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MEMORANDUM

July 31, 2023 (originally submitted December 21, 2022)

To: Yixuan Lin
Organization: Monroe County Department of Planning & Development
From: Wendell Joseph, Michael Blau, and Adam Wood
Project: Monroe County Countywide Active Transportation Plan

RE: Task 5.3: Facility Toolkit – FINAL

Introduction

The purpose of Facility Toolkit is to provide high-level descriptions, design considerations, and guidance for physical interventions in support of safe and comfortable active transportation infrastructure for users of all ages and abilities. The Facility Toolkit Memorandum provides additional information, including guidance for proposed bicycle and pedestrian facility types that can enhance and expand Monroe County's active transportation network. These facilities have been placed in three treatment categories: off-street, on-street, and intersection treatments.

At the county level, routes traverse a much larger geography, which provide opportunities for long-distance bicycle connections between communities, and also facilitate local pedestrian and bicycle trips in communities along those routes. As a result, this toolkit describes how various treatments can be applied throughout Monroe County and in what geographic contexts. It is not meant to replace local engineering investigations, feasibility evaluation, and design, which will always be subject to engineering judgment, context-sensitive design (such as land uses and primary user groups), and supported by community engagement.

Design Users

There are several important factors to consider during bicycle facility selection, but the final decision should also consider the types of bicyclists that are expected on a particular route. Understanding which types of bicyclists feel comfortable using a given facility is critical to building a safe, convenient, and well-used network. This section discusses three types of bicyclists and how their confidence levels inform facility selection.

Research shows that the provision of low-stress, connected bicycle networks improves bicyclist safety and encourages bicycling for a broader range of user types. The most common characteristics used to classify bicyclists are comfort level, bicycling skill and experience, age, and trip purpose. These characteristics can be used to develop generalized profiles of various bicycle users and trips, also known as "design users," which inform bicycle facility design. However, people may not fit into a single user profile, and a bicyclist's profile may change in a single day; for example, a commuter bicyclist who is comfortable bicycling within a bicycle lane when traveling alone may prefer to bicycle on a sidewalk or shared use path when traveling with children. The following sections examine how comfort, skill, and age may affect bicyclist behavior and preference for different types of bicycle facilities.

Many people are interested in bicycling for transportation, but are dissuaded by the potential for stressful interactions with motor vehicles. Of adults who have stated an interest in bicycling, research has identified three types

of potential and existing bicyclists,[1] which are explained below and shown in **Figure 1.** Children were not included in the research and require special consideration in the design of bicycle facilities.

Interested but Concerned Bicyclist

Interested but Concerned Bicyclists are the largest group identified by the research and have the lowest tolerance for traffic stress. As such, they are generally the default design user. Bicycling by this group is suppressed in many communities, as those who fit into the group avoid bicycling except where they have access to networks of separated bikeways or very low-volume streets with safe roadway crossings. This group tends to bicycle for recreation but not transportation. To maximize the potential for bicycling as a viable transportation option, it is important to design bicycle facilities to meet the needs of the Interested but Concerned Bicyclist category.

Highly Confident Bicyclist

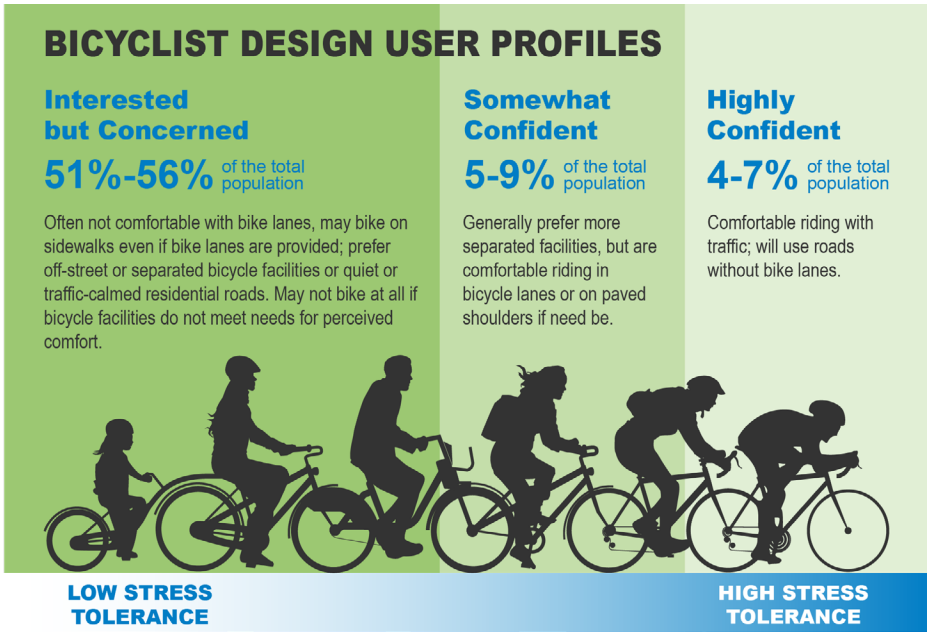
Highly Confident Bicyclists are the smallest group identified by research. While some of these individuals bicycle less frequently, when they do, they prefer direct routes and do not avoid operating in mixed traffic, even on roadways with higher motor vehicle operating speeds and volumes. Many also enjoy bikeways separated from traffic. Similarly, they may avoid bikeways which they perceive to be less safe, too crowded with pedestrians or other slower moving bicyclists, or require deviation from their preferred route.

Somewhat Confident Bicyclist

Somewhat Confident Bicyclists are the next-smallest group. They generally bicycle more than Highly Confident Bicyclists, and are comfortable on most types of bicycle facilities. They have a lower tolerance for traffic stress than the Highly Confident Bicyclist and generally prefer striped or separated bike lanes on major streets and low-volume residential streets, but they are willing to tolerate higher levels of traffic stress for short distances.

1 Dill, D. and N. McNeil. (2016). Revisiting the Four Types of Cyclists. In Transportation Research Record 2587. TRB, National Research Council, Washington, DC.

Figure 1. Bicyclist Confidence Levels



E-bikes and Other Modes

In recent years, many personal transportation options have emerged that provide alternatives to walking and bicycling. These novel forms of transportation, such as electric scooters, bicycles, and skateboards; Segway personal transporters; and monowheels are blurring the lines between active and motorized transportation and are not clearly defined under existing laws.

Electric bicycles, or e-bikes, have grown more popular in recent years. An analysis from Bicycle Retailer found that e-bike sales "increased 83 percent between May of 2017 and May of 2018, and e-bikes made up 10 percent of overall bikes sales in the U.S. for that time period.[2] E-bikes offer the same health benefits as conventional bicycles. By assisting riders on hills and

2 Carpiet, L. E-bikes, gravel bikes, push dollar business up for suppliers through first half. Bicycle Retailer. August 15, 2018. Retrieved from: http://read.dmtmag.com/i/1012247-august-15-2018/8?m4=&utm_source=Digital+Edition&utm_campaign=b544417272-EMAIL_CAMPAIGN_2018_08_01_09_46_COPY_01&utm_medium=email&utm_term=0_850bf-b6c35-b544417272-28945013; Shinkle, D. State Electric Bicycle Laws: A Legislative Primer. National Conference of State Legislatures. December 18, 2018. Retrieved from: http://www.ncsl.org/research/transportation/state-electric-bicycle-laws-a-legislative-primer.aspx

other obstacles, they help conserve energy and extend bicyclists' range. They also attract novice bicyclists and expand bicycling as a viable form of transportation for people who are unable to use conventional bicycles. Bikeshare systems in the United States have embraced e-bikes and they are an increasingly common sight in communities across the country, including Monroe County.

E-bike regulations vary across jurisdictions. As part of CATP implementation, Monroe County will seek to lead a unified approach to regulating safety, operational, and other considerations for e-bikes and other modes list above. This coordination will ensure that people know where to ride, and what rights and responsibilities they have when operating these devices.

Pedestrians

It is important to design and implement connected pedestrian networks that are safe and comfortable for all ages and abilities, since most people are pedestrians in some way or form on any given day. The transportation network should accommodate pedestrians with a variety of needs, abilities, and possible impairments (see Figure 19). While age may be a major indicator, there is no one universal approach to pedestrian needs. Other categories that could be used to describe different types of pedestrians include activity, social use, trip purpose, and ability. Comfort is largely subject to individual preferences and personal experiences, but there are important pedestrian characteristics to consider when designing a network for a wide variety of people, such as pedestrian volumes, age, ability, and micromobility.

Facility Selection Methodology

Bicycle networks should be continuous, connect seamlessly across jurisdictional boundaries, and provide access to destinations. Anywhere a person would want to drive to for utilitarian purposes, such as commuting or running errands, is a potential destination for bicycling. As such, planning connected low-stress bicycle networks is not achieved by simply avoiding motor vehicle traffic. Rather, planners should identify solutions for lowering stress along higher traffic corridors so that bicycling can be a viable transportation option for the majority of the population.

Various methodologies can be used to select the appropriate bicycle facility based on roadway width, traffic volumes, speeds, and other considerations. **Figures 2 and 3** provide some guidance on how to select the appropriate facilities based on traffic volume and speed. These matrices include preferred and acceptable values for each facility type. Designers should utilize forecast traffic volumes if available. Additionally, designers should default to selecting the preferred facility when possible. For more information, refer to the FHWA's Bikeway Selection Guide.

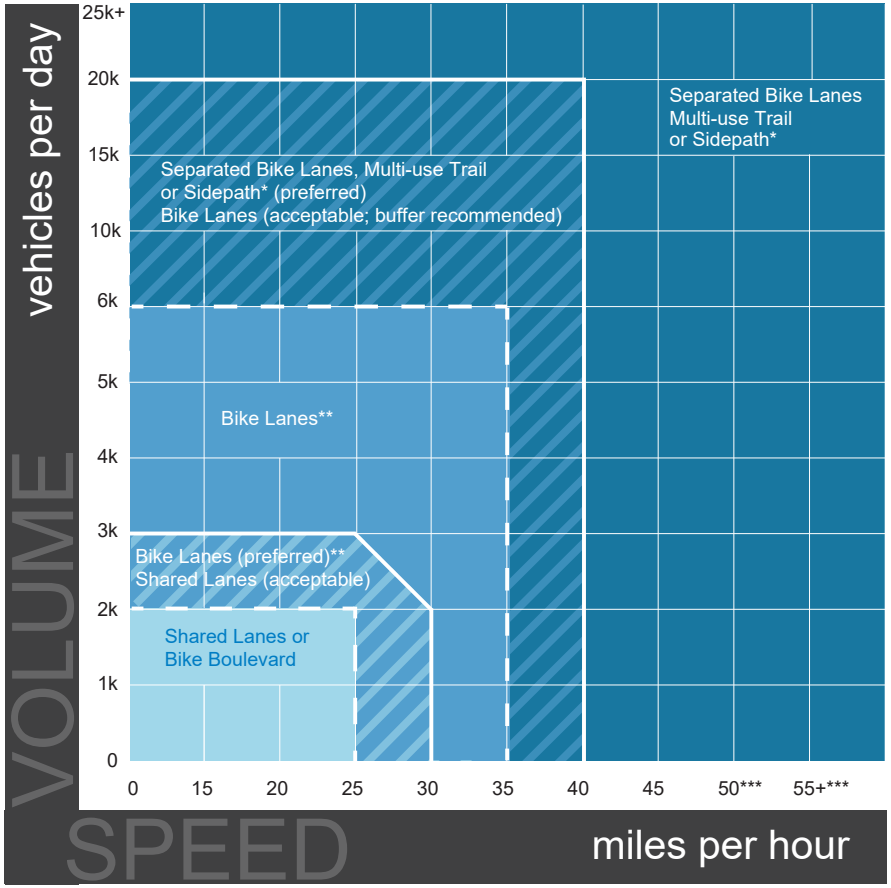
The typical bicyclist type on roadways in rural areas is the recreational bicyclist. Signed routes with shared lanes, paved shoulders, and shared use paths are appropriate bikeway types in rural areas. Shoulder width is an important consideration to accommodate these bicyclists based on traffic volumes and posted speeds in the rural context. It is often desirable to provide shared use paths along rural roads with higher speeds (45 miles per hour or greater). This is especially true for locations that attract larger volumes of recreational bicyclists or for routes that serve as key bicycle connections between destinations. Paths are also an important consideration for families and children making connections in rural areas. Shared use paths are also generally preferred on rural roads with Annual Average Daily Traffic above a certain threshold (e.g. above 6,000 or 7,000 ADT depending on context). In highly constrained conditions where sufficient shoulder width cannot be achieved, it is preferable to provide a narrow shoulder rather than no shoulder.

Urban areas in Monroe County may experience a mix of recreational riders and utility riders: those making short trips around town for commuting, running errands, etc. These riders may be less confident than the typical recreational rider, and should be accommodated accordingly.

Facility Toolkit

Table 1 presents high-level guidance for proposed bicycle and pedestrian facility types that can enhance and expand Monroe County's active transportation network. These facilities have been placed in three treatment categories: off-street, on-street, and intersection treatments. The toolkit is tailored to Monroe County's unique context and is based on best practice design guidance, including the FHWA Bikeway Selection Guide, AASHTO Guide for the Development of Bicycle Facilities, and NACTO Urban Bikeway Design Guide.

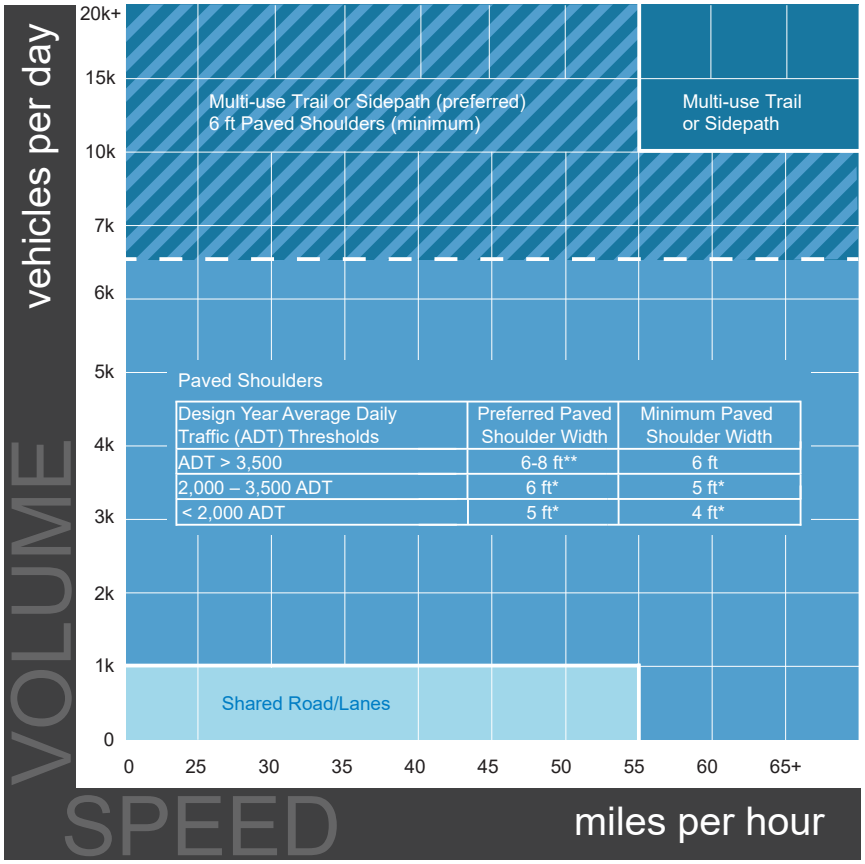
Figure 2. Urban Bicycle Facility Selection Matrix



The thresholds identified in this figure were identified specifically for Monroe County, informed by national best practices, including FHWA's Bikeway Selection Guide.

*To determine whether to provide a multi-use trail/sidepath or separated bike lane, consider pedestrian and bicycle volumes or, in the absence of volume, consider land use.
**Advisory bike lanes may be an option where traffic volume < 4,000 ADT.
***Speeds 50 mph or greater in urban areas are typically found in urban/rural transition areas.

Figure 3. Rural Bicycle Facility Selection Matrix



The thresholds identified in this figure were identified specifically for Monroe County, informed by national best practices, including FHWA's Bikeway Selection Guide.

*Paved width exclusive of rumble strips.

**Depending on surround land uses and other conditions.

Note: The above Selection Matrix figures do not apply to NYSDOT projects as NYSDOT follows its own documented procedures for NYSDOT projects.

The following toolkit is tailored to Monroe County's unique context and is based on best practice design guidance, including the FHWA Bikeway Selection Guide, AASHTO Guide for the Development of Bicycle Facilities, and NACTO Urban Bikeway Design Guide.

Facility Type	Description + Design Considerations	Guidance
Off-Street Treatments		
Trails  	Shared use paths, also known as **trails**, include paved and unpaved paths that can be used by pedestrians and bicyclists. Shared use paths can follow streets for short distances but are typically located away from streets in natural and unsettled environments. Trail intersections should provide clear wayfinding to direct trail users. Where heavily utilized or around curves, a centerline can encourage users to stay to the right. Crossings at major streets should draw motorists' attention and encourage yielding. **Settings:** Urban, Suburban, and Rural **Motor Vehicle Traffic Volume** » Urban: Any volume (typically 15,000 ADT or greater) » Rural: Any volume (typically 6,500 ADT or greater) **Posted Speed Limit** » Urban: Any speed (typically 30 mph or higher) » Rural: Any speed (typically 55 mph or higher)	Multi-use paths should be designed according to state and national standards. This process includes establishing a design speed (typically 18 mph) and designing path geometries accordingly. Maintenance responsibility depends on ownership, which most often rests with cities/towns/villages. **Minimizing user conflicts:** » Vertical objects close to the path edge can endanger users and reduce the comfortable usable width of the path. » Vertical objects should be set back at least 3' from the edge of the path, for a height of 8'. » 3' wide (minimum) shoulders provide space for users who step off the path to rest or to allow users to pass one another.
Sidepaths 	**Sidepaths** are paved paths that can be used by both pedestrians and bicyclists. They are typically located adjacent to streets and can provide connections to off-street trails. Crossings at intersections and driveways should draw motorists' attention and encourage yielding. Recessed crossings at driveways can improve interactions between bicyclists and motorists. **Settings:** Suburban and Rural **Motor Vehicle Traffic Volume** » Urban: Any volume (typically 15,000 ADT or greater) » Rural: Any volume (typically 6,500 ADT or greater) **Posted Speed Limit** » Urban: Any speed (typically 30 mph or higher) » Rural: Any speed (typically 55 mph or higher)	» Sidepaths should be at least 10' wide, and wider where higher bicycle and pedestrian traffic is expected (e.g. urban areas). » Special consideration must be given to the design of roadway crossings to increase visibility, clearly indicate right-of-way, and reduce crashes. » Alternative accommodations should be sought when there are many intersections and commercial driveway crossings per mile. » Maintenance responsibility depends on ownership, which most often rests with towns.

Facility Type	Description + Design Considerations	Guidance
On-Street Treatments		

Separated Bike Lanes
 
 
	Separated bike lanes dedicate spaces to people on bicycles that are physically separated from both motorists and pedestrians. Common vertical separators include planters, curbs, plastic delineators, and on-street parking. Separated bike lanes can be designed to accommodate one- or two-way travel.
	Bicycle signals, lateral offsets, signs, and markings can improve safety at intersections and driveways. Transitions to trails and other bicycle facilities should be clear, comfortable, and intuitive.
	Settings: Urban and Suburban
	Motor Vehicle Traffic Volume
	» Any volume (typically 15,000 ADT or greater)
	Posted Speed Limit
	» Any speed (typically 30 mph or higher)
		» Separated bike lanes can generally be considered on any road with one or more of the following characteristics:
		  » 3 or more traffic lanes
		  » Frequent turnover for on-street parking
		  » Frequent bike lane obstructions
		  » Streets that are designated as truck or bus routes
		  » Critical connections to key destinations/routes
		» Separated bike lanes are preferred over multi-use paths in higher density areas, commercial and mixed-use development, and near major transit stations or locations where pedestrian volumes are anticipated to exceed 200 people per hour on a multi-use path.
		» Parking removal may be required to construct separated bike lanes.

Buffered Bike Lanes 	**Buffered bike lanes** include a striped buffer area in addition to the bike lane, typically positioned between the bike lane and adjacent travel lane. In some cases, the buffer may be placed next to on-street parking to mitigate collisions with opening doors. Cross-hatched buffers, clearly communicate the buffer's function. Where pavement width allows and on-street parking exists, buffers can be provided on both sides of the bike lane. **Settings:** Urban, Suburban, and Rural **Motor Vehicle Traffic Volume** » 9,000 or lower (preferred) **Posted Speed Limit** » 35 mph or lower (up to 40 mph may be acceptable)	» The minimum width of a buffered bike lane adjacent to parking is 5', with a preferred width of 6'. » Buffers are to be broken where curbside parking is present to allow cars to cross the bike lane. » The minimum buffer width is 18". There is no maximum. Diagonal cross hatching should be used for buffers <3' in width. Chevron cross hatching should be used for buffers >3' in width.

Facility Type	Description + Design Considerations	Guidance
Bike Lanes 	Conventional **bike lanes** provide space within the street for exclusive bicycle travel. Signs and markings remind motorists that the bike lane is intended solely for bicyclist travel. Bike lanes should be striped at intersection approaches and through intersections if the need for clarity exists. Bike lanes should meet minimum width requirements exclusive of the gutter pan. **Settings:** Urban, Suburban, and Rural **Motor Vehicle Traffic Volume** » 6,000 ADT or lower (preferred) **Posted Speed Limit** » 35 mph or lower (up to 40 mph may be acceptable)	» The minimum width of a bike lane adjacent to a curb is 5' exclusive of a gutter; a desirable width is 6'. » The minimum width of a bike lane adjacent to parking is 5', with a preferred width of 6'. » Parking T's or hatch marks can highlight the door zone on constrained corridors with high parking turnover to guide bicyclists away from doors.
Paved Shoulders 	**Paved shoulders** are primarily constructed to accommodate emergency stops, provide space for emergency vehicles, and extend pavement life. However, they can also be used by bicyclists. Paved shoulders can collect debris and should be swept to facilitate bicycle travel. Gaps should be provided in shoulder rumble strips to accommodate turning or merging bicyclists. Signage can remind motorists to expect bicyclists in paved shoulders. **Settings:** Rural and Urban Periphery **Motor Vehicle Traffic Volume** » 6,500 ADT or lower (preferred) » Any volume (acceptable) **Posted Speed Limit** » Any speed (typically 45 mph or higher)	» Generally, shoulders should be reserved for conditions where separated, higher comfort facilities are not feasible. » Shoulder width should be at least 4' if the roadway is curbless and there are no vertical obstructions. If curbs or vertical obstructions are present, shoulder width should be 5' minimum, exclusive of the gutter if present. » Shoulders should be wider on roads with high levels of bicycle traffic to accommodate passing and facilitate side-by-side bicycling. » When posted speed limits or 85th percentile speeds exceed 50 mph and/or if heavy vehicles frequently use the road, shoulders should exceed minimum widths to enhance bicyclist comfort. » Edge line rumble strips can provide additional bicyclist space on paved shoulders. The width of a shoulder with rumble strips should be measured from the rightmost side of the rumble strip to the edge of the roadway. Where rumble strips are present, gaps of at least 12' should be provided every 40'-60'.

Facility Type	Description + Design Considerations	Guidance
Bike Boulevards 	**Bike boulevards** optimize local streets for bicycle travel by reducing traffic volumes and speeds. Some measures can be implemented with roadway resurfacing and signage, while others require construction. Beyond signs and markings, bike boulevards generally include traffic calming features – such as speed humps, curb extensions, traffic circles, and traffic diversion treatments – and should be placed on local streets to discourage speeding and cut-through traffic. **Settings:** Urban and Suburban **Motor Vehicle Traffic Volume** » Up to 1,000 (preferred) » 3,000 ADT (maximum) **Posted Speed Limit** » 20 mph or lower	» Bicycle boulevards can range from 12'-22', apart from on-street parking, if present. » Wayfinding signage may be required to direct bicyclists. Additional traffic control at minor intersections may be considered to prioritize pedestrian and bicycle through travel. » The shared roadway design may be an opportunity for plantings, rain gardens, and green infrastructure.
Pedestrian Lanes 	**Pedestrian lanes** are designated spaces in the roadway that are exclusively for people walking. Lanes are designated with paint and other delineators. They provide a temporary pedestrian space – filling short gaps between higher quality pedestrian facilities – that is separated from vehicles where sidewalks may not be feasible due to constraints like drainage, topography, or cost. The lane can fill gaps between destinations or existing sidewalks. **Settings:** Suburban, Small Town, Rural **Motor Vehicle Traffic Volume** » 2,000 ADT (preferred) » 6,000 ADT (acceptable) **Motor Vehicle Operating Speed** » 20 mph or lower (preferred) » 30 mph or lower (acceptable)	» Pedestrians lanes can be 5'-8' wide (8' is preferred) with an additional 0'-4' wide buffer. Double white lines should be used to discourage encroachment by motor vehicles, particular at corners and intersections. » Because pedestrian lanes operate similar to sidewalks, state and local codes should be consulted during their design and application, especially in locations where no sidewalks or shoulders currently exist. » Surfaces should be slip resistant and stable, and the grade should not exceed that of the adjacent street.

Facility Type	Description + Design Considerations	Guidance
Share Lane Marking and "Bike In Lane" sign 	W11-1 "Bicycle" sign with NYW5-32P "In Lane" panel in addition to a shared lane pavement marking is used on roadways where no bicycle lanes are present, where adjacent shoulders not usable by bicyclists, and where vehicular travel lanes are too narrow for bicyclists and motor vehicles to safely operate side by side. They more clearly inform road users of locations where bicyclists may choose to fully occupy travel lanes, discourage passing by motor vehicles, and also inform bicyclists that they can or may operate towards the center of the travel lane for safest operation. **Settings:** Urban **Motor Vehicle Traffic Volume** » 4,000 ADT or less (preferred) » 10,000 ADT (maximum) **Motor Vehicle Operating Speed** » 25 mph or lower (preferred) » 35 mph or lower (maximum)	» Intended for use on travel lanes less than 13’ wide. » Signs should be placed at the beginning of sections of roadways with usable roadway widths travel lanes less than 13’ » This includes roadways where curbside parking or other encroachments narrow travel lanes to 13’ or less » They may also be placed in locations where existing bike facilities end, requiring shared use of travel lanes, or in sections of roadways where a significant number of left turns are expected » Depending on the length of the identified roadway, additional signs should be placed at appropriately designated intervals until the roadway widens to allow for the mandated 3-ft’ passing clearance. » These signs may also be used on roadways to fill gaps in existing, continuous bicycle networks.
Intersection Treatments		
Marked Crosswalks 	**Crosswalks** facilitate pedestrian crossings at intersections and mid-block locations. Per New York State laws and regulations, motorists are legally required to yield to pedestrians in any unsignalized crosswalk. On higher-volume, higher-speed, multi-lane streets, marked crosswalks should be accompanied by treatments to encourage motorist yielding and improve pedestrian safety, such as parking restrictions, nighttime lighting, yield signs and markings, median refuge islands, and pedestrian hybrid beacons. **Settings:** Urban, Suburban, and Rural	» Crosswalk Placements: » On all legs of signalized intersections in school zones and across streets with more than minimal levels of traffic » A multi-use path or active trail that crosses a roadway » Where a local sidewalk either changes sides or changes from both sides to only one side » At locations where vehicular traffic might block pedestrian traffic when stopping for a stop sign or red signal » To guide pedestrians crossing at uncontrolled midblock locations to cross at controlled locations » Crosswalks should be at least 6' wide (10' preferred) or the width of the approaching sidewalk if it is greater. » In areas of heavy pedestrian volumes (such as transit station areas, school zones, and main streets) crosswalks can be up to 25’ wide. » Stop lines at stop-controlled and signalized intersection approaches should be striped no less than 4’ and no more than 30’ from the edge of crosswalks. » Crosswalks should be oriented perpendicular to streets, minimizing crossing distances and therefore limiting the time that pedestrians are exposed.

Facility Type	Description + Design Considerations	Guidance
Curb Ramps 	**Curb ramps** provide smooth transitions from sidewalks to streets at intersections and crossings which serve pedestrians with mobility devices. Curb ramps can also serve people with strollers or people on bicycles. Curb ramp design and construction must comply with ADA requirements to ensure that they can be used by people with disabilities. ADA-compliant curb ramps typically include detectable surfaces to warn visually-impaired people of the bottom of the ramp. **Settings:** Urban, Suburban, and Rural	» Maximum slope: 1:12 (8.33%). » Maximum slope of side flares: 1:10 (10%). » Maximum cross-slope: 2% (1–2% with tight tolerances recommended). » Should direct pedestrians into the crosswalk. The bottom of the ramp should lie within the area of the crosswalk. » Truncated domes (the only permitted detectable warning device) must be installed on all new curb ramps to alert pedestrians to the sidewalk and street edge.[15]
Rectangular Rapid Flashing Beacons 	**Rectangular rapid flashing beacons (RRFBs)** alert drivers to yield when pedestrians or bicyclists are crossing the road. They are typically used at mid- block crossings. Crosswalk users activate the beacon with a pushbutton. RRFBs increase driver yielding at mid-block crossings. RRFB warning signage and their bright, irregularly flashing LEDs, similar to emergency vehicle lights, are effective at getting the attention of motorists. **Settings:** Urban, Suburban, Rural Trail Crossings	» The design of RRFBs should be in accordance with FHWA's Interim Approval 21 for Operational Use of Pedestrian-Actuated Rectangular Rapid-Flashing Beacons at Uncontrolled Marked Crosswalks. » RRFBs should be used in conjunction with advance stop bars and signs. » RRFBs are installed on both sides of the roadway at the edge of the crosswalk. If there is a pedestrian refuge or other type of median on roadways with multi-lane approaches, an additional beacon should be installed in the median.
In-Street Pedestrian Crossing Sign 	**"Yield to Pedestrian"** signs (MUTCD R1-6) are placed in between opposing travel lanes to improve motorist awareness of pedestrians crossing. **In-street pedestrian crossing** signs reduce motor vehicle speeds and increase yielding at uncontrolled crosswalks.[16] **Settings:** Urban and Suburban **Posted Speed Limit** » 30 mph or lower	» Place crossing sign on all approaches to the uncontrolled crosswalk. » Mark uncontrolled crossing with high-visibility crosswalk markings. » Install pedestrian warning signs (MUTCD W11-1, W11-2, W11-15, or S1-1). » Restrict parking within 20'-50' of the crosswalk to improve visibility. » Use markings in conjunction with an appropriate regulatory sign (e.g. Stop Here for Pedestrians MUTCD R1-5 series).

15. Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG). (2011). Retrieved from: https://www.access-board.gov/prowag/
16. FHWA. The Effects of Innovative Pedestrian Signs at Unsignalized Locations: A Tale of Three Treatments. (2000). https://www.fhwa.dot.gov/publications/research/safety/00098/00098.pdf

Rural Pedestrian Facility Selection Matrix

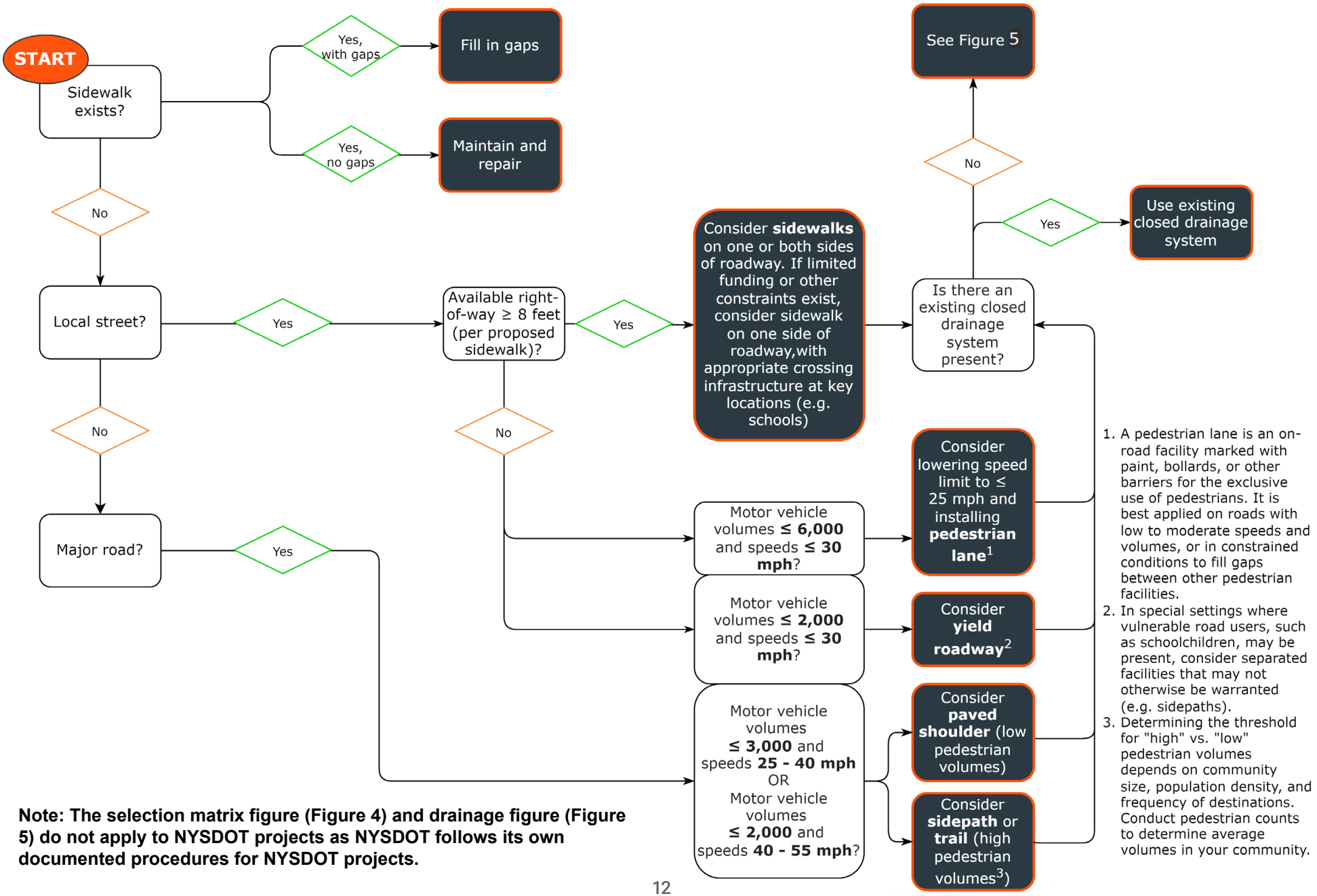
It is beyond the scope of ATP to provide detailed recommendations for every inhabited area throughout the county. The decision matrix on the following pages provides guidance to smaller communities seeking to improve their walking environments. It considers several factors in determining the most appropriate pedestrian treatment: motor vehicle speeds, traffic volumes, right-of-way, and existing pedestrian facilities. It also offers guidance on drainage considerations.

Additional resources for pedestrian network planning and design include:

- FHWA Small Town and Rural Design Guide
- FHWA Achieving Multimodal Networks: Applying Design Flexibility and Reducing Conflicts
- AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities

Figure 4. Rural Pedestrian Facility Selection Matrix

The decision process identified in this figure was created specifically for Monroe County. The process and associated thresholds were informed by national best practices, including FHWA's Small Town and Rural Multimodal Networks guide.



1. A pedestrian lane is an on-road facility marked with paint, bollards, or other barriers for the exclusive use of pedestrians. It is best applied on roads with low to moderate speeds and volumes, or in constrained conditions to fill gaps between other pedestrian facilities.
2. In special settings where vulnerable road users, such as schoolchildren, may be present, consider separated facilities that may not otherwise be warranted (e.g. sidepaths).
3. Determining the threshold for "high" vs. "low" pedestrian volumes depends on community size, population density, and frequency of destinations. Conduct pedestrian counts to determine average volumes in your community.

Note: The selection matrix figure (Figure 4) and drainage figure (Figure 5) do not apply to NYSDOT projects as NYSDOT follows its own documented procedures for NYSDOT projects.

Figure 5. Pedestrian Facility Drainage Considerations