



# Local Operational Research Assistance (OPERA) Program

## Otta Seal Surface on an Unpaved Granite Road

Small communities with limited resources often struggle to maintain their local roads, many of which are unpaved. Franklin Township in Wright County, Minnesota, has about 2,800 residents, approximately 70 miles of roads—60 miles of which are gravel—and an annual levy of just under \$1 million.

In need of harder surfaces to reduce maintenance costs and improve ride quality on its high-traffic gravel roads, Franklin Township officials experimented with a relatively inexpensive bituminous surface treatment, known as Otta seal, on a small section of an existing gravel road with a crushed granite base. Otta seal essentially is a thick mixture of asphalt and crushed rock.

Franklin Township received a \$5,000 grant through the Minnesota Local Road Research Board Local Operational Research Assistance (OPERA) Program to test the products and materials and their application, then share the results.

The township hired a contractor to apply two layers of the special Otta seal oil with an aggregate mixture over a graded and well-compacted granite base stretching 0.7 mile. The project cost about \$68,000, which included site prep, \$64,000 for material and application, and the unexpected repair of two frost boils during the first year.

Franklin Township officials chose the test section because it connects two paved roads. In addition, it connects to an adjacent similar unpaved road they're using for comparison. Part of the experiment involved no grading or dust control on the Otta seal test section. Ordinarily, grading and dust control account for most of the routine maintenance of gravel roads—and most of the ongoing cost.

The success of the Otta seal experiment depends on how long the test section lasts. Routine maintenance of a similar length of township gravel road costs about \$12,000 each year.

### Project Leader

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### Phone

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### OPERA Funding

\$5,000





If the Otta seal test section lasts 10 years without needing further maintenance, it would cost about \$6,800 annually—significantly less than a typical gravel road. But if it lasts only five years, the annual cost would rise to \$13,500, slightly more than a typical gravel road.

After a year and a half, the Otta seal test road is holding up. Maintenance costs have been less than neighboring gravel roads, except for the unexpected frost boil repairs. The road surface is not smooth and does not compare in quality to a fully rebuilt road with bituminous pavement, but it has eliminated the need for dust control.

Franklin Township officials are hopeful the Otta seal experiment eventually will provide a township-wide alternative for roads with a good granite base. In addition, Franklin Township and Wright County officials intend to share their experience using an Otta seal surface on an unpaved granite road with other local agencies.

The Local Operational Research Assistance (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:**

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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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