

CPR: BUILT TO LAST



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Green Oaks Subdivision, I-94 Tri-State Tollway, Chicago, IL

>>> DIAMOND GRINDING, FULL-DEPTH PATCHING

LOCATED IN CHICAGO, IL. Interstate 94 serves as a main route for residential and commercial destinations such as Six Flags. The 78-mile-long state route runs north and south through the northern part of the state from Lake to Cook Counties. The north section of the roadway was constructed using an aggressive transverse tined surface texture and the south section was experiencing minor faulting at transverse joints, both of which contributed to the noise level of the pavement. The tire/pavement noise was further exacerbated by the addition of new lanes on the highway to increase capacity. In response to the conditions located at the north end, the Green Oaks community entered into an intergovernmental agreement with the Illinois Tollway to finance construction of a low noise diamond ground surface for noise reduction.

This project involved full-depth patching and minor repair that took place prior to diamond grinding. Broken into two sections, the first 1.9-mile section was located near the Green

Oaks subdivision on the north end of the project. This relatively young section of concrete pavement was in good shape structurally and simply needed noise abatement through diamond grinding. The second half of the project, located on the south end, was 3.5 miles long. This section was patched and diamond ground to remove the faulting and improve the ride quality.

Although the majority of sections were four lanes wide, sections near the Edens Expressway spur were up to six lanes in each direction. The number of lanes often required multi-lane closures with some restricted to as little as four working hours per shift. Depending on the area and number of lanes involved in the closure, workers were typically able to achieve four to eight hours of production time each night.

“The project has definitely been a success by not only reducing the noise levels, but also improving the ride quality of the pavement,” said Dan LoBello, Engineer at Penhall Company.

TEAM MEMBERS

- Illinois Tollway (Owner)
- R.W. Dunteman Company (Prime contractor)
- Penhall Company (Diamond grinding)
- Roadsafe Traffic Systems (Pavement marking)

The total project value was \$5,038,055, with diamond grinding accounting for \$1 million. The diamond grinding was completed in July 2012, with the northern section of the project near Green Oaks completed in May 2012. The average post-grind OBSI level was 102.4 dBA for the Tollway section and 102.5 dBA for the Green Oaks area. The average reduction in tire-pavement noise level was 5 dBA for the Tollway area and 3.8 dBA for the Green Oaks Area. The diamond ground texture resulted in a safe and quiet pavement.