

A national authority on roundabouts

Roundabouts have seen unprecedented growth across the United States, from just a handful a decade ago to more than 2,000 and counting. National guidance had to keep pace with the needs of states and communities planning and implementing roundabouts, and NCHRP took a lead role.

Capacity and safety models

As a first step, NCHRP undertook Project 3-65, which led to *NCHRP Report 572: Roundabouts in the United States*, published in 2007. “*NCHRP Report 572* was driven by a need to build a better model for safety performance of roundabouts,” says Rob Limoges, director of New York State’s Safety Program Management & Coordination Bureau. “This research established an inventory of roundabouts in the U.S. with a database of geometric, operational, and safety information. Researchers then developed models for predicting operational and safety benefits.”

These models help agencies quantify the projected benefits of roundabouts over traditional intersections. A study of 55 intersections converted to roundabouts revealed an average reduction in crashes by 35 percent and 76 percent fewer severe injuries. Roundabouts also typically experience significantly less delay than signalized intersections with similar traffic volumes. *NCHRP Report 572* has had a direct impact on key national guidance documents, with results incorporated into AASHTO’s *Highway Safety Manual* and TRB’s *Highway Capacity Manual*.

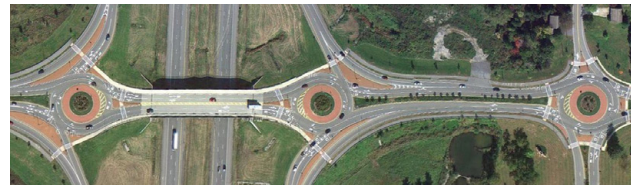
“*Report 672* offers a far broader range of roundabout solutions.”

Updating the guide

Even with the promised benefits and extensive international success stories, travelers often show initial skepticism about roundabout use. “That’s why it was critical to develop new guidance based on current U.S. roundabout data and experiences,” says Steve King, Kansas DOT’s road design leader. “FHWA’s guidance document, *Roundabouts: An Informational Guide* was published in 2000 and based on limited U.S. deployments.”

Through Project 3-65A, NCHRP published *NCHRP Report 672: Roundabouts: An Infor-*

mational Guide, Second Edition in 2010. The document serves as an update to the FHWA guide and is based on a large number of new roundabouts in America. “For example, Kansas DOT’s experience in designing highway roundabouts for heavy freight vehicles was one of many important updates to the guide,” says King.



A five-roundabout corridor in Malta, N.Y., includes Interstate on- and off-ramps. (Image courtesy of Google Maps)

Beatriz Caicedo-Maddison, senior project manager with Florida DOT and chair of the NCHRP project panel, adds, “It’s not only more up-to-date and more research-driven, but it’s also more flexible. *Report 672* offers a far broader range of roundabout solutions.”

The guidance has been put to work in Caicedo-Maddison’s own state. “Florida went through *Report 672* chapter by chapter to see how we can update our Plans Preparation Manual to reflect the findings,” she says.

Different states, common solutions

Brian Walsh, state traffic design and operations engineer with Washington State DOT, has a unique perspective on the report’s value: “This document pulled from early adoption states like Washington that had established working practices and guidance,” he says. “At the same time, we were beneficiaries, learning about new techniques that had been successful elsewhere and putting them to work where we could.”

“It was critical to develop new guidance based on current U.S. roundabout data and experiences.”

“For example, we saw a photo of Maryland’s advance guide sign in *Report 672*,” says Walsh, “and we included it in one of our projects because it communicated the route destinations cleanly.”

Other states, including New York, can tell similar success stories with these publica-

tions. “With increasing design complexity, technical guidance for roundabouts is more important than ever,” Limoges says. “That’s especially true with multilane roundabouts and roundabout corridors. We have drawn on both *Report 572*

and *Report 672* to address capacity and safety challenges related to major urban projects.

“In the end,” he adds, “roundabout design is partly science and partly art, requiring good information and engineering judgment. These reports provided information to help engineers make sound decisions.”

For more information about this NCHRP research or to download these reports, please visit www.trb.org/nchrp.



Large freight vehicles were a design consideration for a roundabout in Florence, Kan. (Image courtesy of Kansas DOT)

NCHRP — Transportation research that works

Objective national highway research since 1962 • Focused on practical problems of state DOTs • Contract researchers competitively selected • Overseen by balanced panels of technical experts • Reviewed by TRB highway specialists

ACKNOWLEDGEMENT OF SPONSORSHIP Work was sponsored by the American Association of State Highway and Transportation Officials, in cooperation with the Federal Highway Administration, and was conducted in the National Cooperative Highway Research Program, which is administered by the Transportation Research Board of the National Academies.

DISCLAIMER The opinions and conclusions expressed or implied in reports are those of the research agencies. They are not necessarily those of the Transportation Research Board, the National Research Council, or the program sponsors.