



Saint Louis County

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James T. Foldesi, P.E.
Public Works Director/
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Janelle Anderson
Tort Claims and Standards Engineer
Minnesota Department of Transportation
Mail Stop 725
1500 West County Road B2
Roseville, MN 55113

RE: Response to FHWA Concerns for the St. Louis County Request to Experiment

Ms. Anderson,

St. Louis County would like to respond to the concerns raised by FHWA in regards to the St. Louis County Request to Experiment submitted on February 1, 2011 for County State Aid Highway No. 13 (Midway Road).

The first concern is that the proposal to simultaneously install an experimental treatment (converging chevrons) with a non-experimental treatment (narrow lanes) would not allow for an independent evaluation of the converging chevrons. St. Louis County disagrees with the premise that the intent is to only evaluate converging chevrons. Although they are identified by FHWA as an experimental treatment, St. Louis County defines the Integrated Speed Reduction Treatment for Intersections (ISRTI) as the experimental treatment for this Request to Experiment. In recent years, converging chevrons have been installed and studied in three locations in the United States as a traffic calming device. They are Roland, Iowa, Eagan, Minnesota and Milwaukee, Wisconsin. All three studies documented a reduction in vehicle speeds, with some observations statistically significant, after the installation of converging chevrons (see the Request to Experiment for reference information). Because of this evidence, the intent of the St. Louis County Request to Experiment is to integrate the converging chevrons with the lane narrowing concept to install the experimental ISRTI and evaluate its effect on intersection safety. As referenced in the Request to Experiment, a summary report titled *Two Low-Cost Safety Concepts for Two-Way STOP-Controlled, Rural Intersections on High-Speed Two-Lane, Two-Way Roadways* (FHWA Publication No. FHWA-HRT-08-063) presented the evaluation results of the narrow lanes. For these treatments, a key component was the installation of rumble strips to reinforce the narrow lanes. Because of the noise concern by St. Louis County, the ISRTI substituted converging chevrons for the rumble strips as a way to “reinforce” the narrow lanes. Speed reduction is only a component of this Request to Experiment, not the primary research objective. St. Louis County will not commit to stagger the installation of the converging chevrons and the narrow lanes because there is a professional disagreement on the intent of this Request to Experiment. Additionally, uncertainties in the budget would also prohibit St. Louis County’s commitment to stagger the installation.

The second concern was that simple before and after speed studies are insufficient to provide reliable information on the causation of speed changes. St. Louis County agrees that a simple comparison of before and after mean speeds is insufficient to properly evaluate the effect of a treatment. However, St. Louis County disagrees with the assertion that the “before and after” construct is insufficient to evaluate the effect of a treatment. This methodology is the only way to measure if a treatment produced an effect. A proper before and after study must use a hypothesis test to answer the question if the treatment caused a true reduction in the mean of the underlying speed distribution or if the

study inadvertently sampled two distinct speed distributions and the underlying speed distribution did not change. The statistical test applied to answer this question is the Large Two-Sample Z-Test. This test assumes the speed data distribution is normal and meets the criteria of the Central Limit Theorem. Ultimately, this test will answer the question if the reduction in the mean speed is statistically significant (reject the null hypothesis which means a real reduction in the mean speed occurred) or not statistically significant (accept the null hypothesis which means there is insufficient evidence to claim there was a real reduction in the mean speed). To clarify, the intent of St. Louis County was always to use this hypothesis test as part of the evaluation plan. This was not included in the Request to Experiment because it was assumed that this detailed description of the analysis was understood as common convention. The third concern was there is no consideration of control sites for the speed study. Control sites only assist the researcher in eliminating environmental factors such as weather, enforcement, or changes in traffic patterns or driver behaviors. To address this concern, St. Louis County would commit to adding control sites.

In summary, St. Louis County will not commit to stagger the installation of the converging chevrons to independently evaluate their effect on vehicle speeds. Rather, it is the position of St. Louis County that the converging chevron and lane narrowing concept must be installed simultaneously to evaluate the effect of the ISRTI on the safety performance of the intersection in question. In regards to the evaluation plan, St. Louis County clarified that the speed study intends to use the appropriate hypothesis test and will commit to adding control sites to eliminate environmental factors. If FHWA is not in agreement with the terms set forth letter in this letter, St. Louis County would request this Request to Experiment be withdrawn from consideration. Again, St. Louis County simply has a professional disagreement with the concerns raised by FHWA and the uncertainties of the budget will not allow for a commitment to independently evaluate the converging chevrons. Given the evidence as summarized in the Request to Experiment, the ISRTI may have significant potential to reduce intersection crashes. As a low cost treatment with promise, it is our hope that FHWA will allow St. Louis County to evaluate ISRTI as proposed.

If you have any questions, please contact me directly at 218-625-3873.

Thank you for your consideration.

Sincerely,



Victor Lund, P.E.
Traffic Engineer
St. Louis County

Cc:

Robert Ege, Mn/DOT District 1 Traffic Engineer
Jim Foldesi, St. Louis County Public Works Director/Highway Engineer
Brian Boder, St. Louis County Assistant Highway Engineer