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Guides for Choosing Work Zone Layouts for Low-Volume Roads

LRRB
LOCAL ROAD RESEARCH BOARD

IMPLEMENTATION SUMMARY

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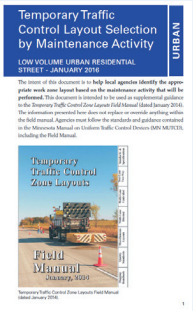
LRRB IMPLEMENTATION PROJECT COST:

$56,087



This project developed guidebooks for identifying work zone layouts for low-volume roads.

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What Was the Need?

The Temporary Traffic Control Zone Layouts Field Manual is a valuable tool that MnDOT offers to help improve work zone safety for both workers and drivers. The field manual describes appropriate work zone layouts, including the safety devices that are needed, for a wide range of work zones. Users of the manual decide which layout is appropriate for a given situation depending on a variety of factors, including number of lanes, the duration of the work zone, the location of the work, or features such as intersections and grade crossings.

The field manual is an extensive document with about 100 different potential layouts, many of which are targeted toward high-volume, high-speed state highways. Cities and counties, however, perform maintenance on a variety of roads, including residential roads or smaller two-lane roads with low traffic levels.

This project adapted the Temporary Traffic Control Zone Layouts Field Manual into two guidebooks for local engineers to use in selecting work zone setups suitable for low-volume urban and rural roads, based on the type of maintenance activity and the duration of work.

Work zone layouts for higher-volume roads also tend to require extensive safety equipment that can be needlessly time-consuming to set up for roads with low traffic levels. For all of these reasons, local agencies needed an easy-to-use guide to work zone layouts appropriate to low-volume roads.

What Was Our Goal?

The goal of this project was to improve work zone safety on low-volume roads by providing a supplemental guide for local engineers to use in identifying appropriate work zone layouts for local roads.

What Did We Implement?

This project adapted MnDOT's Temporary Traffic Control Zone Layouts Field Manual, which includes a section on low-volume road layouts.

How Did We Do It?

Investigators adapted the relevant layout material from the field manual for inclusion in two supplemental guidebooks. Additionally, the field manual often lists both mandatory and optional traffic control devices for a layout. Investigators targeted this information for low-volume roads by reporting the minimum requirements for safety devices and the conditions in which the optional additional devices are likely to be valuable.

What Was the Impact?

This project created two guides to temporary traffic control layouts for low-volume roads: one for urban streets and one for rural streets or highways. A selection matrix in each guide provides appropriate layouts based on the type of maintenance activity (including on-road activities like pavement patching, crack filling or grading a gravel road, and roadside activities like mowing or debris removal) and the duration of work.

The guides also describe each layout that appears in the selection matrix. These descriptions include several pieces of information:

continued

"We developed these supplements to help local engineers use the current field manual to select the best work zone layouts for their low-volume roads."

—Renae Kuehl,
Senior Associate Traffic Safety Engineer, SRF Consulting Group, Inc.

"These guides should help with the efficiency of identifying appropriate work zone layouts, which will also enhance the safety of multiple units of government."

—Jim Grothaus,
Program Director, Minnesota Local Technical Assistance Program

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The guidebooks supplement the Temporary Traffic Control Zone Layouts Field Manual by highlighting the work zone layouts appropriate for roads with low-volume traffic. Local engineers can easily select these layouts based on maintenance activity and work duration.

- The types of maintenance activities that are suitable for the layout.
- General information about the layout, such as maximum work space length, time restrictions and appropriate applications.
- A listing of the safety devices required.
- Notes from the field manual on a variety of factors, including the need for detours, approach sight distances to flaggers or special conditions that may require additional safety devices.
- An "Is this the appropriate layout?" section, which provides simple questions to answer to determine whether the layout is suitable for a situation or if alternative layouts need to be considered.

The State Aid office has sent a link to the guidebooks to city and county engineers statewide, and the University of Minnesota's Local Technical Assistance Program will highlight the project in an upcoming newsletter. Additionally, the Circuit Training and Assistance Program, which provides on-site training for cities and counties, has incorporated the guidebooks into its training on traffic control for work zones.

What's Next?

Local engineers have asked the Local Road Research Board to develop additional work zone layouts that are easier and less time-consuming to set up for low-volume environments. That task was outside of the scope of this project because the field manual is part of the Minnesota Manual on Uniform Traffic Control Devices (MUTCD) and therefore a state standard with a formal process for making changes.

However, members of the MUTCD committee served on the technical advisory committee for this project to learn about the work zone layout needs of local agencies. The technical advisory panel has also begun the formal communication process by writing a letter to the MUTCD committee outlining the need and providing ideas for additional layouts for low-volume work zones.

This Technical Summary pertains to the LRRB-produced Report 2016RIC09, "Temporary Traffic Control — Layout Selection by Maintenance Activity," published April 2016. The full report can be accessed at mndot.gov/research/TS/2016/2016RIC09.pdf.