Swarthmore Town Center West Community Meeting

Swarthmore-Rutledge School

June 18, 2014
Meeting Agenda

- Chester Road Roundabout
  - Project History
  - Traffic Operations
- Modern Roundabout Features and Characteristics
- Computer Simulation Studies
- Questions
Swarthmore Town Center West
Chester Road/Rutgers Avenue/
Station Square/Field
House Lane Roundabout
Aerial Overview

Proposed Town Center West
Project History

- Development of the property was envisioned beginning in 1999.

- Development requires realignment of Field House Lane to intersect Chester Road opposite Rutgers Avenue.

- In 2002, installation of a traffic signal was considered the likely traffic control device for the resulting intersection.

Source: Swarthmore Borough Zoning Ordinance 990, 6-13-2005
• In 2010, discussions with PennDOT led to the consideration that a single-lane roundabout be assessed for traffic control.

• In November 2010, an evaluation of the two traffic control alternatives was completed and submitted to PennDOT.
### Roundabout versus Traffic Signalization Comparison

**HCM 2010 Levels of Service and Delay (seconds)**

<table>
<thead>
<tr>
<th>Approach</th>
<th>Weekday Morning Peak Hour</th>
<th>Weekday Afternoon Peak Hour</th>
<th>Saturday Midday Peak Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Roundabout</td>
<td>Traffic Signal</td>
<td>Roundabout</td>
</tr>
<tr>
<td>Rt. 320 Northbound</td>
<td>C (23 sec)</td>
<td>D (36 sec)</td>
<td>D (25 sec)</td>
</tr>
<tr>
<td>Rt. 320 Southbound</td>
<td>C (17 sec)</td>
<td>C (27 sec)</td>
<td>C (23 sec)</td>
</tr>
<tr>
<td>Fieldhouse Lane</td>
<td>A (8 sec)</td>
<td>C (27 sec)</td>
<td>B (13 sec)</td>
</tr>
<tr>
<td>Rutgers Avenue</td>
<td>B (11 sec)</td>
<td>D (45 sec)</td>
<td>B (10 sec)</td>
</tr>
<tr>
<td>Station Square West</td>
<td>C (15 sec)</td>
<td>B (12 sec)</td>
<td>D (26 sec)</td>
</tr>
<tr>
<td><strong>OVERALL</strong></td>
<td>C (19 sec)</td>
<td>C (31 sec)</td>
<td>C (23 sec)</td>
</tr>
<tr>
<td><strong>Difference in Overall Delay</strong></td>
<td>+63%</td>
<td></td>
<td>+52%</td>
</tr>
</tbody>
</table>
## Roundabout versus Traffic Signalization Comparison

**HCM 2010 Vehicular Queues (feet)**

### 2019 Future With-Development Conditions

#### 95th Percentile Queues

<table>
<thead>
<tr>
<th>Approach</th>
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<th>Saturday Midday Peak Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Roundabout</td>
<td>Traffic Signal</td>
<td>Roundabout</td>
</tr>
<tr>
<td>Rt. 320 Northbound</td>
<td>238 feet</td>
<td>699 feet</td>
<td>250 feet</td>
</tr>
<tr>
<td>Rt. 320 Southbound</td>
<td>175 feet</td>
<td>448 feet</td>
<td>277 feet</td>
</tr>
<tr>
<td>Fieldhouse Lane</td>
<td>0 feet</td>
<td>52 feet</td>
<td>25 feet</td>
</tr>
<tr>
<td>Rutgers Avenue</td>
<td>26 feet</td>
<td>87 feet</td>
<td>0 feet</td>
</tr>
<tr>
<td>Station Square West</td>
<td>39 feet</td>
<td>49 feet</td>
<td>96 feet</td>
</tr>
</tbody>
</table>
• In February 2011, PennDOT concluded that the roundabout was the preferred traffic control concept.
Modern Roundabouts

Features and Characteristics
Roundabouts: Perception

Public Attitude Towards Roundabouts (Before and After Construction)

Source: NCHRP Synthesis 264
Available online at http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_syn_264.pdf
Roundabouts: Safety

U.S. Roundabout Safety Statistics

- 90% reduction in fatal crashes
- 76% reduction in injury crashes
- 35% reduction in all crashes
- Forces lower traffic speeds
- Eliminates left-turns, which are statistically more difficult for elderly drivers
Roundabouts: Safety

Vehicle-Pedestrian Conflict Points

- Crossing (8)
- Crossing (16)
Types of Crashes

Typical 4-leg intersection
- Angle
- Left turn

Roundabout
- Sideswipe
# Roundabouts: Key Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td><img src="image" alt="Yield control" /></td>
<td>Yield control</td>
</tr>
<tr>
<td><img src="image" alt="Circulatory roadway" /></td>
<td>Circulatory roadway</td>
</tr>
<tr>
<td><img src="image" alt="Central island" /></td>
<td>Central island</td>
</tr>
<tr>
<td><img src="image" alt="Splitter island" /></td>
<td>Splitter island</td>
</tr>
<tr>
<td><img src="image" alt="Pedestrian access" /></td>
<td>Pedestrian access</td>
</tr>
<tr>
<td><img src="image" alt="Landscaping" /></td>
<td>Landscaping</td>
</tr>
<tr>
<td><img src="image" alt="Truck apron" /></td>
<td>Truck apron</td>
</tr>
<tr>
<td><img src="image" alt="Signing and marking" /></td>
<td>Signing and marking</td>
</tr>
</tbody>
</table>
Roundabouts: Key Features

- Pedestrian crossings must conform to ADA standards
- Shorter crossing distances with splitter islands for refuge
- Proper signing and pavement markings help drivers navigate the roundabout
Roundabouts: Pedestrian Circulation

Roundabouts create a more walkable community

• Splitter islands on each leg improve pedestrian crossing safety
  – Shorter overall crossing distance
  – Crossing of one direction of traffic at a time

• ADA-compliant sidewalks and ramps
Roundabouts: Traffic Operations

Roundabout versus Conventional Intersection

• \textit{Less delay and queuing}
  – Drivers are not waiting for a green light
  – Drivers are not coming to a complete stop at a stop sign or red light

• \textit{Reduced air pollution}
  – Vehicles are not idling at a signal, waiting for the light to change
## Traffic Delay Comparison

**HCM 2010 Overall Levels of Service and Delay (seconds)**

**Future 2019 With-Development Conditions**

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Weekday Morning Peak Hour</th>
<th>Weekday Afternoon Peak Hour</th>
<th>Saturday Midday Peak Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Traffic Signal</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baltimore Pike &amp; 320/Sproul Road</td>
<td>E (64 sec)</td>
<td>E (64 sec)</td>
<td>F (112 sec)</td>
</tr>
<tr>
<td><strong>Traffic Signal</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swarthmore Avenue &amp; 320/Chester Road</td>
<td>D (44 sec)</td>
<td>D (50 sec)</td>
<td>D (49 sec)</td>
</tr>
<tr>
<td><strong>Roundabout</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>320/Chester Road &amp; Rutgers Avenue</td>
<td>C (19 sec)</td>
<td>C (23 sec)</td>
<td>C (15 sec)</td>
</tr>
</tbody>
</table>
Nearby Signalized Intersections

- Baltimore Pike & 320/Sproul Road
- Swarthmore Avenue & 320/Chester Road

Proposed Town Center West
Roundabouts: Emergency Vehicles

- Coordinate with emergency services personnel
- Emergency vehicles can use the truck apron

Driver education:
- Do not enter the roundabout when an emergency vehicle is approaching
- If you are already in the roundabout, exit immediately and pull to the side when safe
- Do not stop in the roundabout
Roundabouts: Overall Benefits

- Better safety performance
- Slower vehicle speeds
- More efficient traffic flow
- Reduced pollution and fuel use
- Reduced operating costs
- Community benefits
  - Calms traffic
  - Reduces impervious surface
  - Creates a gateway to the Borough’s business district
Modern Roundabouts in the US

• Over 2,200 in the US currently; 17 in PA
• Being constructed at a rate of about 150 to 250 per year nationwide
• Number in operation in nearby states:
  – 90+ in Maryland
  – 70+ in New York
  – 30+ in Virginia
  – 8 in Delaware
Swarthmore Town Center West
Chester Road/Rutgers Avenue/
Station Square/Field House Lane Roundabout

Computer Simulations
Roundabout Project Status

- **Agency Submission Dates**
  - Dec. 2011 – Prelim. PennDOT submission
  - April 2012 – PennDOT submission 1
  - June 2013 – Borough submission 1
  - Sept. 2013 – Borough submission 2
  - October 2013 – PennDOT submission 2
  - Dec. 2013 – Borough submission 3
  - January 2014 – PennDOT submission 3
  - April 2014 – PennDOT submission 4
  - May 2014 – Borough submission 4
  - July 2014 – Final PennDOT & Borough submissions for approval
Swarthmore Town Center West

Chester Road/Rutgers Avenue/
Station Square/Field House Lane
Roundabout

Thank you for your time.
Questions?