Project Overview and Implementation

Overview

Roller-compacted concrete, or RCC, is a stiff, zero-slump concrete mixture with the consistency of damp gravel. It is comprised of local aggregates or crushed recycled concrete, Portland cement and water. The mixture is placed and roller compacted with the same vibratory roller equipment used for asphalt pavement construction. Compaction begins immediately after the concrete’s placement and continues until the pavement meets density requirements. Given these characteristics, RCC is a fast and economical paving solution for certain construction applications.

This case study profiles Johnson County’s first RCC Pavement (RCCP) road application. The highway department was highly impressed with the final product, stating they would consider RCCP again on future road projects. For Irving Materials, Inc., it was a great opportunity to demonstrate our vertical integration as a one-stop solution source.

You can learn more about RCCP by visiting www.ebpaving.com/site/solutions/roller_compacted_concrete/.

Implementation

Tracy Road, a chip-and-seal county road in Whiteland, Ind. with approximately 1,500 feet of failed pavement, needed to be reconstructed to withstand heavy loads. With a very tight budget, the Johnson County Highway Department not only needed the road to be rehabilitated, but also required removing and replacing an old box culvert during the road closure.

E&B’s subsidiary firm, Specialties Company, removed seven inches of existing road material with a milling machine, followed by stabilizing the remaining base material with a 5% cement mix design. They then fine graded the road to ensure proper slope. This stabilization and full-depth reclamation process proved invaluable to the project as it allowed paving to continue on schedule despite the site receiving several inches of rain leading up to paving.

A crew from E&B’s Indianapolis office then installed 660 cubic yards (1,320 tons) of six-inch roller compacted imix® Roller Pave concrete produced at the nearby IMI Whiteland batch plant. We deployed a Road Tec paver with a tamper bar screed that provided 90% compaction behind the paver. We then followed with two rollers to reach optimal density and create the new road surface. To finish the job, we sprayed a curing compound on the RCC to capture the product’s remaining moisture.

The new, smoother Tracy Road opened for traffic after E&B installed the asphalt approaches and stone shoulder, and testing results proved the product exceeded compressive strengths.