

KANSAS DEPARTMENT OF TRANSPORTATION

K-10 in Douglas and Johnson Counties

2014 Corridor Review - Final Report

Kansas Department of Transportation

12/8/2014

In response to concerns about median crossover crashes and requests for additional cable median barrier on K-10 in Douglas and Johnson Counties, the Kansas Department of Transportation (KDOT) assembled a group of informed, problem-solving representatives from state agencies and local units of government to revisit the issues/concerns and develop recommendations for possible educational, enforcement and engineering actions to enhance the safety of the corridor.

Introduction

The safety of the K-10 freeway corridor from the east limits of Lawrence to I-435 in Johnson County has been an on-going concern of the users of this highway and of the communities along the highway. Historically the primary concerns that have been raised are the high prevailing speed along the corridor and the instances of severe cross median crashes. In 2011 these concerns came to critical action point due to a high profile fatality cross over crash near the town of Eudora. At that time the Kansas Department of Transportation (KDOT) formed a working group with the community partners to understand the local safety concerns. The product of the meetings in 2011 were a list of 5 recommendations agreed on by the group.

In 2014, the corridor experienced another spike in cross median collisions prompting the local communities to request a reevaluation and update of the original recommendations. Similar to the 2011 meetings, community partners were invited for a series of meetings to discuss safety concerns along the corridor and ultimately develop an updated set of recommendations.

Through these meetings there was lively and important dialog regarding both perceived and documented safety issues along the corridor. One product of these discussions was some directed crash analysis along the corridor based on particular concerns raised by the working group. In addition, during the meetings, KDOT funded an effort to provide short term, directed funding to speed enforcement along the corridor. An important part of the meeting discussion was analysis of the program's effectiveness and challenges. Ultimately the primary goal of the group was to utilize input from the discussions, crash analyses, and law enforcement feedback to brainstorm a list of potential recommendations for future consideration and implementation. Each community partner was then allowed the opportunity to prioritize the recommendations in representing their respective constituents. This report summarizes the 2014 K-10 corridor safety meeting process along with the key products born from that process.

Input Process

To address reinvigorated local concerns regarding safety along the K-10 corridor, KDOT invited community partners to discuss their individual perspectives and concerns. This was very similar to the process done in 2011 when similar concerns were raised. All of the cities and counties along the K-10 corridor along with identified regional interest groups were invited to participate in the meetings. For this recent round of meetings the different entities that had representatives attend the meetings or submit their input via email include:

- ABATE
- City of Lawrence
- De Soto
- Douglas County
- Eudora Police Department
- Johnson County

- Johnson County Sheriff's Office
- Kansas Department of Transportation
- Kansas Highway Patrol
- Olathe Police Department
- Overland Park
- Overland Park Police Department
- Representative Larry Campbell
- University of Kansas

For the 2014 series of meetings there were 4 meetings held between June and September. At the initial meetings the recommendations from 2011 meetings were reviewed and updates were provided as to the status of each recommendation. A list of the 2011 recommendations with their respective status is provided below:

- Recommendation #1: Installation of cable median barrier on two sections of K-10 that have experienced a high number of crossover median crashes. The two locations on K-10 included a two-mile section adjacent to the K-7 interchange (Johnson County) and a two-mile section between the Church Street and 10th Street interchanges in Eudora (Douglas County).
- Status: In August 2012, the installation project for the cable median barrier on these two portions of K-10 began and installation was completed in late 2012. Construction on the K-10 cable median barrier installation project was approximately \$1.2 million which was entirely funded by KDOT.
- Recommendation #2: As tasked, KDOT was to study the state highway system for crossover median events to develop a policy to determine specific highway segments that would benefit from cable median barrier installation.
- Status: Thousands of crash reports (19,912) were reviewed to find specific information related to crossover median crashes across the state to determine "hot spots" on freeways where there is a depressed median. Dean Sicking with the University of Nebraska and his group looked at these reports and determined that there was not a conclusive method solely utilizing actual crash data to look for locations where the installation of some form of barrier could be justified. KDOT will continue to utilize the methodology defined in the 2009 cable median barrier policy.
- Recommendation #3: The committee recommended that K-10 be designated as a "Highway Safety Corridor" to provide for more enforcement and increased fines. A designated Highway Safety Corridor is a segment of a state highway that's been identified as having a higher than average incidence of fatal and serious injury crashes.
- Status: This type of designation requires legislative action. KDOT worked in support of potential legislation for the 2012 session. KDOT presented the highway safety corridor item during the 2012 legislative session and the legislation failed to pass. During the 2013 legislative session, the highway safety corridor item was presented by ABATE, a motorcycle advocacy organization, but again the legislation failed to pass.

- Recommendation #4: Since the Highway Safety Corridor would take time to implement, the committee wanted to proceed with looking at ways to increase law enforcement monitoring along K-10.
- Status: Staff from KDOT's Traffic Safety Section explored ways to add extra law enforcement and safety messaging to K-10. As of this time, local law enforcement agencies have not requested any additional funding for extra enforcement activities on K-10. The Traffic Safety Unit did utilize available local media opportunities, such as gas pump toppers, signs at convenience stores and social media focusing on distracted driving.
- Recommendation #5: Paving the shoulders and adding rumble strips to the Douglas County portion of K-10 was another important safety benefit the committee strongly supported.
- Status: An improvement project was completed on the Douglas County portion of K-10 in November 2011 that included pavement repairs and resurfacing on all mainline lanes along with the installation of edgeline rumble strips on both inside (median) and outside shoulders. (The Johnson County portion of K-10 already had edgeline rumble strips on both inside (median) and outside shoulders.)

Speed

It is well documented that the prevailing speeds for traffic along this section of the K-10 corridor are in excess of both the original highway design speed and the current posted speed limit. The current 85th percentile speed for the corridor is 78 mph. Though accepted practice is to post the speed limit in conjunction with the 85th percentile speed the current speed limit is set at 70 mph. All parties involved in these meetings have observed these high speeds and concurred they are an issue.

Excessive speeding presents itself as a safety issue in two major ways. First, when vehicles traveling well in excess of the speed limit encounter a vehicle traveling below the speed limit this can cause points of conflict. This is especially true when a platoon of faster vehicles encounter a slower moving vehicle and all the cars in the platoon need to perform a passing maneuver. Also, the severity of all crashes is worsened with excessive speeding. The group cited the later concern especially related to run off the road crashes.

While concerns with speeding along the corridor were universally recognized, there was much discussion and little agreement about the appropriateness and effectiveness of countermeasures to address speeding. As evidenced by the list of proposed recommendations from the group, a wide range of countermeasures were considered ranging from implementation of a safety corridor, enhanced enforcement, and public involvement campaigns. Since the group did not have any research to support or refute any of the proposed countermeasures, they were all considered based on the anecdotal assessments presented during the meetings. There was also some very valuable dialog regarding implementation challenges for many of the countermeasures that KDOT and our partners will consider as we consider enacting them in the future.

Cross Median Collisions

While speed has been a constant safety concern, the major impetus for these 2014 meetings and the ones held in 2011 is and was cross median collisions. Even though this type of crash is not common, since they often lead to severe injury or death they are of heightened concern for the local community. In addition, cross median collisions can impact drivers who are otherwise obeying traffic laws and driving safely which is often considered unjust.

Since widening of the existing K-10 was assumed to be impractical by the group, some focused on cable median barrier (CMB) as the primary countermeasure to reduce cross median crashes. Opinions of the group varied from citing that the existing CMB installed on K-10 is unwarranted according to KDOT's current CMB policy, to recommending installation of CMB from the entire stretch from Lawrence to I-435. It was recognized by the group that principally CMB does reduce the number of cross median collisions, but also increases the number of total crashes due to impacts to the CMB itself. It is reported that approximately 1 in 40 impacts on CMB results in a fatality or serious injury. During the discussion the following key points were raised:

- KDOT has a policy governing the use of CMB. The policy is based on the report, *Cable Median Barrier Guidelines*, March 4, 2009, by Dean L. Sicking, PhD., P.E., professor and Director of the Midwest Roadside Safety Facility. The report provides a benefit/cost (B/C) method to identify the need, and justified selection of locations, for cable median barriers. Traffic volumes on K-10 do not currently meet the threshold to justify the B/C thresholds set in the policy. It is likely that traffic volumes east of K-7 will reach the lower threshold for consideration at some point in the near future but traffic volumes west of K-7 would not. There was discussion about whether the B/C ratios set in the policy are appropriate. Other stretches of highway in the state already have a higher B/C ratio than K-10.
- The Missouri DOT (MoDOT), along with other states, have installed substantial amounts of CMB and have promoted it as a cost effective way to reduce fatalities. Based on outreach to MoDOT it was unclear whether they have a formal policy on CMB installation or a similar process to KDOT to evaluate locations based on a systematic analysis of all highways. There was not sufficient information to understand if the locations MoDOT is installing CMB have a median width or crash experience similar to K-10. It was also not understood if MoDOT would install CMB on a facility comparable to K-10 based on their practice.
- When there is a documented crash with CMB KDOT does seek reimbursement from the insurance company of the responsible driver for the repair costs. In instances where the crash is undocumented, the driver is uninsured, or the cost exceeds the driver's insurance coverage KDOT does not recoup the repair cost. To date KDOT has tracked CMB collisions and repair costs but not the percentage recouped from drivers. MoDOT, based on the amount of CMB infrastructure and frequency of collisions, has a private contract for their CMB collision repair.

Ultimately installation of CMB was presented as one of the final countermeasures for consideration by the full group. Each group had the opportunity to select and prioritize CMB installation as a

countermeasure for the K-10 corridor based on the information provided during the discussion and their own experience and observation.

Crash Analysis

During early discussions it became clear that through this process KDOT and our community partners were interested in evaluating what the crash records showed regarding the overall safety of the K-10 corridor and what, if any, trends could be identified that would help in the development of potential counter measures. In an effort to address these questions KDOT crash data staff developed a comprehensive crash analysis of the corridor. The analysis looked at all 807 crashes that took place on K-10 for the most recent three year period available, from 2011 to 2013. At that time the CMB installed on K-10 was only in place for one full year, 2013. A full copy of the crash analysis provided to group participants is attached. Key findings of analysis include:

- Roughly 24% of the total crashes were animal crashes which is consistent with the total crash experience on Kansas highways.
- There was no particular clustering of crashes at any location in the corridor. This was true for both total crashes and higher severity crashes.
- A higher percentage of total crashes occurred in Johnson County (72%) than in Douglas County (28%). However, this split is consistent with the crash exposure (length of highway and traffic volume) in each county.
- The top two most identified driver contributing circumstances for a crash were both related to speeding, driving too fast for conditions and following too close, and accounted for over half of the total crashes. The next most identified circumstance was general inattention which accounted for 18% of crashes.

Meeting attendees were encouraged to review the crash data provided in the development and assessment of the potential countermeasures. KDOT will continue to monitor the crash data for the locations where CMB has already been installed to determine if any long term trends can be determined regarding the safety performance of CMB.

Enhanced Enforcement

KDOT has historically utilized available funding to supplement law enforcement efforts to perform directed enforcement along a particular corridor or for promoting a specific safety initiative (i.e. seatbelt usage, impaired driving and speeding). At the same time these meetings were taking place to discuss safety along the K-10 corridor such an initiative was underway to target speeding along this section of K-10. Over a 4 month period, from August 2014 to November 2014, KDOT earmarked \$40,000 toward enhanced directed monitoring and enforcement along K-10. The funds were used by local law enforcement entities to pay for the overtime of their patrols necessary to perform this enhanced enforcement. During the meetings law enforcement representatives were available to discuss their observations during the enforcement and provide updates regarding speeding. Below is a summary of key findings and statistics from the enhanced enforcement over the first three periods of the enforcement (August – October):

- Law enforcement agencies wrote 1045 total citations, including 777 for speeding. 122 of the speeding citations were for 16 mph or more above the posted speed limit. 205 of the total citations were written in active construction zones.
- Based on speed data through September 2014 no significant change in driver behavior could be detected from July to September of 2014 or comparing the 2014 data to the same months in 2013.
- Additional overtime payroll funding for increased traffic patrols may become less effective over time since police forces often experience fatigue in covering the extra shifts. For this reason, consideration should be given to permanent staffing level increases for traffic patrol departments.

Results

Toward the end of the meetings all of the community partners were invited to submit recommendations for potential countermeasures to address the safety concerns along the K-10 corridor. KDOT collected all of the proposed countermeasures and after clarifying some points and combining similar countermeasures the full list was compiled into a comprehensive list. That list was then distributed to the community partners and internally within KDOT for each group to provide their respective prioritization of the countermeasures. KDOT again collected the prioritization from each group with no weight given to any particular group. The collective results of this process are shown on the K-10 in Douglas and Johnson Counties FINAL Recommendation Spreadsheet, which is attached. The spreadsheet indicates there is support from most of the group for the following recommendations:

- Support legislative action to establish K-10 as a Highway Safety Corridor with increased fines for traffic violations. Legislation should include fines, modifications to driving privileges, mandatory education and dedicated corridor law enforcement.
- More law enforcement for traffic violations. Increased enforcement.
- Educational efforts targeted at certain populations (teens, adults, college students, senior drivers, etc.) to include media (radio and TV PSA's). Identify education opportunities: KU student outreach. Radio, newspaper, internet, Twitter, etc. messages. Identify education-related research project opportunities for the corridor.
- Look at "bigger picture" of this problem and recommend some long term options along with short term solutions, such as widening K-10 with concrete barriers or some type of road reconstruction. If the likelihood that traffic will only increase, maybe some permanent plans need to be considered. Engineering and traffic studies should indicate whether this or other options meet the criteria. Even though there is significant cost involved, it may be worth it in the long run.

These final results were shared with the participating groups and with KDOT executive staff. Ultimately KDOT, in conjunction with the community partners, will utilize these ranked countermeasures to determine what education, enforcement, and engineering actions are both appropriate and most likely to be effective.