

Butler County, Iowa had previously used cold in-place recycling (CIR) followed by 3 inches of Hot Mix Asphalt (HMA) to maintain their county road system. Hot in-place recycling (HIR) was chosen to repair current distress rather than CIR as there were concerns about excessive pavement thickness and the distress was limited to the HMA layer.

PROBLEM:

A typical road cross section in Butler County consists of 6 inches of aggregate base, topped with 3/4-inch of seal coats and later, 2 inches of HMA. Eight to 10 years later another inch or two of HMA would be placed resulting in 3 to 5 inches of asphalt on top of the base course. In the 1990's Butler County started performing CIR and have performed CIR on approximately 90 percent of the county roads.

Current distress on Sinclair Ave was found to be confined to the 3-inch cap of HMA. CIR was considered, but that would lead to a significant pavement thickness and there was no apparent distress in the CIR layer. The county was also seeking to improve the roadway to handle increased truck traffic. Increasing the depth of the structural section of the pavement to 5 inches was one of the goals of the project. A cost effective rehabilitation method was needed.

SOLUTION:

Besides the distress in the HMA layer, there was a need to restore the cross slope of Sinclair Ave. Butler County looked to Dustrol and their MARS process to hot in-place recycle 2 inches of the existing pavement. MARS stands for Mobile Asphalt Recycling System where a series of preheater and heater milling units heat, soften and remove the existing asphalt in 1/2-inch layers resulting in a 2-inch recycled layer. Tunnel heaters keep the previously milled recycled asphalt hot until the entire 2-inch depth is removed and then placed using a windrow elevator and paver. The mix is compacted using conventional asphalt compactors.

HIR was selected as a method to add structure to the cross section to better support truck traffic. The pavement was first profile milled to approximately 1 inch to correct the cross section and to produce RAP for the surface. The remaining pavement was then recycled using HIR to a 2-inch depth using Dustrol's MARS system. Finally, the project received a 3-inch HMA overlay.

The county estimated a 12% cost savings by utilizing HIR plus the 3-inch HMA cap in lieu of the previously typical rehabilitation of 5 inches of CIR plus a 5-inch HMA cap. Another benefit of HIR (and the other in-place recycling methods) was the improvements were made under traffic with minimal delays to traffic.

More information on this project can be found in the Fall 2022 issue of the Pavement Preservation Journal at www.fp2.org/pavement-preservation-journal

PHOTOS:



Sinclair Ave after profile milling



Performing 2-inch HIR on Sinclair Ave



Recycled HIR layer, Sinclair Ave

