by Jeffrey Shaw and Steve Moler

Bicyclist- and Pedestrian-Only Roundabouts

Facilities dedicated solely to nonmotorized traffic are an emerging development for improving mobility and reducing injury and fatality rates.

National crash data demonstrate the importance of minimizing conflicts between motorists, bicyclists, and pedestrians. During the past decade, traffic crashes killed between 600 and 800 bicyclists nationwide annually. In 2007, crashes killed 698 bicyclists and injured another 43,000. Pedestrians fare much worse: 4,654 died in crashes in 2007, according to the National Highway Traffic Safety Administration's (NHTSA) Fatality Analysis Reporting System.

(Above) Stanford University constructed this roundabout in summer 2007 at the notorious bicycle-pedestrian crossroads known as the Intersection of Death. *Photo: Stanford University.*

The roundabout is becoming more popular at intersections on America's roadways, primarily because of its ability to improve safety and traffic flow, particularly in situations involving low and medium traffic. The Federal Highway Administration (FHWA) estimates that crews construct 150–250 new roundabouts each year in the United States. The typical modern roundabout is a shared-use facility, serving motor vehicles, bicyclists, and pedestrians.

But another type of roundabout is making an appearance in transportation infrastructure. Transportation agencies now are designing roundabouts dedicated to bicycles and pedestrians, and sometimes bicycles only, on shared-use paths. These paths serve bicyclists, walkers, joggers, skaters—virtually all nonvehicle traffic.

Shared-use paths and their associated roundabouts usually supplement onroad bicycle facilities such as bicycle lanes, paved shoulders, and bicycle routes. Shared-use paths typically are located alongside riverbanks, oceanfronts, canals,

abandoned or active railroad and utility rights-of-way, and limited-access freeways; on college and university campuses; and in parks and on connectors between parks. The roundabouts are particularly useful and effective when bicycle volumes are relatively high.

Transportation agencies are building bicycle-pedestrian roundabouts on shared-use paths for the same reasons they build vehicle roundabouts on roads: improved safety and traffic flow. Bicyclists, skaters, and other faster moving users enter a roundabout by first slowing down and yielding to those already there. Once inside, users move counterclockwise according to posted traffic control signs and directions. As with motor vehicle roundabouts, fewer conflicts occur on shared-use paths compared with traditional intersections.

"We're seeing transportation planners and safety engineers at the local level applying the same basic principles of the motor vehicle roundabout to the bike-pedestrian-only roundabout," says Patrick Hasson, team leader for the Safety and Highway Design Technical Service Team at FHWA's Resource Center in Olympia Fields, IL. "This is an effective way to take the success of one type of facility and apply it to another. This can only be a positive trend in helping improve safety and mobility on our path systems and college campuses."

A National Policy Is Born

Planning and constructing transportation facilities with bicycles and pedestrians in mind has become a national policy since enactment of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). In response to Section 1202 (b) of the Transportation Equity Act for the 21st Century (TEA-21) of 1998, the successor to ISTEA, USDOT released a policy statement including the following: "To varying extents, bicyclists and pedestrians will be present on all highway and transportation facilities where they are permitted and it is clearly the intent of TEA-21 that all new and improved transportation facilities be planned, designed, and constructed with this fact in mind."

The current surface transportation law, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) of 2005, now requires that bicycle and pedestrian needs be integrated into the overall transportation planning processes at the State and local levels.

These Federal laws, combined with the public's increased awareness of the health, environmental, and cost benefits of walking and cycling, have increased demand for more and better facilities to accommodate bicycle and pedestrian interests safely. State and local governments have responded by constructing numerous efficient bicycle-pedestrian facilities.

Bicycle-Friendly Davis

That roundabouts are an increasingly popular and viable component of bicycle-pedestrian facilities in certain environments applies particularly to Davis, CA, a university town of about 64,000 people between Sacramento and the northeastern suburbs of the San Francisco Bay area.

Both the city and University of California, Davis (UC Davis), have been leaders in making transportation facilities accessible to pedestrians and bicyclists. Davis was the first community in the country to be named a platinum-level Bicycle Friendly Community by the League of American Bicyclists.

Davis has bicycle lanes on about 95 percent of its arterials and collectors. The city also has 27 different locations where motor vehicle traffic is separated from bicycles and

UC Davis

Students move counterclockwise through this roundabout at Shields Avenue and West Quad Way on the UC Davis campus in California.

Pioneers of the Bicycle-Pedestrian Roundabout

Asked to name a role model for building a bicycle- and pedestrian-friendly community, experts often point to the city of Davis, CA, and UC Davis. According to the League of American Bicyclists, Davis was one of the first U.S. cities to integrate the bicycle into its transportation infrastructure. And UC Davis was one of the first universities to make extensive use of shared-use bicycle and pedestrian roundabouts on campus to improve safety and mobility.

As the automobile hit full stride in the 1960s, Davis and its university were thinking differently. They began envisioning a multimodal community that included extensive walking and bicycling when neither mode was popular—decades before today's concerns about high fuel prices, congestion, and health-conscious living.

According to the paper "Fifty Years of Bicycle Policy in Davis, CA," by UC Davis's Ted Buehler and Susan Handy, after returning from a sabbatical in the Netherlands, Frank Child, a UC Davis economics professor, his family, and others formed a citizens' group that began meeting with city officials to advocate for bike lanes and other bicycle improvements. Shortly after a pro-bikeway slate of candidates was elected to the Davis City Council in April 1966, the city began building a bicycle trail system that quickly gained wide acceptance.

In fall 1967, Davis created the first official striped bike lanes in the United States. A short time later, UC Davis banned almost all motor vehicles from its campus roadway system. The university built a series of bike paths along the campus perimeter that channeled bicyclists into the center of campus. About six roundabouts were constructed on campus in the 1970s, and another six were built over the last 20 years.

Since the 1970s, the city and university bikeway systems have expanded steadily to their present size. Davis, with an area just under 26 square kilometers (10 square miles), now has about 80 kilometers (50 miles) of bike lanes and 84 kilometers (52 miles) of bike paths. More than 90 percent of all the collectors and arterial streets within the city have bike lanes or bike paths, or both. The city is known for experimenting with special bicycle facilities such as bike detectors (loop or video detectors that trigger a flashing warning light if a bike or vehicle is coming toward the intersection), signal heads, and bicycle-only roundabouts.

Davis's extensive trail system has led to widespread use. About 14 percent of all trips to and from work are made by bicycle. On campus, nearly half the university's 30,000 students, most of whom live off campus, ride a bike or walk as their primary mode of getting to and from class. About 1,800 faculty and staff, or about 20 percent of the total, also walk or bike to campus.

Davis's unofficial designation as the Bicycle Capital of the United States can be attributed largely to its physical, social, and political environment. In addition to a mild climate, flat terrain, and wide streets, Davis is "a closely defined and relatively self-sustained community," says David Takemoto-Weerts, UC Davis's bicycle program coordinator. Most city activity centers are within easy cycling range of the most remote households, making the bicycle a viable transportation mode for almost all trips.

But the most important factor, he says, is local attitudes. Davis has a relatively large, young, and healthy student population for which the bicycle is a natural transportation choice. Also, since the mid-1960s, city politicians and activists have helped create a bicycle culture in Davis by encouraging tolerance of all transportation modes. Even the city's official logo contains an image of a late-1800s bicycle.

"Bicycles plying the streets of Davis have become so commonplace that conflicts between cyclists and motorists are rare because so many residents use both modes extensively," Takemoto-Weerts says. "There's mutual understanding and respect for the needs and desires of both groups."

UC Davis

UC Davis banned all motor vehicles from its campus roadway system in the late 1960s. As a result, the university has converted some of its intersections, such as this one at Storer Mall and California Avenue, into bicycle and pedestrian roundabouts. Concrete bumpers and installed splitters, signs, and other devices help to keep traffic moving smoothly in the right direction.

pedestrian traffic using such structures as bridges, underpasses, and tunnels.

Over the past 10 years, the city has spent more than $14 million on bicycle projects, including bicycle-only roundabouts. UC Davis's extensive bicycle-pedestrian trail network features more than a dozen roundabouts at key locations throughout the campus. Several of these roundabouts, which date to the 1970s, were built primarily because of heavy bicyclist and pedestrian traffic during class change time at key intersections near large lecture halls. The remaining roundabouts were built at various times throughout the 1980s and 1990s due largely to the success of the earlier ones, according to David Takemoto-Weerts, UC Davis' bicycle program coordinator.

"When thousands of students get out of class at the same time, you get a very intense short-term rush hour lasting 10 minutes," says Takemoto-Weerts. "That's when problems occur. Roundabouts help minimize congestion at the busiest intersections."

UC Davis built its first roundabout at an intersection in front of what is known as 194 Chemistry, one of the largest lecture halls on campus. The university initially experimented with using old firehoses to construct an inner radius. Additional striping helped guide the hundreds of bicyclists and pedestrians safely and more efficiently through the congested intersection. The university later replaced the

firehoses with concrete bumpers, and installed splitters, signs, and other devices to keep traffic moving smoothly in the right direction.

"UC Davis officials just watched and things improved," Takemoto-Weerts says. "The university didn't do any formal studies, but you could just sit there and observe the improvements in traffic flow. It was pretty impressive."

Stanford's New Roundabouts

The successful use of roundabouts by UC Davis has prompted other colleges and universities to build roundabouts to improve safety and mobility. At Stanford University in Stanford, CA, with a student population of about 13,200, students told the university through a series of focus group discussions that certain campus intersections were dangerous, particularly during class changes. As a result of these discussions and other circumstances, Stanford recently installed two roundabouts to improve safety, traffic flow, and aesthetics. One of the roundabouts is at a crossroads known as the Intersection of Death, where pedestrians and bicyclists frequently experienced conflicts.

Bicyclists now are learning to travel counterclockwise around one roundabout and into a two-lane straightaway between the Barnum Center and Building 500 before being directed into the second roundabout. Ground-painted traffic signs help guide bicyclists properly through the roundabouts. New sidewalks separate pedestrians from the steady stream of bicycles through Stanford's most congested area. The roundabouts are part of a master plan to redesign the center of campus to make it safer and more attractive.

"The goal of the roundabouts is, first, to slow down students on bicycles and, second, to improve traffic flow," says Cathy Blake, associate director of Campus Planning and Design. "A third goal is to provide a refuge for pedestrians who want to get out of the traffic. Before the roundabouts were installed, people would go through these intersections full speed ahead during off-hours. During class change time, it could be almost gridlock."

Although the roundabouts had been in Stanford's plan for about 2 years, the university's marching band tested the idea in fall 2006. The band built a roundabout in front of Stanford's landmark clock tower to help improve traffic flow during the week of the big game with crosstown football rival the University of California, Berkeley. Band members adorned the circle with a sculpture and decorations.

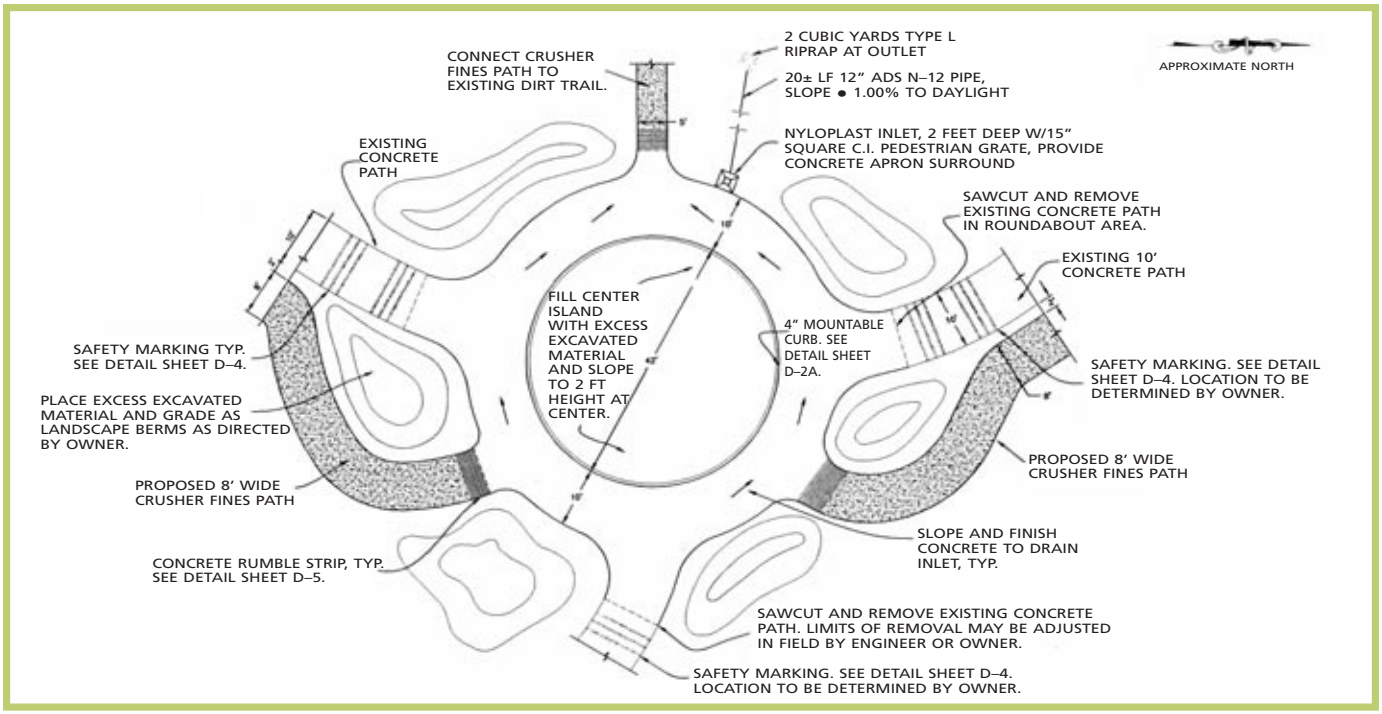
The makeshift roundabout seemed to improve traffic flow, says Carolyn Helmke, who was Stanford's bicycle program coordinator until

Stanford University

Bicyclists navigate Stanford's Intersection of Death on their way to and from classes.

Stanford University

During a typical class change rush period, Stanford University students head toward the Intersection of Death, where a roundabout (not shown) was constructed in summer 2007 to improve safety and mobility on this busy pedestrian-bicycle thoroughfare. Beyond the busy intersection is a short straightaway and a second newly constructed roundabout at White Plaza.



This engineer's schematic shows the Lee Gulch/South Platte River roundabout on the Mary Carter Greenway trail south of Denver, CO. The crushed gravel (pedestrian) and concrete (bicyclist) trails run separately yet parallel until they merge at the roundabout. Once the bicyclists slow down as they approach the roundabout, all trail users share the roundabout. *Source: WHPacific, Inc.*

June 2008. Although plans for the two roundabouts already were underway, the band's effort gave the proposed projects a psychological boost and helped call attention to the need for mitigating bicycle and pedestrian conflicts on campus, she says.

Roundabouts on Shared-Use Paths

One reason for the increased interest in roundabouts is the desire of transportation officials to separate bicyclists from pedestrians on shared-use paths and trail systems. This was the case at the South Suburban Park and Recreation District outside Denver, CO, where officials acted after a deadly crash in 2004.

The South Platte River Greenway is a 56-kilometer (35-mile) trail system south of downtown Denver. One of the trails, the Mary Carter Greenway, consists of a 3-meter (10-foot)-wide concrete pathway that accommodates up to 700,000 walkers, joggers, roller skaters, and bicyclists annually. But after its completion in the 1980s, the trail quickly filled with a multitude of users ranging from families with toddlers in strollers to high-speed cyclists on training rides.

"The pedestrians felt intimidated by the cyclists, and the cyclists got frustrated with pedestrians sometimes walking two or three abreast and blocking the trail," says Bill Woodcock, manager of planning and development with the South Suburban Park and Recreation District in Littleton, CO, which administers the trail system. "This crowding led to conflicts, and in some cases diminished enjoyment for our users. We needed to do something about safety and bring the trail back to the people."

A fatal head-on collision involving two bicyclists on the greenway in 2004 prompted trail management, law enforcement, and safety experts to convene a forum to address ways to reduce conflicts and improve overall safety. Some immediate solutions included painting a centerline along the entire length of the path, posting a speed limit of 24 kilometers per hour, km/h (15 miles per hour, mi/h), and stepping up enforcement. Police have used radar to clock speeding cyclists and, in some cases, issued citations. Additional speed limit signs also have been posted at key locations.

A longer term remedy involved constructing a crushed-stone, pedestrian-only path parallel to the paved trail. Those two parallel facilities, like all South Suburban Park trails, were constructed to accommodate people with disabilities in accordance with the Americans with Disabilities Act. But trail officials still needed to slow bicyclists down and manage traffic at key junctions where pedestrians and bicyclists shared the pathway.

Near the Carson Nature Center, children on nature hikes would come into conflict with high-speed cyclists. The center also has a parking area where people unload their bicycles and access the main trail, says John Pflaum, a senior project engineer with WHPacific, Inc., a Denver-based engineering consulting firm working with the recreation district. "We had to figure out how to sort out the bicycle and pedestrian traffic. The roundabout proved to be the best solution."

The district built the roundabouts at two of its most congested intersections: one near the Carson Nature Center and the other at the junction of the Lee Gulch and South Platte River trails. Both roundabouts have nearly identical designs, including a 3-meter (10-foot)-wide concrete path surrounding a 13-meter (42-foot)-diameter landscaped center island.

The island has a 10-centimeter (4-inch) mountable curb, which, combined with the landscaping, discourages users from cutting through the inner circle. Trail system rangers say they are pleased with the dual trail and roundabouts, which they believe have led to fewer crashes. "The roundabouts have definitely slowed the bikes down," Woodcock says.

The recreation district is planning to construct another roundabout and bicycle bridge near the city of Englewood's golf course to separate golf carts, bicycles, and pedestrians.

UCSB Adopts Roundabouts

The University of California, Santa Barbara (UCSB), with a student population of about 20,000, also has adopted the roundabout approach for separating bicyclists and pedestrians whenever possible to improve safety and mobility. About 14,000 students, staff, and faculty commute to campus by bicycle each day. The university responded by constructing an extensive shared-use path and trail system that integrates with the city and county's path network.

UCSB's bicycle-pedestrian path system contains both shared and separated paths, but the emphasis in recent years has shifted to suburban solutions that completely separate bicycle and pedestrian paths for safety reasons, says Campus Planning and Design Director Tye Simpson. The university's path system includes six campus roundabouts and four grade separations that help minimize conflicts between pedestrians and bicyclists. These facilities include refuge islands so pedestrians have to wait only long enough to cross one lane of bustling bicycle traffic on the way to their next classes.

"Starting in the 1980s, our bicycle traffic volume skyrocketed," Simpson says. "The recreational approach, where everyone shared the pathways, wasn't working. So we started constructing bike-only routes so bicyclists didn't conflict with pedestrian traffic. Some of our bike routes are like freeways. The roundabouts were our way to deal with bike and pedestrian conflicts at intersections."

Simpson says the challenge now is sharing routes because in a more urban context there is not enough space for every transportation mode to have its own exclusive facility.

Roundabouts at Critical Intersections

The municipality of Anchorage, AK, is in the process of constructing two roundabouts as part of a major upgrade and expansion of its Chester Creek Trail system. City officials observed that rider inattentiveness and speeding created potential safety problems at certain intersections. Roundabouts, they determined, would help keep traffic flowing and minimize conflicts between faster and slower riders. One of the roundabouts will be at a critical intersection about halfway between a University of Alaska Anchorage (UAA) residential complex and the Alaska Native Medical Center, near the shores of University Lake. The other roundabout will be farther north, at a connector to the Northern Lights Trail north of UAA and Alaska Pacific University. The Alaska Department of Transportation and Public Facilities is constructing the roundabouts for Anchorage using SAFETEA-LU funds.

"We included the two roundabouts in the design because we wanted to keep bike speeds down at those locations and keep people traveling on the correct trail," says Lori Schanche, coordinator of nonmotorized transportation for Anchorage. "The location of the roundabouts coincides with intersections of minor spur trails, and since we were not able to obtain additional right-of-way, we wanted to keep the main trail flow obvious."

The roundabout designs are based on a previous bicycle-pedestrian roundabout built in the mid-1990s along the Campbell Creek Greenway near C Street. That roundabout, which had to be torn out when two adjoining trail spurs were removed, was considered by Anchorage to be a success. "We didn't have any incidents or issues with that roundabout," says Schanche.

Another application of a roundabout at a critical intersection is in the Cape Cod area of Massachusetts. The Massachusetts Department of Conservation and Recreation (DCR) constructed the Cape Cod Rail Trail in the 1970s along an abandoned railroad right-of-way. Extensive upgrades since the early 1990s include a tunnel and two bridges over Highway 6. DCR also built an extension from Harwich to Chatham along another former railroad right-of-way.

DCR installed a bicycle-pedestrian roundabout in 1998 at the intersection of the rail trail and the new Harwich-Chatham extension to slow bicyclists and keep

South Suburban Park and Recreation District

The South Suburban Park and Recreation District recently built a roundabout at the junction of the Lee Gulch and South Platte River trails, shown here. Not visible on the right side of the photo is the Lee Gulch Trail intersecting the South Platte River Trail. Notice the worn "shortcut" path through the roundabout inner circle. The district later placed several large boulders and additional landscaping inside the roundabout circle to discourage users from taking shortcuts through the inner circle.

Libby Montero

This roundabout on a recreational trail in The Villages, FL, is open to golf carts, bicycles, and pedestrians, sometimes creating potential near-miss conflicts as shown here. The Florida retirement community of 72,000 residents has more than 145 kilometers (90 miles) of transportation trails, including permitted travel for golf carts, bicyclists, and pedestrians on residential streets, providing access to recreational, commercial, and professional services and saving an untold number of car trips each year.

traffic flowing in the right direction. The roundabout's relatively large grassy inner circle, measuring about 30 meters (100 feet) in diameter, is equipped with such amenities as bicycle parking, benches, picnic tables, and trash cans.

Designing the Bicycle-Pedestrian Roundabout

If transportation planners opt for a bicycle-pedestrian-only roundabout, what guidelines should they apply in the facility's design, construction, and operation? Actually, there are no authoritative sources on the topic, which provides an opportunity for bicycle and pedestrian transportation specialists to work with one another and organizations such as the American Association of State Highway and Transportation Officials (AASHTO), Institute of Transportation Engineers (ITE), and Transportation Research Board (TRB) to develop uniform guidelines.

In the absence of definitive guidelines, some roundabout designers use the AASHTO *Guide for the Development of Bicycle Facilities* as a reference on how to proceed with geometric layout, signing, marking conventions, and other critical details. The design guidelines for shared-use paths offer general suggestions that transportation planners can apply to bicycle and pedestrian roundabouts. For example, a minimum width of 1.8 meters (6.0 feet) is recommended for a one-direction shared-use path, useful information for ensuring that entry and circulating lane widths are not scaled down too severely.

But the criteria dealing with horizontal alignment, curvature, and superelevation are mostly relevant to continuous segments of paths and trails, not necessarily intersections. Although planners may glean helpful information from the AASHTO guide, it is currently up to each individual designer to relate the more general criteria to the detailed design necessary for a bicycle and pedestrian roundabout.

One option might be to apply standard engineering principles for traditional motor vehicle roundabouts and then adjust the designs based on the smaller size and slower speeds of bicycles. Another would be to perform tests involving pedestrians and bike users at roundabouts of different designs to help develop standards. A helpful starting point for bicycle- and pedestrian-only design is to recall the key principles of modern roundabout design: speed through the roundabout is reduced, entry geometry provides adequate deflection to aid in speed reduction, circulation has an intuitive orientation (to favor the counterclockwise for example), and entering users must yield the right-of-way to users already circulating in the roundabout.

The first principle, speed reduction, is likely to have the most profound influence on the overall size of a bicycle-pedestrian roundabout due to the direct relationship between speed and curvature. According to FHWA's *Roundabouts: An Informational Guide* (FHWA-RD-00-67), achieving a 30–50 percent speed reduction of vehicles through the roundabout compared to approach speeds is desirable. The same would likely hold true with bicycle-pedestrian roundabouts. The reduction in speed at the roundabout approach could potentially improve safety.

For a shared-use facility with a design speed of 32 km/h (20 mi/h) (per the AASHTO guide), this yields a circulating speed range of about 16 to 22 km/h (10 to 14 mi/h). Even at speeds this low, bicycles remain stable and the entry and circulating curve geometries are kept to reasonable and minimal scales. These geometries enable a bicycle-only roundabout to occupy a much smaller footprint compared to a motor vehicle facility. And, as with vehicle roundabouts, this significant reduction in speed speaks to better safety performance—for all users.

Additional design detail considerations might include use of sloped or mountable curbing for the raised features of a roundabout, such as splitter islands and a central island, avoiding the potential tripping hazard of a raised, 15-centimeter (6-inch) curb. Also, designers should choose the location and height of vegetation and signing carefully, because low-hanging features when placed near the traveled edge of the path can interrupt sight lines and might prove dangerous to bicyclists and pedestrians. Furthermore, facilities must meet accessibility requirements.

Michael Moule, president of Livable Streets Inc. of Tampa, FL, a bicycle and pedestrian facilities consulting firm, says the following about designing a roundabout on shared-use paths: "I would start by

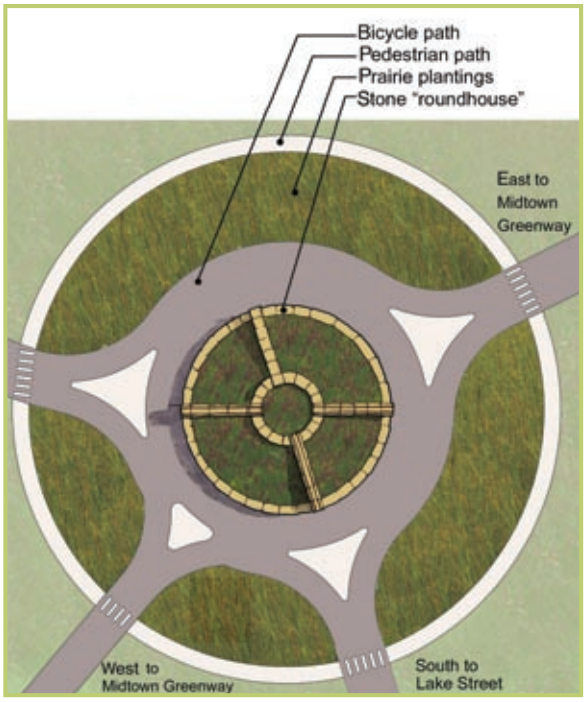
not building it too small and otherwise follow good engineering and roundabout design principles. I've seen several proposals for little circles on paths with about 20-foot [6.1-meter] outside diameters. I think this in general is too small. It's not large enough to allow users to circulate appropriately, and the resulting 5-foot [1.5-meter]-diameter center island becomes more of a fixed-object hazard than anything else."

The roundabouts at UCSB have outside diameters of about 19.8 meters (65.0 feet), Moule says. "That's about right. If the circle is too large, say, over 100-foot [30-meter] outside diameter, users won't want to go all the way around and will tend to take shortcuts when making left turns."

The city of Minneapolis learned what happens when a bicycle roundabout is designed too large. In 2007, the city sought to construct the State's first bicycle roundabout at the intersection of the Midtown Greenway and Hiawatha Trail, a high-traffic location with up to 4,000 users per day. The roundabout was one of several bicycle and walking trail projects the city wanted to build as part of FHWA's Nonmotorized Transportation Pilot Program.

When it came time to design the roundabout, Minneapolis had to "fly by the seat of its pants," says Don Pflaum, the city's bicycle coordinator and a transportation planner. "We had to look at how to accommodate both bicyclists and pedestrians, how to deal with the high traffic volumes, whether to separate the bicyclists from the pedestrians, how to slow down the bicyclists, what the design speeds should be—all of that. There definitely need to be some national guidelines on this."

Minneapolis ultimately came up with a preliminary design that included a shared bicycle-pedestrian facility with a 4-meter (13-foot)-wide path, which was divided into a 2.1-meter (7.0-foot) lane for bikes and 1.8-meter (6.0-foot) lane for pedestrians. The roundabout also featured a 30-meter (100-foot)-diameter inner circle, which the city and public agreed was too large and too costly.



This diagram depicts a proposed bicycle-pedestrian roundabout that Minneapolis wanted to construct at the high-traffic intersection of the Midtown Greenway and Hiawatha Trail. The project was cancelled after the roundabout was deemed too large and too costly. *Photo: City of Minneapolis.*

"When we got to preliminary design and took the proposal out to the public for comment, we realized the roundabout was larger than we wanted for our budget," says Jack Yuzna, a principal with the Minneapolis Department of Public Works who worked on the project. "The larger-than-expected diameter increased the cost almost four times, so due to budgetary constraints we've decided not to move forward with the roundabout at this time."

A New Tool in the Box

Shared-use paths and trail systems used for both transportation and recreation continue to grow in number and miles. As these facilities expand, the potential for them to intersect increases, along with the potential for intersection-related crashes.

Sources mentioned in this article offer some guidance to designers, but no authoritative guidance document exists that designers can turn to for explicit details on how to provide appropriately sized roundabouts for bicyclists and pedestrians only. And although many bicycle- and pedestrian-only roundabouts have been built, the risk of not moving forward with national guidance could lead to missed opportunities, as in Minneapolis.

Given the active involvement of ITE, TRB, and others in implementing traditional vehicle roundabouts, perhaps the time is right to convene an effort to produce guidelines for bicycle-pedestrian-only roundabouts by bringing together the necessary expertise from around the Nation: roundabout designers, bicycle and pedestrian specialists, and trail and path planners. Whether on a college campus or other shared-use paths, the roundabout is an option that might minimize bicyclist and pedestrian conflicts and improve overall safety and mobility.

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Editor's note: Because California law only requires bicyclists under the age of 18 to wear helmets, some of the bicyclists shown in this article are not wearing helmets. For safety, however, FHWA and NHTSA recommend that all cyclists wear proper helmets.