CPR – REBUILT TO LAST

IGGA
International Grooving & Grinding Association
Your Pavement Preservation Resource® since 1972

Afton Interchange on Will Rogers Turnpike in Oklahoma repaired using CPR

>>> DIAMOND GRINDING AND DOWEL BAR RETROFIT

THE AFTON INTERCHANGE is one of seven interchanges on the 88.5-mile Will Rogers Turnpike, which recently received interstate designation. Opened to traffic in June 1957, the roadway, also known as Interstate-44, runs from Tulsa, Okla. to the Missouri state line.

The existing conditions were poor as half of the project had received a 3-inch asphalt overlay constructed in 1999 that had become severely deteriorated. As a result, the condition of the underlying pavement could not be determined in the overlayed portions during the design phase. The original exposed surface, which was more than 50 years old, indicated minor cracking and some faulting between the slabs. The methods considered for the project were a 3-inch bonded concrete overlay coupled with dowel bar retrofit (DBR) and a 4.5-inch asphalt overlay requiring DBR and total reconstruction of 10.5-inches of new concrete pavement. Due to the condition of the original concrete, the Oklahoma Turnpike Authority (OTA), opted to utilize a DBR and grind operation at the location in lieu of an asphalt overlay approach. The chosen rehabilitation approach included milling the existing asphalt on two ramps, full-depth concrete patching, DBR and diamond grinding the final surface of all four ramps.

The project used approximately 3,500 dowel bars and 15,500-square-yards of diamond grinding. Included in the contract was the removal of the existing asphalt overlay, full depth patching, DBR and grinding. The project was unique because this was the last interchange remaining where the original concrete ramps were exposed. The pavement design recommendations that came in from the design engineer required DBR to be performed prior to any asphalt or concrete construction.

According to Tammy Robinson, P.E., Construction Engineer, OTA, the key to success on this project was clearly evaluating options to address the pavement deterioration instead of simply implementing a traditional design.

The project began October 16, 2007 and was completed January 5, 2008. By opting to use the chosen methods, the OTA was able to save approximately $700,000 on the $1.2-million project. Further, they were able to complete the construction in a much shorter time span, saving approximately 85 calendar days as compared to other repair methods. The solution is expected to last 10 to 15 years.

TEAM MEMBERS

- Oklahoma Turnpike Authority (Owner)
- Diamond Surface, Inc. (Prime contractor, grinding, patching, dowel bar retrofit, concrete curb and gutter)
- J.A.G., Inc. (Joint sealing)
- Bob Gladd (Inspector)
- Direct Traffic Control (Traffic control)
- Maxwell Supply (Supplier)
- Mid-Continent Concrete (Ready-mix supplier)