Muddy Roads
IMPROVED PERFORMANCE of UNPAVED ROADS DURING SPRING THAW

“Muddy Roads in Vermont”
A Two Year Project Funded by VTrans (Materials & Research)

Research Team:

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Objectives

Investigation of new and existing technologies that can mitigate loss of serviceability of unpaved roads in the Spring

Locate suitable sites in Towns near the research team and obtain Town support for the construction of test sections
Objectives (cont.)

Plan an instrumentation and monitoring program to evaluate changes over time for variables such as:

- Strength of the pavement profile
- Temperature vs. depth
- Soil moisture vs. depth
- Surface condition of the roads (visual)
Technologies considered

Geosynthetics
  geotextile reinforcement
  geogrids
  geocells
  patented GCBD
Drainage improvements
  gravel wrapped in fabric; lateral drain
Cement stabilization
Asphalt emulsion stabilization
Conventional reconstruction
Products selected and company support

Geocells – 4” depth and 6” depth provided by Presto Geosystems

Tensar Geogrid – two strengths of biaxial grid provided by Contech

Cement – 250 bags of Portland cement to each site provided by the No. East Cement Suppliers group (STG and SGI)
4" AGGREGATE DRAINAGE BLANKET

CL

GEOTEXTILE FILTER

6" UNDER-DRAIN

¼"/ft

6" MIN

12" to 18" EXISTING ROADWAY MATERIAL

ORIGINAL GROUND
Portable Dynamic Cone Penetrometer
In-Situ Instrument Array

Road Centerline

Ditch
March 10, 2003
April 1, 2003
Driving Resistance vs. Depth
Geocell #1n - 4/15/03

Drive Resistance (blows/inch)

Depth (in.)
Preliminary Cost Data

4” deep geocells @ $4.50/sq. yd. = $63,360 per mile
6” deep geocells @ $6.75/sq. yd. = $95,040 per mile

Tensar geogrid @ $1.60/sq. yd. = $22,528 per mile
Tensar geogrid @ $2.80/sq. yd. = $39,424 per mile

Cement additive @ $5.50/bag = $72,600 per mile
Cement additive @ $7.15/bag = $93,380 per mile

Patented GCBD @ $5.25/sq. yd. = $73,920 per mile

Geotextile separator @ $1.08/sq.yd. = $15,210 per mile

Labor costs (est.) @ $800 to $1000 per day adds $47,520 per mile
The End of

Muddy Roads