



## Wisconsin Traffic Engineering Council Issue Paper 11 – Bike and Pedestrian Issues

### Background / Overview

Each year pedestrian fatalities comprise about 11 percent of all traffic fatalities and there are approximately 4,600 pedestrian deaths. Another 70,000 pedestrians are injured in roadway crashes annually. According to NHTSA, in 2007, 698 pedalcyclists were killed and an additional 44,000 were injured in traffic crashes. Pedalcyclist deaths accounted for 2 percent of all traffic fatalities, and pedalcyclists made up 2 percent of all the people injured in traffic crashes during the year. Two issues of concern are ADA compliance at signalized intersections and roundabout pedestrian treatments.

### ADA Compliance at Signalized Intersections

Americans with Disabilities Act requires all public facilities including transportation be accessible to individuals with disabilities. ADA requirements at signalized intersections affect:

1. Sidewalks
2. Ramps
3. Median Treatments
4. Protruding Objects
5. Crosswalks
6. Midblock crossings
7. Signals
8. Accessible Pedestrian Signals
9. Detectable Warning Devices

### Roundabout Pedestrian and Bike Issues

Studies in Europe indicate that, on average, converting conventional intersections to roundabouts can reduce pedestrian crashes by about 75 percent. Single-lane roundabouts, in particular, have been reported to involve substantially lower pedestrian crash rates than comparable intersections with traffic signals.

Because of the continuous movement of traffic, with increasing traffic volumes available gaps for pedestrians are fewer. Also, roundabouts may pose barriers to safe and efficient independent travel by visually impaired individuals. This is especially true for roundabouts with multiple lane exits and/or entries. Some of the challenges that may be faced by the visually impaired individuals are:

1. Locating the crosswalk and its alignment
2. Detecting when it is appropriate to cross
3. Remaining in the crosswalk
4. Detecting the destination sidewalk or splitter island.

High-contrast markings, well-lit pedestrian routes and tactile paving could address the issues of locating the crosswalk, remaining in the crosswalk and detecting nearby destinations.

Improvements for gap creation include:

1. Pedestrian actuated crossing signal (HAWK, PUFFIN or similar)
2. Upstream/downleg signals
3. Signal metering
4. Pre-emption

Bicyclists also may be disadvantaged by roundabout design. Marking bicycle lanes through the roundabout has not been shown to be safer. In larger roundabouts, an off-road bicycle path may be necessary to allow cyclists to use the pedestrian route.

### Current National Practices

Several states have developed guidelines for accessibility on highways and at intersections.

Some states like Kansas, Oregon, California and Arizona consider intersections with heavy pedestrian/bicycle volumes as inappropriate for roundabouts.

Only three roundabouts were outfitted with pedestrian signals in the U.S.: two single-lane roundabouts on university campuses (University of Utah, Salt Lake City; University of North Carolina, Charlotte) and one double-lane roundabout in Lake Worth of Florida.

NCHRP Project 3-78, Crossing Solutions at Roundabouts and Channelized Turn Lanes for Pedestrians with Vision Disabilities is under way to develop solutions for visually impaired pedestrians at roundabouts.

### Current Wisconsin Practices

Wisconsin is currently developing guidance to meet the ADA requirements at signalized intersections and address pedestrian and bike issues at roundabouts.

### Technical Issues

- Driver Understanding of Roundabouts
- Pedestrians and Bicyclists behavior
- Signing and Marking
- Traffic delay

### Additional Resources

- Roundabouts: An Informational Guide. FHWA-RD-00-67, June 2000  
<http://www.fhrc.gov/safety/00068.htm>
- Pedestrian Access to Modern Roundabouts: Design and Operational Issues for Pedestrians who are Blind.  
<http://www.access-board.gov/research/roundabouts/bulletin.htm>
- Roundabout Evaluation and Design: A Site Selection Procedure. Benekohal and Atluri. <http://ict.illinois.edu/Publications/report%20files/FHWA-ICT-09-051.pdf>
- The Pedestrian Safety Guide and Countermeasure Selection System.  
[http://www.walkinginfo.org/pedsafe/pedsafe\\_curb1.cfm?CM\\_NUM=16](http://www.walkinginfo.org/pedsafe/pedsafe_curb1.cfm?CM_NUM=16)
- Accessible Public Rights-of-Way: Planning and designing for alterations.  
[http://www.ite.org/accessible/PROWAAC/PROWAAC\\_SpecialReport.pdf](http://www.ite.org/accessible/PROWAAC/PROWAAC_SpecialReport.pdf)
- Maryland Accessibility Policy & Guidelines For Pedestrian Facilities Along State Highways. <http://www.marylandroads.com/ohd/adafinal.pdf>
- Accessible Pedestrian Signals.  
<http://www.access-board.gov/research/pedsignals/signalsreport.pdf>
- Accessible Pedestrian Signals: A Guide to Best Practices.  
[http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp\\_w117a.pdf](http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_w117a.pdf)