Roundabouts make safer intersections

MORE MODERN ROUNDABOUT intersections are being implemented around the state. A new urban roundabout recently opened in Milwaukee, joining others in Brown and Dane counties. Many more are in the plans for future construction. Roundabouts have an outstanding safety record, according to WisDOT. They also can keep costs down because roadways leading to the intersection do not need widening. This prompted the agency in 2002 to require that roundabouts be routinely considered for state road project intersections instead of traffic signals or all-way STOP sign control.

Statewide, many engineering professionals have embraced the design alternative. "Three years ago there was skepticism on roundabouts. Since then the knowledge base within the profession has grown exponentially," says traffic engineer Pat Hawley of R.A. Smith Engineering. He has reviewed numerous intersection designs under a consulting contract with WisDOT.

Citizen acceptance is also growing. "People can be reluctant during the planning phases of the project, but once the roundabout is built, they get used to it and find it works well. Up in northeastern Wisconsin the public is now advocating for roundabouts," Hawley says.

Roundabouts significantly lower the severity of vehicle crashes and the number of pedestrian and bicycle crashes, studies show. They are a particularly good option for interchanges because they handle turning traffic well. Dangerous weaving maneuvers — crossing multiple lanes to make an immediate left turn — are much lower, Hawley notes.

"Probably the biggest benefit after safety is the cost saving potential," Hawley says. For example, on Hwy 60 south of West Bend two roundabouts are planned at the US 45 interchange during reconstruction in 2011. Alternate designs to handle the same traffic flow required additional travel lanes on Hwy 60 which, in turn, required larger bridge structures on US 45. "Building the roundabouts will save the public over $1 million just at that one interchange," Hawley says.

Roundabout safety

Studies by the Insurance Institute for Highway Safety show that roundabouts provide a:

- 90% reduction in fatal crashes
- 76% reduction in injury crashes
- 30-40% reduction in pedestrian crashes
- 10% reduction in bicycle crashes

Source: WisDot Web page: www.dot.wisconsin.gov/safety/motorist/roaddesign/roundabout-design.htm

Good design required

"Roundabouts are a tried, proven technology that works. They are based on 40 years of engineering science out of the UK (United Kingdom)," says roundabout expert Mark Johnson. "However, they need to be designed properly, especially when they have multiple lanes." Johnson, a former WisDOT project development engineer, owns MTJ Engineering.

Design standards in the WisDOT Facilities Development Manual are a help, but they have to be applied correctly. "In reviews we see problems with interpretation," says Hawley. "With experience you learn which design elements to adjust for the specific site conditions." This knowledge differential is why WisDOT contracts for reviews of roundabout designs.

Designs are evolving, too. The UK built roundabouts in the late 1970s that were quite large, making it harder for pedestrians and bicycles to get through, some studies showed. "What we're designing and building today is much more compact," says Johnson. "The design criteria provide safety for pedestrians and bicyclists as well." Also, when it takes less roadway width to move the same amount of traffic, more off-street ped/bike facilities are possible.

Roundabouts are excellent solutions when well designed, but they don't work everywhere. "It boils down to good transportation and traffic engineering," Johnson says. You have to follow the engineering principles, rather than prescribed rules."

"Probably the biggest benefit [of roundabouts] after safety is the cost saving potential."

For more information see the WisDOT roundabout Web page:

www.dot.wisconsin.gov/safety/motorist/roaddesign/roundabout-design.htm

Safety and cost savings are benefits from modern roundabout intersections.