

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

VTrans Research Symposium 2024

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# Current Vermont Work Zone Mobility Performance Standards



15 minutes

cumulative delay for one-way traffic

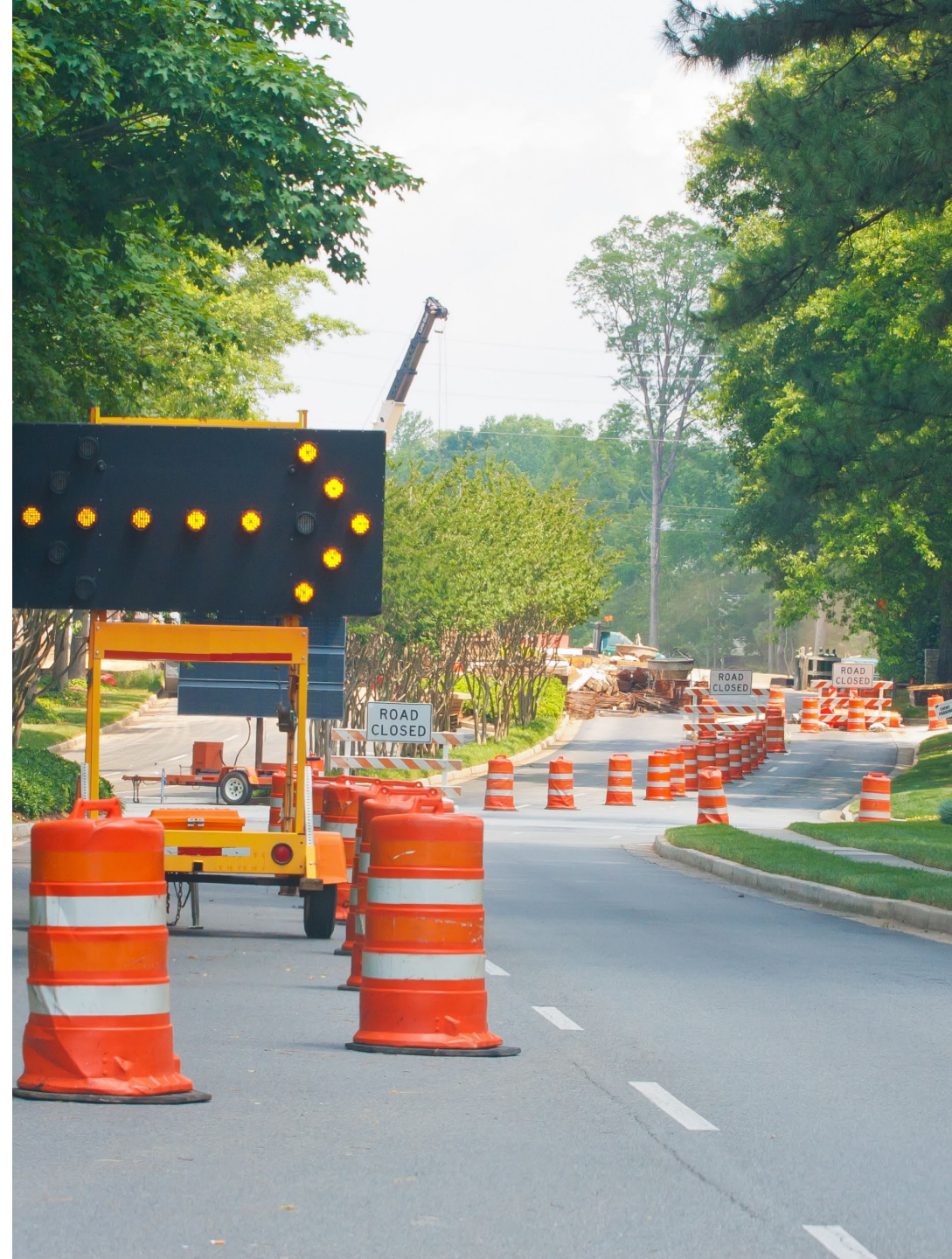


10 minutes

delay per operation

# Project Objectives

1. 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
2. To **recommend changes** to the current and future VTrans construction specifications and future updates to the VTrans Work Zone Safety and Mobility Guidance document with a **standard operating procedure (SOP)** for collection of data and measurement of delay.



# Methodology and Tasks



**Literature review** and synthesis of best practices



**Selection** delay-measurement methods



**Obtain equipment** needed to measure travel time delay through each test work zone



**Deploy equipment** in the field to measure travel time delay through each test work zone



**Post-process data** collected in the field to establish a travel-time delay calculation procedure



**Evaluate** methods of data collection and delay measures and **report** on all findings



# Tasks 1 & 2

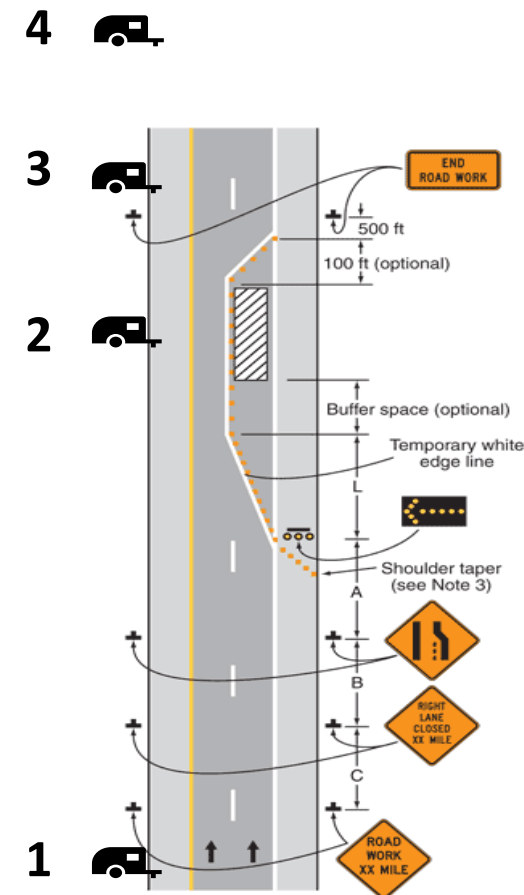


**Literature review** and synthesis of best practices



**Selection** delay-measurement methods

- Measure **travel time** immediately after the work zone (1 to 3) and farther downstream (1 to 4)
- Measure **average speed** and **volume/capacity** upstream (1), within (2), immediately after (3), and downstream (4) of the work zone
- Use Wavetronix SmartSensor Radar (speed, count, avg. speed, occupancy) and BlueToad Spectra Bluetooth (travel time)



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**Literature review** and synthesis of best practices



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# Tasks 3 & 4

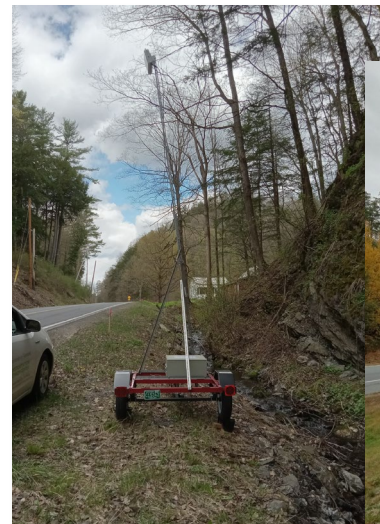
- Build out and test Mobile Traffic Monitoring Platforms (MTMPs)
- Select candidate sites based on Project Level of Significance and suitability for the study
- Coordinate with Project Managers, Resident Engineers, and contractors on deployment plan
- Collect data during work zone activity and baseline conditions for each site



**Obtain equipment** needed to measure travel time delay through each test work zone



**Deploy equipment** in the field to measure travel time delay through each test work zone



Hubbardton VT-30

Westminster I-91



# Methodology and Tasks



**Literature review** and synthesis of best practices



**Selection** of delay-measurement methods



**Obtain equipment** needed to measure travel time delay through each test work zone



**Deploy equipment** in the field to measure travel time delay through each test work zone



**Post-process data** collected in the field to establish a travel-time delay calculation procedure



**Evaluate** methods of data collection and delay measures and **report** on all findings



# Next Steps

- Wrap up data collection this season
- Post-process data collected in the field and compare to Big Data where available
- Evaluate methods of data collection and delay measures
- Develop recommendations and inform SOPs for travel time delay in work zones



**Post-process data** collected in the field to establish a travel-time delay calculation procedure



**Evaluate** methods of data collection and delay measures and **report** on all findings

