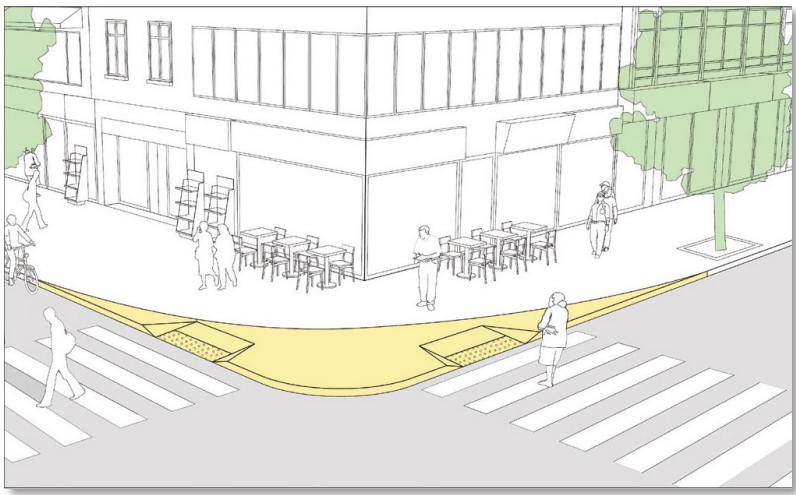




THE UNIVERSITY OF VERMONT
**TRANSPORTATION
RESEARCH CENTER**

Traffic Safety Toolbox— Addressing Speeds



VTrans Champion: Joshua Taylor

UVM Principal Investigators:

Dr. Dana Rowangould

James Sullivan

September 14, 2022

Project Schedule Review

	Current Quarter of Completion
Task 1: Literature Review	Apr – Jun 2022 ✓
Task 2: Speed Countermeasure Profiles	Jul – Sep 2022 ✓
Task 3: Countermeasure Speed-Reduction Evaluations	Oct – Dec 2022
Task 4: Create Toolbox	Jan – March 2023
Task 5: Disseminate Toolbox	Jan – March 2023

Literature Review

- Guidance Documents
 - Federal and National
 - Vermont – State and Municipal
 - Peer States
 - Canadian – National, Provincial, and Municipal
- Research Journal Articles
 - Focused on where to measure speeds
 - Focused on perceptual measures instead of physical measures
 - Focused on the method of speed comparison

Recommended Measures for Vermont

- From Quebec (Berthod and Leclerc, 2013)
- From FHWA (2018) ePrimer on transition zones and town centers
- Through follow-up from TAC meeting with MnDOT:
 - Transverse rumble (or mumble) strips
- From FHWA (2016) *Small Town and Rural Multimodal Networks*
- No conflicts with existing guidance or case studies in Vermont

Recommended Measures for Vermont

- Horizontal Deflections:
 - Lane or street narrowing
 - Lateral shifts
 - Bulbout / pinchpoint / median island
 - Mini roundabout



Typical Lane Narrowing (Kingston, undated)



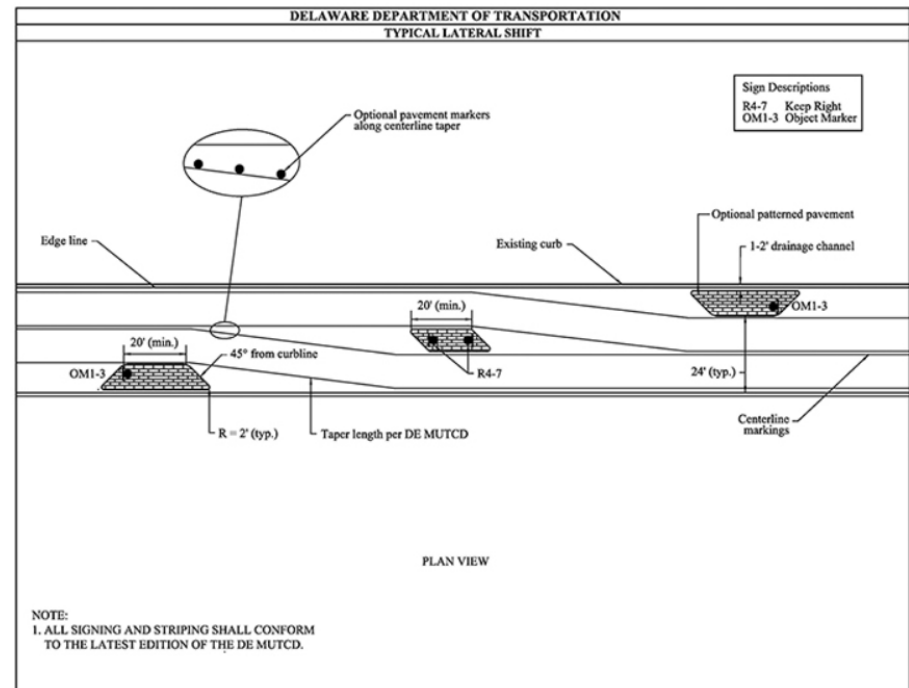
Median striping used to narrow lanes in Ferrisburgh, Vermont

Recommended Measures for Vermont

- Horizontal Deflections:
 - Lane or street narrowing
 - **Lateral shifts**
 - Bulbout / pinchpoint / median island
 - Mini roundabout



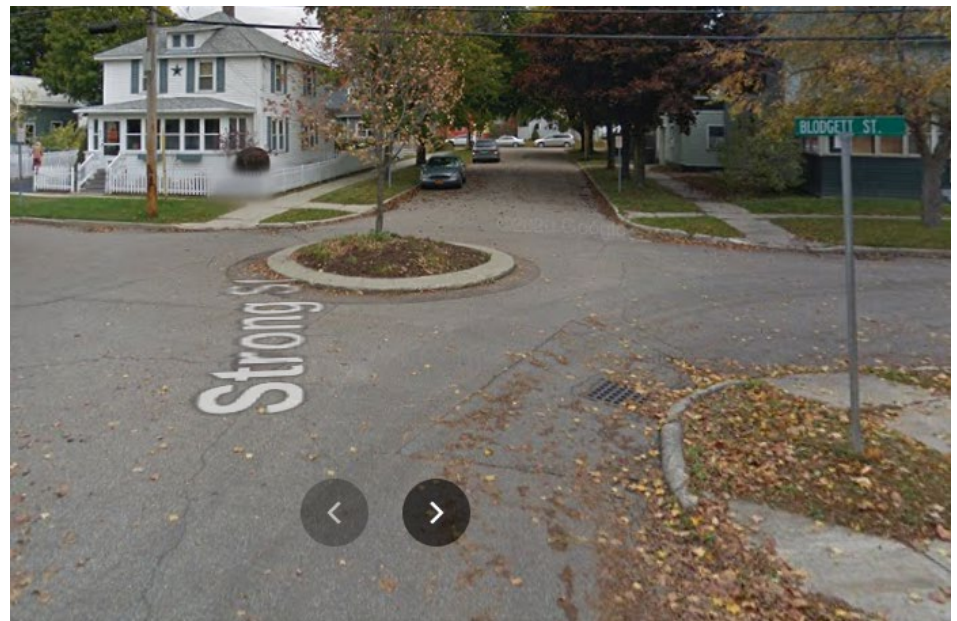
Typical Lateral Shift (Kingston, undated)



Delaware DOT Geometric Design for Typical Lateral Shift (DelDOT, 2012)

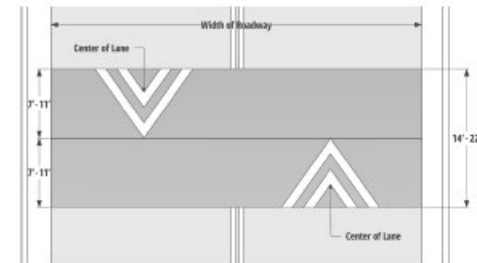
Recommended Measures for Vermont

- Horizontal Deflections:
 - Lane or street narrowing
 - Lateral shifts
 - **Bulbout / pinchpoint / median island**
 - **Mini roundabout**

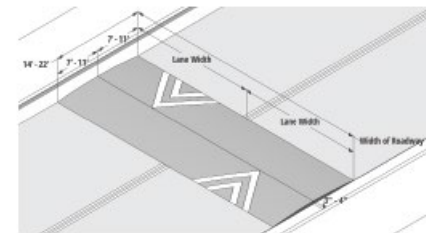


Recommended Measures for Vermont

- Vertical Deflections:
 - **Speed hump or cushion - consider removable rubber**
 - Raised crosswalk or speed table
 - Raised intersection



Plan View Detail



Oblique Angle Detail



Typical Speed Hump (Kingston, undated)



Built Example

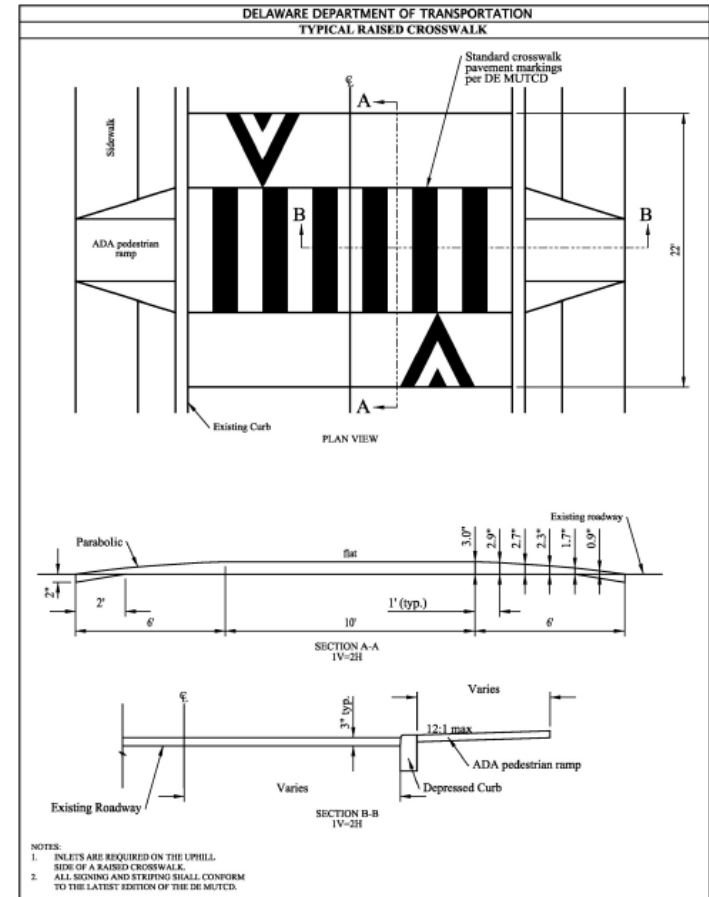
Speed Hump (Stantec, 2020)

Recommended Measures for Vermont

- Vertical Deflections:
 - Speed hump or cushion – consider removable rubber
 - **Raised crosswalk or speed table**
 - Raised intersection



Raised crosswalk or speed table (GDCI, 2016)



Typical raised crosswalk (DelDOT, 2012)

Recommended Measures for Vermont

- Vertical Deflections:
 - Speed hump or cushion – consider removable rubber
 - **Raised crosswalk or speed table**
 - Raised intersection



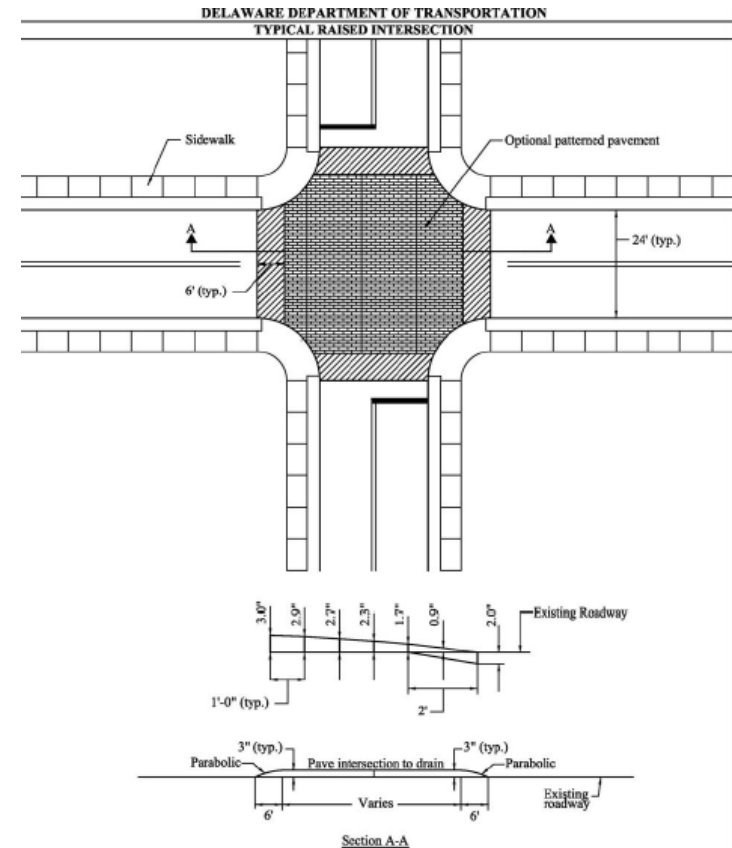
Raised crosswalk in Jericho Center, Vermont

Recommended Measures for Vermont

- Vertical Deflections:
 - Speed hump or cushion – consider removable rubber
 - Raised crosswalk or speed table
 - **Raised intersection**



Raised intersection (Kingston, undated)

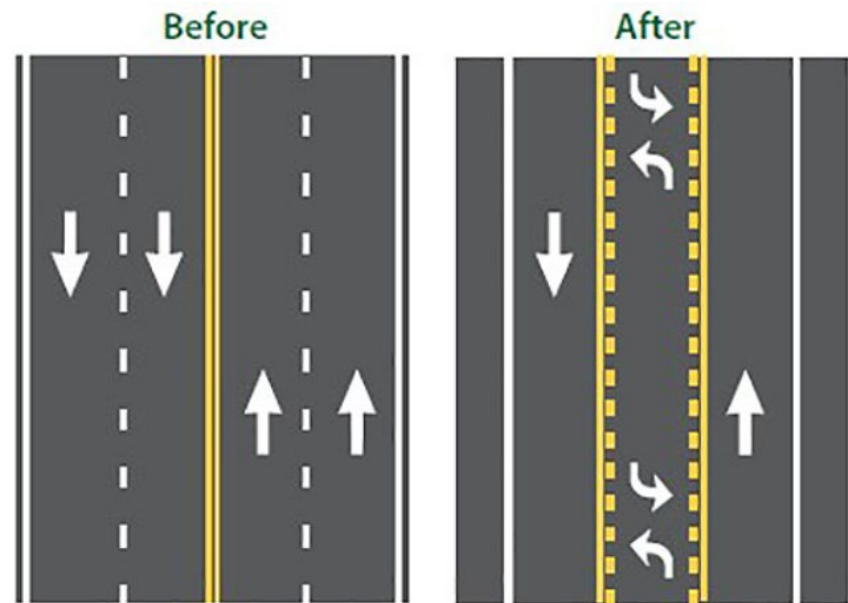


NOTE:
1. ALL SIGNING AND STRIPING SHALL CONFORM
TO THE LATEST EDITION OF THE DE MUTCD.

Typical raised intersection (DeIDOT, 2012)

Recommended Measures for Vermont

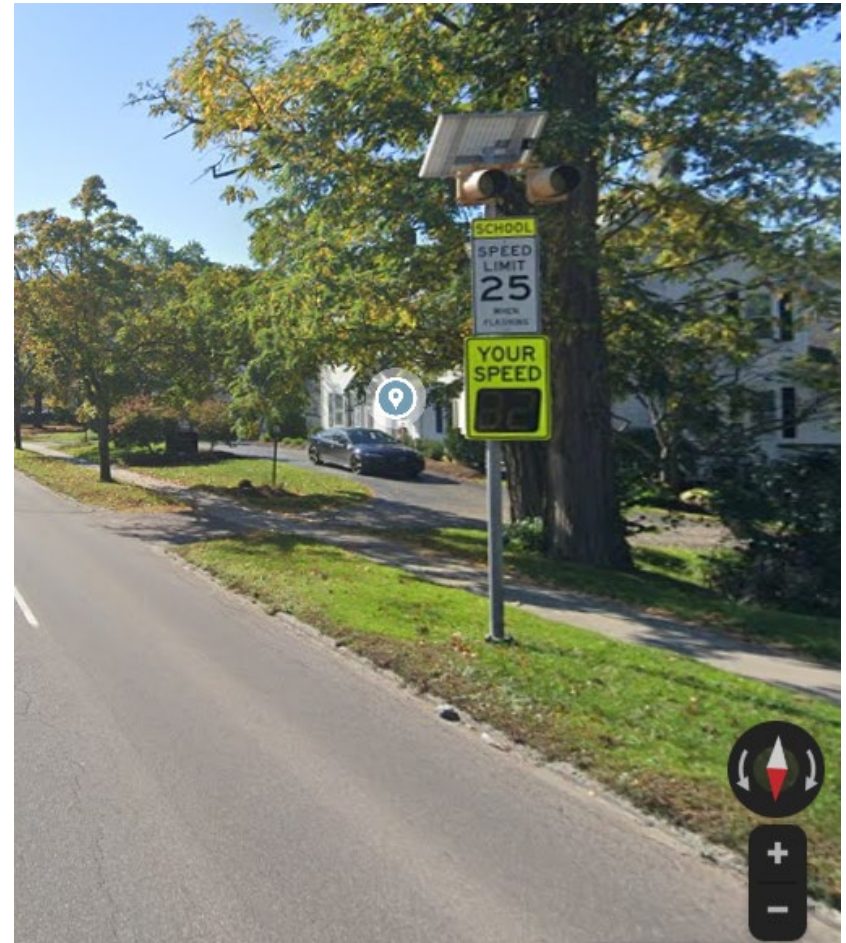
- Perceptual, or passive, measures:
 - **Road diet**
 - Radar speed feedback signs
 - Transverse line markings
 - Gateway signing / landscaping
 - Transverse rumble strips
 - SLOW or 25 MPH pavement word marking



Road diet schematic (FHWA, 2017)

Recommended Measures for Vermont

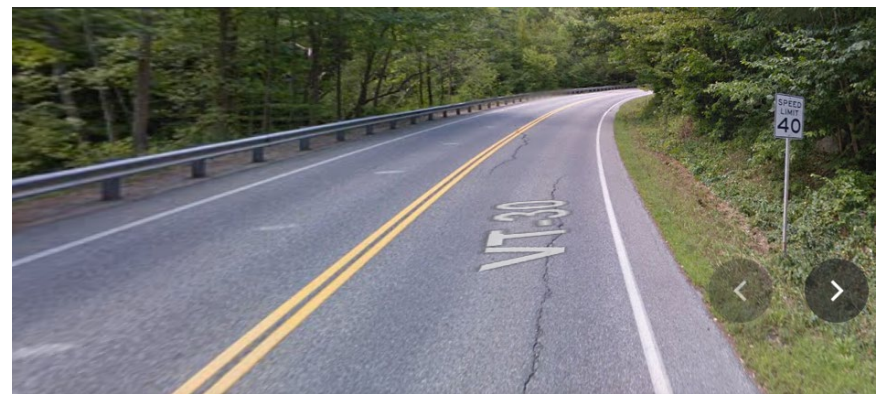
- Perceptual, or passive, measures:
 - Road diet
 - **Radar speed feedback signs**
 - Transverse line markings
 - Gateway signing / landscaping
 - Transverse rumble strips
 - SLOW or 25 MPH pavement word marking



Radar speed feedback sign in Burlington, Vermont

Recommended Measures for Vermont

- Perceptual, or passive, measures:
 - Road diet
 - Radar speed feedback signs
 - **Transverse line markings**
 - Gateway signing / landscaping
 - Transverse rumble strips
 - SLOW or 25 MPH pavement word marking



Remains of transverse line markings in Jamaica, Vermont

Recommended Measures for Vermont

- Perceptual, or passive, measures:
 - Road diet
 - Radar speed feedback signs
 - **Transverse line markings**
 - Gateway signing / landscaping
 - Transverse rumble strips
 - SLOW or 25 MPH pavement word marking



Typical transverse chevrons (Kingston, undated)

Recommended Measures for Vermont

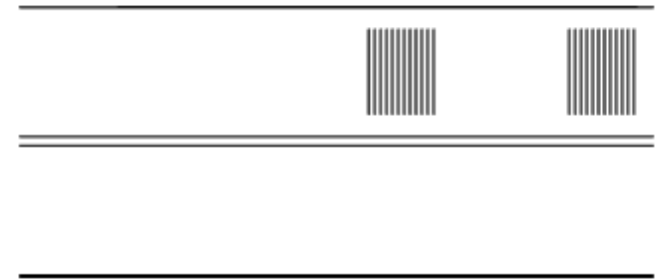
- Perceptual, or passive, measures:
 - Road diet
 - Radar speed feedback signs
 - Transverse line markings
 - **Gateway signing / landscaping**
 - Transverse rumble strips
 - SLOW or 25 MPH pavement word marking



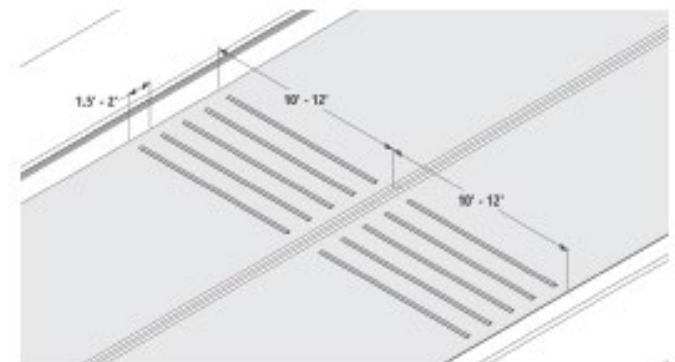
Gateway sign in Jamaica, Vermont

Recommended Measures for Vermont

- Perceptual, or passive, measures:
 - Road diet
 - Radar speed feedback signs
 - Transverse line markings
 - Gateway signing / landscaping
 - **Transverse rumble strips**
 - SLOW or 25 MPH pavement word marking



Typical rumble strip layout (VTrans, 1998)



Oblique angle rumble strips (Stantec, 2020)

Recommended Measures for Vermont

- Perceptual, or passive, measures:
 - Road diet
 - Radar speed feedback signs
 - Transverse line markings
 - Gateway signing / landscaping
 - Transverse rumble strips
 - **SLOW or 25 MPH pavement word marking**

