

Roundabouts and Roundabout Interchanges

Overview

There are an estimated 300,000 signalized intersections in the United States. About one-third of all intersection fatalities occur at these locations, resulting in roughly 2,300 people killed each year. Furthermore, about 700 people are killed annually in red-light running collisions. Although traffic signals can work well for alternately assigning the right-of-way to different user movements across an intersection, roundabouts have demonstrated substantial safety and operational benefits compared to most other intersection forms and controls, with especially significant reductions in fatal and injury crashes. The Highway Safety Manual (HSM) indicates that:



- By converting from a two-way stop control mechanism to a roundabout, a location can experience an 82 percent reduction in severe (injury/fatal) crashes and a 44 percent reduction in overall crashes.
- By converting from a signalized intersection to a roundabout, a location can experience a 78 percent reduction in severe (injury/fatal) crashes and a 48 percent reduction in overall crashes.

The benefits have been shown to occur in urban and rural areas under a wide range of traffic conditions, and ongoing research has expanded our collective knowledge on safety performance for specific scenarios. Although the safety performance of all-way stop control is comparable to roundabouts (per the HSM), roundabouts provide far greater operational advantages. Roundabouts result in significantly lower delay than signalized intersections. Roundabouts also can be an effective tool for managing speed and creating a transition area that moves traffic from a high-speed to a low-speed environment. However, proper site selection, channelization, and design features are essential for making roundabouts accessible to all users. The Federal Highway Administration has produced a [video](#) describing the benefits of roundabouts.

In addition to the safety benefits at at-grade intersections, roundabouts have also proven to be effective at freeway interchange ramp terminals. Roundabout interchanges are particularly cost effective in that the overpassing bridge can be shorter due to the elimination of turning lanes on the surface street. Right of way requirements are reduced on the surface street, also as a result of the elimination of turn lanes and transitions. Finally, signalization is eliminated, reducing initial costs as well as continuing maintenance.



Design Criteria

The Florida Department of Transportation has adopted the NCHRP Report 672, [Roundabouts: An Informational Guide](#), (TRB, 2010) as the key reference in roundabout implementation, subject to preferences specific to Florida contained in the [Florida Intersection Design Guide](#), [Plans Preparation Manual](#) and other Design Office publications.

Specifications

There are no specifications devoted to roundabouts. Standard specifications that apply to roadway construction are sufficient to govern these designs.

Implementation Plan

Current FDOT policy on roundabouts states that “Roundabouts *shall* be evaluated on new construction, reconstruction and safety improvement projects, as well as anytime there are proposed changes in intersection control that will be more restrictive than the existing conditions.”

There are currently two roundabout projects under development in the State of Florida. US-41 in Sarasota has two planned roundabouts, and SR-7 in West Palm Beach will have one roundabout. There is one roundabout interchange under study in District 2 at this time.

Contact Information

David Amato, PE
Roadway Design Engineer
Phone: 850-414-4792
Email: david.amato@dot.state.fl.us