

Illinois, Let's Discuss Our Roundabouts

Illinois lags behind its neighbors in the implementation of roundabouts statewide, but acceptance is slowly increasing. Counties and municipalities throughout the state would benefit from convening to rigorously discuss roundabout design information and review best practices.



Before the dawn of the modern roundabout in the 1960s, early traffic circle designs suffered high accident rates and congestion troubles when serving contemporary traffic. Modern roundabouts overcame these capacity and safety limitations — but the stigma attached to roundabouts by a mistrusting public persists. Only in the past 20 years or so has the modern roundabout emerged in the U.S. as an accepted alternative to traditional intersections for improved traffic flow and safety.

Benefits of the Modern Roundabout

For U.S. intersections with identified safety issues, traffic flow challenges or other traffic calming and pedestrian mobility needs, modern roundabouts can be used as an efficient solution, and they are safer and generally superior to traditional signalized intersections for many reasons:

Increased safety. Roundabouts can save lives by reducing fatalities, crash frequency and crash severity, compared to standard stop or signal-controlled intersections.

Increased capacity. Compared to a similarly sized traditional intersection with traffic signals, in the right settings, more vehicles are able to travel through a roundabout each day during peak traffic flow conditions.

Reduced traffic speeds. The relatively tight radius of the modern roundabout forces drivers to slow down, and calms traffic as drivers enter the circle and negotiate a curve sharp enough to slow speeds to 15-20 mph in urban settings and 25-30 mph in rural settings.

Improved pedestrian safety and mobility. Those same reduced travel speeds, combined with refuge islands and shorter crosswalks, allow much safer and easier crossings by pedestrians and bicyclists.

Reduced wait times. By replacing stop-and-go situations with yield situations, vehicle queues and delays are greatly reduced — especially during off-peak periods, when traffic signals are less efficient.

Better traffic flow. Several studies from across the U.S. have reported significant improvements in traffic flow following conversion of traditional intersections to modern roundabouts.

Better for the environment. The shift from stop-and-go situations to yield situations means there is less idling, which reduces vehicle emissions as well as fuel consumption.

Smaller footprint. Roundabouts may reduce the amount of pavement required compared to traditional intersections.



Less pavement means less stormwater runoff for a smaller ecological footprint.

More cost-effective. While initial construction costs might be higher for a roundabout in a retrofit situation (the expense often is comparable in new installations), a roundabout generally has lower operating and ongoing maintenance costs than signalized intersections as there is no signal hardware to power, maintain and modernize.

Additional Perspectives

Often, the decision to reject a roundabout is based on contract value — namely, what it will cost to implement. It is important to at least consider additional factors in calculating the true value of a roundabout and evaluating its long-term cost-effectiveness:

Safety, operational and environmental benefits. A comprehensive review of the benefits of roundabouts can be quantified and compared to the initial construction and ongoing maintenance cost across the life cycle of the roundabout. While many factors influence the potential service life of a roundabout — such as the types of construction materials, weather conditions, traffic conditions and growth in the area — roundabouts often can serve for longer periods of time between major upgrades (e.g., repaving and reconstruction) than comparable signalized intersections.

Benefits to society. In addition to avoiding signals as an ongoing maintenance expense, owners may wish to take a closer look at how roundabouts provide substantial benefits to society, such as reducing crashes, particularly fatal and injury crashes. According to the Institute of Transportation Engineers, the more severe the collision, the less likely it is to have occurred with a roundabout in place. One safety study conducted in Wisconsin showed a significant decrease in crash severity. According to the Institute of

Transportation Engineers, at 21 of the 30 roundabout locations studied, there was a decrease in fatal and injury crashes, and overall, the state experienced a decrease of 38% for injury crashes across all 30 roundabouts. Other studies have found even more dramatic reductions in severe crashes.

A full analysis conducted by owners should involve a thorough review of all metrics motorists consider important, which likely include saving driver time and reducing stress, lowering insurance costs, and providing best-practice infrastructure solutions that facilitate economic development in a community.

Roundabouts in the U.S. and Illinois

Although some states, counties and municipalities have been slow to build roundabouts, such traffic control devices are gaining more popularity in the U.S. Roundabouts are among the 20 evidence-based safety countermeasures recommended by the Federal Highway Administration, which reports there are currently more than 4,500 roundabouts overall in the U.S., a number that has nearly doubled in the past 10 years.

New roundabouts are widely successful in winning over local critics. According to the Insurance Institute for Highway Safety, multiple studies have found that majorities opposing a proposed roundabout often become majorities in favor of the completed improvement.

Some states, such as New York and Virginia, have adopted “roundabout first” policies requiring that roundabouts be considered a preferred alternative when building new intersections or upgrading older ones, if feasible.

Despite their applicability to nearly all traffic, operational and land-use settings, roundabouts remain absent from a majority of Illinois counties.

While the modern roundabout has been slower to take root in Illinois than in nearly all of its neighboring states, county and municipal DOTs in Illinois are moving now to build more of them. Nearly a dozen future Illinois roundabouts are in Phase 2 design or awaiting construction, nearly equaling the number already in service.

As the state begins to implement roundabouts, out-of-state engineers have been responsible for many of the designs currently approaching construction. The variety of design sources and the delay in building a deeper bench of in-state design talent in Illinois has led to a surprising diversity and a lack of standardization in design approaches for roundabout curb types, entry-width guidelines, application of truck aprons and more.



When examining the modern roundabouts in Lake, Kane and Winnebago counties, for example, the numerous differences are easy to discern, and they appear to be driven at least in part by the design personalities behind them.

Illinois Roundabout Engineers, Unite

To provide the highest-quality, expandable, efficient, sustainable and safe roundabout solutions at a significant cost savings for the residents of Illinois, it may be time to schedule a first-ever, Illinois-specific roundabout conference. The conference can strive to achieve two goals: first, to provide a wealth of information on roundabout design to agencies with limited access; and second, to create a forum where the variety of design approaches currently in operation can be assessed for their value and applicability statewide.

By the best available information, there are more than 85 counties in the state of Illinois in which no roundabouts have been built. The means by which those counties and their communities learn about roundabouts is still largely via happenstance or anecdote. An Illinois roundabout conference would be an excellent opportunity to convey a wealth of information tailored to agencies unfamiliar with the concept, featuring specific topics such as the following:

- Roundabout design basics.
- Recognizing good (or bad) concepts.
- Explaining roundabouts to the public.
- Case studies in operations and maintenance.
- Keys to roundabout capacity.

The organizers of this proposed conference would do well to solicit questions and concerns from the target audience. Could there be an established set of recommended design approaches for the state of Illinois? If the answer is yes, ideally,

such approaches could be determined and refined through a strategic, facilitated discussion among key stakeholders and transportation leaders.

From reviewing the two existing roundabout guides prepared by the Illinois Department of Transportation, to engaging in a peer-to-peer dialogue among the state's owners and designers, this conference would be groundbreaking. What's more, it would be a great opportunity to introduce agencies new to the concept in a well-informed local forum.

Such an Illinois conference certainly could be informed by a similar roundabout event held in Ohio in 2019. Attendees discussed the small footprint and big impact of roundabouts, lighting best practices and how roundabouts serve as the multimodal solution for complete, safe streets.

Ideally, through this Illinois conversation, in-state design talent will receive a more formalized introduction to roundabouts, and counties and cities will be provided with the tools, information and confidence they need to implement their own roundabout projects, as well as effectively communicate their proper use to the public and the associated cost benefits.

The Benefits of Working Together

As Illinois embraces roundabouts as innovative solutions that save money while reducing delays and improving safety, it is helpful to bring a third-party perspective to the process as well as trusted advisers who are experienced in the assessment, design and construction of modern roundabouts.

Illinois also stands to benefit considerably from the deep body of design and operational experience in neighboring states. The close proximity of out-of-state engineers is convenient, and their innovative ideas are worthwhile to consider for customization by design engineers within the state of Illinois.

The flipside to relying on out-of-state engineers is the lack of standardization and diversity of design across the state's roundabouts, as well as the very real, long-term need to develop Illinois' own in-state roundabout design talent.

Illinois Roundabouts: Raising the Bar

Perhaps now is the time to standardize modern roundabout design in Illinois. A conference involving the state's design community, transportation leaders and their respective agencies could be just the thing to foster a beneficial forum to explore specific design approaches, the establishment of design and construction criteria, and industry best practices. When it comes to this kind of creative assembly, there is much to consider.

By involving and engaging Illinois transportation leaders and key stakeholders to develop, refine and finalize Illinois' preferred roundabout guidelines, the counties and municipalities across the state would be greatly served. The potential for dramatic improvements in safety and cost across the state would make this conversation worthwhile and particularly important and urgent.

As counties and municipalities become more fully informed, they are better positioned to design and model roundabout plans that will reduce crashes and motorist wait times, as well as save many types of costs in the short and long term.

When Illinois can deliver a more comprehensive approach to roundabout assessment, design and construction, it will begin to recognize the benefits its neighboring states already enjoy. A statewide roundabout conference would be a great way to set ourselves on that path.

Conclusion

The state of Illinois can improve its approach to roundabout design and implementation through a statewide roundabout conference to discuss and determine preferable roundabout design, specifications and approaches, and to make it easier for new jurisdictions to pursue their own improvements. While Illinois lags behind its neighbors in the implementation of roundabouts, acceptance is increasing, and the time is now to evaluate the benefits and build for the future.

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