

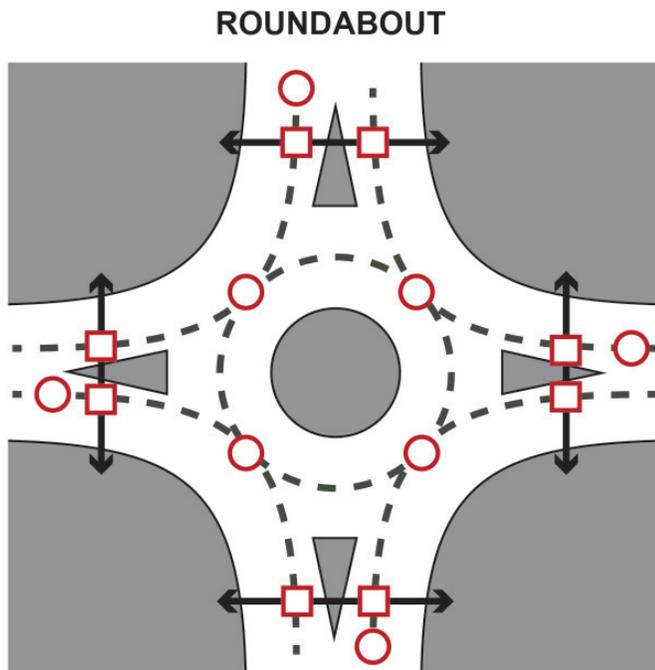
Pilot roundabout studies completed for Lehigh and Northampton County

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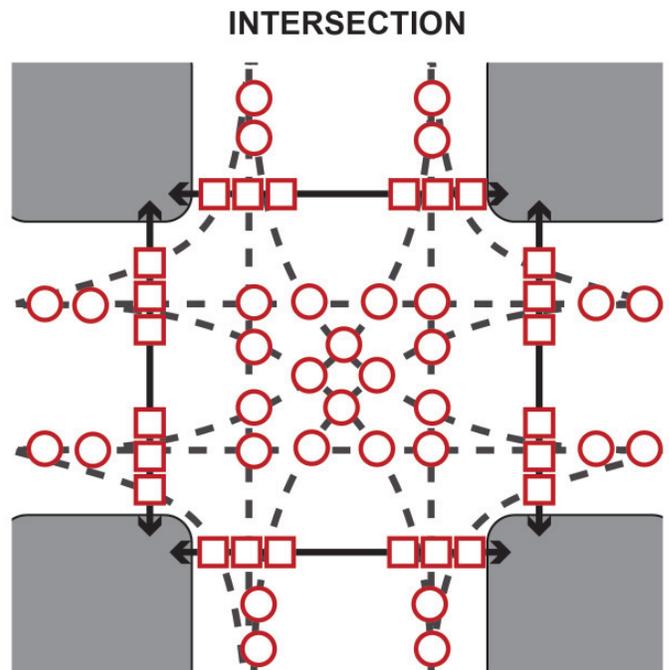
The Pennsylvania Department of Transportation (PennDOT) recently commissioned roundabout pilot studies for both Lehigh and Northampton County. The purpose of the studies was to identify intersections and corridors where single-lane or multi-lane roundabouts could be installed with maximum benefit and minimal impact. The Lehigh Valley is one of several regions across the state that was studied for this purpose.

There are significant benefits that roundabouts offer over traditional signalized intersections and corridors. They include:

- **Safety** – Once installed, roundabouts have proven to be much safer than traditional intersections, offering a 35% reduction in total crashes, a 76% reduction in injury crashes and a 90% reduction in fatal crashes. This is due, in part, to the reduction in speed and the number of vehicle conflict points. In addition, roundabouts are safer for bicyclists and pedestrians because their design includes refuge islands that reduce exposure and crossing distances.



○ 8 Vehicle Conflicts
 □ 8 Pedestrian Conflicts
16 Total Conflicts



○ 32 Vehicle Conflicts
 □ 24 Pedestrian Conflicts
56 Total Conflicts

□ = Pedestrian ○ = Vehicle ↔ □ ↔ = Pedestrian Path - - ○ - - = Vehicle Path

- **Operational Improvements** – Traditional traffic signals usually stop two or more directions of traffic at one time. In roundabouts, all directions of traffic are kept open and remain safely flowing. Accordingly, roundabouts move traffic through an intersection more quickly and with less congestion on approaching roads. This is particularly beneficial during peak hour events when the movement of vehicles is most critical. Studies have shown that installing a roundabout can offer up to an 89% reduction in vehicle delays and a 56% reduction in vehicle stops. Roundabout geometry reduces speed, making them particularly effective at calming traffic in speed transition zones. They also help to regulate turning movements, making them useful to a robust access management strategy.
- **Operations and Maintenance** – While the cost difference between constructing a roundabout and a traffic signal is comparable, the long term operating costs related to roundabouts is significantly reduced. Roundabouts eliminate hardware, maintenance and the electrical costs associated with traffic signals, which can cost between \$5,000 and \$10,000 per year. Roundabouts are also more effective during power outages. Unlike traditional signalized intersections, which must be treated as a four-way stop or require police to direct traffic, roundabouts continue to work like normal. Roundabouts also function well as part of an evacuation route and are self-regulating as their geometry forces speed reductions and minimizes the need for police enforcement.
- **Environment** – Roundabouts are more environmentally-friendly than traditional intersections. Because roundabouts eliminate stops and improve traffic flow, they also reduce vehicle emissions and fuel consumption. Studies show a reduction in carbon mon-

oxide emissions by 32%, nitrous oxide emissions by 34%, carbon dioxide emissions by 37% and hydrocarbon emissions by 42%. Fuel savings can be up to 30% in roundabouts. A study of ten intersections in Virginia showed this savings in excess of 200,000 gallons of fuel per year. Additionally, roundabouts utilize less impervious surface and can be designed to more effectively manage stormwater.

- **Street Environment (Aesthetics)** – Roundabouts serve as an attractive alternative to traditional intersection design and work well in conjunction with road diet and complete street initiatives. The center circles provide opportunities for landscaping and aesthetic improvements that can enhance and define corridors, municipalities and tourism. Roundabouts have also been known to promote economic development when used as part of a gateway treatment.

The Lehigh and Northampton County studies employed a ranking methodology in an attempt to identify the best possible sites for the consideration of a roundabout. The methodology emphasizes crash severity but also includes an analysis of posted speeds, existing grades, existing safety measures and countermeasures, observed congestion, access management deficiencies, environmental and historic resources, and the potential for displacement. The studies were officially presented by the PennDOT consultant (RK&K) to the Lehigh Valley Transportation Study (LVTS) on August 31.

PennDOT's anticipated next steps include performing a feasibility study and/or cost-benefit analysis for the top ranking candidate sites to determine whether a project can be considered and included in the Lehigh Valley *Long Range Transportation Plan* for future implementation.