

## Key Points:

**Project Number:**

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**Start Date:**

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**Project Cost:**

\$150,136

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# DEVELOPMENT OF MIX DESIGN AND STRUCTURAL DESIGN PROCEDURES FOR COLD IN-PLACE RECYCLING

**By: Lindsey Costello**

## PROBLEM

Cold In-Place Recycling (CIR) of badly deteriorated asphalt pavements in Nevada has proven to be a very effective alternative to the costly activity of reconstruction. The current methods for mix and structural design of CIR needs to be updated to incorporate the latest technologies in pavements/materials engineering. Furthermore, NDOT is in need for a guide to decide when an asphalt overlay or a maintenance activity (e.g., chip seal) should be applied over the CIR layer.

## OBJECTIVE

The updated mix and structural design methods will ensure excellent long-term performance of every CIR pavement through minimizing early failures

which will provide great payoff. These processes must be appropriately designed and constructed to achieve their full potential and become cost effective. This study will assess the cost/benefits of the engineered asphalt emulsions through an extensive LCCA that is based on actual long-term performance of CIR pavements under Nevada's conditions.

## METHODOLOGY

A total of four tasks will be completed by the UNR team to achieve the objectives of the proposed research.

- Task 1 will develop a performance-based mix design guide for CIR.
- Task 2 will conduct Life Cycle cost analyses of CIR methods.
- Task 3 will develop structural design guides for CIR overlays.
- Task 4 will develop technical reports and guides for the various mix and structural design methods developed in the research process.

## IMPLEMENTATION POTENTIAL

NDOT has had some noticeable success with CIR on all levels of the road network; low, medium, and high traffic volumes. Potential benefits are more environmentally friendly mix designs, cost effectiveness, and roadway longevity. The research will also prepare all necessary training materials/manuals and will conduct training to the appropriate NDOT Divisions and Personnel.

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