Problem Statement:
The NMDOT currently designs pavement sections for a specific design life; five years for pavement preservation activities, ten years for rehabilitation projects, and twenty years for new construction and reconstruction projects. Department personnel have expressed uncertainty as to whether these pavements are performing as expected during their design lives, and if not, what factors should be considered in evaluating potential causes for this difference.

Objective:
Determine the factors contributing to disparities between predicted and observed pavement performance on New Mexico highway facilities. Provide recommendations for countermeasures in policies and procedures in design, construction and maintenance, and a produce an implementation plan for use by the Department in implementing these recommendations.

Background:
NMDOT has identified the need to determine how long pavements on New Mexico facilities are actually lasting. For example, a Life Cycle Cost Analysis (LCCA) must assume a pavement performance period for all pavement reconstruction, rehabilitation, and pavement preservation projects. If the assumed pavement lives are not accurate, the resulting analysis is worthless. Actual pavement performance is also needed in Pavement Management Systems analyses, such as health-of-the-network projections, and if assumed pavement performance is not accurate, then the analyses are not useful. Research is needed to study how long pavements are actually lasting on New Mexico highways, to determine the causes for premature failure or service lives extending beyond design lives, and to identify system improvements in design, construction and maintenance to address this condition.

Action Items:

Step One: Perform a thorough literature review to determine how actual pavement performance compares with expected performance among states and foreign governments, and what countermeasures are being taken.

Step Two: Perform a thorough comparative analysis between expected and observed pavement performance on New Mexico highway facilities.

Step Three: Perform an analysis of factors into why pavements may not be performing as expected.

Step Four: Perform a study of the functional areas within NMDOT that factor into long term pavement performance issues (design, construction, maintenance, traffic studies, ESAL projections, pavement preservation, etc.) and recommendations on systemic improvements to improve this performance. Provide recommendations and an implementation plan for implementing research results.
New Mexico Pavement Life Expectancy
Project Number: NM08MNT-02
Research Category: Maintenance

Desired Results:
Improvement in design, construction, serviceability and durability of New Mexico highway pavements.

Product or Service to be delivered:
1) Literature review of existing conditions and countermeasures undertaken by other states and governments.
2) Comparative analysis between actual and expected performance of pavements in New Mexico.
3) Analysis of factors contributing to disparities between actual and expected pavement performance.
4) Preparation of a report and implementation plan describing recommended countermeasures in design, construction, maintenance and other areas to improve pavement performance.

Tool to Measure Impact:
Changes in Agency policies and procedures to implement the findings and recommendations resulting from this study.

Standards of Success:
1) Improved pavement designs.
2) Improve construction and maintenance practices.
3) Longer lasting pavements.

Time Frame: 18 months

Project Funding: $115,000