

# Validating Collection Methods for and Quantification of Travel Time Delay Through Work Zones Across Vermont

**PROJECT TITLE**

Validating Collection Methods for and Quantification of Travel Time Delay Through Work Zones Across Vermont

**STUDY TIMELINE**

June 2023 – December 2024

**INVESTIGATORS**

Karen Sentoff, VHB  
[ksentoff@vhb.com](mailto:ksentoff@vhb.com)

James Sullivan, UVM TRC  
[james.sullivan@uvm.edu](mailto:james.sullivan@uvm.edu)

**VTRANS CONTACTS**

Ben Tietze  
Transportation Design Engineer  
[benjamin.tietze@vermont.gov](mailto:benjamin.tietze@vermont.gov)

**KEYWORDS**

Work zone capacity, work zone speed impacts, work zone delay, travel time delay, value of travel time, travel time reliability

**FUNDING**

\$140,000



More information about the VTrans Research Program, including additional Fact Sheets, can be found at:  
<http://vtrans.vermont.gov/planning/research>

**Problem Statement**

Although the Vermont Standard Specifications for Construction identify an acceptable delay in work zones of less than 10 minutes per operation and less than 15 minutes cumulatively for a project maintaining one-way traffic, it is recognized that these thresholds have been set without consideration for context, procedures for measuring delay, or methods for mitigating delay. The objectives of this project are to validate the effectiveness of various types of travel-time delay measurement methods and quantify the delays incurred across a variety of work zones in Vermont. These objectives aim to recommend changes to the current and future VTrans construction specifications and updates to the VTrans Work Zone Safety and Mobility Guidance regarding a standard operating procedure for collection of data and measurement of delay to ensure compliance with the specification.

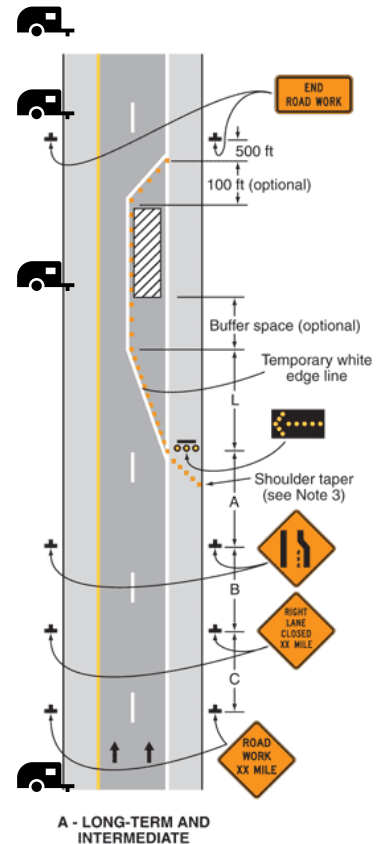
**Methodology**

The initial phase of the project reviewed the work zone safety and mobility practices in Vermont and researched best practices from other state DOTs for both standards of allowable travel time delay and methods for quantifying delay in work zones. This information was used to help identify delay measurement methods to test via mobile traffic monitoring platforms (MTMPs).



**Next Steps**

The project team has collected data at three different candidate test sites and plans to wrap up data collection through the end of the construction season. The data will be post-processed to assess the work zone travel-time delay at each site.



The MTMPs (see photo) were assembled while the team gathered information on potential candidate projects for measuring travel time delay in the field based on project significance levels, project timelines, and feasibility of sites for the MTMP deployments.

The team deployed MTMPs to the first candidate work zones in Fall 2023 and continued data collection through the 2024 construction season. Data gathered are post-processed to establish a travel-time delay calculation procedure. Methods of data collection and delay measures will be evaluated based on measures of effectiveness (MOEs) identified in the literature review.

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Data collection and analysis will be leveraged to establish substantive delay thresholds, assess efficacy of different measurement methods, and develop procedures for measuring delay in work zones. Results of the analysis will inform a framework for quantifying delay through different types of work zones in Vermont.

### **Potential Impacts and VTrans Benefits**

This research will serve to directly inform the criteria for context-sensitive, maximum-acceptable travel time delays through work zones in Vermont and identify viable methods and procedures for quantifying delay through work zones in support of the established Work Zone Safety and Mobility Policy goals. The findings of this project will be used by the VTrans WZTC to make recommendations for changes to the current and future VTrans construction specifications and to make future updates to the VTrans Work Zone Safety and Mobility Guidance document. Ultimately, the anticipated benefits of this research will be a practical implementation of the travel-time delay standards for work zones in Vermont, which will serve to increase mobility and improve VTrans' level of service to the travelling public.

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