



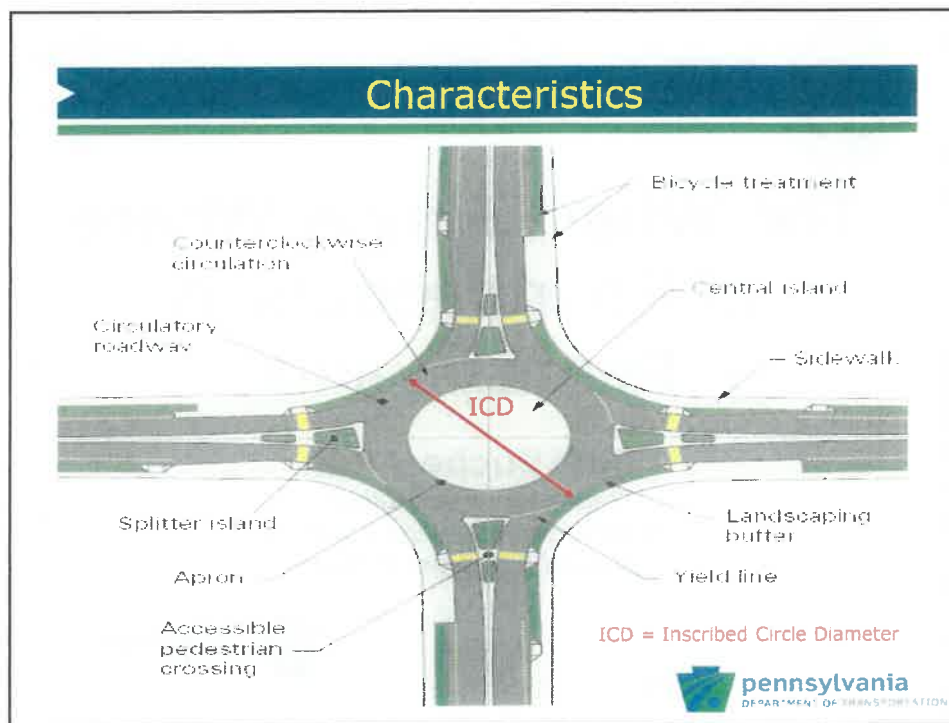
The What, Why & Where of Roundabouts in Pennsylvania

Jeff Bucher, P.E.
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July 3, 2018 – Bern Township





Characteristics

- Only as large as necessary
 - Single Lane ICD 130 to 180-ft. (WB-67 (longest legal truck))
 - SR 183 Roundabout ~ 150-ft.
 - Two Lane ICD 165 to 220-ft. (WB-67)
- Speeds geometrically restricted (20 to 30 MPH)
- Entering **Yields** to circulating
- Not signalized unless for pedestrians
- Flared entry
- Truck Apron
- No shoulders or bike lanes
- No parking
- No pedestrian access to central island

pennsylvania
 DEPARTMENT OF TRANSPORTATION

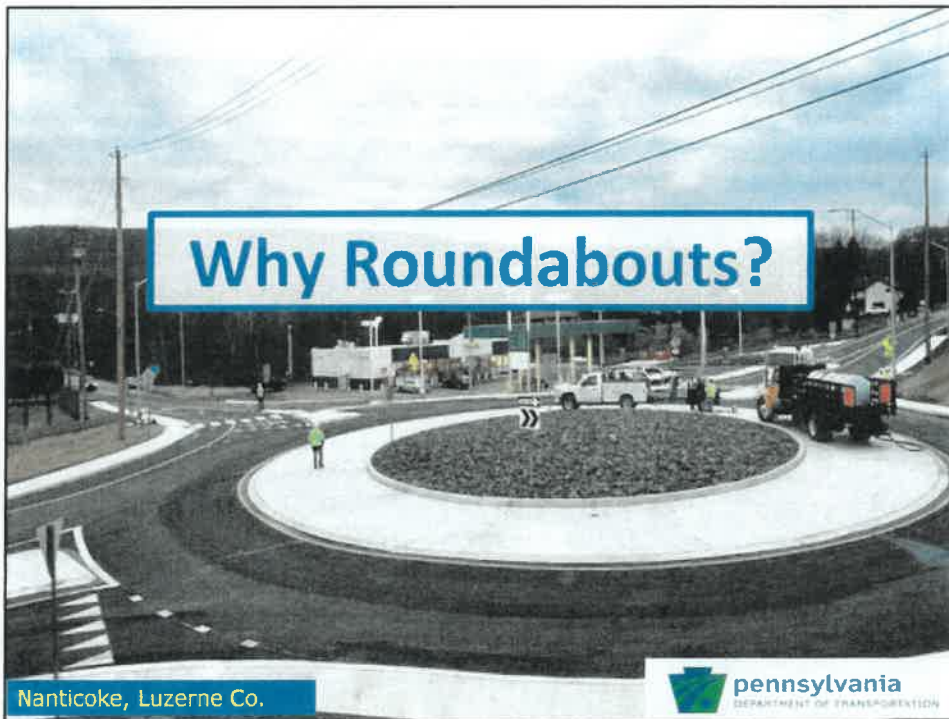
Not Traffic Circles!

- Circular Intersections include
 - Traffic Circles
 - Vary significantly in size and characteristics
 - Rotaries
 - Typically very large and may be high speed
 - Modern Roundabouts (US)
- PA's first roundabout was built in 2005
- New Jersey traffic circles are **Not** roundabouts!
 - New Jersey has very few roundabouts



Roundabouts





Benefits

- Safety
- Operational
- Environment
- Life Cycle Cost



Linglestown, Dauphin Co.

Safety Benefits

- National Studies have shown:

➤ (NCHRP-572 & FHWA)

- Reduction in fatalities > 90%
- Reduction in injuries ~ 76%
- Reduction in crashes ~ 35%
- Reduction in pedestrian crashes ~ 35%



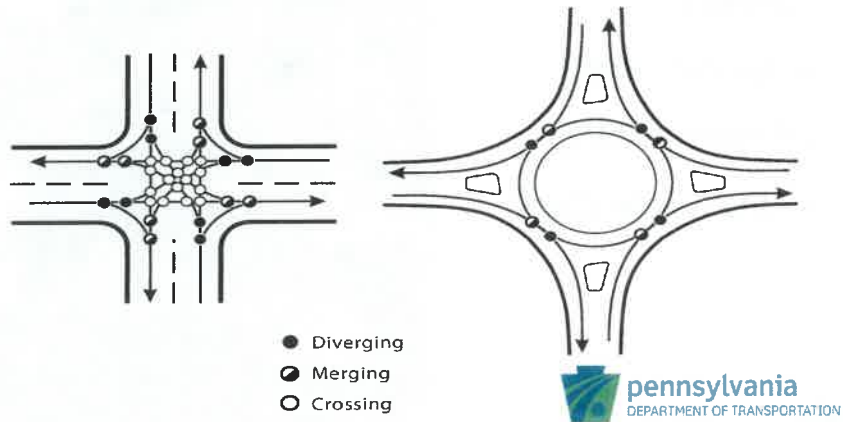
- PennDOT study in 2015 provided similar results



Safety Benefits

➤ Vehicle Conflicts (32 versus 8)

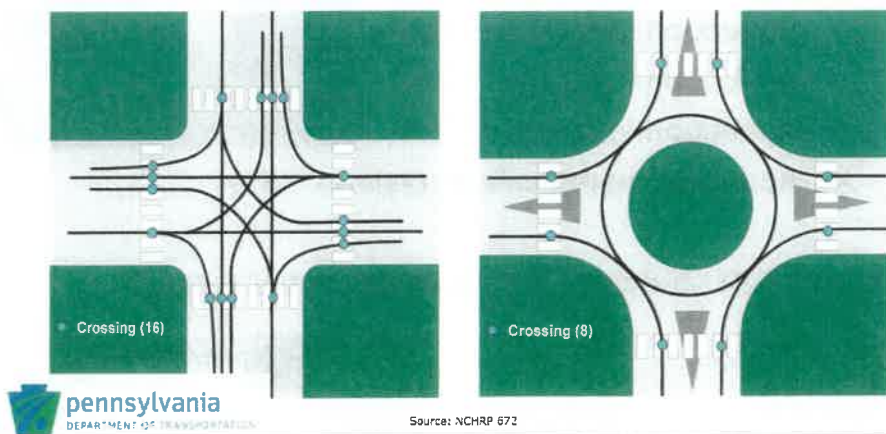
➤ No T-Bone Collisions.



Safety Benefits

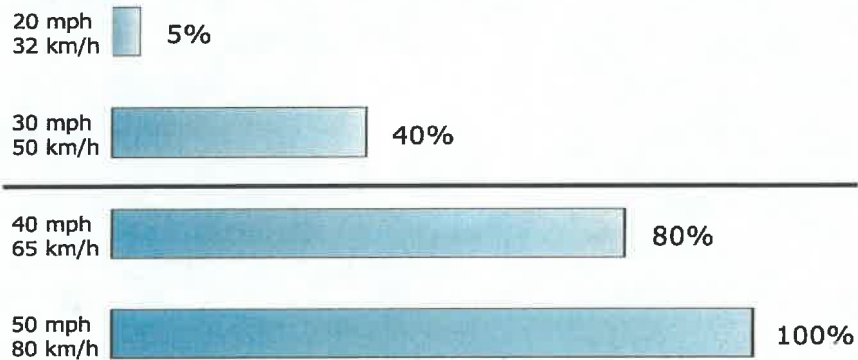
➤ Pedestrian Conflicts (16 versus 8)

➤ Eliminates permissive right and left conflicts



Safety Benefits

Chance of pedestrian death if hit by a motor vehicle



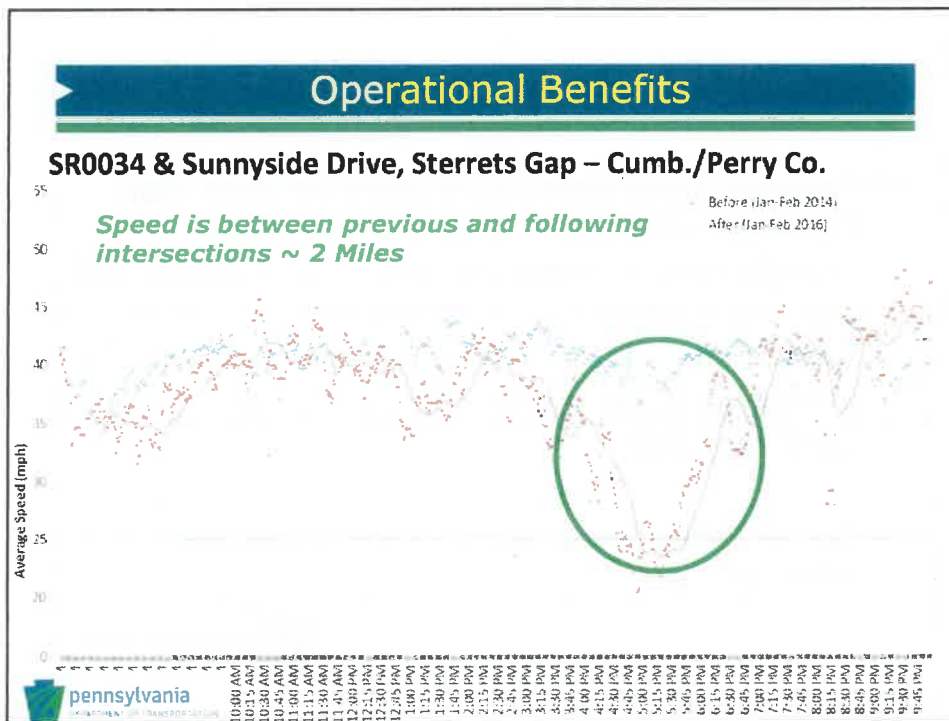
NCHRP Report 672, Exhibit 5-15

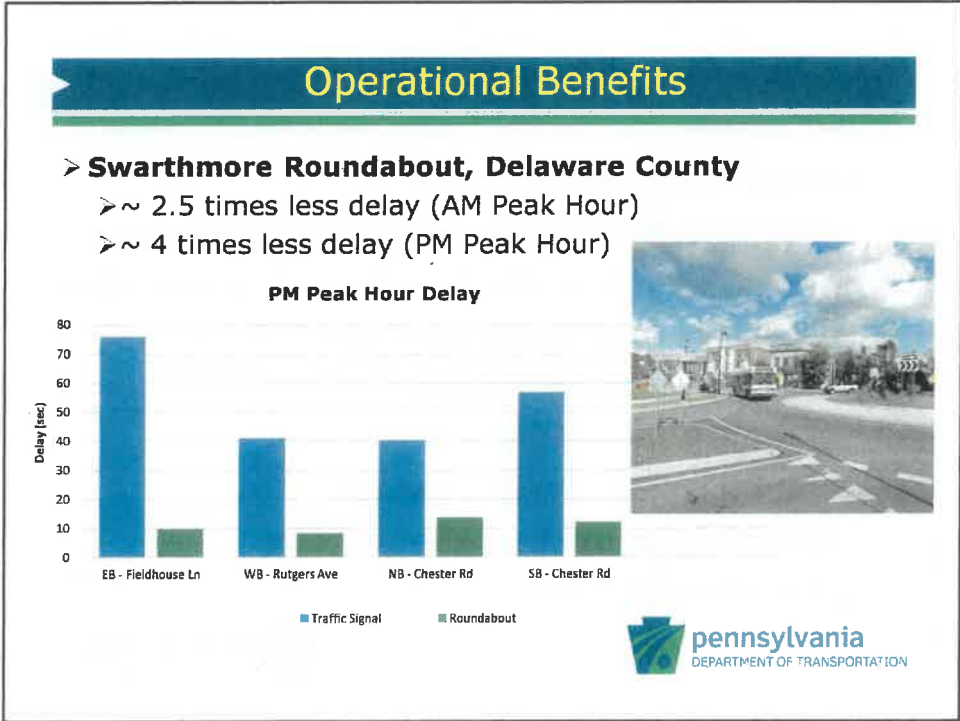


Operational Benefits

- Typically carry about 30% more vehicles than signalized intersections during peak times.
 - Single Lane roundabouts carry up to ~ 20,000 ADT.
 - SR 0183 - Three Leg ~ 10,200 ADT
- Almost no delay during off-peak conditions due to yield condition.
- Can be designed to accommodate oversize vehicles.

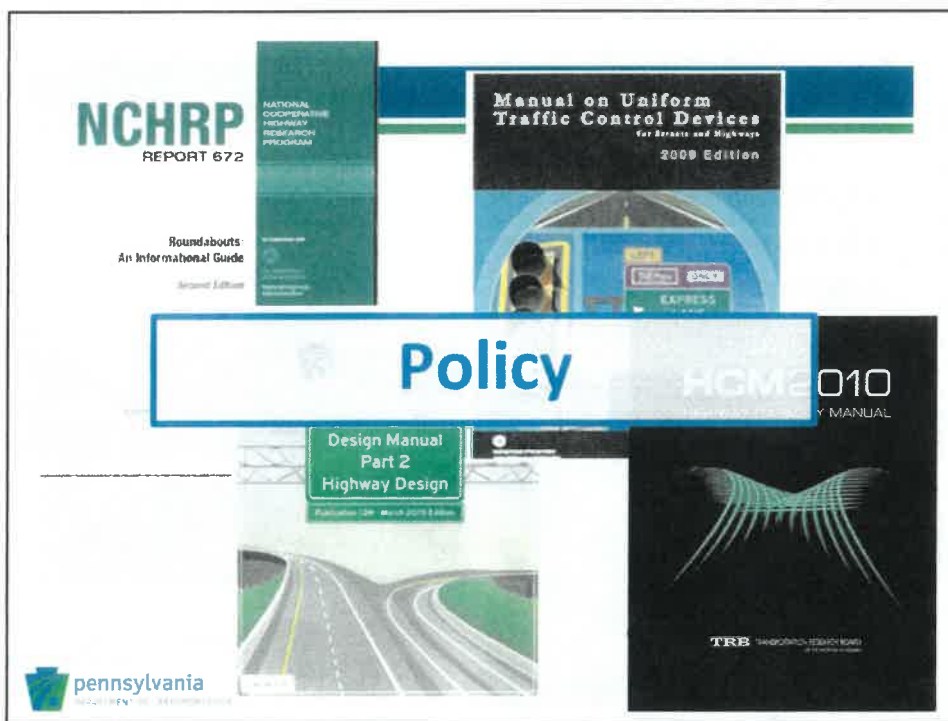






Life Cycle Cost

- Indirect savings are significant.
 - Significantly fewer fatalities and major & moderate injuries.
 - Reduced traffic delay which saves the traveling public's time.
- Maintenance cost may be more than 30% less.
 - No signal maintenance or timing.
 - Will have landscaping and overhead lighting.
- Construction cost is sometimes less.
 - R/W may be less (Wide node, Narrow road).
 - Adjacent bridge may be narrower.



FHWA

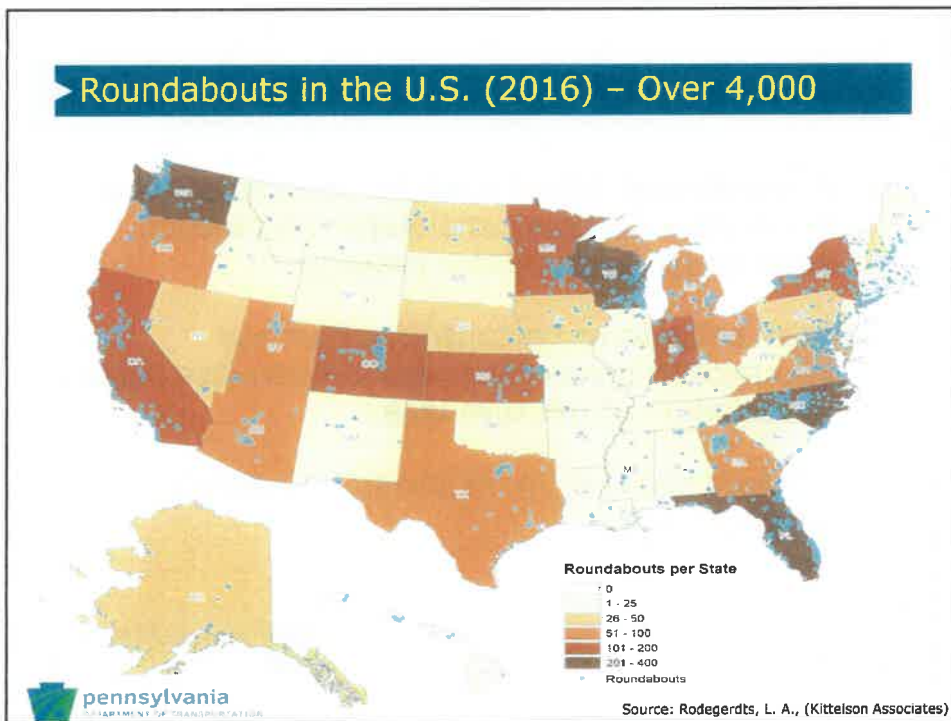
- FHWA promotes roundabouts as one of nine **proven safety** countermeasures.
<http://safety.fhwa.dot.gov/provencountermeasures/>
- Intersections that involve new construction or reconstruction.
- Intersections needing major safety or operational improvements.
- Freeway interchange ramp terminals.
- Rural high-speed intersections.

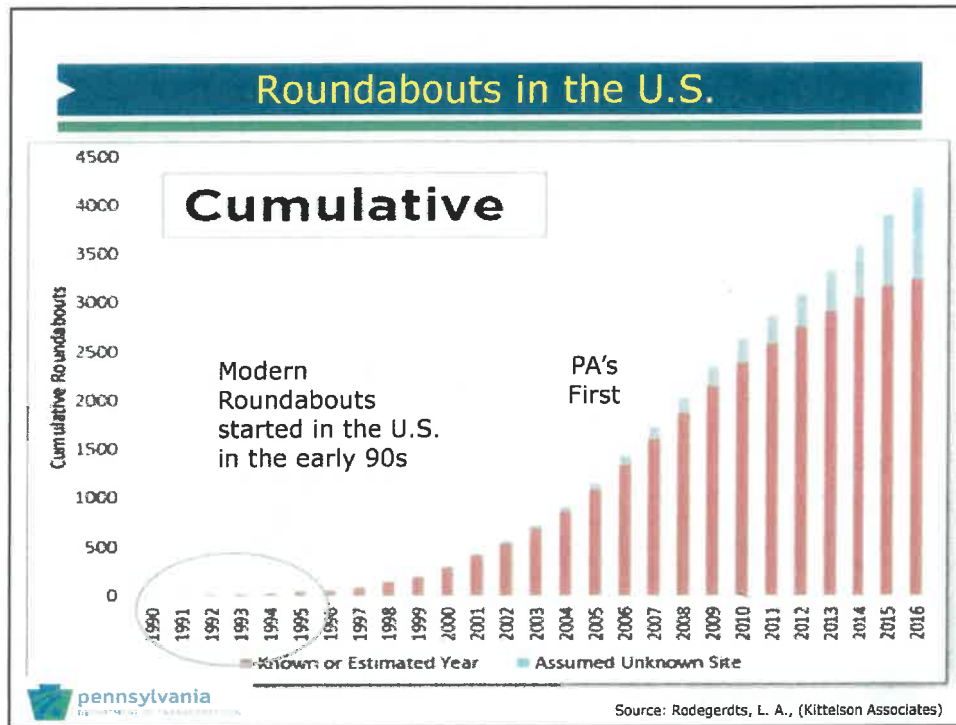


PennDOT's Policy

- A roundabout option shall be considered for all Moderately Complex and Major intersection, interchange and corridor projects.
- They are also to be considered for any intersection project that would otherwise require the addition of left turn lanes.
- Analysis required for Highway Occupancy Permits (HOPs).



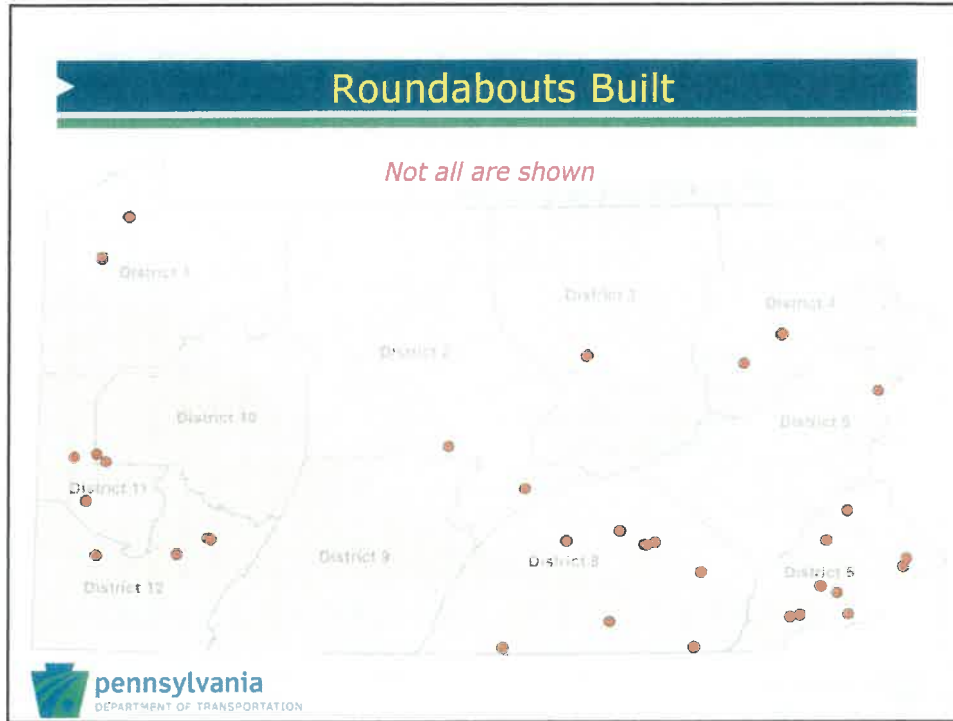




Pennsylvania Roundabouts

- Built
 - **50** (41 on SRs)
- Construction
 - **6** (All on SRs)
- Design/Planning
 - **~ 30**

Marshalls Creek, Monroe Co.



Public Involvement

How to Navigate Pennsylvania's Roundabouts

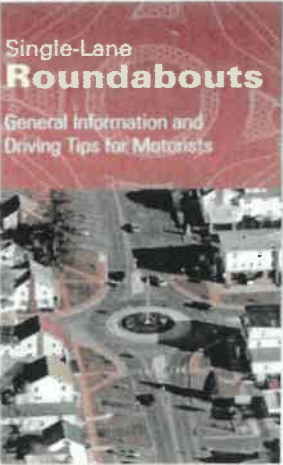
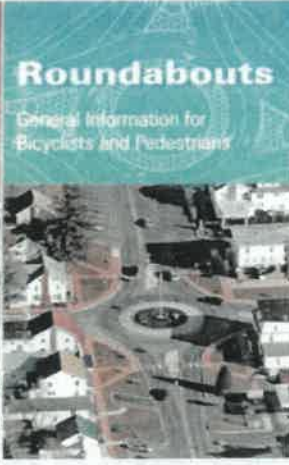
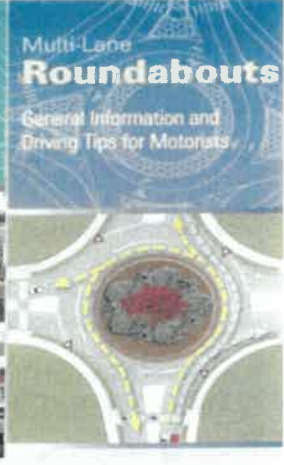



- ROUNDABOUTS
SINGLE-LANE BICYCLE MULTI-LANE PEDESTRIANS
- Single-Lane Roundabouts
General Information and Driving Tips for Motorists
- Roundabouts
General Information for Bicyclists and Pedestrians
- Multi-Lane Roundabouts
General Information and Driving Tips for Motorists

Swarthmore Roundabout Overview

The Swarthmore Roundabout

A collage of images related to roundabouts. It includes a video player interface for 'How to Navigate Pennsylvania's Roundabouts' with a 'Public Involvement' overlay. Below it is a video thumbnail for 'Swarthmore Roundabout Overview' showing an aerial view of a roundabout with the text 'The Swarthmore Roundabout'. The Pennsylvania Department of Transportation logo is in the bottom right.

Public Involvement

 <p>Single-Lane Roundabouts General Information and Driving Tips for Motorists</p>	 <p>Roundabouts General Information for Bicyclists and Pedestrians</p>	 <p>Multi-Lane Roundabouts General Information and Driving Tips for Motorists</p>
		

Public Involvement

 <p>How to Navigate Pennsylvania's Roundabouts</p> <p>ROUNDABOUTS SINGLE-LANE BICYCLE MULTI-LANE PEDESTRIANS</p> <p>0:05 / 4:26</p>	 <p>Swarthmore Roundabout Overview</p> <p>The Swarthmore Roundy Learning to Navigate Roundabouts</p> <p>0:03 / 7:31</p>
<p>➤ http://www.penndot.gov/ProjectAndPrograms/RoadDesign/Environment/RoadDesign/Pages/Roundabouts.aspx</p>	
	

Roundabouts on the Web

➤ FHWA

<http://safety.fhwa.dot.gov/intersection/roundabouts/>
<http://safety.fhwa.dot.gov/provencountermeasures/>

➤ Modern Roundabouts – A Safer Choice – FHWA

➤ <https://www.youtube.com/watch?v=ns2k71K46g8>

➤ PennDOT Website

➤ Roundabout webpage

<http://www.penndot.gov/ProjectAndPrograms/RoadDesignEnvironment/RoadDesign/Pages/Roundabouts.aspx>

➤ Other State DOT Websites

➤ Maryland, New York, Wisconsin, Oregon

➤ Google "Roundabouts" or search on YouTube

An aerial photograph of a large, multi-lane roundabout in a suburban area. The image is overlaid with yellow text and a semi-transparent grey box. In the top right corner, there is a small inset image of fireworks exploding over an American flag.

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The logo for the Pennsylvania Department of Transportation, featuring a stylized green and blue graphic to the left of the text "pennsylvania" in a bold, sans-serif font, with "DEPARTMENT OF TRANSPORTATION" in a smaller font below it.