Cold In-Place Recycling allowed Bobby Phillips, Roadway Superintendent for Jefferson County, Indiana, to restore Jackson Road, an ailing pavement in the Southeast corner of the state. This technology, new to Phillips and this region of Indiana, allowed him to also look to the future portion of the roadway's life cycle. This was an opportunity to utilize innovative technology while also looking to the future for the pavement and the entire county as a whole network.

In order to treat the same depth of distress with conventional methods, a total savings of approximately 47% of the final project cost were realized by utilizing the CIR process.

The 5.0 inches of recycled material equates to approximately 85% reused or recycled pavement material.

168 tons of engineered emulsion were utilized to recycle approximately 7,200 tons of existing asphalt pavement.

Complete treatment of the deeper structural distresses eliminated the possibility of reflective cracking throughout the project.

BACKSTORY:

This section of Jackson Road is a 2.2-mile-long rural collector for Indiana State Route 62 in Jefferson county. The traffic consists of farm traffic along with local residents. After pavement investigation, it was understood that Jackson road needed repairs, however, a traditional mill and fill treatment was not a viable option for the county's budget.

PROBLEM:

The existing asphalt pavement on Jackson Road was experiencing age-related cracking. Pavement investigation on Jackson Road confirmed more distresses within the pavement structure including stripping in the existing pavement. Stripping and debonding were observed in the existing asphalt lifts as deep as 5.0 inches from the surface.

The existing asphalt pavement thickness ranged from 6.0 to 11.0 inches. The traditional solution of the mill and fill to a depth of 5.0 inches to eliminate all of the observed distresses was not a viable option for Jefferson County's budget.

A viable traditional solution within the County's budget would be a minor mill and fill, which would only treat a portion of the cracking throughout the project. Reflective cracking would return, and Phillips would be back at the beginning of his problem.

The County was in the market for a treatment to repair and improve Jackson Road while saving money right now and in the future. He was also looking for something to shift the mindset from dollars per mile to years of service life.

> "This is just one small step in trying to maintain roads with longevity, with a mindset of years of service life instead of dollars per mile"
>
> *— Bobby Phillips, Jefferson County Highway Superintendent*

SOLUTION:

Bobby Phillips was introduced to the CIR process when in attendance at the Purdue Road School Transportation Conference and Expo for the state of Indiana. The idea of utilizing the existing material that the county already owned and asphalt emulsion to create a new pavement layer was intriguing. This interest and information provided from pavement investigation helped Phillips decide that he had a candidate for the CIR process.

The project began by processing the 5.0 inches of distressed asphalt pavement and injecting the engineered emulsion. The mixture was then paved back onto the remaining underlying pavement and compacted. The CIR process took only two construction days. Once the construction and curing of the CIR mixture was complete a 1.5-inch HMA wearing course was paved to complete the entire project.

Selecting a 5.0-inch CIR treatment, with a 1.5-inch HMA wearing course over the 2.2 mile stretch of Jackson Road, Jefferson County realized an initial cost savings of more than $200,000 when compared to a mill and fill of 5.0-inches of HMA, this equates to a total savings of approximately 47% of the final project cost. The CIR process recycled approximately 7,200 tons of existing asphalt pavement, while just 8 trucks of new material were delivered to the site.

The project, constructed in the Summer of 2020, was the first project to utilize CIR in this region of Indiana. The project had a demonstration day to further promote the technology to nearby government agencies representing local Indiana Counties, along with the states of Kentucky and Tennessee.

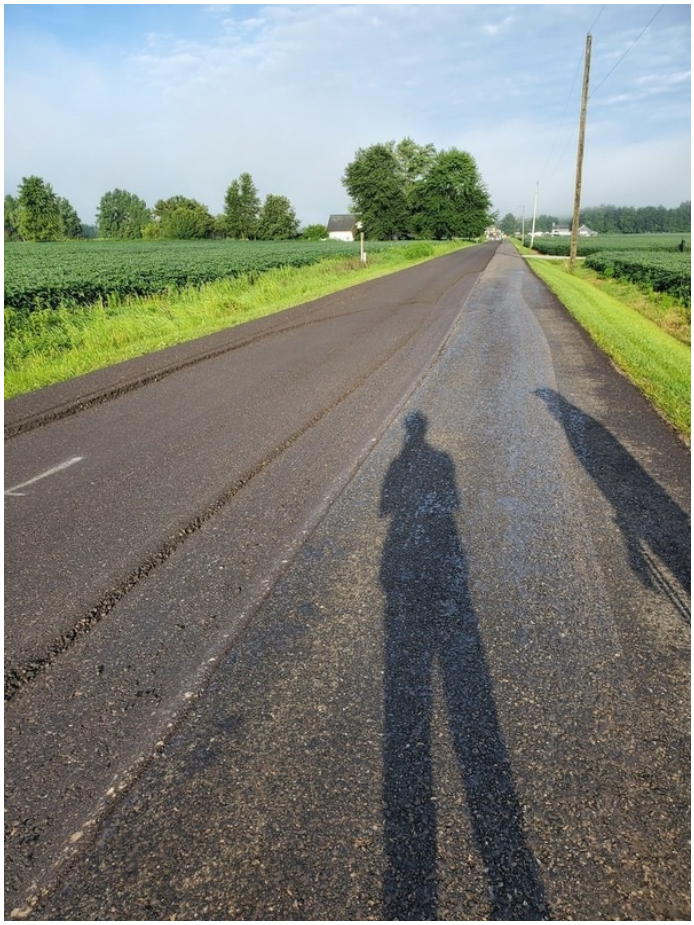
PHOTOS:

Existing Pavement Condition along Jackson Road, cracking throughout the project included longitudinal and block cracking

The Multi-Unit train processing Jackson Road

The smooth drum roller compacting the CIR mat

The compacted 5.0-inch CIR mat next to the distressed existing pavement



Compacted and uncompacted CIR mat on Jackson Road

The 1.5-inch HMA surface and cured CIR mat

Finished 1.5-inch HMA surface on Jackson Road