

FY00-XXXIV-97
DEMONSTRATION OF NORTH DAKOTA LIGNITE FLY ASH IN
HAUL ROAD CONSTRUCTION

CONTRACTOR: The Falkirk Mining Company

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PARTICIPANTS

<u>Sponsor</u>	<u>Cost Share</u>
The Falkirk Mining Company, GRE, ISG, ENROCK/MT ND Industrial Commission	\$59,426.00 <u>59,426.00</u>
Total Project Costs	\$ 118,852.00

Project Schedule – Eighteen Months

Contract Date – 10/28/99
Start Date – 10/28/99
Completion Date – 9/1/01

Project Deliverables

Con Execution, DOH & DOT approvals – 10/28/99 ✓
First Status Report – 12/31/99 ✓
Second Status Report – 10/1/00 ✓
Final Report – 9/1/01 ✓

OBJECTIVE / STATEMENT OF WORK

The primary goal of this project is to demonstrate the technical performance of Lignite fly ash used to enhance the engineering performance of natural spoils and /or subsoil in the construction of an improved haul road subgrade and subcut utilizing construction techniques typical for road building. Supplemental objectives include providing experience in using fly ash for soil enhancement; providing technical data for educating contractors and engineers on the benefits of utilizing fly ash in road subgrade and subcut construction; and providing counties and local entities with a low-cost method for enhanced road construction.

STATUS

The design goal of the project was to achieve a minimum strength gain of 25% above the native soils, or a minimum of 150 psi. The strength gains achieved for the laboratory mixes exceed the design goal.

Field placement of the fly ash modified soils was accomplished over a nine-day period in May of 2000. A 1,900 feet section of haulroad located in the Riverdale Mine Area south and west of the Falkirk office complex was selected as the demonstration site. A level of 15% fly ash addition was applied in the demonstration site.¹

Falkirk concluded the field test was a success from an engineering and economic perspective. Data from the water monitoring indicates the fly ash did not change the runoff water quality. Construction costs were estimated for the unmodified haulroad (control) = \$1.14/yd³; fly ash stabilized test site = \$4.76/yd³; rebuilding the unmodified haulroad = \$3.44/yd³; and cement stabilized site = \$13.70 to \$14.52/yd³. The standard haulroad requires a rebuilding one to three times in five years.

¹ . The level of 15% fly ahs was an optimum level based on laboratory data.