



NJDOT Bureau of Research  
QUARTERLY PROGRESS REPORT

Project Title:	Evaluation of Poisson's Ratio		
RFP NUMBER:	NJDOT RESEARCH PROJECT MANAGER: Mr. Anthony Chmiel		
TASK ORDER NUMBER/Study Number: Task Order No. 128 / 4-26531	PRINCIPAL INVESTIGATOR: Thomas Bennert		
Project Starting Date: 1/01/2004 <b>Original</b> Project Ending Date: 12/31/2005 <b>Modified Completion Date:</b>	Period Covered: 1st Quarter 2004		

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Literature Search/Sensitivity Analysis	10%	50%	100%	10%
1. Material Collection	5%	0%	100%	5%
2. Laboratory Testing	65%	20%	40%	26%
3. Calibration	10%	25%	25%	2.5%
4. Reporting	10%	0%	0%	0%
Final Report				
<b>TOTAL</b>	<b>100%</b>			<b>43.5%</b>

Project Objectives:

- Conduct a sensitivity analysis to evaluate how the changing of the Poisson's Ratio affects the stresses and strains determined using elastic layer analysis procedures
- Evaluate the measurement of the Poisson's Ratio for aggregate base materials during the resilient modulus test and compare to available prediction equations
- Evaluate the measurement of the Poisson's Ratio for HMA materials during the dynamic modulus test and compare to available prediction equations

Project Abstract:

For the upcoming AASHTO Mechanistic Design Guide, the two main parameters needed for predicting the pavement stresses and strains are the modulus and the Poisson's Ratio. At the moment, the Poisson's Ratio is estimated based on the modulus of the material (both aggregate and HMA) or by the HMA temperature. However, this was developed using a minimal amount of material that does not represent the commonly used materials of New Jersey. Therefore, a research effort was developed to evaluate the current prediction methods and, if applicable, modify them to provide values that more closely represent materials from New Jersey.

1. Progress this quarter by task:

Difficulties with the LVDT system for the aggregate testing caused the testing to be shifted to the HMA materials. The HMA materials were instrumented with three vertical LVDT's and a circumferential LVDT. Three HMA mixes were evaluated, 12.5mm coarse Superpave mix with a PG64. 70, and 76-22 asphalt binder. Testing showed that the Poisson's Ratio did change with modulus, however, not as drastic as that recommended by the NCHRP researchers. The Poisson's Ratio only increased with increasing temperature, a trend that was also recommended by the NCHRP researchers.

2. Proposed activities for next quarter by task:

Further testing of HMA samples will take place this quarter using different gradations. The testing method will also be further evaluated to try to explain the discrepancies between the results here and those recommended by the NCHRP researchers.

3. List of deliverables provided in this quarter by task (product date):

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# CAIT

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Rutgers, The State University of New Jersey

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N.A.

4. Progress on Implementation and Training Activities:

N.A.

5. Problems/Proposed Solutions:

N.A.

Total Project Budget	\$426,111
<b>Modified Contract Amount:</b>	
Total Project Expenditure to date	\$150,649
% of Total Project Budget Expended	35%

\* These are approximate expended amounts for the project; these estimates are for reference only and should not be used for official accounting purposes. For a more accurate project accounting please review the quarterly invoice for this project.