

Cold In-Place Recycling allowed INDOT to repair a major 4-lane divided highway in Northern Indiana. US 30 showed large cracks that, upon further investigation, extended deep into the pavement structure.



1,605 tons of engineered emulsion were utilized to recycle approximately 52,800 tons of existing asphalt pavement.



Nearly 7 miles of 4-lane divided highway were rehabilitated in 18 production days



Performing a Cold-In Place Recycling treatment on asphalt of a composite pavement allows for the majority of asphalt pavement distresses to be mitigated with CIR

BACKSTORY:

US 30 is a major collector that is used to get from Chicago, IL to Fort Wayne, IN. Indiana Department of Transportation's (INDOT) LaPorte District was tasked with the rehabilitation of a 6.7-mile section of US 30. This section of road had an AADT of 21,000 with an estimated 35 percent of that traffic being trucks.

PROBLEM:

The existing asphalt pavement on US 30 was experiencing widespread, age-related distress and fatigue cracking. Severe longitudinal and transverse cracking had affected the drivability of the road.

Pavement sampling revealed full-depth cracking, debonding between layers, and stripping throughout the pavement structure. Records indicated shallow concrete, which was confirmed by pavement sampling to be as close as 2.25 inches from the pavement surface. A wide range of pavement thicknesses combined with the full-depth distresses provided too many obstacles for a single lift HMA mill-and-fill to fully address. A more cost-effective solution would have to be found.

It became clear that the pavement could be rehabilitated as opposed to reconstructed entirely, but the evidence of shallow concrete limited the available rehabilitation options. Additionally, the traffic determined that the project must be completed in phases to minimize closure.

INDOT was tasked with finding a solution that would reduce cost, treat distresses deeper than a mill-and-fill, and minimize disruption to the traffic pattern.

SOLUTION:

INDOT elected to solve the problem with a Cold In-Place Recycling (CIR) treatment. The construction project was split into two phases, the passing lane was recycled, and then the driving lane followed. The project re-established a 2.0% profile by conducting a pre-mill of up to 1.0-inch from the pavement surface.

The CIR mixture utilized an engineered emulsion, and was paved at a depth of 4.0 inches to produce 240,000 square yards of paved CIR over 18 days of production. Once the construction and the curing of the CIR were completed, the roadway was profile milled and a 2.0-inch SMA (Stone Matrix Asphalt) surface course was placed.

PHOTOS:



Existing Pavement Surface during Investigative Sampling



Pavement Samples taken during Investigative Sampling



The Single Unit CIR train



CIR was performed in phases by travel lane



Due to heavy traffic volumes, the CIR mat was opened to intersection traffic directly after compaction with little to no raveling observed

