



Appendix A

RESEARCH & RESOURCES

Who are We Designing For?

People. Pedal. Power.

Transportation Equity

Policy, design and practices in our transportation system have led to inequities, disproportionately affecting low-income, people with disabilities, Black, Indigenous and People of Color, women and children. Advancing transportation equity requires a shift in transportation system design and decision-making processes. For example, it might mean more investment in areas that have been historically underserved. It also requires underserved users and communities to share in the power of decision-making through engagement and design processes.

A BIKE NETWORK FOR ALL ABILITIES, YEAR ROUND

To become a premier bike-friendly city, Roseville's bicycle network must **accommodate people biking of all levels, ages, abilities and preferences, and prioritize less confident and more vulnerable people (e.g., children)**. The network must also accommodate people in all seasons.

People bike for different trip purposes. Transportation-related trips are categorized as trips to work, school, for errands (such as groceries) or connecting to transit. Recreational trips are considered trips for physical activity or leisure.

Depending on trip purpose, people have different preferences. For example, people biking to the grocery store or work often prioritize directness as time is important, whereas people out for a recreational bike ride value attractiveness and comfort more than a direct route. Regardless of trip type, safety is critical for all people, especially when ensuring children have safe routes to school, parks and other places. In addition, people's preferences and comfort for biking may change by time of day, who they are traveling with (e.g., children), weather or other factors.

Understanding the diversity and nuance of trip purpose and bicyclists' preferences is an important part of planning for bikeways throughout Roseville. This Plan intentionally avoids designating a bikeway for a particular trip purpose. Often, the same bikeway network is used for both transportation and recreational trips. **To make all forms of bike trips a real option for more people, the Plan establishes the need, and incremental steps, to prioritize the "interested but concerned" type of bicyclist who want to bike more, but do not currently feel safe or comfortable doing so. Meeting the needs of this cross section in bike network and facility design will create a low stress, all abilities network that is inviting for the majority of the community.**

Safer Streets By Design

Street design and allocation of street space play a large part in managing vehicle speeds, which are directly correlated to injury and mortality outcomes in crashes involving bicyclists and pedestrians. For example, narrowing and/or removing travel lanes allows space to be reallocated for bike lanes, buffered bike lanes or fully separated or protected bike lanes (also called cycle tracks). Striping bike lanes on a street visually narrows the street, which can reduce the speed of drivers and provide greater comfort to people walking.

Installing intersection treatments like modern roundabouts, a Federal Highway Administration (FHWA) Proven Safety Countermeasure, reduce drivers' speeds and decrease the distance people walking and biking need to cross at intersections. In addition, they increase vehicle capacity at [intersections without the need to add vehicle lanes, allowing street space to be reallocated for protected bike lanes or shared use paths](#). [Designing streets that are safer and more comfortable](#) for people biking benefits the safety of other users, creating a positive feedback loop.

Streets that are complete put people first and become even greater community assets. They are places where people want to bike, rather than places where people can bike if they must. In turn, more people choose to bike.

Toward an All Abilities Bike Network

A high-quality bicycle network can significantly impact community access, convenience, well-being and environmental and economic resiliency. A safer, more connected and balanced network will encourage and promote bicycling for everyday trips, giving people more transportation choice. Plus, biking is a fun way to enjoy Roseville!

Bike Network Principles

To provide transportation choice and encourage biking trips, bikeways must be:

SAFE

Does the route minimize risk of injury and danger (both traffic and personal safety)?

COMFORTABLE

Does the route appeal to a broad range of age and ability levels and are there user amenities (e.g., places to sit, bike racks, protection from the weather)?

COHERENT

How easy is it to understand where to go? How to navigate a crossing or an intersection? How connected is the network?

DIRECT

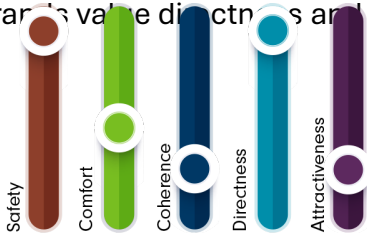
Does the route provide direct and convenient access to destinations?

ATTRACTIVE

Is the route green, well-maintained and celebrate local identity?

The significance of each principle may vary from bikeway to bikeway and from person to person. For example:

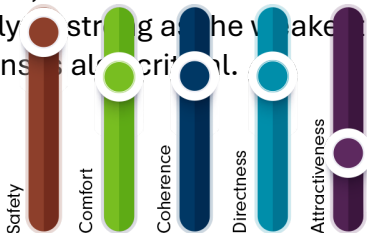
Commute or Errand Trips: People commuting or running errands value directness and safety.



Recreational or Leisurely Trips: For recreational trippers the biggest shift is in directness and attractiveness.



School Trips: This refers to elementary aged school children. This is the hardest group to design for as safety is vital, but all characteristics are important. The route is only as strong as the weakest link, so safety at intersections is also critical.



Bicyclist User Types

Low Stress Tolerance

High Stress Tolerance



NO WAY
NO HOW
33

INTERESTED BUT
CONCERNED
51-56%

ENTHUSED &
SOMEWHAT
CONFIDENT
5-9%

HIGHLY
CONFIDENT
4-7%

0%
People will
not bike out
of
disinterest
or inability to
do so.

People in this group would like to bike more, but do not feel safe on busy streets with fast moving traffic nearby. Biking on streets with fewer and slower-moving cars or in a space separated from vehicles would help them feel more comfortable. National and state research finds, on average, **over half of the population are interested in bicycling more often** but are **concerned about having to share the road with motor vehicles. They would like lower stress street environments to bike.**

People who currently bike for transportation. Sometimes they are comfortable sharing the street with drivers but would prefer to ride on streets with bike lanes or separated paths.

People who will ride regardless of roadway conditions and bicycle facility. Highly confident riders represent the smallest category of people willing to bike.

Comfort Types of Bicyclists

Low Stress Tolerance

High Stress Tolerance



WHAT IS TRAFFIC STRESS?

Bicycle Level of Traffic Stress (LTS) is a way to evaluate the stress a person bicycling may feel when they ride on a road close to traffic. It assigns a stress level to streets and bikeways based on factors such as:

- Traffic speed
- Number of travel lanes
- Number of vehicles
- Frequency of on-street parking turnover
- Ease of intersection crossings
- Presence of bike lanes
- Presence of physical barrier to bike lane

LTS
1

Most children will feel safe bicycling on these streets.

LTS
2

The “interested but concerned” adult population will feel safe bicycling on these streets.

LTS
3

Streets that are tolerable to “enthused and somewhat confident” riders who still prefer having their own dedicated space.

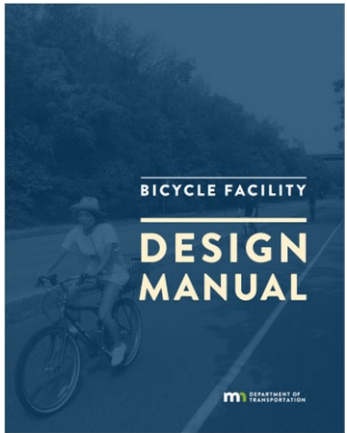
LTS
4

High stress streets with high-speed limits, multiple travel lanes and limited or non-existent marked bikeways.

LTS LEVEL	DESCRIPTION				HIGHLY CONFIDENT BICYCLIST WILL RIDE	ENTHUSED & SOMEWHAT CONFIDENT BICYCLIST WILL RIDE	INTERESTED BUT CONCERNED BICYCLIST WILL RIDE
LTS 1	 Neighborhood street	 Bike and pedestrian path separated by paint	 Off-street bike path	 Off-street bike and pedestrian path	YES	YES	YES
LTS 2	 Neighborhood street	 On-street bike lane with painted buffer	 On-street bike lane with physical barrier		YES	YES	Inviting to most adults, but demands more attention than might be expected from children
LTS 3	 On-street bike lane	 On-street bike lane			YES	Often, but more variability in level of comfort	NO
LTS 4	 Shared-use collector or arterial street				YES	NO	NO

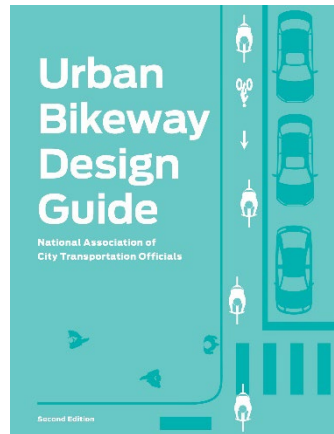
Best Practices

The bike network presented in this Plan, and associated bikeway recommendations, are based on state and national evidence-based best practices in bikeway design. Use, adopt or endorse the following design guides to support decisions about design that will be made during later stages of bikeway planning and implementation.



[Bicycle Facility Design Manual](#)

Minnesota Department of Transportation (MnDOT)



[Urban Bikeway Design Guide, 3rd Edition](#)

National Association of City Transportation Officials (NACTO)



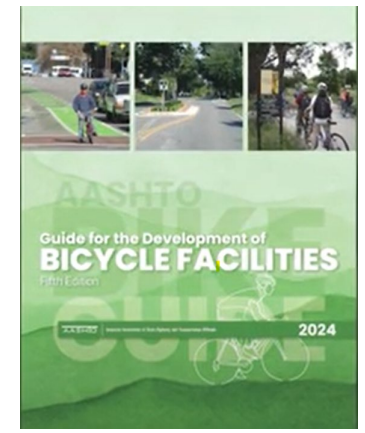
[Urban Street Design Guide](#)

National Association of City Transportation Officials (NACTO)



[Bikeway Selection Guide](#)

Federal Highway Administration (FHWA)



[Guide for the Development of Bicycle Facilities, 5th Edition](#)

American Association of State Highway and Transportation Officials (AASHTO)

The city can also refer to the Manual on Uniform Traffic Control Devices for Streets and Highways issued by FHWA for guidance on traffic control, pavement markings, and signing related to bikeways.

Complete Streets

Complete Streets is an approach that integrates people and place in the planning, design, construction, operation and maintenance of streets. A Complete Streets policy helps ensure a comprehensive and connected multimodal transportation system that prioritizes safety over speed, more equitably balances the needs of different modes and supports local land uses, economies, cultures and natural environments.

Complete Streets look different from street to street. There is no “standard,” rather a holistic and context sensitive approach is taken to address the unique needs of users and characteristics of place. For example, to make biking safer, more accessible and inviting, a “collector” or “arterial” street might include buffered or protected bike lanes to account for higher traffic speeds and volumes. On a residential street, people biking and driving might share the lane and mix due to the low traffic speeds and volumes.

Roseville’s Complete Streets Policy

“Roseville’s transportation system is robust and complex, providing facilities for vehicles, freight, walking, bicycling, and transit, and prioritizing connectivity between essential community hubs such as neighborhoods, schools, shopping centers, and parks. All modes of transportation are equally safe and accessible, facilitating the mobility of all community members and especially vulnerable populations.”

MnDOT Complete Streets Policy

“MnDOT must follow a complete streets approach in all phases of planning, project development, operation and maintenance activities.”

One of the four policy goals is to **“increase bicycling and walking as a percentage of all trips.”** The policy states higher priority should be given to address identified user needs on projects that:

- **Equity:** Have a higher proportion of people with disabilities, people of color, older adults, children or low-income
- **Mode Shift:** Have a higher probability of increasing the number of people walking, biking or taking transit
- **Safety:** Addresses a significant safety issue for vulnerable users
- **Connectivity:** Addresses a gap or barrier created by prior transportation investments
- **Plan Alignment:** Are identified in a local or regional plan

Ramsey County All-Abilities Transportation Network

Ramsey County All-Abilities Transportation Network resolution (2016) to advance the county vision: “A vibrant community in which all are valued and thrive.” Public works uses an evaluation checklist for road, trail and transit projects to ensure the resolution is put into practice.

Safe System Approach

The Safe System Approach is the U.S. DOT's guiding paradigm for traffic safety. More communities and agencies, including MnDOT are following the Safe System Approach to traffic safety, which aims to eliminate fatal and serious injuries for all road users, including the most vulnerable users – people walking, bicycling and rolling.

The Safe System Approach focuses roadway safety efforts on ways to effectively:

1. **Design for the people in the system**
2. **Manage vehicle speeds by design**
3. **Employ proactive tools to manage risks across an entire roadway network, especially for the most vulnerable users**
4. **Foster integrated, collaborative and coordinated action**



[MnDOT] can prevent traumatic life-altering, costly crashes by focusing on creating low-speed environments in population centers and around other destinations where people are likely to walk [and bike]."

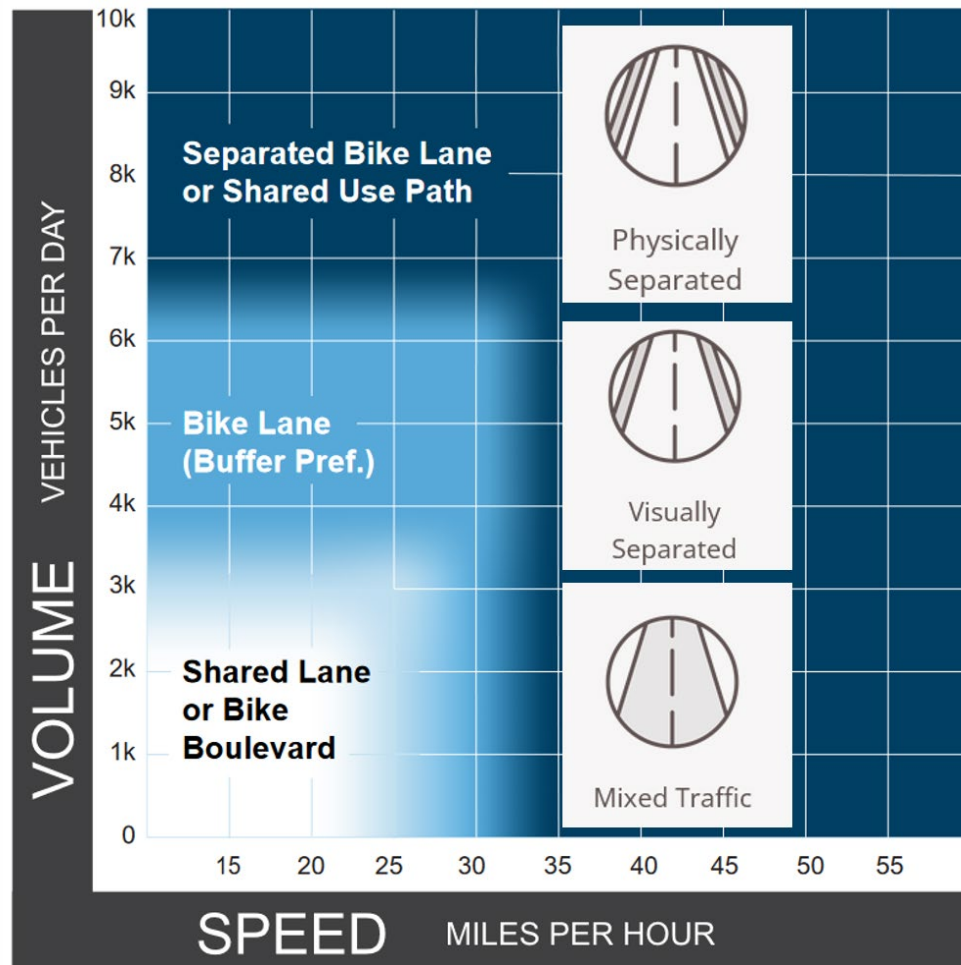
- Statewide Pedestrian System Plan



Learn more about the Safe System Approach:

<https://www.transportation.gov/NRSS/SafeSystem>

Safe System: When to Mix, When to Separate



BIKEWAY SELECTION GUIDE

The chart (left) was developed by Federal Highway Administration (FHWA) and used by MnDOT in the Bicycle Facility Design Manual. It is considered a best practice when selecting the best bikeway for a street.

A key aspect to ensure safer roads by design is **separating users in the street space**. The **greater the vehicle speed** and the **higher the vehicle volume**, the **greater the physical separation** needs to be between people driving and people biking.

Separate and protect people from moving traffic when **vehicle speeds are above 20 mph**. This can be done visually with painted bike lanes or buffered bike lanes or physically with bikeways fully separated by curbs, street trees, on-street parking and more.

A **shared street environment**, where users are mixed, can be created for **people biking and driving** when **speeds are at or below 20 mph and vehicle volumes are relatively low**. This is a common environment on neighborhood residential streets. Traffic calming tools, such as neighborhood traffic circles, chicanes, pinch-points and curb extensions can be used to further manage and achieve 20 mph speeds on residential or low volume streets.

Chart adapted from *Federal Highway Administration Bicycle Selection Guide (2019)*.

Note: Chart assumes operating speeds are similar to posted speeds. If they differ, operating speed should be used rather than posted speed.

How to Select Bike Facility Type

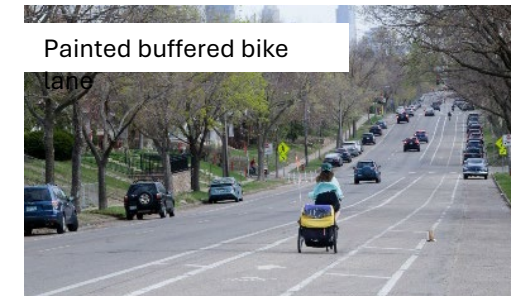
There are many different types of bike facilities. These facilities are all different in the way they interact and operate with other users of the street. The range of bicycle facility types is also always evolving. Determining how each bikeway will function requires detailed examination of each corridor, using several interrelated concepts and approaches. As the city implements bikeways, they should consider the following elements:

- **Context Sensitive:** Balance the community's economic, social and environmental needs and values alongside the corridor's operational needs. This includes considering existing and future land use, origins and destinations along the facility, and how the type of facility might vary along a given route. Given that streets in Roseville are already built out, full reconstruction projects provide the most opportunity to reallocate street space for people biking. However, interim improvements achieved through restriping, mill and overlay projects, or with temporary materials are important as Roseville works towards its full vision.
- **Complete Streets:** Evaluate streets during any stage of a street project (e.g., planning, design, maintenance) to provide safe, comfortable and inviting facilities for all transportation users, especially the most vulnerable.
- **Safe System Approach:** Prioritizes safety over speed. Focus on efforts to effectively design for all transportation users' safety by managing vehicle speeds through design. This is a proactive approach that provides guidance on how to select bike facilities and other proven safety treatments based on traffic speeds and volumes.
- **Engagement:** Thoughtful engagement with the community living or working along the bikeway and those using the bikeway.

Bikeway Facility Types

The bikeway routes and facility types discussed in this Plan are defined as:

- **Protected bike lanes:** Bikeways on busy streets that are physically separated from moving vehicle traffic either using landscaping, bollards or other vertical features such as flexible delineator posts or curb. Protected bike lanes can be at the same level as the street or at curb-level. Protected bike lanes may be one-way or two-way and are only intended for people biking or using similar modes.
- **Shared-use path:** Bikeways shared by bicyclists and pedestrians for bi-directional travel, which are typically 10-feet-wide or more. Shared-use paths include paths at curb-level along a busy street or paths farther from the street, like through a park.
- **Painted bike lanes or painted buffered bike lanes:** Bike lanes marked on the roadway with white paint. As space allows, a painted buffer space can be added to provide visual separation between the bike lane and moving traffic, parked cars or both.
- **Traffic-calmed local streets:** Low-speed, low traffic volume streets where bikes share the street space with vehicles. Shared-use streets include both neighborhood greenways or bicycle boulevards (streets that prioritize bike travel). Shared lane pavement markings may be used to reinforce the bike route. Traffic-calmed local streets would apply to a subset of Roseville's local city street network.



Core Concepts

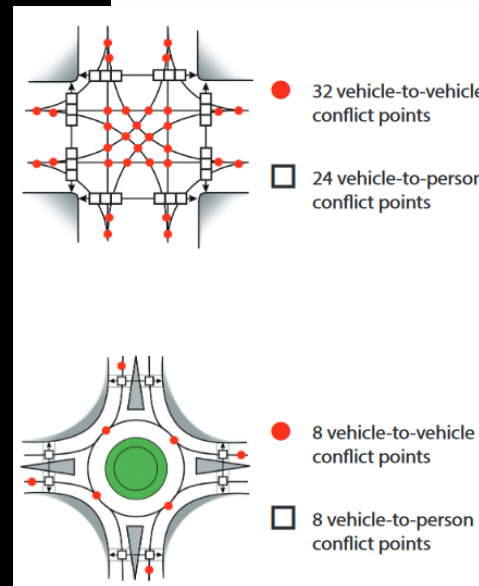
MODERN ROUNDABOUTS

A SAFER CHOICE BY DESIGN

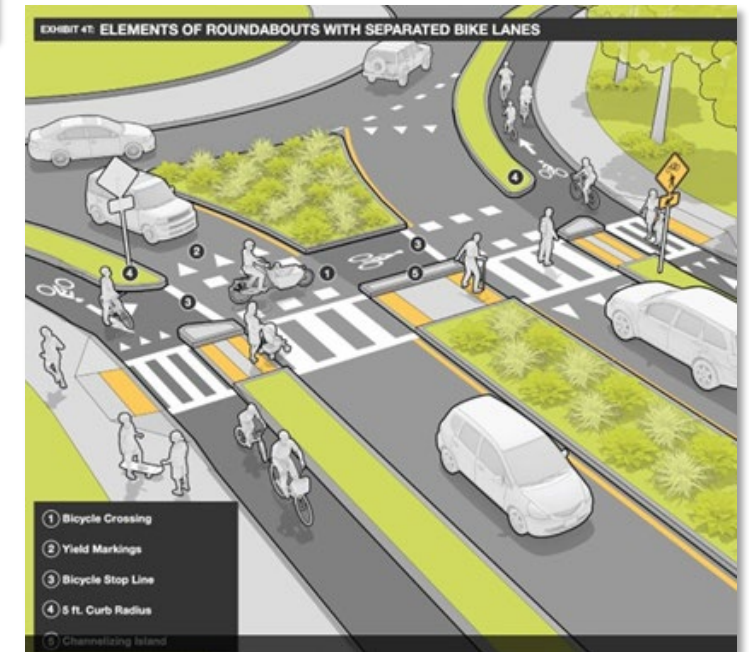
Modern roundabouts, including mini or compact roundabouts, are a Federal Highway Administration (FHWA) **Proven Safety Countermeasure**, creating a safer intersection for all users:

- 90% reduction in fatal crashes
- 75% reduction in injury crashes
- 30-40% reduction in pedestrian crashes
- 10% reduction in bicycle crashes
- 30-50% increase in traffic capacity

A single-lane modern roundabout can handle up to 25,000 vehicles per day (a compact roundabout slightly less); a double-lane roundabout can handle up to 43,000 vehicles per day. When designed properly, roundabouts ensure motorist speeds of 15-23 mph, which increases drivers' ability to judge and react to other people driving, walking and biking. Roundabouts also create gateway treatments, providing space for landscaping, local art and signage.



- 📷 Photos (top to bottom right):
- Domed mini or compact roundabout with curb extensions in winter. (Detroit Lakes, MN)
 - Compact roundabout with a painted rainbow creates a sense of arrival and welcome. (Richfield, MN)
 - Single lane roundabouts have fewer vehicle-to-vehicle conflict points and vehicle-to-person conflict points than a signalized intersection.
 - Massachusetts DOT diagram showing guidance for roundabouts with protected bike lanes and crossings.



Core Concepts

PROTECTED INTERSECTIONS

DEDICATED SPACE FOR EACH MODE

Protected intersections provide dedicated space for each mode of travel: walking, biking and driving. They can be implemented at stop-controlled or signalized intersections and are most often used with separated bike lanes, but may be used with conventional bike lanes, paved shoulders or even shared lanes. A variation on the standard protected intersection can also be designed for two-way bicycle traffic on one side of the road.

Protected intersection benefits:

- Provide clear right-of-way assignment between modes
- Maintain physical separation between bicyclists and motor vehicles through an intersection
- Place queued bicyclists in front of and in clear view of drivers
- Improve visibility of bicyclists for motorists while turning
- Clearly define pedestrian and bicycle operating spaces
- Reduce pedestrian and bicycle crossing distance
- Reduce motor vehicle turning speed

Elements of protected intersections can be implemented without reconstruction using paint and bollards. See NACTO's *Don't Give Up at the Intersection* (2019).

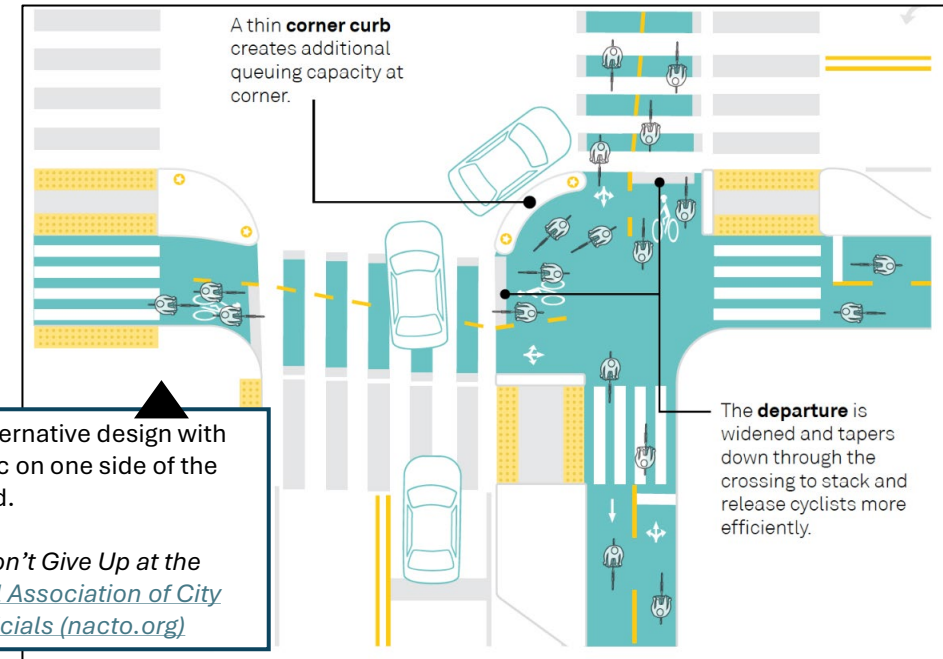
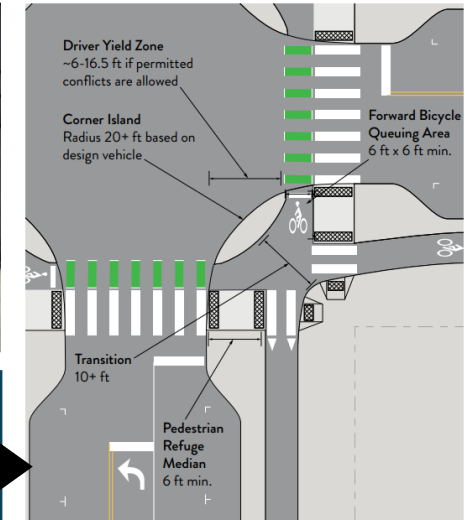
Source: MnDOT Bicycle Facility Design Manual, 5-37 and 5-38.

Truck Movements:

Protected intersections would be most appropriate for bikeways on roads comprising the ½ mile arterial grid in Roseville (primarily County roads). For this reason, protected intersections would need to accommodate truck turning movements and the concept designs shown on this page would need to be adapted. However, there are examples in the Twin Cities metro where protected intersection elements have been implemented on County roads that accommodate truck turns.



- People using a protected bike intersection. (Davis, CA)
- Graphic illustrates key features: a corner island, bicycle queueing area, driver yield zone and pedestrian refuge median. Source: MnDOT Bicycle Facility Design Manual



Graphic illustrating alternative design with two-way bicycle traffic on one side of the road.

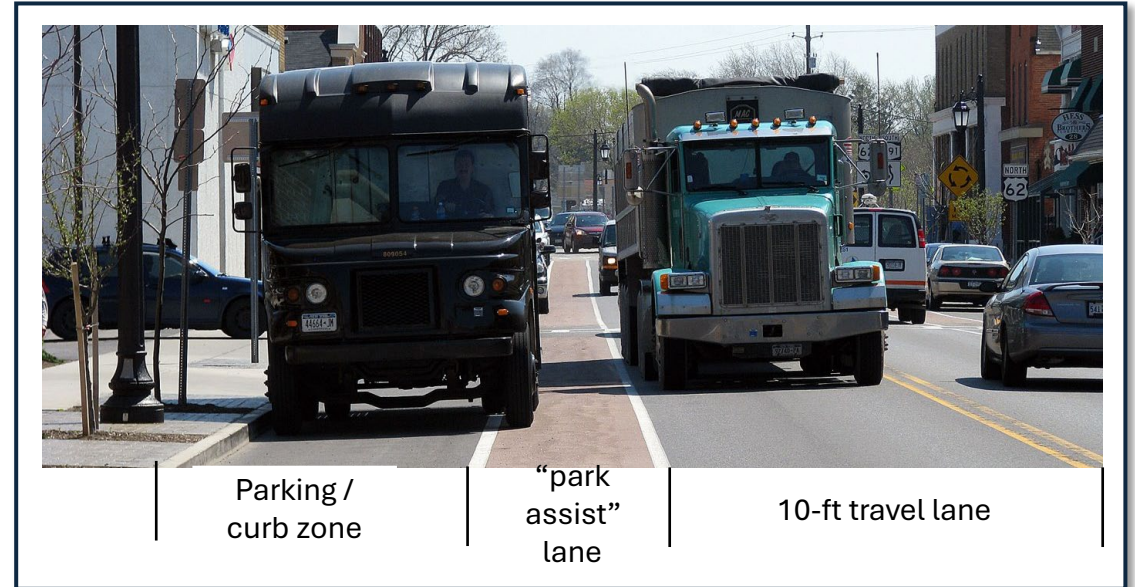
Source: NACTO, "*Don't Give Up at the Intersection*" [National Association of City Transportation Officials \(nacto.org\)](https://nacto.org)

Core Concepts

RIGHT-SIZING STREETS

More communities are prioritizing a people-first approach to street design. To make streets safer for people walking, biking and driving, street spaces is being reallocated by reducing vehicle lane widths and removing lanes altogether. The gained space is reallocated towards wider sidewalks, bike lanes, separated bike lanes (also known as protected bike lanes or cycle tracks), street trees, on-street parking and more.

Right-sizing 5- or 4-lane streets to 3- or 2-lane streets works best on streets that have daily traffic volumes of 8,000 to 20,000 vehicles. As streets reach the higher traffic volumes additional intersection treatments, such as the modern roundabout, might be needed to more effectively manage vehicle traffic.



📷 Photo (above): Main Street in Hamburg, NY is a major state truck route carrying 12,000 vehicles per day. The town of Hamburg and NYDOT replaced four intersections with single-lane modern roundabouts, removed two travel lanes and narrowed the remaining lanes to 10-feet, allowing wider sidewalks, park assist lanes and additional street trees.

Core Concepts

RIGHT-SIZING STREETS



Travel lanes could be as narrow as 10 feet. Narrower lanes and narrower street width are associated with fewer crashes.”

- *MnDOT Technical Memorandum No. 17-12-TS-05 and No. 18-09-TS-06*
- “Ten-foot lanes do not result in an increase in crashes or reduce vehicle capacity on roads with speeds of 45 mph or less. Narrower lane widths can contribute to lower vehicle operating speeds, which can increase safety for all roadway users.”
- *FHWA Bicycle Selection Guide, 2019*

Travel Lane Width: Narrowing lanes can reduce the operating speed of traffic while also providing the additional space needed for bikeways. Ten-foot-wide lanes have a positive impact on a street’s safety without impacting traffic operations. To support vulnerable users like pedestrians and bicyclists, streets should maximize buffer space and work to manage safe speeds for all by design.

National Association of Transportation Officials (NACTO):

<https://nacto.org/publication/urban-street-design-guide/street-design-elements/lane-width/>

Context Sensitive: AASHTO’s *A Policy on Geometric Design of Highways and Streets*, commonly referred to as the “Green Book,” provides flexibility to use 10-foot-wide travel lanes in a variety of situations depending on operating speeds, volumes, traffic mix, design vehicle, horizontal curvature, use of on-street parking and land use context.

Minnesota State Aid Standards (Part 8820.9941) note minimum lane width of 10 feet may be allowed on streets with bike lanes when design speeds are less than 35 mph and when all street factors are considered (e.g., bus route, traffic mix, land use). It also notes engineering judgment should be used.

Core Concepts

BIKE LANES

SAFER STREETS FOR ALL

Cities investing in bicycling infrastructure—from bike lanes to fully separated or protected bike lanes (or cycle tracks)—achieve environmental and safety advantages through the increase of bicycle use. Bike lanes are one of FHWA's **Proven Safety Countermeasures**. Conventional bike lanes designate an exclusive space for people biking with pavement markings and signage. **Many benefits of bike lanes go beyond the bicyclist:**

- Creates visual separation between people biking and driving
- Increases predictability of bicyclist and motorist positioning and interaction
- Visually reminds motorists of bicyclists' right to the street
- Improves comfort for pedestrians by providing additional buffer space to the sidewalk
- Improves emergency response by providing space for motorists to pull over
- Supports more compact intersections as bike lanes provide an effective turning radius for large vehicles, allowing for other tools such as curb extensions to support people on foot

BIKE LANE SAFETY BENEFITS

49% 

in total crashes decreased on 4-lane undivided collectors and local roads due to marked space and lane reduction.

30% 

in total crashes decreased on 2-lane undivided collectors and local roads due to marked space.

Buffered bike lanes are almost always higher comfort than conventional bike lanes. Fully separated bicycle lanes provide further safety benefits and are more comfortable to people of all abilities due to the greater separation between people biking and driving.

Sources:

<https://highways.dot.gov/safety/proven-safety-countermeasures/bicycle-lanes>
<https://nacto.org/publication/urban-bikeway-design-guide/bike-lanes/>
<https://www.aarp.org/content/dam/aarp/livable-communities/livable-documents/documents-2014/Livability%20Fact%20Sheets/Bicycling-Fact-Sheet.pdf>

Core Concepts

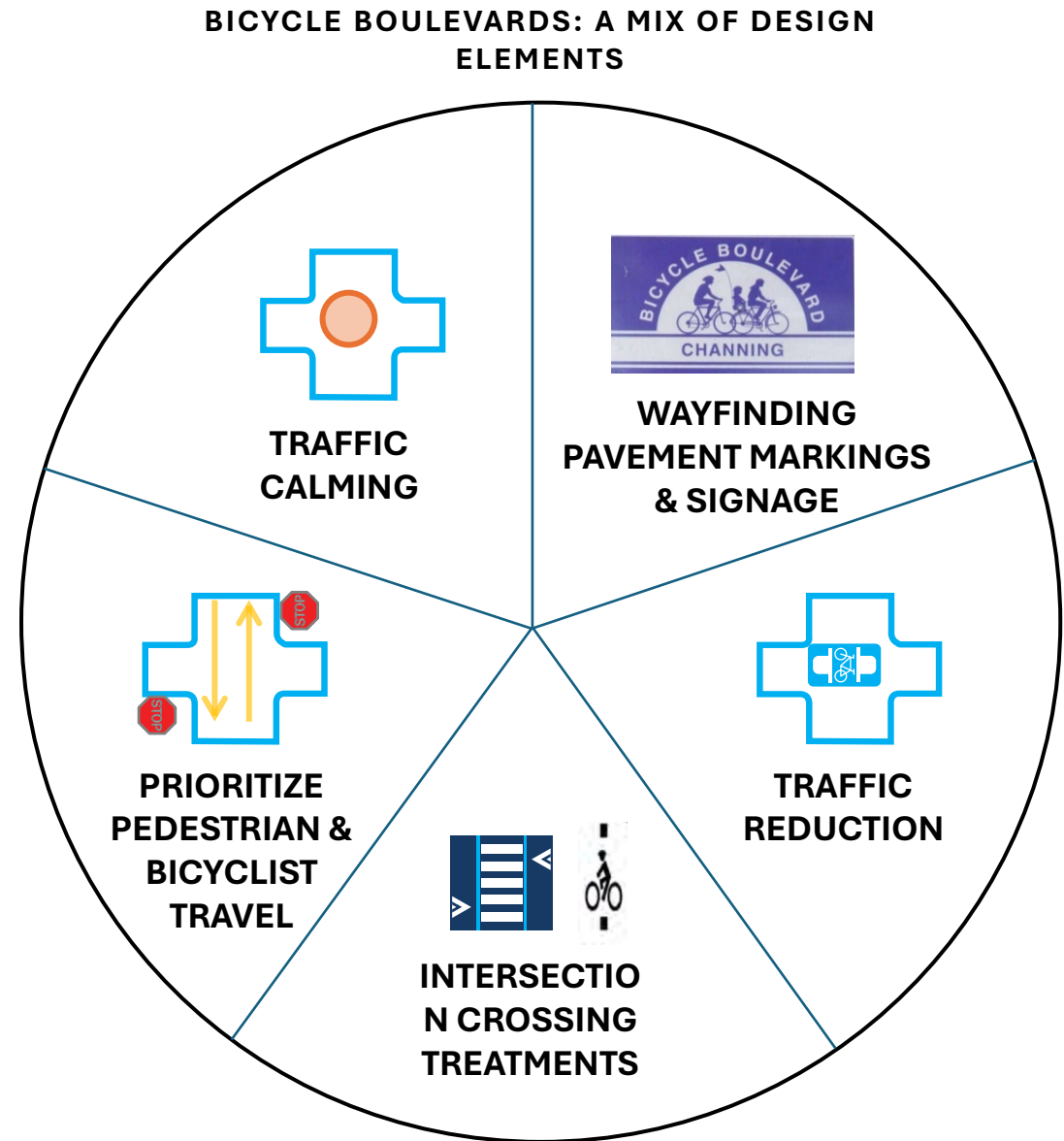
BICYCLE BOULEVARD

PRIORITIZE NEIGHBORHOOD BIKEWAYS

Bicycle boulevards (also called neighborways or neighborhood greenways) are **low-volume** and **low-speed residential streets** that **prioritize people walking** and **bicycling** and discourage motor vehicle through traffic. Street design elements are mixed and matched along the corridor to:

- Reduce or maintain low motor vehicle volumes
- Reduce or maintain low motor vehicle speeds
- Create a direct, coherent (logical) and continuous bikeways
- Create access to key community destinations
- Create comfortable and safe intersection crossings
- Give priority to people walking and biking, reducing delay

Combined, these treatments create an **attractive, convenient and comfortable shared street environment** that is welcoming to people of all ages and abilities.



Adapted from Portland Bicycle Boulevard
Guide:

[PortlandBicycleBoulevardGuidebook.pdf](#)

Core Concepts

NEIGHBORHOOD TRAFFIC CIRCLE

SLOWER IS BETTER ON RESIDENTIAL STREETS

Traffic circles (also called mini-circles) work to reduce vehicle speeds in a few ways.

First, they interrupt the “straightaway” feel of many residential streets that can signal to drivers to go a faster speed than the posted speed. Second, traffic circles narrow the intersection, slowing drivers’ through and turning movements. Slower intersection speeds increases motorists’ yielding behavior to people walking and biking.

Traffic circles are a proven safety treatment, reducing all types of intersection crashes by 90% and injury crashes by 97% (Seattle Department of Transportation). They are most effective when installed as a series at multiple intersections along a corridor and are often suitable for replacing stop-controlled intersections.



▲ Traffic circles help achieve neighborhood-friendly speeds of 15-20 mph by design. (Saint Paul, MN)



▲ Traffic circles can be tested using low-cost materials. They keep people safely in motion, which is beneficial to people biking. (Edgewater, CO)



▲ Street trees in traffic circles adds to the traffic calming effect while also helping to better manage stormwater. (Seattle, WA)



▲ Traffic circles can be designed to create gateways into key neighborhoods or districts, like downtown, with features such as sculptures or artwork. (Holland, MI)

Core Concepts

CHICANES

SLOWER IS BETTER ON RESIDENTIAL STREETS

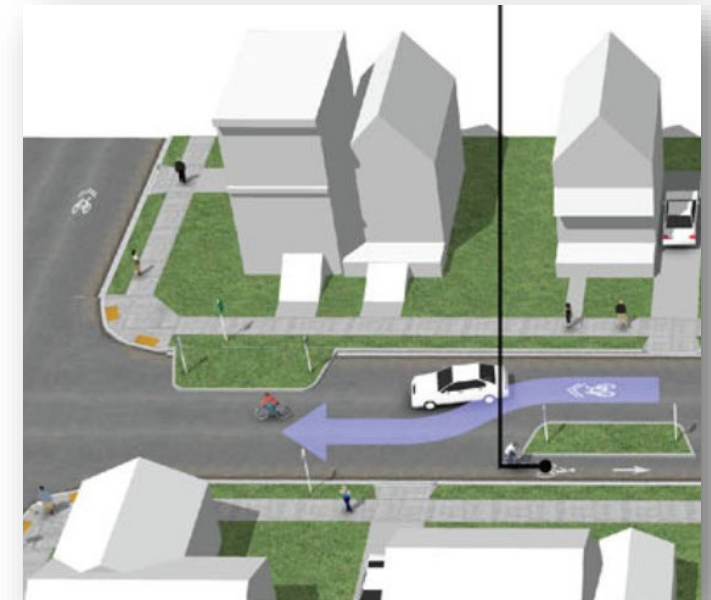
Chicanes slow vehicle traffic and can add space for greening and stormwater management. They can also be implemented quickly with just paint and temporary bollards.

Chicanes are curb extensions that create a serpentine, horizontal shifting, effect. This shifting eliminates long stretches of straight streetway where motorists can pick up speed by requiring drivers to drive more slowly due to the lateral shift. They are often paired with median islands to further manage motorist speeds. Chicanes can be created with parking stalls, sidewalk extensions, or green infrastructure curb bump outs that allow for planting of native vegetation and rain gardens. Chicanes also create space for street furniture or public art.



Chicanes provide space for native vegetation as seen on Grand Avenue in Minneapolis, MN.

A designated space outside of the chicane element helps bicyclists avoid having to merge into traffic at a narrow pinch point, and creates a route for people walking, especially when no sidewalks exist. (Source: NACTO.org)



Core Concepts

MEDIAN REFUGE-Vehicle Closure

PRIORITIZE NEIGHBORHOOD BIKEWAYS FOR PEOPLE BIKING

Median refuges that extend through the intersection where a bike boulevard crosses a busy street improve the crossing experience for people walking and biking, especially at major intersections by shortening the crossing distance into two separate sections with a place to stop in the middle. They also reduce vehicle traffic volumes on the bicycle boulevard by restricting vehicle turning movements onto and off the busy street.

Traffic analysis is needed to assess potential impact of diversion onto nearby streets and to consider additional traffic calming measures needed to mitigate any traffic impacts. Coordination would be needed with Ramsey County or MnDOT if the diverter is on their roadway. Impacts to emergency responders should be considered before implementation; some treatments may be designed to allow emergency vehicle access.

Median refuges with vehicle closure are only one method to keep traffic volume low on local streets. Roseville should consult the guides listed in [this appendix](#) for additional traffic reduction strategies for Bicycle Boulevards.



◀ Motorists can only take a right off the 40th Street Bicycle Boulevard at this traffic diverter while cyclists can continue through. (Cedar Ave. Minneapolis, MN)

Motorists can make a right turn onto and off of the Charles Ave Bicycle Boulevard at Lexington Pkwy while cyclists can continue in any direction. (St. Paul, MN) ▶



State, Federal and County Funding for Active Transportation (1 of 3)

In addition to local Capital Improvement Program funds, local jurisdictions may seek state and federal funding to assist with development of the active transportation network. Most programs involve applying through one of these agencies:

- Federal Highway Administration (FHWA)
- Minnesota Department of Transportation (MnDOT)
- Minnesota Department of Natural Resources (MNDNR)
- Greater Minnesota Regional Parks and Trails Commission (GMRPTC)
- Legislative-Citizen Commission on Minnesota Resources (LCCMR)

Grants are sometimes also available through organizations that support economic development and tourism, public health, and conservation and the natural environment. Private donations are popular for projects that support community recreation and well-being.

Source	Funds	Purpose
FHWA	Safe Streets and Roads for All (SS4A)	funds Comprehensive Safety Action Plans (and demo projects) and infrastructure projects that are recommended as a result of a SS4A plan
FHWA Reconnecting Communities Pilot	Reconnecting Communities Pilot (RCP)	Creating connections across highways disconnected or destroyed by highway development
MnDOT Active Transportation Program	Infrastructure Grants, Planning Assistance, Quick Build/Demonstration Projects	Support active transportation capacity building and facilities
MnDOT Safe Routes to School	Planning Assistance and Boost grants	Support current SRTS plans and programs
MnDOT Safe Routes to School	Infrastructure Funds	Construct sidewalks; improve crossings
MnDOT (Federal funding)	Transportation Alternatives (TAP)	New pedestrian and bike facilities
MnDOT	State Aid for Local Transportation (SALT)	Highway projects

State, Federal and County Funding for Active Transportation (2 of 3)

Source	Funds	Purpose
Metropolitan Council	Regional Solicitation	Multi-modal infrastructure projects that focus on outcomes like moving people more effectively, managing congestion, safer streets for people walking and biking and improving air quality
MN DNR	Regional Trail Grant	Motorized, non-motorized and joint trail usage for trails that are regionally significant
MN DNR	Outdoor Recreation Grant Program	Matching grant for the cost of acquisition, development, and/or redevelopment of local parks and recreation area. Trail must be internal to a park
MN DNR	Local Trail Connections Program	Supports acquisition and development of trail linkages for small train connections that are not regional
MN DNR (Federal funding)	Federal Recreational Trail Program	New trails, trail maintenance and trailhead construction
Greater Minnesota Regional Parks and Trails Commission	Parks and Trails Legacy Grant Program	“Regionally Designated” parks and trails can be funded
Legislative-Citizen Commission on Minnesota Resources (LCCMR)	Environment and Natural Resources Trust Fund (ENRTF)	Activities that protect, conserve, preserve and enhances Minnesota's air, water, land, fish, wildlife and other natural resources

State, Federal and County Funding for Active Transportation (3 of 3)

Source	Funds	Purpose
Active Living Ramsey Communities	Be Active! Be Green! Bench Initiative	The goal of the Be Active! Be Green! Bench Initiative is to have benches placed often enough that when people sit on one bench, they're able to see the next one — with the thought that seniors, people with disabilities, or small children can more easily make it to the next bench.
Ramsey County Active Transportation Funding		Contact County Public Works for more details on funding opportunities for municipalities to make active transportation improvements on County roads.
Ramsey County Economic Development	Critical Corridors Programs	Ramsey County's Critical Corridors programs offer assistance to qualifying public, private and nonprofit organizations for place-based investments along major transportation, commercial and cultural corridors. The programs are fully funded by the Housing Redevelopment Authority (HRA) levy. Eligible projects or activities seeking funding must align with the county's Economic Competitiveness & Inclusion Plan and Equitable Development Framework.
Saint Paul Ramsey County Public Health Department	Community Innovation Grants	Saint Paul – Ramsey County Public Health (SPRCPH) is offering grants to support activities, programs and initiatives that improve public health issues in the community. They must be related to building capacity, planning, developing, implementing or evaluating work designed to address our Community Health Improvement Plan (CHIP) priorities.