



Greener Bituminous Pavements

Project Number 2011-02

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Problem Inflationary cost increases, including dramatic changes in the cost of asphalt and fuels, have doubled the cost of bituminous pavements in Lake County over the last 10 years. In addition, bituminous surfaces in the county are subject to premature wear because the aggregates available locally are soft.



Solution Lake County developed potential reclaimed asphalt pavement (RAP) mixes containing imported, high-quality aggregates that could be tested in a low-volume pavement project. These mixes allowed the county to reduce the amount of new asphalt needed while also using surplus RAP material available from local surface renewal projects. The addition of high-quality aggregates also provided a more durable bituminous surface.

Procedure The project team analyzed characteristics of typically available milled materials from local roads, locally available screened sand, Mesabi aggregate, and locally available fine aggregate material. The team then developed a wear and non-wear bituminous mix to be used on a half-mile segment of Marble-Kane Lake Road in Lake County. The non-wear mixture used 45 percent RAP, and the wear mixture used 40 percent RAP. Project partners included the University of Minnesota Duluth, the Minnesota Asphalt Pavers Association, and the Minnesota Department of Transportation.

Results Cost comparisons show that Lake County saved about 19 percent on the non-wear and 4 percent on the wear mixture by using high percentages of RAP. The material was easy to compact and met density requirements, and the results of visual project inspections were positive. Quality improvements resulting from the addition of Mesabi aggregate and locally available screened sand are hard to measure. However, the use of these two components together with the RAP and fine aggregate from a local gravel pit allow for a higher degree of quality control.

Approximate Cost \$154,000

OPERA Funding \$8,000

Implementation Follow-up lab testing will be conducted to determine crack susceptibility and mix characteristics. Field investigations will also continue to evaluate mix performance compared to adjoining standard bituminous pavements.

Status Complete

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