

CPR – REBUILT TO LAST



John Kilpatrick Turnpike, Oklahoma City, OK
Interstate-40 near Yukon to I-35

>>> DIAMOND GRINDING & DOWEL BAR RETROFIT

IN 2005, THE OKLAHOMA TURNPIKE AUTHORITY (OTA) identified the need for significant road repairs on the John Kilpatrick Turnpike. The 25.3-mile highway is a toll road that originates in Oklahoma City and runs from Interstate-40 to I-35. Originally constructed in 1988, this section serves as a major arterial for commuter traffic with an average daily traffic rate of 28,500 vehicles. The project site consisted of four driving lanes spanning approximately nine miles. The road was originally constructed without dowel bars, which eventually led to panel movement and joint faulting creating a rough ride. Due to joint faulting, which ranged from 5/16-inches to 3/8-inches between panels, the average smoothness of the pavement was 10.78-inches per mile. Full-depth repair, dowel bar retrofit (DBR), diamond grinding and joint re-sealing methods of repair were selected to address the deterioration.

Half of the project was completed at night to minimize the effect on the driving public. A major challenge was trying to place as many dowel bars as possible in a short six-hour work window, while allowing enough time for the proper curing of the concrete patching materials. This aggressive schedule allowed motorists to travel on

the pavement the very same day. According to Tammy L. Robinson, P.E., C.P.M., Construction Engineer for the OTA, the selection of a DBR and grinding repair combination in lieu of other options was made because this solution resulted in less impact to the driving public.

"All lanes were opened to full capacity outside of construction working hours and during peak volume periods. The construction duration was significantly reduced compared to an asphalt overlay," said Robinson. "Further, the traffic control utilized was simple and easy to remove. All of these variables added up to a cost effective alternative that has performed very well, with little to no deterioration."

Jerry Jeffries, President of J.A.G., Inc., "predicts it will be 15 to 20 years before any additional major work will need to be completed." Following construction, the final smoothness numbers averaged 0.99-inches per mile, nearly a 90 percent improvement in ride quality. The project was completed on February 5, 2006, 34 days earlier than planned. The final cost was \$5.2 million, with DBR at \$2.2 million, \$735,000 for grinding, \$660,000 for joint rehabilitation and \$450,000 for traffic control.

TEAM MEMBERS

- Oklahoma Turnpike Authority (Owner) – Tammy Robinson, P.E., C.P.M., Construction Engineer; and Wade Piersall, Transportation Specialist
- J.A.G., Inc. (DBR installation, joint resealing)
- Diamond Surface (Full depth repair and diamond grinding)
- Diamond B, Inc. (Diamond blade supplier)
- Wel-Co Diamond Tool Corp. (Diamond blade supplier)