

Traffic Safety Toolbox—Addressing Speeds



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Introduction

Speeding on lower speed and local roadways is a major contributor to speeding-related fatalities in Vermont. In 2018, over half of all fatal crashes occurring on local and collector roadways were classified as speeding-related. Vermont does not currently have a “toolbox” for engineers and local officials to help determine the most effective speeding countermeasures to improve safety on roads. While our engineers have experience using various tactics to improve road safety and reduce speeds, compiling all our resources into a single accessible location will help identify the correct measures to take and how to implement them. This project will help districts and towns where the responsibility of addressing speeds and improving safety often falls to local engineers or DPW superintendents, many of whom have limited experience in traffic safety.

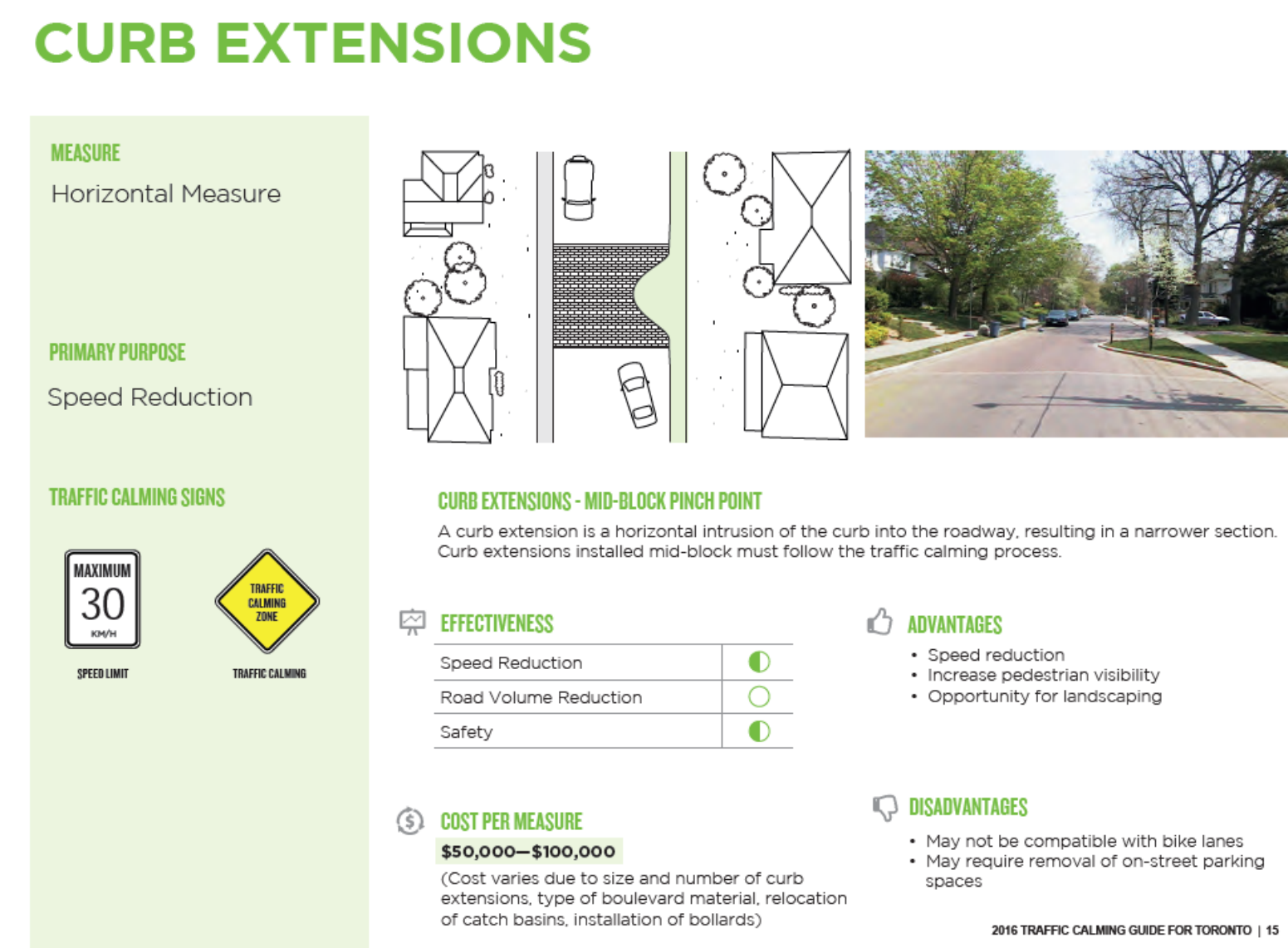


Figure 1. Toolbox Example for Bulbouts from the 2016 Traffic Calming Guide for Toronto

Methodology or Action Taken

This project will identify a collection of countermeasures that can be implemented by Vermont towns to lower vehicle speeds. For each countermeasure, the research team will create a fact sheet (Figure 1) that will include design characteristics, appropriate applications, and local case studies. These fact sheets will be compiled into a pdf document or posted to a website. The research team will also work with VTrans to determine the most effective way to share access to, and understanding of, this information with municipalities. The project consists of 5 tasks:

1. Literature Review
2. Speed Countermeasures Profiles
3. Countermeasures Speed-Reduction Evaluations
4. Create Toolbox
5. Disseminate Toolbox

Research is still underway, but the first 2 tasks have been completed.

Literature Review

The literature review included 54 guidance documents and research journal articles. Guidance documents included U.S. federal guidance, national guidance from NGOs, guidance from states including Vermont and its peer states, and Canadian guidance documents covering the national, provincial, and municipal levels. Research journal articles reviewed included those focused on where and how speeds should be measured to assess the impact of countermeasures, and others focused on the use of perceptual (as opposed to physical) countermeasures.

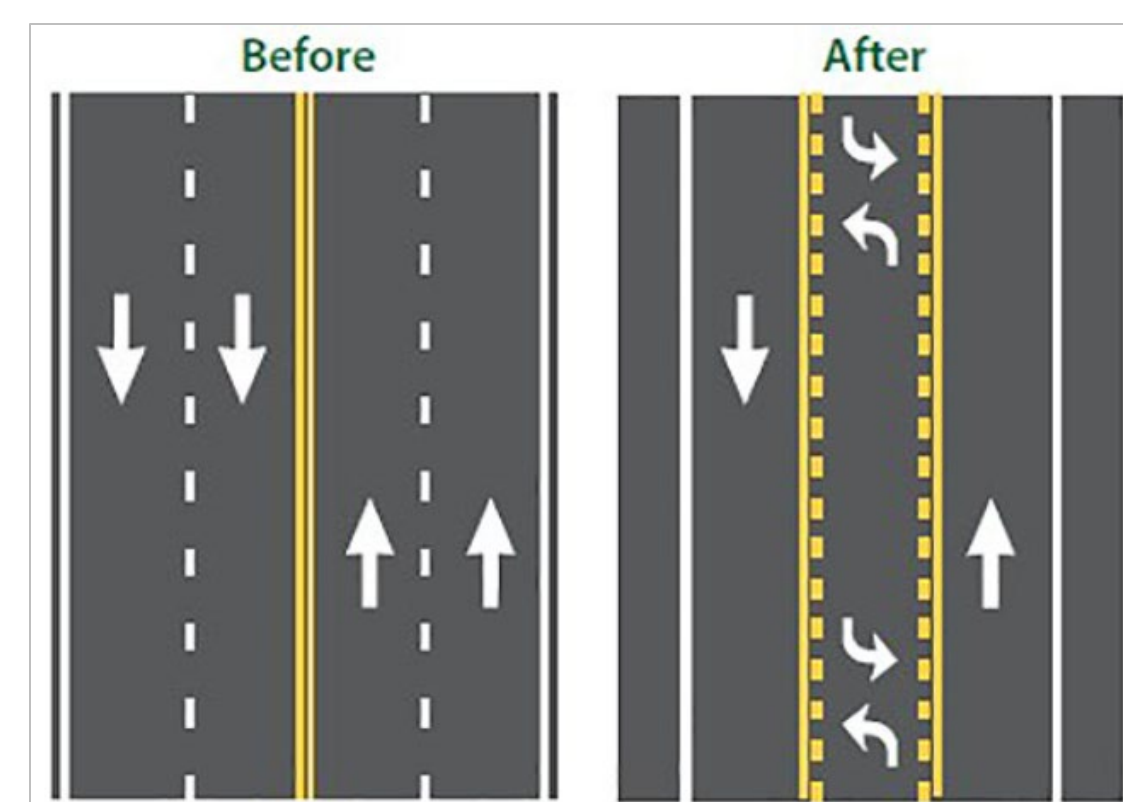


Figure 2. Schematic example of a road diet (FHWA, 2017)

Speed Countermeasure Profiles

A subset of the guidance documents were used to derive a list of recommended countermeasures for Vermont:

- From Quebec (Berthod and Leclerc, 2013)
- From the ePrimer on Transition Zones and Town Centers (FHWA, 2018)
- From the Small Town and Rural Multimodal Networks (FHWA, 2016)

Follow-up discussion with the Technical Advisory Committee resulted in the addition of “mumble strips” to the final list:

- Horizontal Deflections
 - Lane or street narrowing
 - Lateral shifts (Figure 5)
 - Bulbout (Figure 1), pinchpoint, or median island
 - Mini roundabout
- Vertical Deflections
 - Speed hump or cushion (Figure 3)
 - Raised crosswalk or speed table
 - Raised intersection
- Perceptual
 - Road diet (Figure 2)
 - Radar speed feedback sign (Figure 4)
 - Transverse line markings (Figure 8)
 - Gateway signing / landscaping
 - Transverse mumble strips (Figures 6 and 7)
 - SLOW or 25 MPH pavement word marking

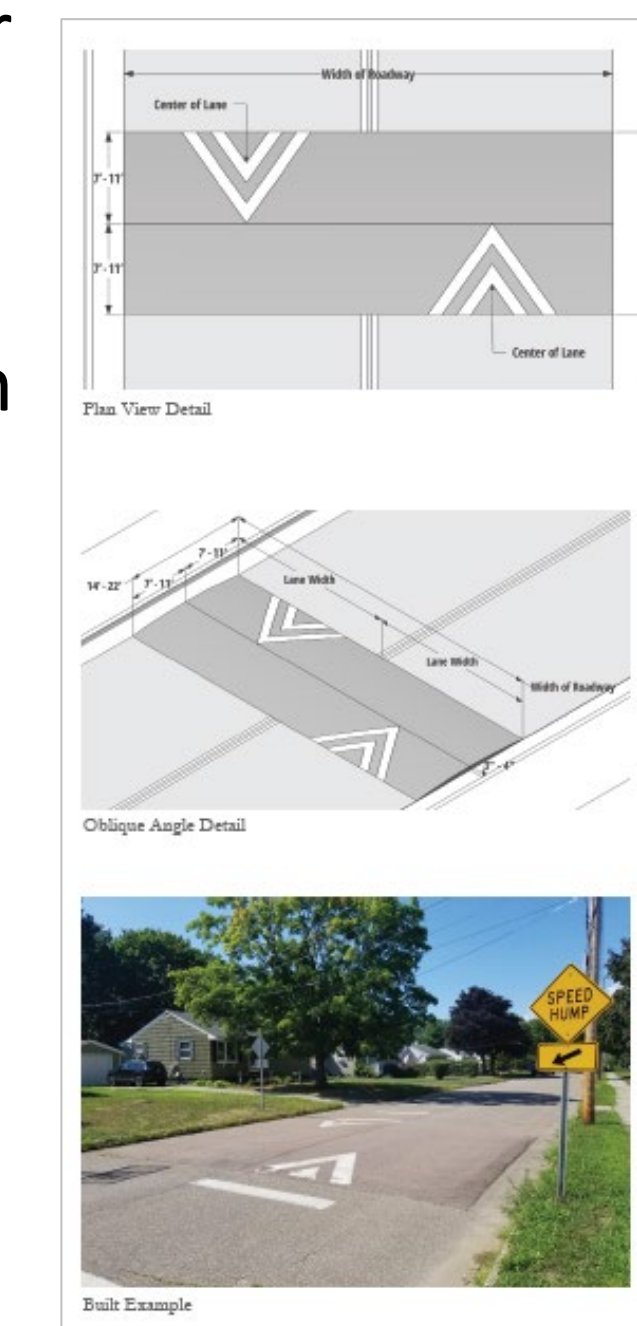


Figure 3. Speed Hump (Stantec, 2020)

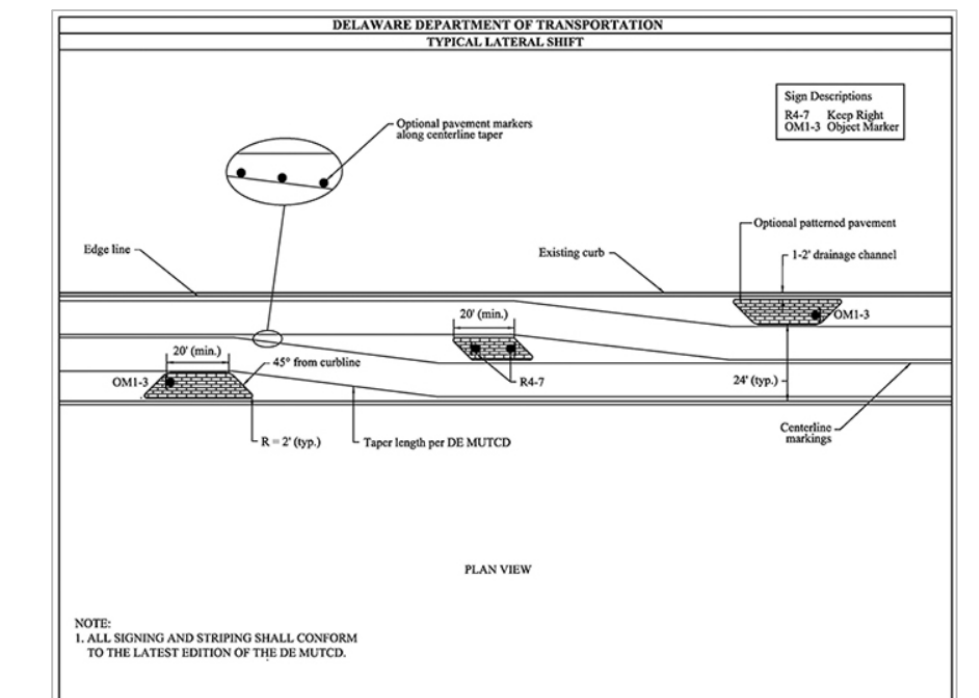


Figure 5. Geometric Design for Typical Lateral Shift (DelDOT, 2012)

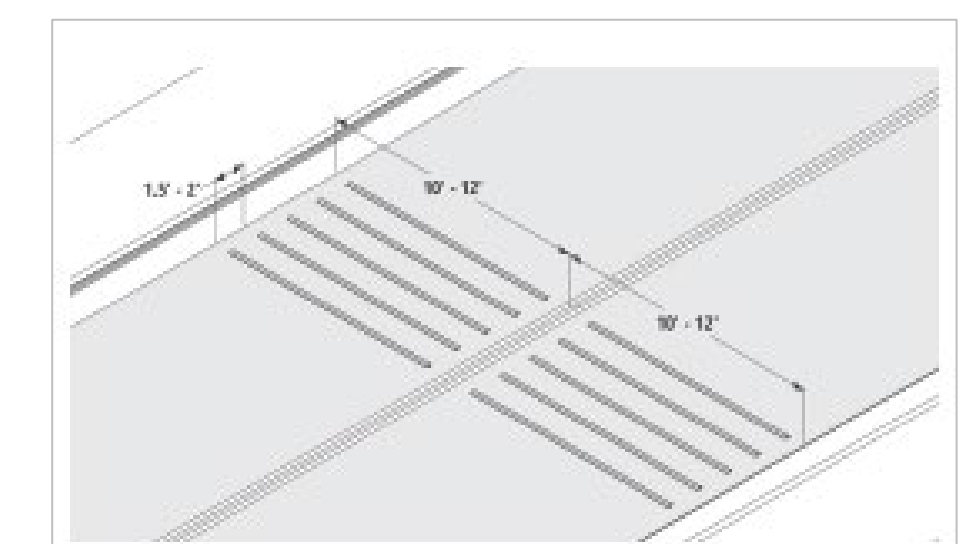


Figure 6. Oblique angle rumble strips (Stantec, 2020)



Figure 4. Radar Speed Feedback Sign in Burlington, Vermont

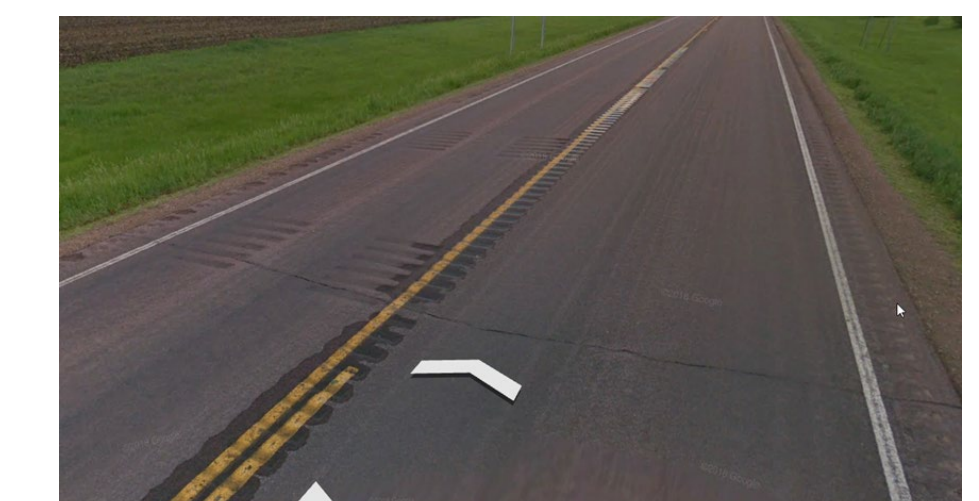


Figure 7. Transverse mumble strips (MnDOT, 2022)



Figure 8. Remains of transverse line markings in Jamaica, Vermont

Potential Impacts and VTrans Benefits

By creating this resource, we will be improving VTrans’ workflow as well as providing access for our Districts and Towns to a much-needed resource documenting the most effective ways to reduce speeding and prevent future speeding-related fatalities on our roadways.

Acknowledgments

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