




## INTEROFFICE MEMO

TECHNICAL SERVICES  
Traffic-Roadway Section  
Office Phone: (503) 986-3568  
Fax Phone: (503) 986-4063

DATE: November 10, 2008

TO: ODOT Staff Involved in Project  
Development

File Code: TRA 16-10

FROM:   
Edward L. Fischer, P.E., PTOE  
State Traffic Engineer  
State Roadway Engineer

SUBJECT: Intersection Control using Roundabouts

I want to share with all of you involved in project planning, scoping and development some information about roundabouts and some related efforts underway within the Department. If you have recently been involved in requesting a new traffic signal on state highways you have probably heard that I am asking everyone to give serious consideration to intersection control alternatives beyond merely traffic signals. I want to assure everyone, however, that we do not intend to hold up projects that are on critical time lines or to create additional work when traffic signals are the only realistic solution.

In the past decade or more modern roundabouts have been showing up in increasing numbers all over America. Our neighbor Washington has about 120 roundabouts on the state highway system. They have even replaced at least one traffic signal with a roundabout. At least one of the Washington DOT regions has implemented a policy of not allowing traffic signals on highways with speeds greater than 45 mph. Several states (including Wisconsin, New York, Minnesota and others) have adopted policies that require consideration of roundabouts before considering traffic signals. Numerous rural high-speed roundabouts are succeeding in states like Kansas and Virginia. In Oregon several cities and counties have begun installing roundabouts and are experiencing success and acceptance.

And why are roundabouts growing in popularity and use? One of the main reasons is safety. Roundabouts eliminate the most severe type of angle crashes. When there are collisions at roundabouts they are at lower speeds and significantly less severe than typical intersections, signalized or not. The 32 conflict points at an intersection of two two-lane roads are reduced to 8 in a roundabout. Studies have shown (see NCHRP Report 572) that roundabouts reduce all crashes by over 35% and, especially significant, reduce injuries by over 75% compared with other types of intersection control.

Other reasons for roundabouts include congestion management. They are efficient in both peak and off-peak times and they typically have less delay than signals. They operate just as effectively (and much safer than signals) when power outages occur. Roundabouts reduce pollution and fuel use because there are fewer stops and hard acceleration as well as less idling time. They often complement other community values, offering aesthetic advantages, serving as "gateways" (one of the reasons Astoria wanted their roundabout), and offering quieter operation than the acceleration and deceleration of signals.

Roundabouts are not always the lower initial cost alternative, but are usually the lower cost alternative when life cycle costs are evaluated. The cost of a typical new traffic signal these days exceeds \$200,000. The cost of power and maintenance is between 5 and 10 thousand dollars annually. The comprehensive cost of a single fatality (National Safety Council, 2006) is 4 million dollars. When a life-cycle cost evaluation is performed that considers the value of improved safety as well as reduced maintenance costs, roundabouts in the right situations will prove to be the most cost effective solution.

There are obviously places where roundabouts are not necessarily the right solution. For example, in high traffic volume areas with limited right-of-way, in areas with high pedestrian use and multi-lane approaches, or at intersections on grades, roundabouts may not be the best choice. There are also still concerns about whether multi-lane approaches to roundabouts will be required by the U.S. Access Board to have some form of signal control for pedestrian crossings. As a result, we will need to proceed cautiously when considering multi-lane roundabouts. But overall I believe that the benefits of roundabouts are significant enough to give them strong consideration whenever we are looking to improve safety and operations at intersections.

We have recently organized a task force with members from the disciplines of Traffic Operations, Traffic Safety, Roadway Engineering, and Traffic Planning and Analysis. They will be looking at existing policies, procedures, and guidance documents and making recommendations for changes relative to what we now know about the benefits and applications of roundabouts. I anticipate that there will be changes in the Highway Design Manual, the Traffic Signal Policy and Guidelines, and other documents that will provide a new emphasis on considering roundabouts as well as other intersection control alternatives in scoping project alternatives. Before approving any future traffic signals on state highways I will ask whether other alternatives have been evaluated. I hope that all of you who are working with local agencies and scoping projects on state highways will give strong consideration to roundabouts in place of traffic signals. If you would like additional information on Roundabouts please check out the following web site.

<http://safety.fhwa.dot.gov/intersections/roundabouts.htm>