Circular Intersections

- Rotaries
- Roundabouts
- Circulators
- Mini Roundabouts
- Traffic Circles
Rotary
- Generally larger and designed for higher speeds
- Do not always have yield control / speed control for entering vehicles

Roundabout
- Splitter islands for yield control and speed of vehicles entering
- Center island
- Shape can vary
- Number of lanes can vary
- No traffic signals (circulator)
Mini Roundabout
• Single lane
• Splitter islands are raised, mountable
• Center island is raised, mountable
• Generally 45’ – 90’ diameter
• Lower cost and smaller footprint that standard roundabout

Traffic Circle
• Single lane
• No yield control for vehicles entering
• No crosswalk adjustments
• Slow traffic in a residential area with low traffic volumes
• May beautify the street
• Large vehicles turn left around or in front of circle
Roundabout Benefits

• Slow speeds through the intersection
• Fewer conflict points
• Less severe conflicts
• Often safer than conventional intersections
• Aesthetic opportunities
• Can be less expensive than conventional intersections
• Reduced vehicle idling
• Can improve traffic operations*
Considering Roundabouts in Burlington

Design Approach

- Roundabouts are considered as an alternative in any intersection scoping or redesign
- FHWA Guidance for Mini-Roundabouts
  - % truck traffic, number of lanes, traffic volumes on approaches, peak traffic
  - CAP-X Planning Capacity Tool

Urban constraints

The additional ROW needed for turning/storage lanes is often much more extensive than the corner properties needed for a roundabout.
Projects that did not consider roundabouts

• Archibald St / Winooski Ave Study (2011) – limited scope for small-scale improvements
• Pearl St Corridor (2015) – limited scope for interim-design alternatives
• Bike Path Intersection Scoping (2014)
Projects that considered circular intersections

- Strong St / Blodgett St traffic circle
- South End neighborhood traffic calming
- North / South Bicycle & Pedestrian Route Study & planBTV Walk Bike
- Shelburne St Roundabout (2021 construction)
  - Vermont Agency of Transportation Highway Safety Program – 100% funding for eligible costs
- Champlain Parkway
- North Ave / Rt 127 Intersection Scoping
- Colchester Ave / Pearl St / Prospect St Scoping
- Winooski Ave / Howard St / St Paul St Scoping
- North Ave Corridor
  - North Ave / Ethan Allen Parkway Scoping (underway)
- Colchester Ave / Riverside Ave / Barrett St / Mill St Scoping
- Neighborhood Greenways
- North Ave / South Road (Cambrian Rise)
- Winooski Ave Corridor Transportation Study (underway)
2005 North / South Bicycle & Pedestrian Route Study

Winooski Avenue

Improved safety for pedestrians and bicyclists

Improved streetscape and cityscape
2017 planBTV Walk Bike

Roundabouts: A Field Guide

Roundabouts offer many benefits, including increasing safety, road capacity, and design, and they are a tool that should be considered for Burlington’s intersections. Single-lane roundabouts have an excellent safety record for all modes of transportation, and can accommodate car traffic in lower lanes, potentially leaving more room on the streets for biking and walking. (Note that multi-lane roundabouts lose many of the safety benefits of single-lane roundabouts.) Roundabouts come in many sizes and styles, and each type has a place on Burlington’s streets. See the following page for details about potential opportunity sites for each of the roundabout types described below.

MODERN URBAN ROUNDABOUT
Definition: Typically greater than 90 feet in diameter (measuring the outside edge of the traffic portion), these roundabouts especially good for slowing down traffic, thus increasing safety for everyone.
Cost Range: Typically $3 to $5 million, due to high design and engineering complexity and need for acquiring property, relocating utilities, etc.

MINI-ROUNDABOUT
Definition: Have many of the same features of a full-sized roundabout, but in a pint-sized version. Mini-Roundabouts are completely “mountable” by larger trucks.
Cost Range: Much lower than Modern Urban Roundabouts. Depending on design, can range from $500,000 to $1,500,000. Vermont’s first Mini-Roundabout is located in Manchester, VT.

NEIGHBORHOOD TRAFFIC CIRCLE
Definition: Roundabout used for traffic calming and beautification on low-volume neighborhood streets. Large vehicles have to make their left turns "left of center" of the island.
Cost Range: Less than $50,000, depending on materials and landscaping.
Champlain Parkway

2011 Act 250 Permit Preparation

Roundabouts were compared to signalized intersections at 4 locations
Not recommended or selected

2015 Safety Improvements

Intersection reconfigurations are now beyond what is feasible at this stage of the project in order for our partners to continue the project (only safety improvements that do not impact operational performance or trigger permit reevaluation)
2005 North Ave / Rt 127 Intersection Scoping

Alternative 5:
Strong technical alternative
Limited community support in 2005

More community support during the North Ave Corridor Study. Will be evaluated again in supplemental scoping.
2015 North Avenue Corridor Study

Recommends intersection scoping to include:

Plattsburg Ave mini roundabout
VT 127 roundabout
Institute Rd roundabout

Ethan Allen Parkway roundabout (scoping underway for roundabout and signalized alternatives)
2013 Colchester Ave / Pearl St / Prospect St

Scoping

Alternative 3:

Traffic analysis (Sidra) showed significant westbound congestion (LOS D-F)

Parking impacts

Close proximity to two buildings
2018 Winooski Ave / Howard St / St Paul St Scoping

**Alternative 4: Dual Roundabouts**
$1.9 - $2.4 mil
Take one property
Potvin Park impacts
3 driveways within roundabout
Parking loss (5 off street, 8 on-street)

**Alternative 5: Modern Roundabout**
$1.6 - $2.1 mil
Take two properties
Impact one historic structure
Parking loss

Evaluated but not feasible as an alternative:
- Mini roundabout
- Dual roundabout centered on S. Winooski Ave
- Signalized intersection adjacent to roundabout
### 2018 Colchester Ave / Riverside Ave / Barrett St / Mill St Scoping

<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>No Build</th>
<th>Short Term Improvements</th>
<th>Alternative 1 4 Way Intersection</th>
<th>Alternative 2 4 Way Intersection w/ Separate Right Lane</th>
<th>Alternative 3 Roundabout</th>
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<tr>
<td>Project Costs</td>
<td>$0</td>
<td>$875,000</td>
<td>$3,300,000</td>
<td>$3,430,000</td>
<td>$6,700,000</td>
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<td><strong>PURPOSE AND NEED</strong></td>
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<tr>
<td>Improves Pedestrian Safety</td>
<td>No</td>
<td>Some</td>
<td>Better</td>
<td>Better</td>
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<td>Provides Safer Bicycle</td>
<td>No</td>
<td>Some (allows safer east/west bicyclist movements)</td>
<td>Some (protected bike lanes south of Barrett and south of Mill northbound)</td>
<td>Some (protected bike lanes south of Barrett and south of Mill northbound)</td>
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<td>Connectivity Winoski to</td>
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<td>Burlington</td>
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<tr>
<td>Reduces Potential For Crashes</td>
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<td>Reduces Intersection Complexity</td>
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<td>Manages Peak Hour</td>
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<td>Congestion</td>
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<td><strong>IMPACTS</strong></td>
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<td>ROW Impacts</td>
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<td>None</td>
<td>Minor (1600 sf)</td>
<td>Minor (1600 sf)</td>
<td>Major (4000 sf / 1 house)</td>
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<tr>
<td>Historic Resources</td>
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<td>None</td>
<td>None</td>
<td>None</td>
<td>Major (Removes 4(f) resource)</td>
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<td>Stormwater</td>
<td>No change</td>
<td>No Change</td>
<td>Treatment opportunity</td>
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<td>Treatment opportunity</td>
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<tr>
<td>Net Change In On-street parking spaces</td>
<td>0</td>
<td>Some (-1 - N. of Barrett St. - 2 - S. of Barrett St.)</td>
<td>More (-5 - N. of Barrett St. - 2 - S. of Barrett St.)</td>
<td>More (-5 - N. of Barrett St. - 2 - S. of Barrett St.)</td>
<td>More (-5 - N. of Barrett St. - 2 - S. of Barrett St.)</td>
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<tr>
<td>Aerial Utilities</td>
<td>0</td>
<td>0</td>
<td>Some (3 poles relocated along Colchester Ave)</td>
<td>Some (3 poles relocated along Colchester Ave)</td>
<td>Some (3 poles relocated along Colchester Ave)</td>
</tr>
</tbody>
</table>
2018 North Ave / South Road (Cambrian Rise)

City Engineer consulted with FHWA, Vtrans, TRB publications

Traffic volumes are anticipated to exceed intersection capacity by 2020:

- 1300 VPH suggested for mini roundabouts; 1700+ VPH projected for Cambrian Rise in 20 years
- minor street traffic is only 23%, which would function until 12,500 VPD; projected to exceed this by 2020
What’s Next?

We keep trying!

• 2018 Vtrans Bicycle & Pedestrian Program – unsuccessful scoping request for Colchester Ave / East Ave intersection; potential candidate for 2019

• Intersection reconstruction is expensive and funding is limited