

OHIO DEPARTMENT OF TRANSPORTATION OFFICE OF PAVEMENT ENGINEERING RESEARCH IMPLEMENTATION PLAN



Title: Three-Dimensional Modeling of Flexible Pavement

State Job Number: 14654

PID Number:

Research Agency: Ohio University

Researcher(s): Shad Sargand

Technical Liaison(s): Roger Green

Research Manager: Karen Pannell

Sponsor(s): Howard Wood, David Humphrey

Study Start Date: 9/3/96

Study Completion Date: 9/3/98

Study Duration: 24 months

Study Cost: \$30,000

Study Funding Type: 80% Federal/20% State from ODOT SPR (2)

STATEMENT OF NEED:

Many of the asphalt pavement analysis programs are based on linear elastic models. A linear viscoelastic models would be superior to linear elastic models for analyzing the response of asphalt concrete pavements to loads. There is a need to develop a user friendly three dimensional finite element program for analysis of the data collected on the Ohio/SHRP test road.

RESEARCH OBJECTIVES:

Develop a user friendly three dimensional finite element program for analysis of flexible pavement systems which can run on selected ODOT computers.

RESEARCH TASKS:

- Develop computer code for a three dimensional viscoelastic model.
- Verify the program using data from the Ohio/SHRP test road

RESEARCH DELIVERABLES:

- Flexible pavement analysis software.
- Final report.

RESEARCH RECOMMENDATIONS:

Realistic problems required up to several days to complete on ordinary desktop computers. Specialized servers would need to be employed to solve useful problems in a few hours.

PROJECT PANEL COMMENTS:

While responses predicted for FWD and moving trucks appeared to be reasonable, the long processing time required to complete the modeling indicated the computer technology at the time was insufficient to make this process practical.

IMPLEMENTATION STEPS & TIME FRAME:

Implementation was not feasible.

EXPECTED BENEFITS:

N/A

EXPECTED RISKS, OBSTACLES, & STRATEGIES TO OVERCOME THEM:

N/A

OTHER ODOT OFFICES AFFECTED BY THE CHANGE:

None

PROGRESS REPORTING & TIME FRAME:

N/A

TECHNOLOGY TRANSFER METHODS TO BE USED:

- The final report of this research will be available online at the ODOT website.
- The Final Report was also distributed to all other state departments of transportation in addition to national libraries and repositories.

IMPLEMENTATION COST & SOURCE OF FUNDING:

N/A

Approved By: (attached additional sheets if necessary)

Office Administrator(s):

Signature: David Humphrey Office: OPE Date: 2/10/2006

Division Deputy Director(s):

Signature: Howard Wood Division: Planning Date: 2/14/2006