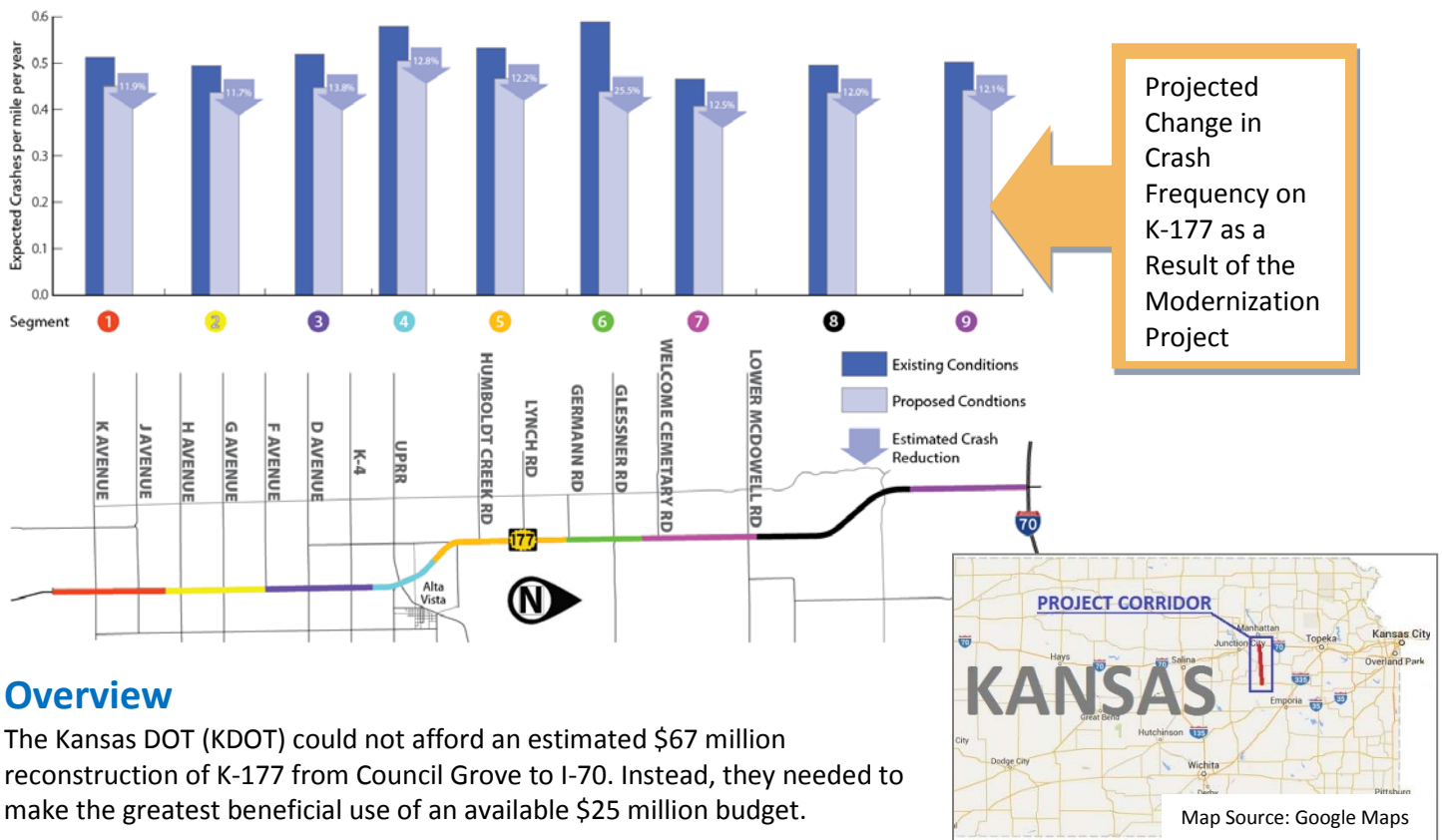


PERFORMANCE-BASED PRACTICAL DESIGN – Kansas State Route K-177



Overview

The Kansas DOT (KDOT) could not afford an estimated \$67 million reconstruction of K-177 from Council Grove to I-70. Instead, they needed to make the greatest beneficial use of an available \$25 million budget.

Project Development

The KDOT utilized a “Design-to-Budget” approach that relied heavily upon Performance-Based Practical Design solutions:

- Assembled a representative group of stakeholders from local communities to provide feedback regarding the selection of proposed improvements
- Divided the corridor into nine segments to develop individual alternatives for each section based on its needs
- Utilized stakeholder feedback and results of extensive operational and safety analysis to consider a range of design alternatives within each segment

Project Design

Targeted solutions were developed to address issues as identified by the analyses for each corridor segment:

- Maintain two-lane, two-way operations with passing zones added where needed
- Widen the typical section throughout the entire corridor from its existing 26-ft roadway (13-ft lanes, no shoulders) to a 40-foot roadway (12-ft lanes and 8-foot shoulders)
- Reconstruct approximately 4.6 miles of the existing alignment
- Retaining existing pavement located beyond the limits of reconstruction portions of the project

Results

Safety and operations were enhanced by the targeted approach. Solutions that met purpose and need were engineered as opposed to applying one concept to the whole corridor based on values found in tables:

- Safety analysis indicated a projected 13% decrease in the expected number of crashes compared to no-build
- K-177 expected to operate at a Level of Service B for its design life with increased passing opportunities on the project corridor by 14%
- Corridor operations and safety were improved overall (compared to the no-build) at the \$25 million budget.

View the report at: <http://www.fhwa.dot.gov/design/pbpd/documents/fhwahif14018.pdf>

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