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1.0 Alternative Transportation Strategies

1.1 Introduction and Purpose

Selecting bicycle and pedestrian facilities is a critical step in developing safe and connected non-motorized networks. The following is an overview of tools that will support selecting appropriate bikeway\(^1\) and pedestrian facilities for the Memphis MPO region. Each section of this document should be viewed as a toolkit identifying the key considerations and constraints in selecting and designing active transportation facilities. Facility selection should be driven by the following principles:

- **Safety**: Facility selection and design should reduce the frequency and severity of crashes, minimizing conflicts for users of the bicycle and pedestrian networks.
- **Comfort**: Active transportation and recreational facilities should be selected to minimize stress, anxiety, and safety concerns for users.
- **Connectivity**: Trips within a bicycle and/or pedestrian network should connect directly and conveniently to major destinations.

### 1.1.1 Benefits of Facility Selection Guidance

Using a strategic approach to selecting bicycle and pedestrian facilities has several benefits:

- **Appropriateness**: Not all bicycle and pedestrian facilities in the network require the same type of facility; for example, the types of facilities recommended in a densely developed urban area may not be appropriate for a rural or suburban setting due to differences in land uses, road design, typical users, etc. Design recommendations that are delineated based on the type of development around the facility ensure that the type of facility implemented is appropriate for its surroundings.
- **Flexibility**: A generalized approach allows designers the freedom to make certain decisions about facility design that reflect conditions during implementation and engineering judgement. This will ultimately create better-designed and more cost-effective bicycle and pedestrian facilities.
- **Consistency**: The facility design selection and guidance provided here ensure that facilities are safe enough for the given roadway and that they are designed with key safety elements to be accessible for many ages and abilities.
- **Streamlined implementation**: Creating foundational guidelines for bicycle and pedestrian facility selection and design creates a more predictable environment for implementation; it can expedite design and construction of facilities throughout the region.
- **Total network improvement**: Selecting the right facilities for the given context and roadway conditions for facilities that connect to one another encourages seamless transitions, which can encourage overall network cohesion.

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\(^1\) Bikeways, as defined by the AASHTO Guide for the Development of Bicycle Facilities and the FHWA Bicycle Selection Guide, are travel facilities intended for bicycle use which designates space for bicyclists separately from motor vehicle traffic. A bikeway does not include shared lanes, sidewalks, signed routes, or shared lanes with shared lane markings, but does include bicycle boulevards.
1.1.2 Understanding trade-offs

A variety of factors may influence how a facility that is planned may be altered during design and implementation. Facility selection should not neglect political, funding, and public input factors but consider how trade-offs can be used to provide the appropriate facility type in many circumstances. Although some facilities with great separation between mode types could be more expensive, that facility type may encourage more users. If more users is a goal and cost is a constraint, a temporary installation may be considered for a facility with separation instead of downgrading the facility type to one that is less comfortable for users. Understanding trade-offs along with network goals can assist in facility selection and provide clarity on decision-making to the public.

Although user safety and comfort are connected to each other, it is important to delineate between the two here. User comfort may be sacrificed in some scenarios; for example, if existing ROW does not allow enough room for separated or buffered facilities, a delineated facility (like a bike lane) may be an appropriate option. Users will likely not feel as comfortable using that facility, but it may still be a safe option for all roadway users. Safety, however, should not be compromised during the facility selection process. If a facility is not safe for a given environment, it should not be considered for selection or design; instead, alternative routes or other options should be considered.

1.1.3 Target Users

Understanding users should be a priority for facility selection. Not all users feel comfortable in the same type of facilities; therefore, identifying the target user group for any type of facility must begin with a review of user types.

Bicycle User Types

For bikeway facility selection and design, the “bicyclist user profile” is the user for which the facility is being designed. Identifying the targeted design user profile is often the first step in facility selection; the design user profile should be used to select a preferred type of bikeway treatment that aligns with the roadway and surrounding land development context.

Research findings2 of adult bicyclists show that most people have little tolerance for interacting with traffic while riding a bike; “would-be” bicyclists may choose not to bike for trips because they are afraid or uncomfortable bicycling in mixed traffic. Research identifies three groups of cyclists; there is some overlap between these groups and the goal, as it pertains to the planning process, is to better understand and account for the general needs of different types of bicyclists. The three groups are illustrated in the figure below.

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If the goal is to increase bicycle ridership in the Memphis MPO region, facilities should be designed to target the largest category: the interested but concerned bicyclists. Facilities in this category must be low-stress, safe, and separated from motorized travel where appropriate.

Pedestrian User Types

Walking and wheeling (traveling via wheelchair or other mobility assisting device for those with disabilities) is the most basic form of transportation. Walking/wheeling serves as an inexpensive way to travel between destinations that is accessible to nearly the entire population. While some pedestrians may be capable of walking long distances, the network of pedestrian facilities should be planned and designed for those of all ages and abilities. Facility selection should be comprehensive and consider users that may need additional time to cross streets, where pedestrian signals are warranted, and if midblock crossings should be provided due to the users in the area.

To encourage walking within the Memphis MPO region, infrastructure must be safe, comfortable, visible, and accessible for all ages and abilities. All infrastructure should be compliant with guidelines from the Americans with Disabilities Act (ADA) to ensure that the network of routes for people walking/wheeling is accessible to all, regardless of age or ability.

1.2 Facility Selection Process

1.2.1 Goals and Objectives

Facility selection should both align with and encourage goals and objectives defined by the planning process. Each goal and objective should highlight the needs and desires of the community while also encouraging local or regional organizations toward a safer and more connected network of bicycle and pedestrian facilities. Several goals, including safety, connectivity, accessibility, and mode shift were included in the Regional Bicycle & Pedestrian Plan adopted in 2014 by the Memphis MPO. These goals and other goals/objectives that are common in the planning process may include, but are not limited to, the following:

- Safety
- Connectivity
- Accessibility
- Mode Shift
- Equity
- Education
- Cohesion
- Directness
- Attractiveness
- More Users
- Implementation

1.3 Metrics for Success

Benchmarking practices should be established as a part of any planning process to ensure that facility planning and design are reaching the goals that they are intended to accomplish; this approach helps tell a data-driven story of how the bicycle and pedestrian network changes over time. Metrics for success should be updated routinely at the local and regional level as the built environment changes and new technologies are available for data collection. Metrics to consider may include the following:

- Access to destinations measured in time or distance
- Change in travel times and trip lengths
• Reduction in crash severity and/or crash rate
• Improvements in facility maintenance programs/policies
• Change in mode split
• Measuring change in user perceptions
• Network expansion measured in percentage of new facilities

1.4 Framework for Prioritization and Programming

The policy that is developed at the local or regional level can impact facility selection and implementation. While policies can address a broad range of topics related to bicycle and pedestrian facility selection and design, they can also clearly articulate how to prioritize projects and how decisions are made with respect to trade-offs. The following is a list from FHWA Bikeway Selection Guide\(^3\) that highlights how policies can impact facility selection; policies have the ability to:

• Define specific goals and expectations for the bicycle network.
• Make the linkage between bikeway selection and broader goals for multimodal access and safety.
• Define the metrics for success.
• Provide a transparent framework for prioritizing and programming transportation projects, including specific bikeway types.
• Define different planning contexts and design considerations used to select desired bikeways.
• Explain a preferred approach to design flexibility and experimentation when selecting bikeway types.

1.5 Facility Selection

Facility selection should be driven by multiple considerations, many of which are summarized here. While multiple factors contribute to facility selection, the following sections focus on a few major considerations: context, feasibility, and facility design considerations.

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1.5.1 **Context**

When selecting bicycle and pedestrian facility types for the multimodal transportation network in Memphis region, the project’s “land use context” is one of the most important determining factors. An area’s land use context is defined by the type of development patterns that are common in an area. Development patterns that particularly affect bicycling, walking, and wheeling include the distance between signalized intersections, typical building setbacks, the type and quantity of amenities, and the general scale of development (lot sizes, building footprints), and other factors. The figure below illustrates how land use and transportation infrastructure may change through each context.

![Land Use Context Diagram](image)

**Urban Core**

The Urban Core context is the densest development type. It includes a variety of land uses (e.g., retail, office, multi-family residential, etc.), defined city blocks, short distances between signalized intersections, and minimal setbacks or build-to requirements that frame the public space. Additionally, several mobility choices are available and supported by short travel distances, including biking, walking, transit, and driving personal vehicles. Walking and biking occur regularly, as compact development patterns lend themselves to a network of on-street and adjacent-to-street facilities (e.g., sidewalks, bike lanes, separated bike lanes, etc.).

**Urban**

The Urban context is a densely-developed context with a variety of land uses like the Urban Core context (e.g., retail, office, multi-family residential, etc.) but with a smaller scale of development. Minimal setbacks or build-to standards may be required in some areas. Shorter travel distances between destinations and proximity of signalized crossings may encourage walking or biking. While parking is available, it is limited to on-street and surface lots and structures that may not be near destinations; therefore, many find walking and biking to be preferable. The Urban context may exist adjacent to the Urban Core or as a node of compact development surrounded by the Suburban context.

**Suburban**

The Suburban Context has a variety of land use types (e.g., residential, retail, office, etc.) that are rarely mixed with one another on a single site but are connected by a network of arterial and collector streets. Commercial and industrial development is spread out on medium to large parcels with greater minimum setbacks and large surface parking lots. Suburban transportation corridors increase vehicular mobility from the Suburban context into more dense contexts for employment, services, and/or entertainment. Connectivity may be challenging due to increased distances between destinations and/or signalized intersections along arterial and collector streets.

**Rural**

Rural contexts are characterized by large parcels used for single-family and/or agricultural purposes that are set back significantly from roadways. Some service-oriented businesses are occasionally found in the Rural context. Mobility choices are primarily limited to personal vehicles because of long distances to destinations. Rural roadways may have earthen or paved shoulders for walking, but they are connected in very low-density frameworks, often having few if any signalized intersections and low traffic volumes moving at high speeds.

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4 Regional Planning Commission of Greater Birmingham. B-Active Plan. Birmingham, AL, 2019
Rural Town

The Rural Town context is a node of compact, somewhat dense development surrounded by the Rural context. It generally has a variety of land uses that provide commercial services, government facilities, and public amenities to the surrounding area. Within the Rural Town context, compact development, low traffic volumes, slow speeds, on-street parking, and sidewalks may allow for enhanced walkability and bikeability. On-street and surface lot parking accommodate locals and visitors who are traveling longer distances to access the services and amenities provided in the Rural Town.

Pedestrian Networks in Context Zones

What defines a “complete” pedestrian network varies in each land use context due to varying pedestrian needs. Pedestrian activity in an Urban Core setting and a Rural setting are very different, and requirements for sidewalk networks should be appropriate in those contexts. The following (Table 4-3) outlines best practices for what types of pedestrian facilities may be present in each context.

<table>
<thead>
<tr>
<th>Context Type</th>
<th>Complete Pedestrian Network</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban Core</td>
<td>Sidewalks on both sides.</td>
</tr>
<tr>
<td>Urban</td>
<td>Sidewalks on both sides.</td>
</tr>
</tbody>
</table>
| Suburban       | Based on street type and land use:  
• Near schools/parks: sidewalks on both sides of the street.  
• Low-speed/local roads: sidewalks on one side.  
• High-volume/high-speed roads: sidewalks on both sides. |
| Rural          | Based on street type:  
• High-speed/low-volume roads: paved shoulders.  
• High-speed/high-volume roads: sidewalk or sidepath on one side.  
• Local/low-speed/low-volume roads: shared streets. |
| Rural Town     | Based on street type and land use:  
• Commercial roads and near schools/parks: sidewalks on both sides.  
• Residential streets: sidewalk on one side. |
## Context and Street Typology

In most cases, there are a variety of street typologies or functional classes within each land use context. While there are some characteristics of streets that may not be suitable for bicycle or pedestrian infrastructure, such as limited access arterials, there are a variety of options that exist along individual streets based upon typology and context. The graphic below illustrates best practices of how context and typology may be used to identify appropriate facility choices for the Memphis MPO region.

<table>
<thead>
<tr>
<th>Context</th>
<th>Major Arterial</th>
<th>Minor Arterial</th>
<th>Collector</th>
<th>Local</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban Core</td>
<td>wide sidewalk with buffer</td>
<td>wide sidewalk with buffer</td>
<td>medium sidewalk</td>
<td>sidewalk</td>
</tr>
<tr>
<td></td>
<td>separated bike lane</td>
<td>separated bike lane, buffered bike lane</td>
<td>separated bike lane, buffered bike lane</td>
<td>bike lane, shared lane marking</td>
</tr>
<tr>
<td>Rural</td>
<td>shared use path</td>
<td>shared use path</td>
<td>medium sidewalk</td>
<td>traffic calming, paved shoulder</td>
</tr>
<tr>
<td>Rural Town</td>
<td>shared use path</td>
<td>shared use path</td>
<td>separated bike lane, bike lane</td>
<td>shared lane marking</td>
</tr>
</tbody>
</table>

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Tyler Area MPO. Active Tyler Plan. Tyler, TX. 2019.
1.5.2 Feasibility

Meeting safety and mobility goals are typical objectives for roadway designers. Designers have an ethical obligation to provide for the health, safety, and welfare of the public, which may require a careful evaluation of mobility goals where they have the potential to degrade safety. One user’s convenience or mobility should not be prioritized over another user’s safety. Most roadway and bikeway design projects can be designed to improve safety for all modes. When evaluating safety trade-offs, options that reduce serious injuries and fatalities should be prioritized over options that may reduce property damage or minor injuries.

Options for Reallocating Roadway Space

When building new roadways, preferred bikeways should be built to preferred dimensions. When retrofitting existing roadways, it will often be necessary to evaluate options that reallocate space and options that require the use of constrained dimensions for motor vehicle lanes and bikeways. The following options are common strategies for reallocating roadway space to provide a preferred bikeway.

- Narrowing Travel Lanes: In some cases, the width needed for bikeways can be obtained by narrowing travel lanes. Lane widths on many roads are greater than the minimum values described by the AASHTO Green Book, and lanes as narrow as 10 feet do not result in an increase in crashes or reduce vehicle capacity on roads with speeds of 45 mph or less. Conversely, narrower lane widths can contribute to lower vehicle operating speeds, which can increase safety for all roadway users.

- Removing Travel Lanes: Removing travel lanes and reconfiguring the resulting roadway space (commonly known as a “road diet”) are frequently the result of efforts to improve the safety performance of a roadway segment. Reallocating roadway space in this way may even reduce vehicular delay and provide a variety of mobility options simultaneously. Road diets can improve safety for all roadway users by reducing travel speeds, providing space for bikeways, shortening street crossings, adding turn lanes, or by providing wider sidewalks.

- One-way streets: Many one-way couplets were originally two-way streets, and in the conversion, all available space was converted to one-way travel lanes, resulting in excess capacity. These streets may offer opportunities to install bikeways through lane removal or narrowing.

- Reorganizing Street Space: There may be opportunities to create bikeways or upgrade existing facilities by reorganizing street space without removing travel lanes. For instance, in some cases curbside on-street parking can be shifted away from the curb face to create parking-protected separated bike lanes. This type of project requires changes to pavement markings and attention to intersection design treatments. Pre-cast concrete curb sections can be used to augment pavement markings to physically separate parking stalls from the bike lanes.

- Making Changes to On-Street Parking: On-street parking may serve residents or street-oriented businesses. On-street parking provides a buffer for pedestrians, improving their comfort and safety; it may also reduce automobile traffic speeds on the street. On-street parking can also provide a physical separation between a separated bike lane and moving traffic.

- Removing Parking on One Side: On streets with parking on both sides, adding bikeways may not require the removal of all on-street parking if the parking is not being used efficiently. Deciding where to remove parking may depend on which side of the street has fewer or no businesses. For streets with steep grades, removal of parking on the downhill side may be preferable to minimize conflicts between faster moving bicyclists and parked vehicles.
1.5.3 Facility Types and Design Considerations

Rural Striped Shoulder

Where 4-foot (or wider) paved shoulders exist already, it is acceptable to mark them as bike lanes, especially in rural or rural town settings. If paved shoulders are marked as bike lanes, they must also be designed as bike lanes at intersections. Where a roadway does not have paved shoulders already, paved shoulders can be retrofitted to the existing shoulder when the road is resurfaced or reconstructed. In some instances, adequate shoulder width can be provided by narrowing travel lanes to 11’. The following graphic6 illustrates shoulder widths on rural roadways based upon volume and speed.

Appropriate Contexts: Rural, Rural Town

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Shared Lane Marker

Shared lane markers, or sharrows, are painted symbols added to the roadway to remind roadway users to be aware of bicyclists. They are often paired with “Share the Road” signage alongside the roadway. While sharrows have been used as low-cost ways to create bicycle routes, they should be used with caution; sharrows do not delineate space for bicyclists, and they do not provide any physical separation or protection for bicyclists. Community educational campaigns should be considered along with implementation to ensure that people on bicycles understand appropriate placement within the travel lane and motorists understand legal passing procedures. They are exclusively appropriate for slower street settings, such as residential neighborhoods or other low-speed/low-volume scenarios.

*Appropriate Contexts: Urban, Suburban, Rural Town*
Yield Roadways/Slow Streets

Local streets may serve as comfortable connections for pedestrians and people on bicycles to key destinations. A yield roadway or slow street is a facility design that slows vehicular speeds and provides shared space for pedestrians, bicyclists, and vehicles. The Small Town and Rural Multimodal Networks resource from FHWA provides detailed guidance on pavement markings, intersection design, and signage for yield roadways. These types of facilities are designed to reduce the speed differential between transportation modes. Through street designed for slower speeds, vulnerable users are more visible to motorists, promoting more yielding for pedestrian and bicyclists crossings. Key considerations and a graphic illustrating these type of facilities are provided below:

- Total traveled way width may vary from 12 ft (3.6 m)–20 ft (6.0 m).
- When vehicles traveling in opposite directions meet, the two vehicles may not have enough room to pass within the travel area. One vehicle may need to pull into a parking lane, pull-out, or driveway area to let the other pass.
- For more urban contexts, a slow street design may be more appropriate.
- Design speeds for slow streets are typically at or below 20 mph.
- Good candidates for slow streets include neighborhood residential streets, school walking routes, bicycle routes, and shopping streets with a high level of pedestrian activity.
- In some cases, slow streets will include bollards, planters, and other vertical elements in close proximity to the travel way, therefore encouraging caution as drivers move along the street.

*Appropriate Contexts: Urban Core, Urban, Suburban, Rural Town*

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Bike Lane

Bike lanes provide delineated space for bicyclists in the roadway using lines and symbols on the roadway surface. Bike lanes are typically for one-way travel and are normally provided in both directions on two-way streets and/or on one side of a one-way street; however, two-way bike lanes can be considered in some circumstances. Bicyclists are not required to remain in a bicycle lane when traveling on a street; they may leave the bicycle lane as necessary to make turns, pass other bicyclists, or to otherwise position themselves. Bike lanes may also be part of temporary solutions that, as funds and space become available, will eventually become a more highly protected facility.

Appropriate Contexts: Urban Core, Urban, Suburban, Rural Town
Buffered Bike Lane

Buffered bike lanes are created by painting or otherwise creating a flush buffer zone between a bike lane and the adjacent travel lane. While buffers are typically used between bike lanes and motor vehicle travel lanes to increase bicyclists’ comfort, they can also be provided between bike lanes and parking lanes in locations with high parking turnover to discourage bicyclists from riding too close to parked vehicles. Like conventional bike lanes, buffered bike lanes can also be used as a temporary facility to become a more highly protected facility as funds become available.

*Appropriate Contexts: Rural, Urban Core, Urban, Suburban*
Separated Bike Lane

Separated bike lanes (SBLs) are an exclusive bikeway facility type that are physically separated from motor vehicle traffic and distinct from the sidewalk. SBLs are more attractive to a wider range of bicyclists than striped bike lanes on higher-volume and higher-speed roads. They eliminate the risk of a bicyclist being hit by an opening car door and prevent motor vehicles from driving, stopping or waiting in the bikeway. They also provide increased comfort to pedestrians by separating them from bicyclists operating at higher speeds. Depending on design requirements, SBLs can be one- or two-way facilities and may vary in type of physical separation, including but not limited to parking, raised curbs, landscaped buffers, flexible delineators, planters, and more. Much thought must be given to selecting and designing separated facilities, including the following considerations:

- Separated bike lanes can provide different levels of separation:
  - Separated bike lanes that are raised with a wider buffer from traffic provide the greatest level of separation from traffic but will often require road reconstruction.
  - Separated bike lanes that are protected from traffic by a row of on-street parking offer a high degree of separation.

- Separated bike lanes can be considered on roads with one or more of the following characteristics:
  - 3 or more travel lanes.
  - 9,000 vehicles per day or more.
  - Frequent on-street parking turnover.
  - Bus routes/truck routes

- Width of facilities can vary depending on demand and on design constraints; however, the minimum width of the bicycle travel lane should be 5’ for one-way travel and 8’ for two-way travel.

**Appropriate Contexts: Urban Core, Urban**
Shared Use Path

A shared use path (or trail) is a grade-separated, two-way facility used by bicyclists and pedestrians. Shared use paths are often located in an independent alignment, such as a greenbelt or abandoned railroad. However, they are also regularly constructed along roadways, in which case they are referred to as “sidepaths.” Sidepaths and shared used paths accommodate both bicyclists and pedestrians using the same facility, often minimizing costs and right of way consumption. Considerations that must be reviewed when selecting and/or designing shared use paths include the following items:

• Sidepaths are desirable along high-volume or high-speed roadways where accommodating the targeted type of bicyclist within the roadway in a safe and comfortable way is impractical.

• Paths should not always be considered a substitute to accommodating more confident bicyclists within the roadway. They usually have a lower cyclist design speed than on-street facilities and may not be best for more confident bicyclists who desire to travel at greater speeds. Contextual judgement is required in designing these facilities.

• Path widths can vary from 8’ at the minimum (for short distances under physical constraints) to 11’ recommended (for two-way travel).

• Along the path, vertical objects should be set back at least 2’ from the edge of the path to protect users.

• Paths must be designed according to state and national standards. This includes establishing a design speed (typically 18 mph) and designing path geometry accordingly. Consult the AASHTO Guide for the Development of Bicycle Facilities for guidance on geometry, clearances, traffic control, railings, drainage, and pavement design.

**Appropriate Contexts: Rural, Rural Town, Suburban**
Sidewalks

Sidewalks contribute to the character, function, enjoyment, and accessibility of streets. Sidewalks are the place typically reserved for pedestrians within the public right-of-way, adjacent to property lines or the building face. In addition to providing vertical and/or horizontal separation between vehicles and pedestrians, the spaces between sidewalks and roadways also accommodate street plantings and furniture, stormwater infrastructure, and street lights. The following list outlines other considerations when designing and/or allocating space for sidewalks:

• Streets should have adequate space for building frontage features (café seating, awnings, signage, etc.), pedestrian travel, and amenities (street furniture, plantings, etc.).

• Sidewalks should be wider in places where there are higher pedestrian volumes.

• Building frontage space on sidewalks used for sidewalk cafés are a special condition and should generally be no less than 6’ in width. It is best practice to require a minimum of 7’ for street amenities.

• In general, pedestrian travel areas should be between 6’ – 18’ wide, depending on available ROW and street classification (neighborhood, commercial, etc.). Pedestrian travel areas can be narrowed with constrained ROW, but sidewalks should always be at least 5’ wide.

Appropriate Contexts: Urban Core, Urban, Suburban, Rural, Rural Town
Pedestrian Lanes

A short term or interim solution for pedestrian connectivity may be accomplished through pedestrian lanes. The Small Town and Rural Multimodal Networks resource developed by the FHWA indicates that pedestrian lanes are not intended to be an alternative to sidewalks but may be used to fill short gaps in a local network. The FHWA report includes the following considerations and graphic:\footnote{U.S. Department of Transportation Federal Highway Administration. Small Town and Rural Multimodal Networks. Washington, DC, 2016.}:

- Pedestrian lanes should be designed to support and promote side-by-side walking within the lane.
- 8 ft (2.4 m) width is preferred.
- Pedestrian lanes are intended for use by pedestrians and must meet accessibility guidelines for a pedestrian access route.
- Sufficient space to provide a pedestrian lane may already exist or may be created through configuration changes, including removing or consolidating on-street parking, or narrowing of travel lanes.

Appropriate Contexts: Rural, Rural Town, Suburban
Relevant data collection and additional considerations

Selecting an active transportation facility type requires a balance of community priorities with data analysis, engineering judgment, and the given constraints of a facility and existing conditions. An initial understanding of the project information provides a framework for selecting a preferred bicycle facility type given different traffic conditions and land use contexts. The following information should be collected, reviewed, and analyzed to determine specific constraints or unforeseen opportunities:

- Jurisdiction – identifying both roadway owners (locality, DOT, or private) and the local jurisdiction (and accompanying codes) at the beginning of the process can streamline facility selection and implementation.
- Number of lanes
- Approximate lane width – a detailed inventory of existing lane widths for the length of a project can identify potential opportunities for reducing lane widths to make room for bicycle facilities.
- On-street parking and turnover rates – roadways with existing on-street parking may require additional separation (in buffered width or physical separation) to ensure that bicyclists and pedestrians are safe from opening doors and parking cars.
- Curb-to-curb width – an inventory of curb-to-curb width for the entire length of a proposed projects can indicate facility feasibility or potential cost increases.
- Length of project – the length of a bicycle and pedestrian facility is directly related to facility cost, so it is key to know the extent of the proposed facility before selecting the facility type.
- Presence of utilities and stormwater controls – adding active transportation facilities can often trigger required changes in stormwater controls; having an inventory of existing stormwater control devices can help inform facility feasibility and selection.
- Speed limit – roadway design speeds can influence the type of facility that is most appropriate and safest for all roadway users.
- Additional consideration should be given to the following elements before selecting a facility:
  - Planning and Design Process: Each project may require a different process to plan, design and implement active transportation facilities. Active transportation projects may be implemented as standalone projects or may be completed during a larger roadway project. Local stakeholders and the public should be involved in facility selection early in the process to ensure that the final infrastructure will align with community goals and context.
  - Design Considerations: Proposed active transportation facilities may have specific considerations based on surrounding land uses, traffic volumes, or existing vehicular speeds. Design of bicycle or pedestrian facilities should be comprehensive and should address safety of all modes.
  - Roadway Cross Sections: The roadway’s cross section (i.e., the number of lanes, their orientation, and their widths, including sidewalks) may change throughout the length of a planned project. A selected facility and design should be appropriate for the entire length of the roadway. If the facility selection and design must vary along the roadway, transitions between facilities should be safe and intuitive for all users.
1.6 Conclusion

The process and considerations outlined here are intended to accelerate the delivery of high-quality multimodal projects that improve safety for all roadway users and meet the transportation needs of people of all ages and abilities. The document should be used as a resource to help transportation practitioners consider and make informed decisions about trade-offs relating to the selection of bikeway types; it outlines a process for balancing these trade-offs by identifying the desired bikeway type, assessing and refining the potential options, and evaluating feasibility. More resources can be found in the following documents:

- FHWA Bikeway Selection Guide
- FHWA Guidebook for Developing Pedestrian & Bicycle Performance Measures
- FHWA Achieving Multimodal Networks
- FHWA Small Town and Rural Multimodal Networks
- AASHTO Guide for Design of Bicycle Facilities
- AASHTO Policy on Geometric Design of Highways and Streets (Green Book)
- NACTO Urban Bikeway Design Guide