QUESTION 13:

What are some factors to consider when implementing a temporary test of a four- to three-lane conversion project?

For various reasons, communities that have never implemented a four-lane undivided to three-lane (four- to three-lane) cross section conversion are sometimes reluctant to proceed with this option. In some cases, a temporary setup of the new reduced cross section has been implemented first to observe its potential impacts. The objective of this type of trial period is to provide stakeholders with an opportunity to see how the conversion will look and function and to provide feedback. A decision can then be made about whether the conversion should become permanent.

IMPLEMENTATION CONSIDERATIONS

The temporary implementation of a reduced cross section is often completed with temporary roadway striping and other lane guidance devices (e.g., cones, stanchions, barrels). Temporary pavement marking materials are typically made from adhesive tape that, to a certain extent, minimizes scarring on the pavement if a return to the original lane configuration is needed. Paint is also sometimes used if the temporary facility has to stay in place for some time. It is important to note, however, that the application of a temporary cross section also requires the complete removal of existing pavement markings (and any remaining residues) to avoid any confusion among drivers and other road users. The complete removal of pavement markings can be difficult and can adversely impact any test results.

As with any test trial or pilot, it is also important that a properly designed evaluation be performed to determine whether the new configuration is performing well in relationship to the community goals and objectives for the conversion. If, following the test trial period, the new configuration is accepted, the temporary striping materials could then be replaced with permanent pavement marking materials (e.g., paints, thermoplastics) along with any of the more substantial aspects of the conversion. If the lane conversion is determined not to be a viable option, however, the roadway can be returned to its original configuration through the complete removal of the temporary pavement markings and any residues they may leave. However, as noted above, this can often be a very difficult process unless, of course, the conversion (whether accepted or not) is a part of a larger resurfacing project.

A cross section conversion trial can also use drums, cones, tubular markers or other work zone devices in combination with temporary lane markings. These devices can be used to temporarily reduce the width of and/or eliminate roadway lanes. In other words, they can be used to mimic the end result of most of the physical changes that might be needed for the conversion. It is important to note, however, that the use of this approach and these devices over a long period of time may not have the same significance of impact as the use of permanent structures. The devices, for example, may move or be knocked down. However, if the goal is to provide road users with an idea of the physical layout of a cross section conversion, this type of setup may be a viable alternative.

Iowa LTAP

Temporary traffic control devices

Along corridors that include traffic signals, agencies will also need to consider changing their phasing and/or timing during a temporary trial of a cross section conversion. Temporary signal head placements may also be needed. In addition, during the trial it is important to observe vehicle operations at signalized intersections and throughout the corridor to determine whether any additional signal or other adjustments are needed.

A temporary cross section conversion is often implemented to determine whether the change will meet the goals and objectives that the traveling public and the community have for the roadway. This type of trial application is typically short term in nature, as illustrated in the examples described below. Unfortunately, however, no resources were found that suggested a specific duration. Overall, the trial period must be long enough to allow road users to become accustomed to the new cross section and to allow the collection and analysis of valid data. At that point, data on roadway operations (e.g., travel times, queues, and vehicle speeds) after the adjustment period might then be compared to data collected before the implementation of the temporary conversion. Qualitative or observational information (e.g., from stakeholder surveys) before and after the conversion might also be compared.

The comparison of any quantitative safety or crash data, however, will be limited due to the short-term nature of the trial implementation.

Overall, it is also important when implementing a temporary cross section that no changes other than the new potential configuration be made that might influence the results of any before-and-after evaluations. For example, if a new business opens on the corridor the day the temporary configuration is applied, the before-and-after data should be collected in a manner that minimizes any influence on the operations along the corridor.

EXAMPLE TRIAL CONVERSIONS

Examples of cross section conversion trials have been documented in the literature. One example from Grand Rapids, Michigan, in 2013 involved the conversion of Division Street from a four- and five-lane cross section to three lanes with a two-way left-turn lane and dedicated bicycle lanes (FHWA 2015). The trial conversion was accomplished through the removal of existing pavement markings and repainting of the corridor. The new cross section was in place for over a year and provided the city with a chance to see how safety and operations were affected. It was found that both crashes and vehicle speeds decreased. The decreased speeds also led to increased travel times, however, which was viewed as a drawback. This impact was particularly notable for the transit along the corridor. In fact, the city transit operator shifted the existing route to another corridor because of the lane conversion trial. Ultimately, however, the city decided to make the conversion permanent as a result of the positive outcomes from the trial, including the feedback received from the public.

In Iowa, the City of Des Moines undertook a temporary lane reduction conversion project on a two-mile segment of Ingersoll Avenue (FHWA 2015). The original four-lane cross section with parallel parking was temporarily changed to a three-lane cross section with a two-way left-turn lane and bicycle lanes. The parallel parking was retained. The trial cross section was implemented using temporary restriping applied by the city. Additional parking spaces were also added to the corridor where feasible. Initial public concerns about the conversion focused on potential increases in congestion and the potential loss of traffic to local businesses. The city agreed that if the concerns came to fruition, the roadway would be converted back to its original cross section. Following a six-month trial period, however, these concerns had not developed, and a survey found that fewer people opposed the project after the trial period than when it was originally proposed. Other positive outcomes observed during the six-month temporary conversion included a reduction in total crashes and an increase in vehicle traffic between 11:00 a.m. and 1:00 p.m. In light of these outcomes, the reconfiguration was made permanent.

SUMMARY

Communities reluctant to implement a four- to three-lane cross section conversion might first conduct a temporary trial conversion to evaluate how the new cross section will function and to solicit feedback before a decision is made about whether the conversion should become permanent. This summary describes the considerations involved in the implementation and evaluation of this type of trial application and provides examples of two temporary trial conversions.

In addition to soliciting public feedback as noted above, however, it is also important to collect and evaluate before-and-after data on the performance measures that were selected before the temporary trial conversion was installed. This analysis is used to determine whether the goals and objectives of the trial were met. Some performance measures that might be considered include the following:

- Crash data
- Travel time
- Queuing
- Vehicle speeds
- Bicycle and pedestrian activity
- Economic impacts

References available in: Knapp, K., and D. Veneziano. 2024. *Roadway Cross Section Reconfiguration: Responses to 14 Commonly Asked Questions.* Iowa Local Technical Assistance Program, Institute for Transportation, Ames, IA. https://intrans.iastate.edu/uploads/2024/10/roadway_cross_section_reconfiguration_w_cvr.pdf.