

Structural improvements of flexible pavements using geosynthetics for base course reinforcement

Quarterly Progress Report

June – September 2007

Next report due: January 31, 2008 (for period October-December 07)

ACCOMPLISHMENTS DURING THE QUARTER:

ERDC-CRREL:

Testing on Test Sections 3 (6" asphalt, 12" base, with grid) and 6 (4" asphalt, 24" base, no grid) was completed (now 5 of 8 test sections have had complete testing) (Figure). After consulting with University of Maine, the decision was made to stop trafficking after 464 K passes, as it would be very time-consuming to traffic to a rut depth of 12.5 mm. Trafficking on Test Section 8 (4" asphalt, 24" base, grid) began and will likely be completed in December 2008. FWD analyses of Test Sections 3 (after failure), 6 (immediately prior to and after testing) and 8 (immediately prior to testing) were performed so that the subgrade modulus values at this critical time during testing has a independent measure.

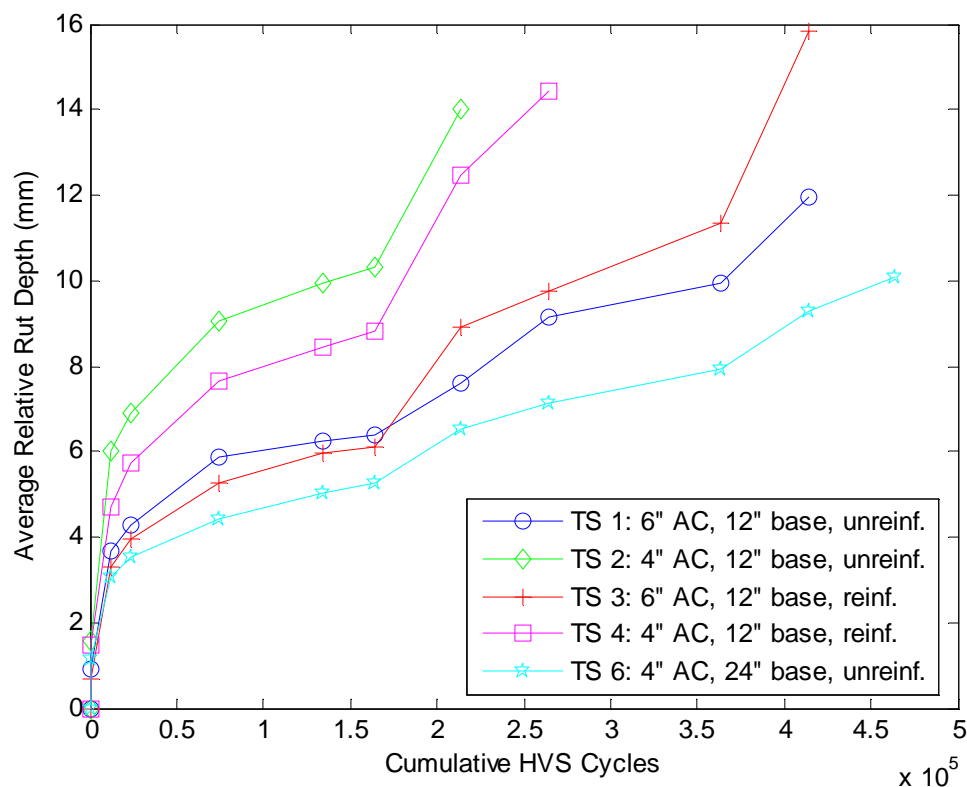


Figure: Rut Depths after 464k Cycles in TS 6.

PROPOSED ACTIVITIES:

1. Traffic test section 8 until failure
2. Begin trafficking test section 5

UNIVERSITY OF MAINE:

Static load test data was monitored over the course of trafficking on Test Section 6. Protocols were cooperatively developed with CRREL in order to establish the traffic cycle termination point on this section such that sufficient data would be collected while satisfying project constraints. This was necessary because rutting failure could not be reached within a reasonable number of traffic cycles.

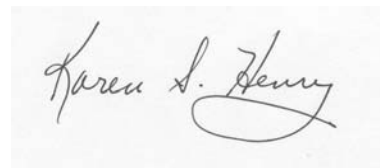
PROPOSED ACTIVITIES:

1. Continue to monitor data being generated by CRREL
2. Cooperatively develop/modify static testing protocols based on instrumentation survivability

UNRESOLVED OR NOTABLE ISSUES:

1. Additional funding, now available at FHWA, has not been received by either CRREL or University of Maine. ***This funding should be received very soon in order to continue work without any further delays in the project***
2. A lightning strike and associated power surge resulted in mechanical and electrical damage to various components of the HVS. It required approximately 6 weeks to repair.. This may delay completion of testing by about 1-2 months.
3. Some geogrid strain gages have failed. requiring some changes in the static load test protocol in order to obtain the best data possible for modeling purposes.

Respectfully submitted:

A handwritten signature in cursive script, reading "Karen S. Henry". The signature is written in dark ink on a light-colored background.

Karen S. Henry, Ph.D., P.E.
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PURPOSE AND SCOPE:

This study will provide missing data required to help determine whether geosynthetic reinforcement is beneficial at conditions typically experienced in state highway construction. If the geogrid does provide benefit, the study will develop an AASHTO specification for geosynthetic reinforcement of the aggregate base course of flexible pavement structures. Furthermore, the results will be published in a format to conform with future modifications to the AASHTO Pavement Design Guide.

The objectives of this study are:

- 1.To determine whether and under what conditions geosynthetics (geogrids and geotextiles) increase the structural capacity of pavements typically constructed by state DOTs.
- 2.To determine whether and under what conditions geosynthetics increase the service life of pavements typically constructed by state DOTs.
- 3.To measure in-situ stress/strain response of the reinforced material for use in current or future pavement design processes.