PEDSAFE

Pedestrian Safety Guide and Countermeasure Selection System

Roundabouts

View Other Intersection Design Treatments

Unlike traditional signalized and stop-controlled intersections, vehicles generally flow and merge through roundabouts without having to stop; therefore roundabouts should be designed for slow speeds and geometry that facilitates motor vehicles yielding to pedestrians and bicyclists. ADA compliant pedestrian crosswalks and curb ramps should be provided at least 20 feet from the entry of the roundabout to give room for a vehicle to stop prior to the crosswalk but outside of the circulatory roadway. Channelization islands at the approaches can help slow vehicles and allow pedestrians to cross one direction of travel at a time. At-grade pedestrian cut-throughs should be provided at channelization islands with ADA compliant detectable warning strips.

An example of a modern roundabout approach.

Roundabouts present unique challenges for individuals with visual disabilities. Because traffic is governed by yield-control entry, as opposed to stop or signal control, pedestrians with visual disabilities must not only decide when to cross the road, but they also have to determine where and which direction to cross. Wayfinding and gap selection cues need to be adequately addressed in roundabout designs. Accessible pedestrian signals should also be considered for all crosswalks at single lane roundabouts, and are required for multilane roundabouts in accordance with the draft Public Right-of-Way Accessibility Guidelines (PROWAG).[1]

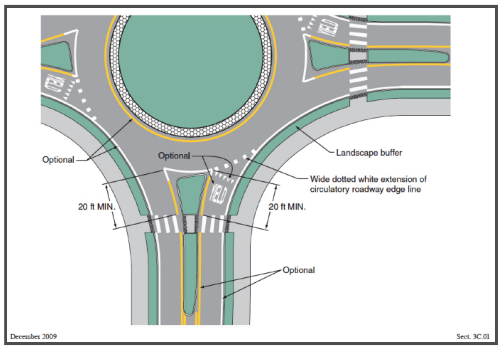

Illustration of the components of a modern roundabout.
Source: 2009 MUTCD

As stated in NCHRP 672, in order to better provide for visually-impaired pedestrians on multi-lane roundabouts, measures such as raised crossings or the pedestrian hybrid beacon should be considered. In general, multilane roundabouts are not recommended in areas with high levels of pedestrian and bicycle activity because of safety concerns of multiple threat crashes for pedestrians, especially those with visual impairments, and bicyclists. General guidance on roundabout design and control are given in several sources.[1,2,3,4,5,6]

Overview of a modern roundabout.
Source: Designing for Pedestrian Safety

Purpose

Roundabouts are circular intersections designed to eliminate left turns by requiring traffic to exit to the right of the circle. Roundabouts are installed to reduce vehicular speeds, improve safety at intersections through eliminating angle collisions, help traffic flow more efficiently and reduce operation costs when converting from signalized intersections, and help create gateway treatments to signify the entrance of a special district or area.

Considerations

• When determining whether to install a roundabout, general considerations include pedestrian and bicycle volumes, effects on pedestrian route directness, the design vehicle, the number of travel lanes, and available rights-of-way.
• Yield lines should be provided at all entries of the roundabout.
• Where there are high pedestrian volumes, signal controls and larger crosswalk widths should be considered.

• Roundabouts often work best where the traffic flows are balanced on all approaches.
• Roundabouts are not recommended if they would increase difficulty for pedestrians navigating the intersection or vehicle delay. Intersections with more than four legs may be good candidates for conversion to roundabouts. An engineering study should be conducted in order to determine where a roundabout would be most appropriate, or if a traditional intersection would be more suitable for the location.
• Roundabouts are not meant for high-speed roadways. Generally, entry speeds on each leg of the intersection should be designed for about 15-18 mph.
• Roundabouts are typically not appropriate for the intersection of two multilane roads.
• Intersections near active, at-grade railroad crossings are generally poor candidates for roundabouts because traffic will be blocked in all directions when trains are present.
• On low speed and volume not-arterial streets, consider installing mini-circles, or smaller-scale roundabouts.

Estimated Cost

For neighborhood intersections a roundabout can be installed for approximately $25,000 to $100,000, with landscaped roundabouts raising the cost from $45,000 to $150,000. For arterial streets the cost is approximately $250,000, but can be more than $500,000 depending on the size, site conditions, and whether right-of-way acquisitions are needed. Two-lane roundabouts cost approximately $330,000. Roundabouts usually have lower ongoing maintenance costs than traffic signals, depending on whether the roundabout is landscaped.

Safety Effects

A summary of studies that have looked at the safety effects of roundabouts can be found here.

Case Studies

Fort Pierce, FL
Montpelier, VT
Green Bay, WI, Metropolitan Area
Village of Great Neck Plaza, New York