

NEW ENGLAND TRANSPORTATION CONSORTIUM

QUARTERLY PROGRESS REPORT

**A. PROJECT NUMBER AND TITLE:** Project No. 00-4, Portable Falling Weight Deflectometer Study

**B. PRINCIPAL INVESTIGATOR(s) & UNIVERSITY(s):**

Dana N. Humphrey  
Department of Civil and Environmental Engineering  
University of Maine, Orono, Maine.

Maureen A. Kestler  
Geotechnical/Pavements Engineer  
USDA Forest Service

**C. WEB SITE ADDRESS (If one exists):** None

**D. START DATE (Per NETC Agreement):** 7/1/02

**E. END DATE (Per NETC Agreement):** 6/30/04

**F. ANTICIPATED COMPLETION DATE:** 6/30/04

**G. PROJECT OBJECTIVES:**

The objective of this project is to evaluate the effectiveness of portable falling weight deflectometers (PFW) as a means of monitoring compaction, density, or bearing capacity at construction sites. This will include developing correlations between PFW results and percent compaction for a range of soils. Guidelines for use of PFWs will be developed. The guidelines will include acceptance and testing protocols. In addition, the PFW will be evaluated as a means of optimizing timing for load restriction placement and removal on secondary roads in New England. A comparison will be made of the results from different PFWs and several alternate devices for measuring the degree of compaction of highway subgrade soils and base/subbase aggregates.

**H. REPORT PERIOD:** January 1, 2004 to March 31, 2004

**I. ACCOMPLISHMENTS THIS PERIOD:**

Work on Task 4 (Monitoring seasonally posted low volumes roads) continued. Field sites in Maine, New Hampshire, and Vermont have been monitored on a weekly basis 5 to 6 times, with the exception of the test site in Litchfield, Maine where bad weather prevented measurements from being taken on two reading days. The general procedure at the test sites is to take PFW and conventional FWD readings at the same locations. Instrumentation (typically, thermocouples and piezometers) readings are also taken weekly, or recorded hourly by an

automated datalogger system. Weekly field monitoring will continue until approximately the end of April.

Work on Task 5 (Perform testing on subgrades and construction materials) was continued. The test chamber for the large-scale laboratory tests was fabricated.

**J. PROBLEMS ENCOUNTERED (If any):**

It will not be possible to complete the project by the contracted completion date of June 30, 2004. A request for a six-month no-cost time extension has been submitted.

**K. TECHNOLOGY TRANSFER ACTIVITIES: None**

**L. STATUS BY TASK:**

Task 1. Literature Review – 90%

Task 2. Test Plan – 100%

Task 3. Meet with Technical Committee – 100%

Task 4. Monitor seasonally posted low volume roads – 80%

Task 5. Testing on subgrade and construction materials – 65%

Task 6. Recommended guidelines – Not yet started

**M. PERCENT COMPLETION OF TOTAL PROJECT: 70%**

**N. ACTIVITIES PLANNED FOR NEXT QUARTER:**

The laboratory portion of Task 5, Testing on Subgrade and Construction Materials, will be the focus of work during the next quarter. This will include evaluation of the PFWD as a compaction control method using four 3-ton subbase/base samples that are currently stored in the laboratory. Tests will be conducted in accordance with the test plan. One additional subbase/base sample will be obtained and tested.

In addition, monitoring of field sites for Task 4, Monitor seasonally posted low volume roads, will be completed in the early part of this quarter.

**O. FINANCIAL STATUS:**

**As of:** 3/31/04

**Total Project Budget:** \$100,000

**Total Expenditures:** \$76,877