New Interchange at K-7 and Johnson Drive/55th Street Designed for Safety

A new roundabout single-point urban interchange has replaced a potentially dangerous at-grade, signalized intersection at K-7 and Johnson Drive/55th Street in Shawnee, Kansas, improving safety, increasing traffic capacity, and enhancing traffic flow in this rapidly growing area.

Completion of the new interchange is a significant step in meeting KDOT's goal, outlined in the 2006 Corridor Management Plan, to upgrade K-7 to a freeway facility.

"The investment here and along the K-7 corridor during the next few decades will provide important economic return and job creation for the region and the state. But the return on that investment won't just be in dollars and jobs; the improved roads also will be measured in fewer crashes, fewer injuries and fewer fatalities." *Kansas Governor Sam Brownback*

Safety concerns and capacity issues prompted KDOT to replace an at-grade signalized intersection with a new roundabout single-point urban interchange at K-7 and Johnson Drive/55th Street in Shawnee, Kansas. The interchange design incorporates twin, 350-foot-long bridges on K-7 over a large, multi-lane roundabout constructed where K-7 on- and off-ramps merge with Johnson Drive/55th Street. A second roundabout was constructed west of K-7 at the intersection of Hedge Lane Terrace and 55th Street. Designed to interstate standards, the K-7 improvements provide a four-lane divided freeway with provisions for adding an additional lane in each direction as traffic volumes warrant.

KDOT selected GBA to provide professional engineering services, including a concept study, traffic analysis, interchange design, construction traffic control, and public involvement. According to GBA Project Manager Todd Jones, P.E., GBA analyzed 15 different interchange alternatives as part of the preliminary design effort. "The roundabout single-point urban interchange was selected as the most innovative, sustainable solution," he said. "It keeps traffic moving rather than idling at signals, and is ideal for an interchange with space constraints, handling more traffic with less right-of-way and accommodating higher traffic volumes by keeping traffic moving without stops."

Significant measures were taken to provide a quality, long-lasting product while minimizing construction impact on the public and the environment. For example, an innovative low-cracking, high-performance concrete was used on the decks of the two bridges. Developed at the University of Kansas, the use of the concrete is part of a long-term study to find methods and materials to reduce cracking on bridge decks.

Maintaining through traffic on K-7 as well as access to local businesses during construction was also a priority of the project and involved complex phasing and construction of an access road on the west side of K-7. Public involvement was equally important and included additional signage targeting access to area businesses, detour route maps for distribution to patrons, and advertising in local media to inform the public during construction.

Completed in September, this innovative project has done exactly what was intended, improving the safety and welfare of the public by replacing a potentially dangerous intersection.