



Traffic Circle with bike lane CREDIT: Mike Dillon



Active Transportation Design Toolkit

Guidelines for implementing active transportation projects in the Southwestern Pennsylvania region

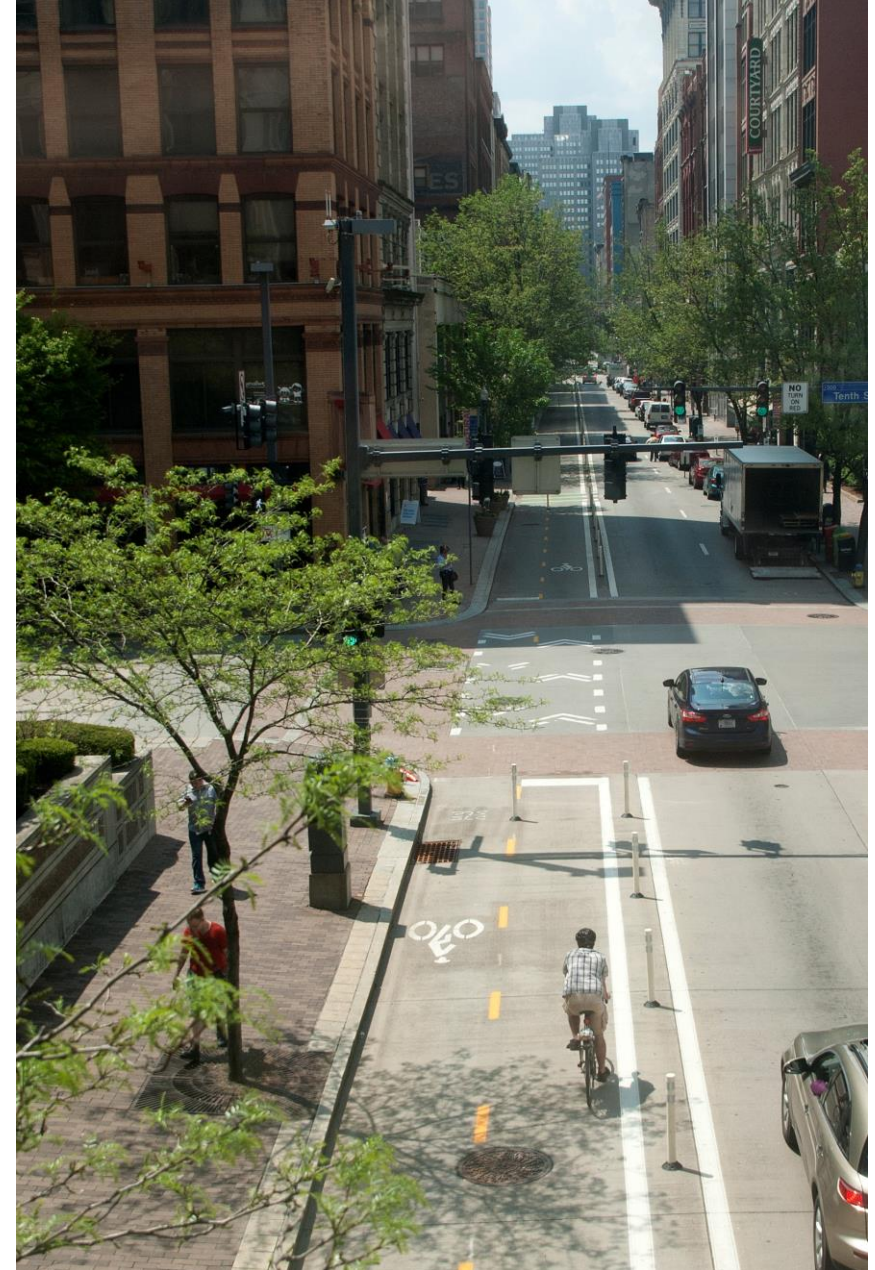
March 2025

Introduction

In 2025, the Southwestern Pennsylvania Commission (SPC) updated its Active Transportation Plan (ATP) to address evolving trends and priorities related to active transportation. The update highlights best practices to help local governments advance their active transportation goals.

This document is a companion resource for the 2025 ATP Update. It offers a collection of resources and street design strategies to help communities expand, develop and improve the region's active transportation network. It is intended to help inform residents, stakeholders, and public agency staff about options for improving multimodal safety through street design.

The document compiles national and local design guidance and provides detail on several tools that will be useful to this region's specific context.



Separated Bike Lane: Penn Avenue, Pittsburgh, PA (Source: SPC)

Contents



Abbreviations.....	4
Regional Complete Streets Policy.....	5
Design Resources.....	6
Design Toolkit for the SPC Region	15
Additional Information	34

Abbreviations

Average Annual Daily Traffic (AADT)

Active Transportation Plan (ATP)

American Association of State Highway and Transportation Officials (AASHTO)

Congestion Mitigation + Air Quality Improvement Program (CMAQ)

Carbon Reduction Program (CRP)

Federal Highway Administration (FHWA)

Federal Transit Administration (FTA)

Metropolitan Planning Organization (MPO),

Manual on Uniform Traffic Control Devices (MUTCD)

National Association of City Transportation Officials (NACTO)

Pennsylvania Department of Transportation (PennDOT)

Pittsburgh Regional Transit (PRT)

Southwestern Pennsylvania Commission (SPC)

Smart Transportation for Livable Communities (STLC)

Transportation Alternatives Set-Aside (TASA)

Regional Complete Streets Policy

- In October 2024, the Southwestern Pennsylvania Commission adopted a Complete Streets policy, committing to prioritize the safety, comfort, and connectivity of all users of the street network, regardless of how they travel.
- As the region's Metropolitan Planning Organization (MPO), SPC is responsible for allocating state and federal transportation funding. The new policy applies to all projects seeking funding through programs such as the Congestion Mitigation and Air Quality Improvement Program (CMAQ), Carbon Reduction Program (CRP), Transportation Alternatives Set-Aside (TASA), and Smart Transportation for Livable Communities (STLC).
- The policy applies to new construction, reconstruction, rehabilitation, repair, maintenance and ongoing operations of roadways, bridges, transit and paratransit infrastructure, on-street sections of trails, and physical changes to other transportation infrastructure. For more information, read [Southwestern Pennsylvania Commission's Complete Street Policy](#).

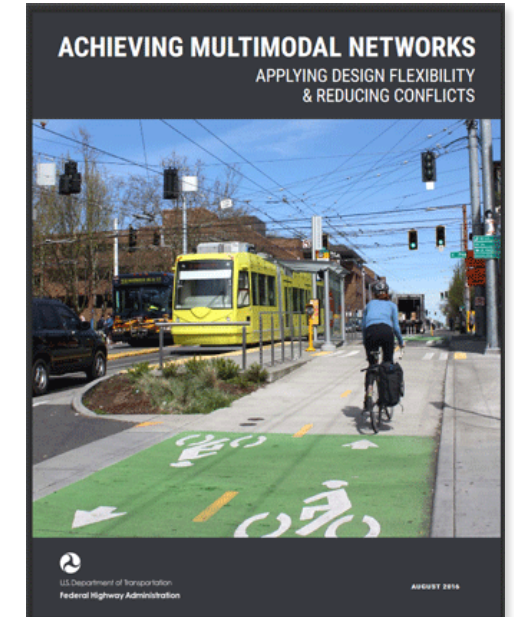
Design Resources

Designing Active Transportation Networks

- A primary goal of this plan update is to provide tools that support communities in expanding and connecting their active transportation networks.
- Connected networks improve safety and convenience for people walking, rolling, and biking. A variety of routing options and facility types can accommodate most community members when designing pedestrian and bicycle networks.
- Interconnected active transportation infrastructure makes walking and biking viable transportation options for all users, while also contributing to improved health and quality of life in communities.
- These two FHWA publications outline the methodology and design process for creating a multimodal network.



[FHWA Small Town and Rural Multimodal Networks](#)



[FHWA Achieving Multimodal Networks: Applying Design Flexibility & Reducing Conflicts](#)

Sidewalks

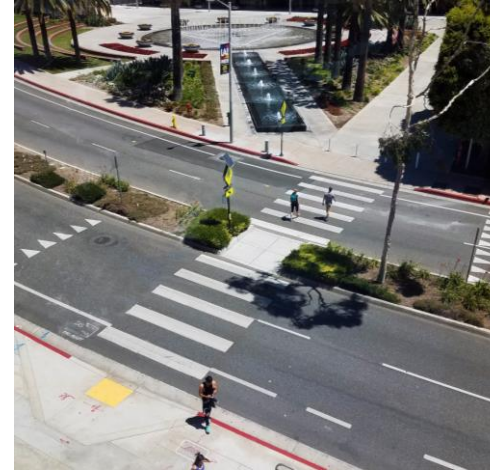
- Sidewalks are intended to provide a safe pathway for people who walk, including those using mobility aids, allowing them to travel separately from vehicle traffic. Sidewalks are usually located next to the roadway, separated by a curb and/or a buffer, like a tree lawn.
- As roadway speeds and volumes increase, more separation is needed to maintain a safe and comfortable walking environment for pedestrians.
- Sidewalks are especially important along bridges where there is often no other space for people to walk, and in areas with high pedestrian generators such as schools and businesses.
- The Pennsylvania Department of Transportation (PennDOT)'s Statewide design manual includes guidance for the design of sidewalks: [PennDOT Pub 13M Design Manual 2: Highway Design Manual \(2015 edition, December 2024, Change No. 12\)](#), Chapter 6: Pedestrian Facilities and the Americans with Disabilities Act



Sidewalk Construction: S Main Street, Washington, PA (Source: SPC)

Intersections and Crossings

- Intersection treatments and midblock crossings improve safety and convenience for people walking and biking. The spacing between crossings should be carefully planned to ensure pedestrians have easy access to safe and comfortable crossing points without long gaps.
- Treatments can vary from painted features, like high-visibility crosswalks, to signage, lighting, and signals. Marked crosswalks clearly define the safest pathway for pedestrians, while rectangular rapid flashing beacons (RRFBs) enhance user safety and convenience at crossings where full signalization is not warranted.
- For further guidance on designing signals to support active transportation, refer to:
 - [FHWA's Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations](#)
 - [FHWA's Guide for Improving Intersections for Pedestrians and Bicyclists](#)
 - [PennDOT Publication 149: Traffic Signal Design Handbook](#)
 - [NACTO Urban Street Design Guide, Intersections](#)



Pedestrian Refugee Island
(Source: Toole Design)



Midblock Crossing
(Source: Toole Design)



Pedestrian Hybrid Beacon
(Source: Toole Design)



Trail Crossing: Saunders Station Road
(Source: ACED)

Bikeway Design

- Bikeways can take on many forms based on the community network vision and the target design user.
- On-street bikeways should follow an established street grid, and their design should be based on each individual street's physical and geographical context.
- Bikeways should be designed to be comfortable for bicyclists of all ages and abilities. By developing safe, low-stress bicycle facilities, communities can achieve their multimodal transportation goals and encourage more people to bike.
- The bikeway treatment should be designed with the needs of the intended users in mind. FHWA identifies three types of potential and existing bicyclists among adults who express an interest in biking. A fourth type identified in the original research includes those who have no interest in biking.
 - Interested by Concerned
 - Somewhat Confident
 - Highly Confident

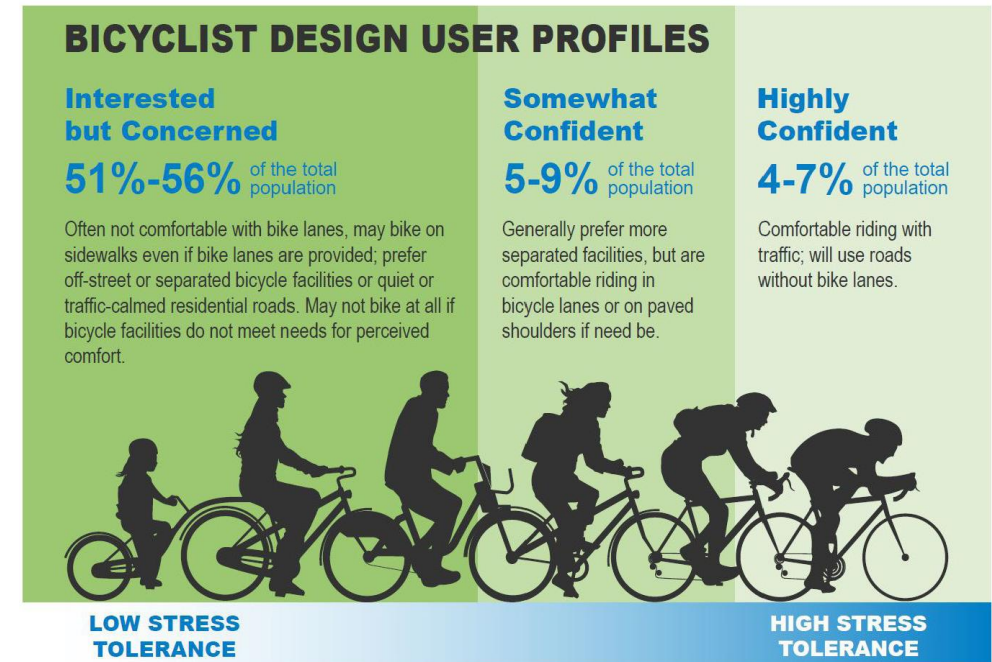


Image from [FHWA's Bikeway Selection Guide](#) based on the following research: Dill, D. and N. McNeil. Revisiting the Four Types of Cyclists. In Transportation Research Record 2587. TRB, National Research Council, Washington, DC, 2016.

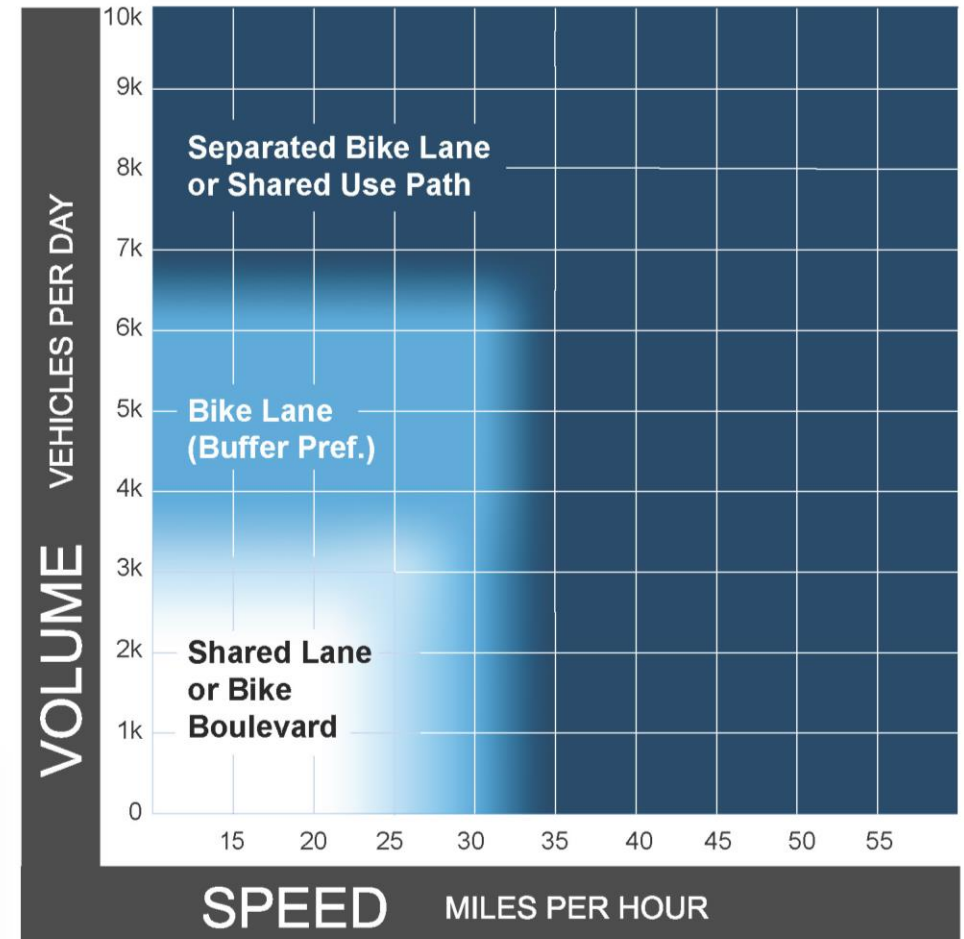
Bikeway Design

- Communities should prioritize developing bicycle facilities that meet the needs of the “Interested but Concerned” group, as this approach will help create a safer environment for the greatest number of potential users.
- Use the chart at the right to determine the appropriate bikeway type for an urban street based on its speed and traffic volume.

Notes

- 1 Chart assumes operating speeds are similar to posted speeds. If they differ, use operating speed rather than posted speed.
- 2 Advisory bike lanes may be an option where traffic volume is <3K ADT.
- 3 See page 32 for a discussion of alternatives if the preferred bikeway type is not feasible.

Preferred Bikeway Type for Urban, Urban Core, Suburban, and Rural Town Contexts



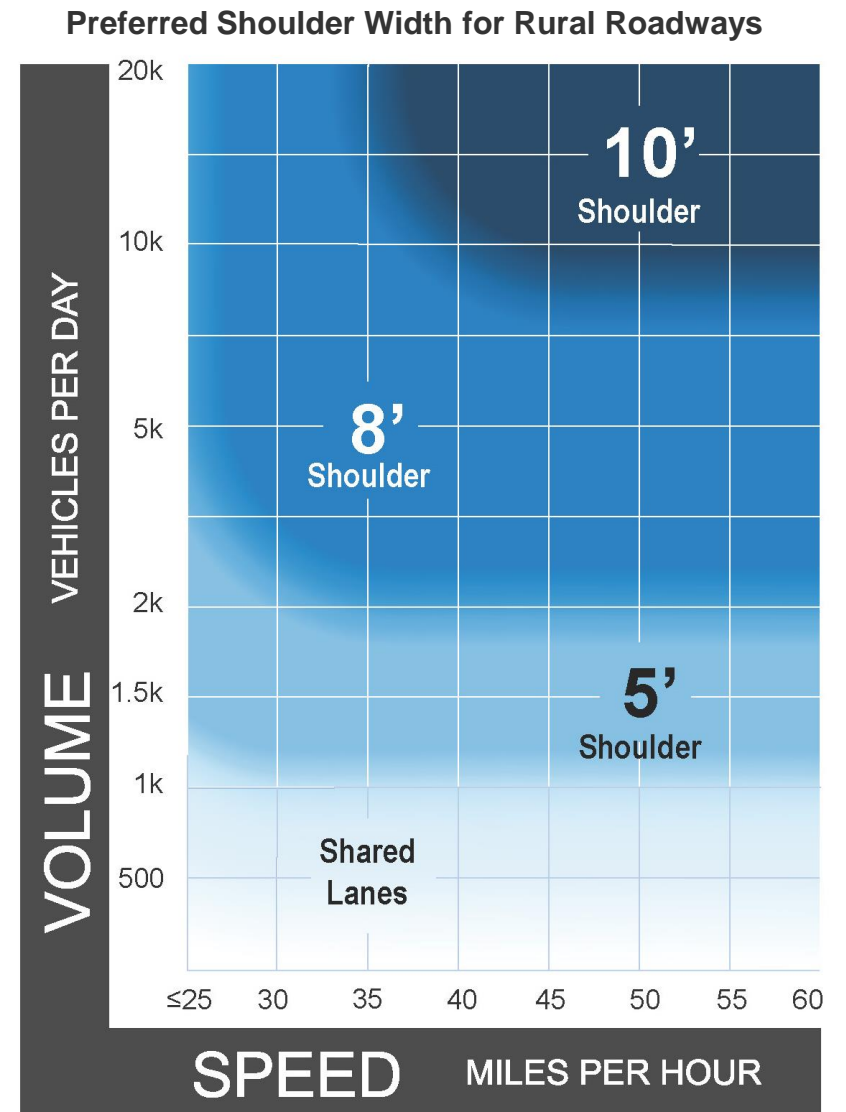
Source: [FHWA Bikeway Selection Guide](#)

Bikeway Design

- Use the chart at the right to determine the appropriate bikeway type for a rural street based on the street's speed and traffic volume.

Notes

- 1 This chart assumes the project involves reconstruction or retrofit in constrained conditions. For new construction, follow recommended shoulder widths in the AASHTO Green Book.
- 2 A separated shared use pathway is a suitable alternative to providing paved shoulders.
- 3 Chart assumes operating speeds are similar to posted speeds. If they differ, use operating speed rather than posted speed.
- 4 If the percentage of heavy vehicles is greater than 5%, consider providing a wider shoulder or a separated pathway.



Source: [FHWA Bikeway Selection Guide](#)00

Bikeway Design

- For further guidance on designing a bikeway network and designing bikeways to support active transportation, refer to:
 - [FHWA Bikeway Selection Guide](#) - Use this guide to design your network and select the appropriate bicycle facility.
 - [PennDOT Pub 13M Design Manual, Part 2, Highway Design, \(March 2015 Edition, Change 11\)](#) Chapter 16 Bicycle Facilities – This Pennsylvania guide covers facility selection, bike route signage, and design details.
 - [Guide for the Development of Bicycle Facilities](#) (2024), AASHTO –This comprehensive guide provides guidance on all aspects of bikeway selection and design.

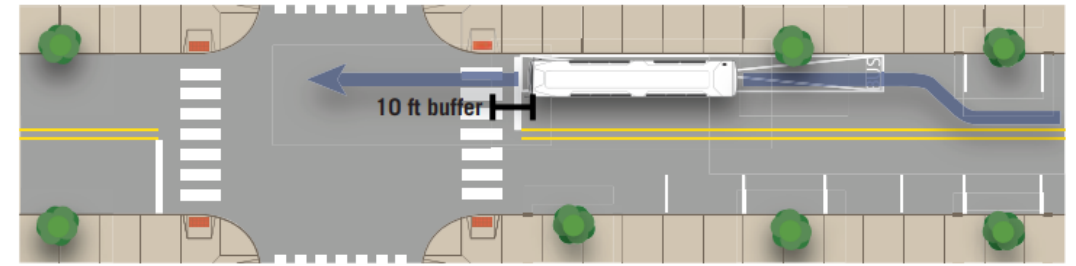


Separated Bike Lane; Connellsville, PA. This bicycle facility is part of the Great Allegheny Passage and Bicycle PA Route S. (Source: SPC)

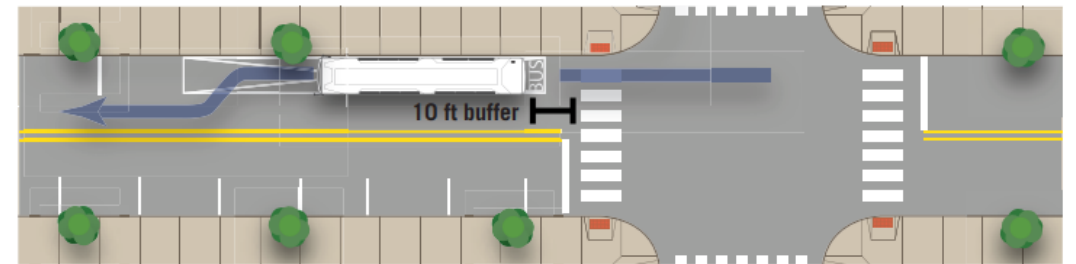
Transit Access

- Public transit relies on a well-connected bicycle and pedestrian network and the guidelines in this document will help communities expand access to public transit. In addition to a complete and connected multimodal feeder network, the areas near transit stops should be designed to improve access, accommodate the needs of all transit riders, and integrate the needs of transit vehicles and operators into the design of streets. Use the following resources:
 - [Multimodal Access to Public Transportation](#) (FTA)
 - [Improving Safety for Pedestrians and Bicyclists Accessing Transit](#) (FHWA)
 - [Bus Stop Design Guide](#) (PRT)

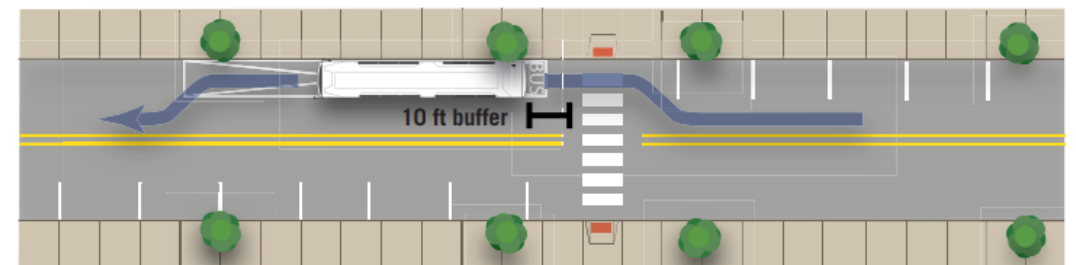
Near-Side Stop



Far-Side Stop



Mid-Block Stop



Stop location diagram from PRT's Bus Stop Design Guide
(Source: [PRT's Bus Stop Design Guide](#))

Design Toolkit for the SPC Region

This toolbox of design treatments identifies design description, appropriate applications (land use and street types), context specific factors to be considered and green infrastructure elements that may be incorporated into the design of active transportation facilities.

Multimodal Main Streets

Description

- Due to the region's topography and historical development patterns, many communities in Southwestern Pennsylvania are built around dense, walkable business districts that are adjacent to or include high-volume roadways.
- The multimodal safety measures in this section can be applied individually or combined to increase safety and comfort along main streets.

Application

- Traditional downtowns and modern main streets surrounded by commercial land uses.

Design Guidance

- Designing a multimodal main street involves applying multiple design treatments consistently along the entire corridor to accommodate all users, including people walking, biking, driving, and taking transit. The specific combination of treatments will vary based on the street's role within a town's multimodal network.



7th Avenue in Beaver Falls, PA (Source: SPC)

Local Example

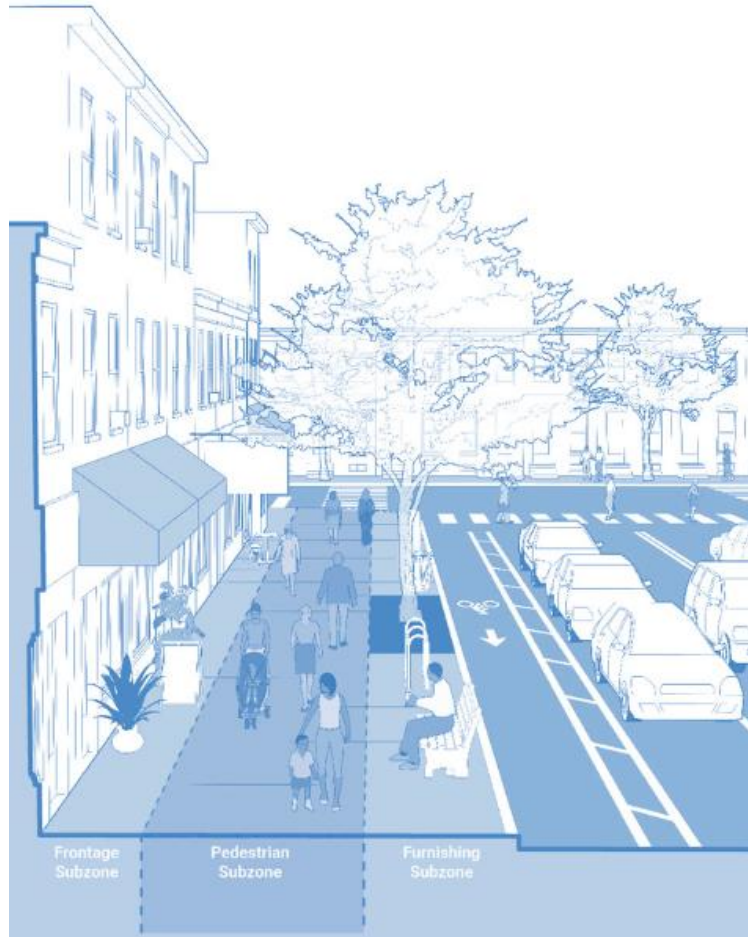
- As an example, 7th Avenue in Beaver Falls features a combination of treatments that create a multimodal main street, including:
 - Sidewalk Zones
 - Bike Lanes
 - Back in Angled Parking
 - Curb Extensions

Multimodal Main Streets

Sidewalk Zones

To maintain a clear space for people walking and rolling, anticipate other uses on a sidewalk by establishing clear sidewalk zones.

- Sidewalk zones include:
 - Frontage zone: The area adjacent to buildings, used for building access, storefront displays, or signage.
 - Pedestrian zone: The clear pathway for pedestrian travel. This zone must be kept free of obstructions and should be at least 6 feet wide.
 - Furnishing zone: The space between the pedestrian zone and the curb, used for elements like street trees, transit stops, benches, and streetlights.



Source: [Baltimore Complete Street Manual](#)

Back-In Angled Parking

- On streets with 90-degree parking, convert on-street parking to back-in angled parking.
- Back in angled parking reduces the required width, speeds up the parking process, improves visibility, and frees up space for multimodal facilities such as wider sidewalks or bike lanes.



Back in angled parking on 7th Ave in in Beaver Falls, PA
(Source: SPC)

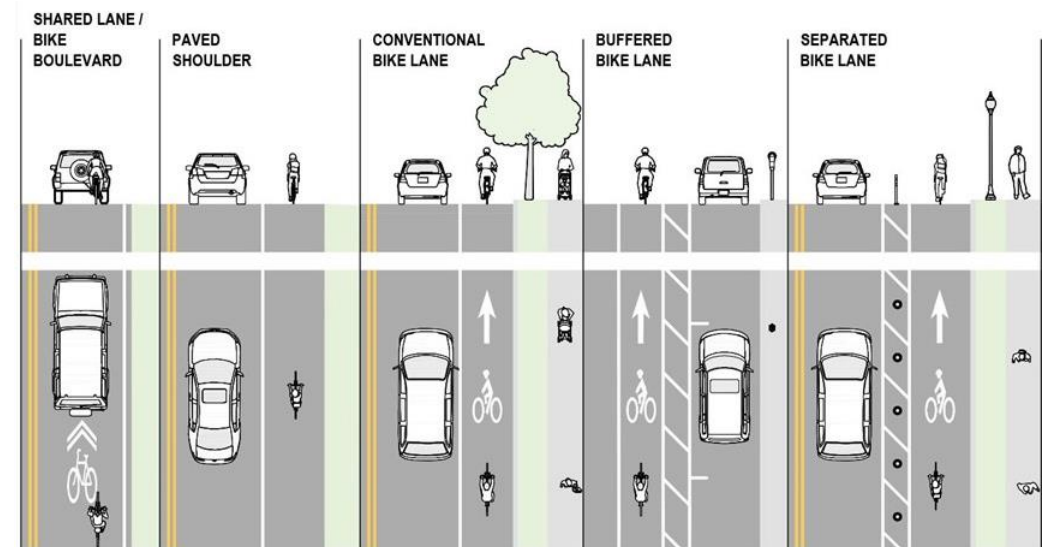
Multimodal Main Streets

Bikeway Facilities

- Communities can choose from a range of bikeway facilities based on the roadway's context, with each option offering a different level of comfort for users.
- The image to the right shows examples of bikeways, from the least to the most separated. In general, greater separation from traffic increases user comfort.
- High-comfort bikeways, such as separated bike lanes, are recommended for streets with higher traffic volumes, which may require adjusting parking or travel lanes.
- For more detailed guidance on bikeway types and design, see the Additional Information section.



Bike lanes on 7th Avenue in Beaver Falls, PA (Source: SPC)



On-Road Bikeway Facilities (Source: [Ohio Department of Transportation Multimodal Design Guide](#))

Multimodal Main Streets

Crossing Treatments

- Crossing treatments make main streets safer and more comfortable for pedestrians and bicyclists, while also calming traffic by encouraging slower vehicle speeds.
- A variety of treatments, such as curb extensions, pedestrian refuge islands, and raised crosswalks, can improve both safety and accessibility.
- By clearly defining pedestrian space and preventing vehicle encroachment, these treatments help keep the pedestrian zone clear and accessible.

Accessibility

- The [Public Right-of-Way Accessibility Guidelines](#) (PROWAG) provide direction for designing accessible sidewalks, streets, crosswalks, curb ramps, pedestrian signals, on-street parking, and other public right-of-way features.
- A wide range of accessible treatments is available. Consider detectable warning surfaces, accessible pedestrian signals, and raised crosswalks to support safe, barrier-free travel.

Multimodal Main Streets

Curb Ramps

- Curb ramps provide a sloped transition between the sidewalk and the street, either by cutting through the curb or by building up to meet it. They can be configured as perpendicular, parallel, or a combination of both, depending on site conditions.
- Detectable warning surfaces are commonly installed at the base of curb ramps to alert pedestrians with vision impairments to the presence of street crossings and the edge of transit boarding areas.

Leading Pedestrian Interval (LPI)

- LPIs give pedestrians a head start by activating the walk signal a few seconds before the parallel vehicle green phase begins.
- LPIs increase pedestrian and bicyclist safety by reducing vehicle-pedestrian and vehicle-bicycle crashes at intersections.

Curb Extensions

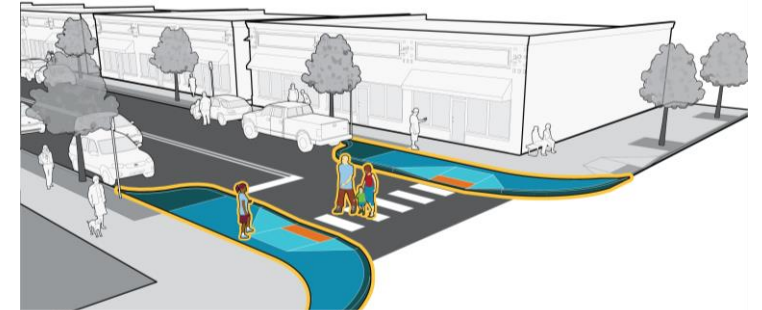
- Curb extensions—also known as bulb-outs or bump-outs—extend the sidewalk into the roadway at intersections or mid-block crossings.
- They reduce crossing distances and shorten the time pedestrians are exposed to vehicle traffic, while also improving visibility between drivers and pedestrians.

Pedestrian Refugee Islands

- Pedestrian refugee islands, also known as crossing islands, provide a protected space between opposing lanes of traffic.
- They give pedestrians a safe place to wait, allow them to cross one direction of traffic at a time, and help calm vehicle speeds.



Leading Pedestrian Interval (Source: Toole Design)



Curb Extension (Source: Toole Design)

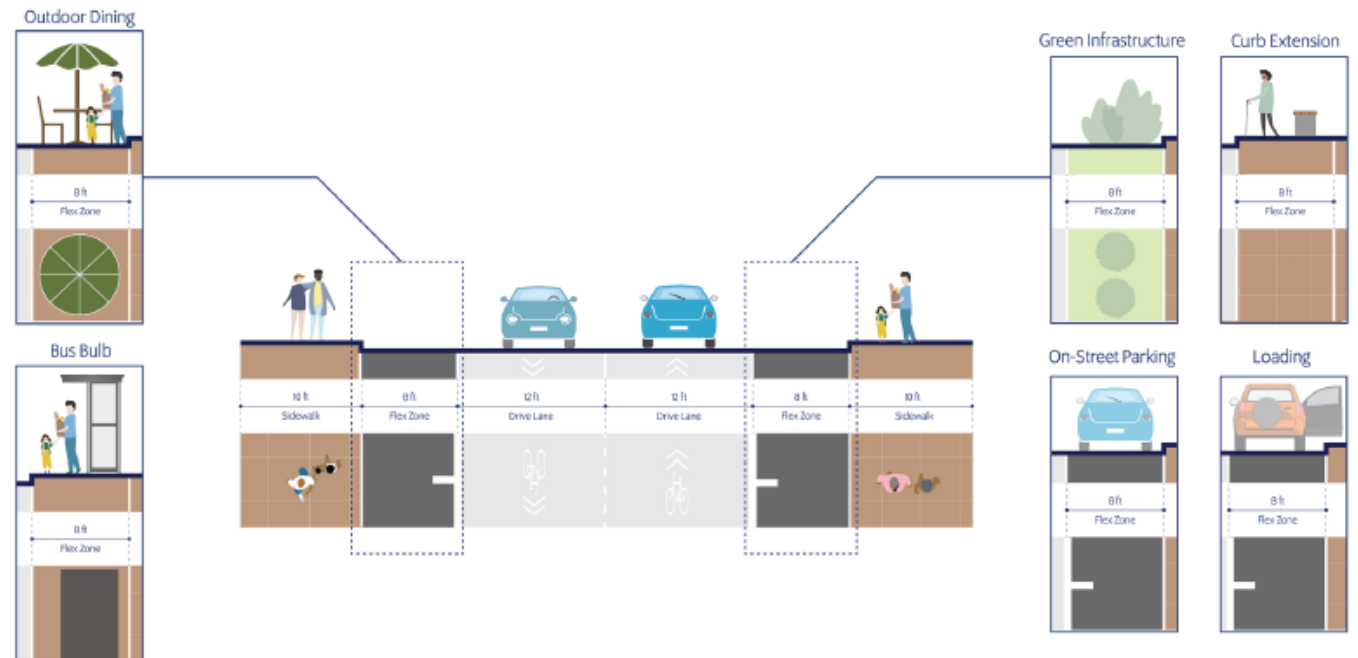


Pedestrian Refugee Island; Sewickley, PA (Source: SPC)

Multimodal Main Streets

Considerations for a Multimodal Main Street

- Reinforce and improve the use of alleys and narrower side streets for loading and deliveries to reduce these activities along the main street.
- Provide frequent pedestrian crossings, both at intersections and midblock, to support safe and convenient access.
- Treat the parking lane as a "flex zone" that can adapt to meet a variety of needs (see image to the right).
 - Diversifying curbside use creates a flexible zone that can vary from block to block, accommodating parking, loading, outdoor dining, stormwater management, seating, bus stops, and other activities.



Source: East Ohio Streetscape Plan (Source: City of Pittsburgh)

Road Diets

Purpose

- A road diet is a transportation planning strategy that reduces the number of lanes and/or makes travel lanes narrower to slow traffic and create space for other uses, such as bike lanes, sidewalks, pedestrian refuge islands or landscaping.

Road diets can:

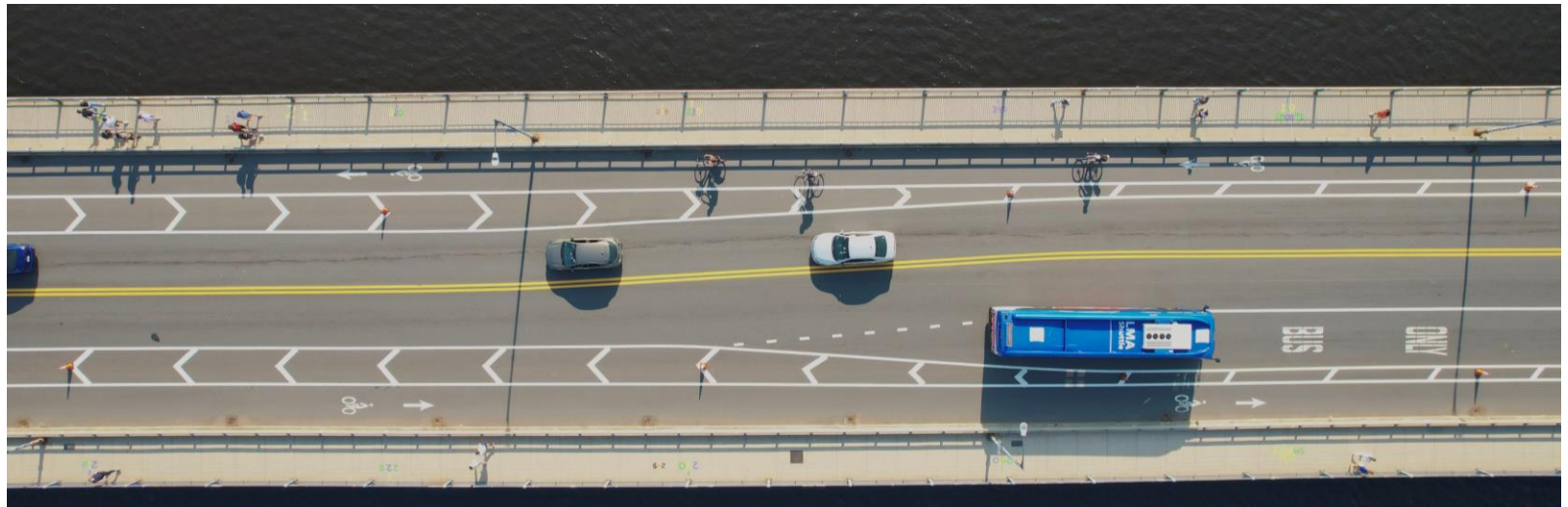
- Increase space for pedestrian and bicycle infrastructure
- Reduce the number of potential conflict points between users
- Slow vehicle speeds, improving overall safety
- Shorten crossing distances for pedestrians and bicyclists

Application

- Road diets are typically applied to multi-lane roads, with a focus on streets that serve important pedestrian and bicyclist routes.
- They can be implemented in urban, suburban, and rural areas.

Local Examples

- Broad Street from East Liberty Boulevard to Centre Avenue in the City of Pittsburgh
- Penn Circle from Baum Boulevard to Centre Avenue in the City of Pittsburgh
- Negley Avenue from Stanton Avenue to Centre Avenue in the City of Pittsburgh
- 7th Avenue from 13th Street to 20th Street in the City of Beaver Falls



Mass Ave Bridge road diet in Cambridge, MA (Source: Petru Sofio)

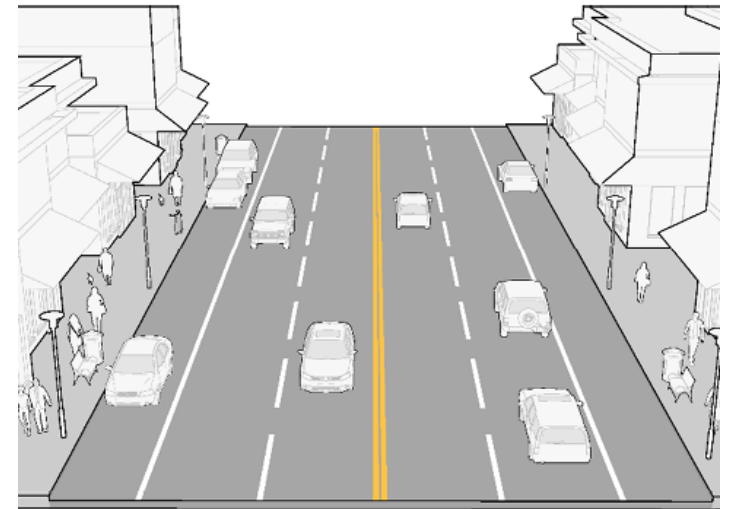
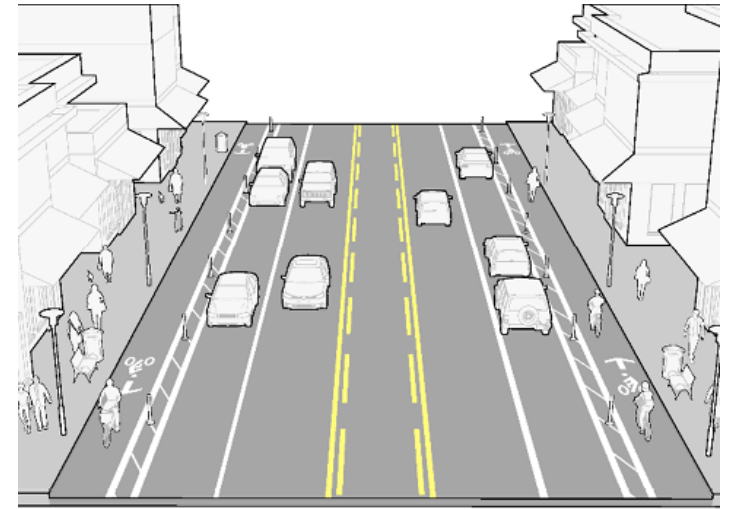
Road Diets

Design Guidance

- Road diets are most effective on streets with average daily traffic (ADT) of 25,000 vehicles or less.
- Standard travel lanes can be narrowed to 10 feet, depending on the context and vehicle types.
- Use wider curbside lanes where transit service or frequent loading activity is present to improve accessibility and reduce conflicts.
- Common road diet conversions reduce four-lane undivided roads to three lanes (two through lanes and one center turn lane)

Considerations

- Evaluate the impact of a road diet on all road users. Repurposing a travel lane can enhance safety and create space for walking, biking, and other multimodal uses. While travel patterns may shift, especially during peak hours, these changes can be managed with appropriate design and signal timing to maintain overall traffic flow. Consider implementing a road diet in conjunction with pavement overlay.
- The FHWA recommends considering the following factors when deciding to implement a road diet:
 - Volume thresholds
 - Vehicle speed
 - Trip generation estimates
 - Level of Service
 - Quality of Service
 - Pedestrian and bicyclist volumes
 - Transit and freight operations
 - Peak hour and peak direction traffic flow



Example of a four to three lane conversion with separated bike lanes. (Source: Montgomery County Vision Zero Design Guidelines)

Trail Crossings

Purpose

- A trail, also known as a shared use or multi-use path is designed to provide a low-stress environment for users.
- However, where trails intersect with streets, such as at intersections and midblock locations, users may experience increased stress.
- Trail crossings play a critical role in ensuring safe, comfortable and continuous mobility for all trail users.

Application

- Prioritize improvements at trail crossings where motor vehicle traffic is heavy, travel speeds are high, or where the crossing distance is long.

Design Guidance

- Consider these design objectives when designing a trail crossing:
 - Minimize exposure to conflicts.
 - Reduce speeds ahead of conflict points.
 - Communicate right-of-way priority.
 - Provide adequate site distance.
- At a minimum:
 - Mark all crossings with high visibility crosswalks.
 - Install with applicable advanced warning sign (MUTCD W11-15 series).
- To minimize exposure to conflicts, consider the following treatments:
 - Pedestrian refuge islands at least 10 feet wide to accommodate bicycles.
 - Updates to signal phasing including dedicated turns and Leading Pedestrian Intervals (LPI) at signalized locations.



Trail Crossing at Saunders Station Rd

Trail Crossings

Conflict Points

- To reduce speeds at conflict points, consider the following treatments:
 - Narrowing travel lanes and installing speed humps in advance of trail crossings.
 - Reducing vehicle turning radii at intersections.

Right-of-Way Priority

- To communicate the right-of-way priority, consider the following treatments:
 - Pedestrian refuge islands
 - Raised crossings
 - Rectangular Rapid Flashing Beacons (RRFB)
 - Advanced Warning Signage

Site Distance

- To provide adequate site distance, consider the following treatments:
 - Parking restriction within 20 to 50 feet of the crosswalk.
 - Remove or cut back landscaping in advance of the crossing.

Considerations

- At mid block crossings, use the FHWA [Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations](#) to select treatment options.



A raised crossing on the Burke-Gilman Trail in Seattle, WA (Source: Toole Design)

Midblock Crosswalk

Purpose

- Midblock crossings, a type of uncontrolled crossing, occur when pedestrians cross the street at a location between intersections that typically have a traffic signal or STOP sign.
- Without appropriate safety treatments, midblock crossings can create unsafe conditions for both pedestrians and drivers.

Application

- Any marked or unmarked crosswalk located away from a signalized intersection or stop-controlled intersection.
- New midblock crossings should be considered at locations that attract active transportation users, such as bus stops, schools, building entrances, and trail crossings.

Design Guidance

- Mark crosswalks with high visibility crosswalk markings and advanced warning signage.
- Improve visibility for both drivers and people crossing, by limiting on-street parking or installing curb extensions within 20 to 50 feet of the crosswalk.
- Install pedestrian refuge islands, especially on multi-lane roadways.
- Consider installing raised crosswalks at crossings that provide a connection to parks, schools, and other locations where children may be present.
- At locations with higher vehicle volumes and speeds, install a PHB or RRFB.

Considerations

- Stop or yield markings placed too far in advance of the crosswalk may be disregarded by drivers.
- Use the [FHWA Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations](#) to select treatment options.



A raised midblock crossing on a local street
(Source: Toole Design)

Rural Town Gateway

Purpose

- Rural town gateways mark the transition from high-speed, two-lane rural roads into more populated or developed areas.
- At the transition from rural roads to town centers, traffic calming measures like curb extensions and chicanes help reduce vehicle speeds and alert drivers to increased multimodal activity.

Application

- This strategy is appropriate for rural roads approaching more populated or developed areas, where a clear visual and physical transition is needed to alert drivers to changing travel conditions.

Design Guidance

- Narrow travel lanes to reduce travel speeds.
- Install speed limit signs and advanced warning signage for crosswalks.
- Consider reducing the number of travel lanes through town and installing turn lanes.
- Transition the shoulder to a sidewalk and/or bike lane.
- Install a gateway treatment such as a roundabout, chicanes, or curb extensions.

Considerations

- Continue traffic calming treatments into and throughout town.
- Consider including public art and wayfinding signage to enhance sense of place.



Bentleyville Interchange, Washington County

Paved Shoulders

Purpose

- Paved shoulders provide additional space outside of the travel lane, creating space for bicyclists, pedestrians, and horse-drawn vehicles.

Design Guidance

- Shoulders that accommodate bicyclists should measure at least 5 feet wide.
- Shoulders should be wider if guide rails or vertical barriers are present.
- Where present, design rumble strips for bicyclist safety. Rumble strips should be installed at least 4 feet from the outside edge of the paved shoulder and have gaps to allow bicyclists to exit the shoulder.
- For more information, see [FHWA's Small Town and Rural Multimodal Networks](#)

Application

- Paved shoulders are most effective in rural settings where dedicated bikeways would not fit or be appropriate.

Considerations

- Wide shoulders can also encourage higher vehicular speeds.
- If providing shoulders in both directions is not feasible, prioritize the uphill direction and the inside of a curve.
- A paved shoulder is not a low-stress facility for bicyclists if the posted speed exceeds 30 mph and volumes exceed 6,000 motorists per day.
- Rumble strips do not provide protection for bicyclists and are not a substitute for separated bike facilities.



Person walking in a shoulder (Source: Toole Design)



Rumble Strips (Source: Toole Design)

Traffic Calming

Purpose

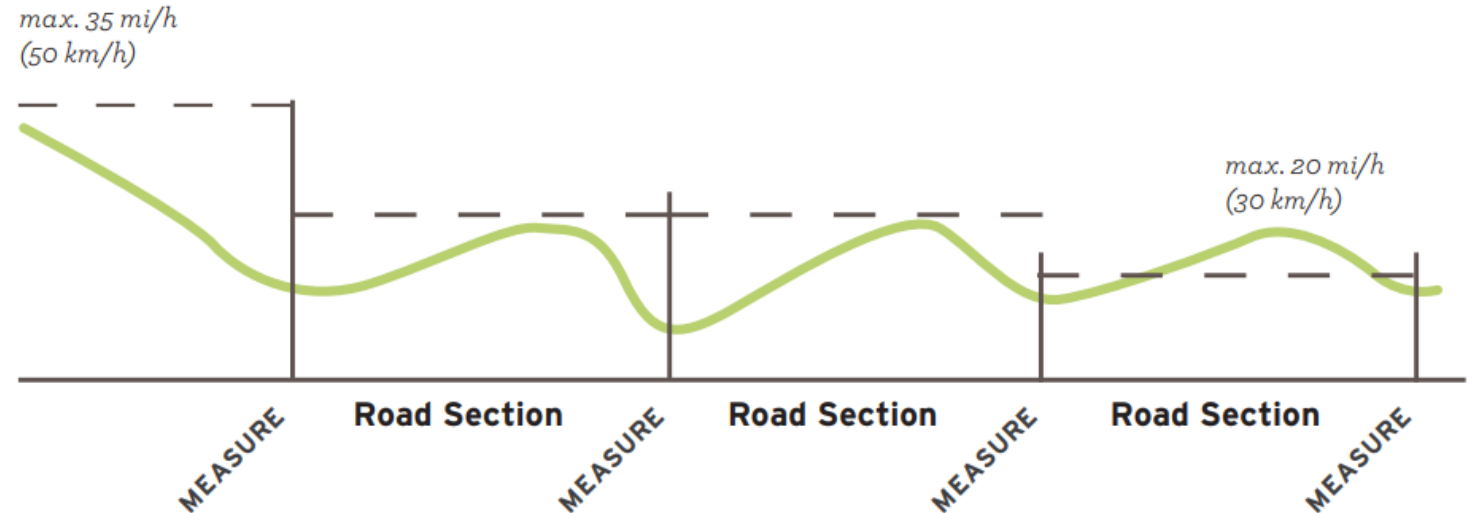
- Traffic calming is a strategy used to reduce vehicular speeds.
- There are two types of traffic calming measures – horizontal deflection and vertical deflection.
- **Horizontal deflection treatments** slow speeds with a horizontal shift in the roadway that forces drivers to alter their path of travel, slowing drivers down and requiring them to be more aware of their surroundings.
- **Vertical deflection treatments** use a change in the elevation of the roadway to slow drivers down.

Application

- Local residential streets
- Collector streets
- Arterial streets within downtown or commercial districts with posted speeds of 40 mph or less

Design Guidance

- Traffic calming measures should be implemented strategically and in combination with one another to ensure a consistently reduced speed.
- Multiple traffic calming treatments can be combined to create a slow zone or bicycle boulevard that prioritizes safety and low-speed travel.



This illustration shows the effect of speeds and the spacing of traffic calming treatments.
(Source: [FHWA Small Town and Rural Multimodal Networks, section 5-3](#))

Traffic Calming

Vertical Deflection Treatments

- **Speed Humps** - Speed humps are raised sections of pavement that span the full width of the street and are typically three to four inches high.
 - **Speed tables** are wider or have a flat top.
 - **Speed cushions**, have wheel cutouts to allow large vehicles, such as fire trucks and buses, to pass through with minimal impact.
- **Raised Crossings** - Crossings elevated at least three inches above the roadway surface, typically flush with the adjacent sidewalk.



Speed hump (Source: Toole Design)

Horizontal Deflection Treatments

- **Mini Roundabouts** - Mini roundabouts, also known as mini traffic circles, are small raised circular islands installed at the center of intersections to slow traffic and improve safety.
- **Chicanes** – Chicanes are traffic calming features that reduce vehicle speeds by introducing horizontal deflection. They typically use curb extensions or islands to create 'S'-shaped curves along the roadway.



Mini Roundabout (Source: Toole Design)

Considerations

- For the most beneficial speed reduction, install traffic calming treatments in a series along a corridor, or in a zone.
- Lower cost temporary materials such as pavement markings and flexible bollards can be applied quickly and broadly.
- PennDOT Publication 13, Contextual Design Manual, Chapter 18 includes more design treatments.



Chicanes (Source: Toole Design)

Bicycle Boulevards/ Neighborhood Streets

Purpose

- A bicycle boulevard is a low-stress bikeway established along local streets with low traffic volumes and speeds. These routes are enhanced with traffic calming, signage, and wayfinding to prioritize bicyclists and improve safety.

Application

- Local streets with speeds at or below 25mph and volumes below 3,000 vehicles per day

Design Guidance

- Signage and pavement markings are the basic elements of a bicycle boulevard, indicating that a roadway is intended to be shared by bikes as well as motor vehicles.
- Supplemental signage is necessary at major intersection crossings.
- Center lines should not be used on bicycle boulevards unless it is at the approach to an intersection.

Considerations

- Consider adding wayfinding signage guiding users to nearby destinations.
- Due to the role that bicycle boulevards play in a low-stress bike network, route planning is a critical element of implementing a bicycle boulevard. Bicycle boulevards provide strategic connections between other bicycle facilities and key destinations.
- Traffic calming tools such as speed humps, chicanes, and curb extensions should be incorporated into bicycle boulevards to help slow vehicle speeds and enhance safety for all users



The City of Pittsburgh has installed Bicycle Boulevards (called Neighborways) throughout the city.



Bicycle Boulevard in Columbus, Ohio (Source: Toole Design)

Advisory Bike Lanes

Purpose

- An advisory bike lane defines a space for bicyclists and motorists to operate on a narrow roadway that would otherwise be a shared street.
- Advisory bike lane markings include a continually dashed bicycle lane that permits opposing motor vehicle traffic to use the bike lane to pass when necessary.
- Advisory bike lanes are an experimental treatment, and their use requires a Request to Experiment from FHWA.

Application

- Streets with low posted vehicle speeds (at or below 25mph) and low to moderate vehicle volumes.
- Streets under 3,000 vehicles/day is preferred, streets under 6,000 vehicles per day can be considered.



Advisory bike lanes in Washington DC (Source: Toole Design)

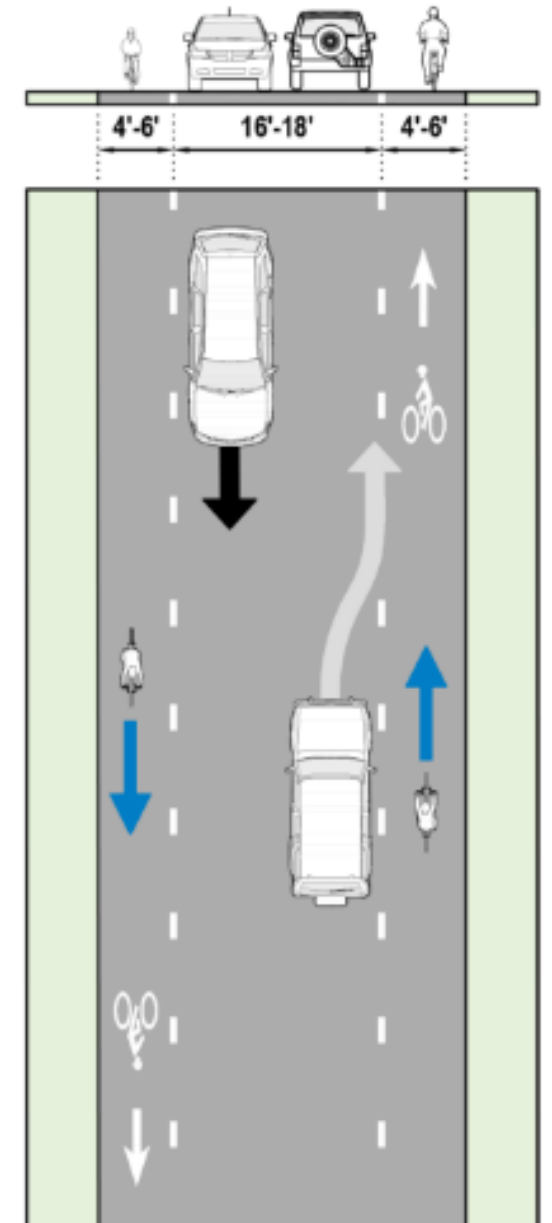


Illustration of an advisory bike lane (Source: AASHTO)

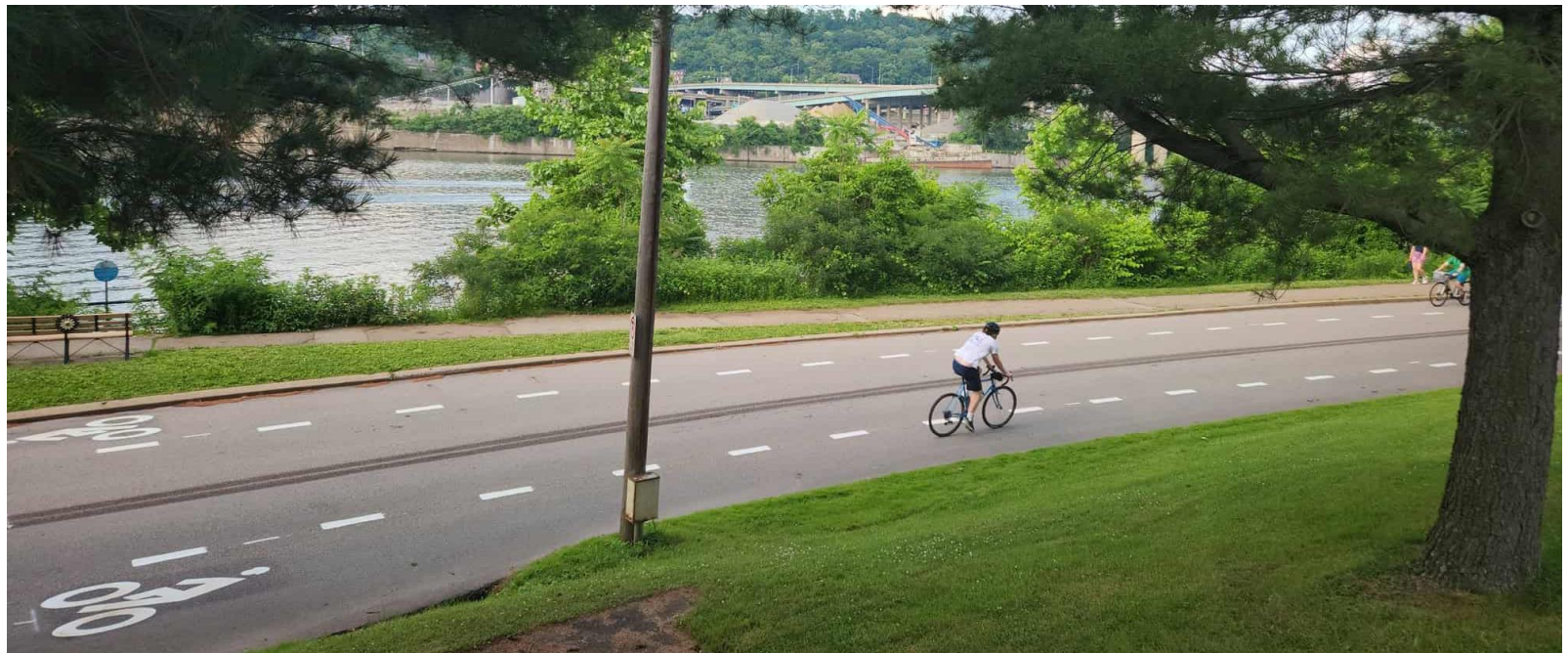
Advisory Bike Lanes

Design Guidance

- The preferred advisory bike lane width is six feet.
- The two-way center travel lane should be 10 to 18 feet depending on context and usage.
- Signs and markings are very important to alert roadway users about the presence of an advisory bike lane.
- Dotted line extensions as well as a contrasting pavement color/material should carry across any minor intersections.
- It is recommended that the advisory bike lane roadway transition to a shared lane at intersections, railroad crossings, bridges and tunnels, and locations with inadequate passing sight distance.

Considerations

- A different pavement color should be used to make the advisory bike lane visually distinct and identifiable for both motorists and bicyclists.
- Unlike a conventional bike lane, the advisory bike lane is subject to more vehicular traffic with increased instances of vehicle-bicyclist encounters of meeting and passing.



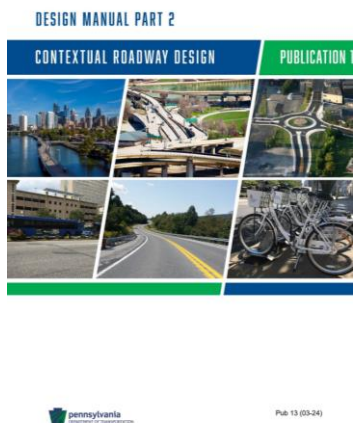
Advisory bike lane in Pittsburgh (Source: Bike PGH)

Additional Information

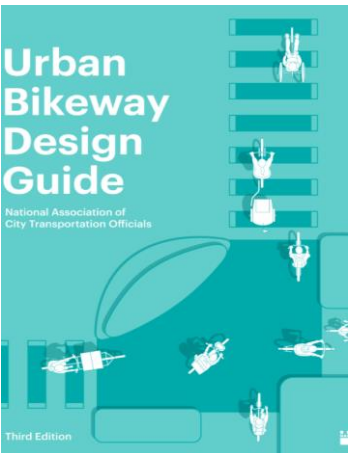
Design Resources



PRT Bus Stop Design Guidelines



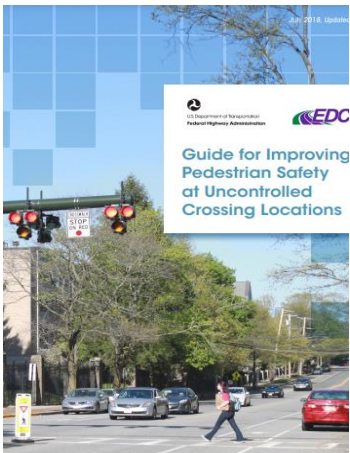
PennDOT Publication 13, Contextual Design Manual



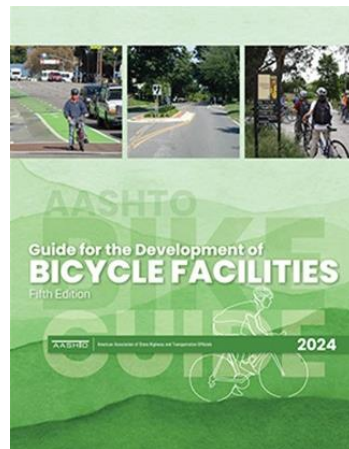
NACTO Bikeway Design Guide



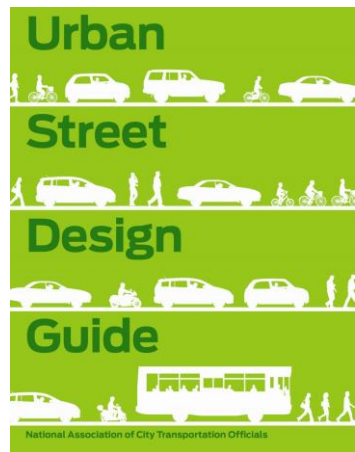
Small Town and Rural Multimodal Networks



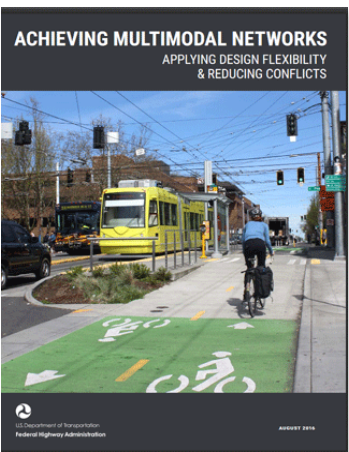
FHWA Guide for Improving Pedestrian Safety of Uncontrolled Crossing Locations



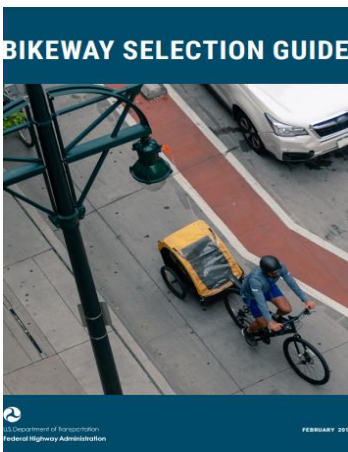
AASHTO Guide for the Development of Bicycle Facilities



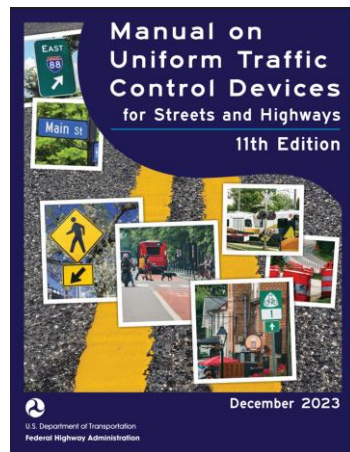
NACTO Urban Street Design Guide



FHWA Achieving Multimodal Networks: Applying Design Flexibility & Reducing Conflicts



FHWA Bikeway Selection Guide



MUTCD

References

- American Association of State Highway and Transportation Officials (AASHTO). “Highway Safety Manual.” 1st ed. 2010. <https://www.highwaysafetymanual.org/Pages/default.aspx>
- Bahar, G., M. Parkhill, E. Hauer, F. Council, B. Persaud, and C. Zegeer. “Parts I and II of a Highway Safety Manual: Knowledge Base for Part II” 2007. (source material for NCHRP Project 17-27, unpublished).
- Blackburn, L., C. Zegeer, and K. Brookshire. “Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations.” Report FHWA-SA-17-072. 2017. https://www.fhwa.dot.gov/innovation/everydaycounts/edc_5/docs/STEP-guide-improving-ped-safety.pdf
- Federal Highway Administration. “Achieving Multimodal Networks: Applying Design Flexibility and Reducing Conflicts.” Report FHWA-HEP-16-055. 2016. https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/multimodal_networks/fhwahep16055.pdf
- Federal Highway Administration. “Pedestrian Safety Guide and Countermeasure Selection System. Rectangular Rapid-Flashing Beacon (RRFB).” http://pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=54
- Federal Highway Administration. “Proven Safety Countermeasures.” [https://safety.fhwa.dot.gov/provencountermeasures/.](https://safety.fhwa.dot.gov/provencountermeasures/)
- Federal Highway Administration. “Small Town and Rural Multimodal Networks.” 2016. https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/small_towns/fhwahep17024_lg.pdf

References, continued.

- National Association of City Transportation Officials. “Urban Street Design Guide.” 2013. <https://nacto.org/publication/urban-street-design-guide/>.
- Pennsylvania Department of Transportation. Publication 13M Design Manual Part 2 Contextual Roadway Design. <https://www.dot.state.pa.us/public/pubsforms/Publications/PUB%2013/Pub%2013%20Title%20Page.pdf>
- Pennsylvania Department of Transportation. Publication 13M Design Manual Part 2 Highway Design. <https://www.dot.state.pa.us/public/pubsforms/Publications/PUB%2013M/Pub%2013M%20Title%20Page.pdf>
- Southwestern Pennsylvania Commission. “Southwestern Pennsylvania Commission’s Complete Streets Policy.” 2024. https://www.atrc-spc.org/uploads/7/8/8/8/78882890/complete_streets_policy_for_southwestern_pennsylvania_final_october_2024.pdf
- U.S. Department of Transportation, Federal Highway Administration. “Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations.” 2018. https://www.fhwa.dot.gov/innovation/everydaycounts/edc_5/docs/STEP-guide-improving-ped-safety.pdf
- U.S. Department of Transportation, Federal Highway Administration. “Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD).” 2012. <https://mutcd.fhwa.dot.gov/index.htm>