

Project Profile

General Project Information

Project Location: K-140 Saline & Ellsworth Counties, Kansas
Road Owner Contact: Kansas Department of Transportation
 Don Drickey KDOT District 2
Date Placed: July 2001
Existing Pavement: Composite; two layers of hot mix overlay plus surface treatments over a Portland cement concrete (PCC) pavement
Length: 37 miles



While the pavement base was structurally sound, the surface of this composite highway exhibited severe reflective cracking. KDOT wanted a cost-effective solution for rehabilitating the surface layers, protecting the pavement structure, and providing an acceptable riding surface. The agency chose the ReFlex® engineered emulsion cold in-place recycling system, which is designed using performance-related specifications. The in-place recycling project was unusual because it was done over a PCC pavement.

Construction Information

The Project: The existing bituminous layer (100-125 mm or 4.5") was recycled using the ReFlex® emulsion cold in-place recycling process. The recycled pavement was surfaced with a hot mix asphalt (HMA) overlay.

Construction Notes: Koss Construction Company of Pauline, Kansas was the contractor. Koss has a lot of experience with recycling, but this was their first project using the engineered design and emulsion. The project was completed in a timely manner with no major interruptions. The emulsion recycled mix cured quickly, allowing same day traffic return and early surface placement.

Surfacing: The 40-mm (1 1/2") PG 64-28 HMA overlay surface course was placed as early as 2 days after recycling on some portions of the project.

Photos

Before

Recycling Construction

Half-finished ReFlex® Recycled Road



Design Test Information

Marshall Stability at 40°C	1606 lbs
Retained Stability after water treatment	81%
Raveling Loss	0.5%
Indirect Tensile Test, Thermal Cracking Temo	-28°C
Design Emulsion Content adjust in field per field gradation test results	3%

Comparison of Design & Field Core Testing

	Laboratory Design	Field Core Tests
Air Voids	9.4%	9.2%
Indirect Tensile Test Cracking Temperature	-28°C	-27°C

Performance Results

The designed material had excellent strength, moisture resistance, resistance to raveling and resistance to thermal cracking. The field samples indicate a close match to the design. Some sections of the recycled pavement were left open to traffic before surfacing for as long as 60 days during the hottest part of the summer, with the temperature reaching 100°F on many of those days. The recycled pavement showed no evidence of rutting and held up very well, even under the very heavy July 4th weekend traffic traveling to a nearby lake. After almost four years KDOT is pleased with the project's performance. Since this construction, the agency has contracted and completed over 500 miles of ReFlex® CIR projects on State and Interstate Highways.

For more on this project, the ReFlex® process or other solutions available in your area, contact your local Road Science™ representative.

