



Local Operational Research Assistance (OPERA) Program

Road Shouldering Machine Improvements

Road shoulder drop-offs have been a major maintenance and safety concern for the Redwood County Highway Department. Drop-offs typically indicate eroding support for the edge of the paved driving surface, which can hasten deterioration of the roadway. They also present a serious driving hazard to vehicles drifting from the paved driving surface.

To address road shoulder drop-offs, the county highway department's maintenance team sought equipment upgrades and additional funding for purchasing gravel material to bring deficient shoulders level with the asphalt pavement. The team researched various options and decided to purchase the Road Widener, a hydraulically operated road shouldering machine with roller and shoe extensions. The unit can be attached to a motor grader or skid loader.

Keeping an effective and efficient tool in service

The new road shouldering attachment immediately proved to be an effective and efficient tool for placing gravel on shoulders. It has a lightweight design and easily can be adjusted hydraulically during operation to accommodate shoulders 2 to 6 feet wide. However, within the first two weeks of use, the machine was damaged when a gravel supply truck tailgate pin caught on the frame above the shouldering unit's gravel discharge area and bent the beam, crushing the discharge chute and collapsing the frame into the discharge belt. The damage was significant and rendered the unit inoperable.

Redwood County Highway Department staff determined their best option was to repair the damaged shouldering attachment. The department received a \$7,000 grant through the Local OPERA Program to evaluate what had gone wrong and to improve the design of the machine.

Project Leader

Jamie Larsen

Agency

Redwood County Highway Department
1820 East Bridge Street
Redwood Falls, MN 56283

Phone

507-637-4056

OPERA Funding

\$7,000



Design improvements prevent the tailgate pin of a gravel supply truck from snagging on the frame of the road shouldering machine.



The addition of an angle iron deflector has shifted truck tailgate pins away from the frame of the road shouldering machine, preventing further damage and the resulting downtime.

Repairs improve durability of essential road shouldering equipment

Following a thorough study of the damaged road shouldering attachment and its use, the maintenance team contracted with a local welding shop to repair it. The repairs involved bending the frame straight, reinforcing the upper portions of the discharge chute and lower portion of the conveyor, and installing an angle iron on the reinforced upper frame. These repairs not only restored the original functionality of the road shouldering unit, they also ensured that it could again be used effectively without the worry of similar damage.

Since completing the repairs, the maintenance team resumed use of the shouldering attachment for the remainder of the 2022 season without any issues. The added angle iron deflector has been successful in shifting truck tailgate pins away from the machine's frame, preventing further damage and the resulting downtime.

Repair of the road shouldering attachment has enabled the Redwood County Highway Department to more effectively and efficiently maintain its 177 miles of gravel roads and reshoulder its 333 miles of asphalt roads. The team also has shared these improvements to the benefit of other local agencies using the attachment.

About OPERA

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.

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
mnltp.umn.edu | mnltp@umn.edu | 612-626-1077
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