

3.6 Bikeways and Trails

1. General Provisions

- 1.1. Guidance for the development of bikeways is rapidly evolving with new designs being explored, tested, and incorporated into national guidance. This section builds upon guidance provided by national design manuals and identifies locally-preferred standards and procedures. For additional detail and guidance, refer to the latest version of the following guides: the AASHTO Guide for the Development of Bicycle Facilities, the NACTO Urban Bikeway Design Guide, the Manual on Uniform Traffic Control Devices (MUTCD), and the City of Albuquerque Bikeways & Trails Facility Plan.
- 1.2. See NACTO or AASHTO guides for guidance on striping of lanes and buffers, including use of dashed lines to mark driveway access points, traffic merging areas, and transit stops.
- 1.3. See the MUTCD for standards related to bike lane symbols and markings.

2. Location

- 2.1. The location of future bikeways and trails is shown on both the Metropolitan Transportation Plan's Long Range Bikeway System (LRBS) and the City Bikeways and Trails Facility Plan (BTFP). These future system maps show the facilities necessary to provide an integrated bikeway and trail network. The most recently updated future system map, either in the BTFP or the LRBS, shall be used to require planned bikeways and trails as part of new development.
- 2.2. Bicycle lanes are not necessary on local streets with speeds of 25 mph or less, low traffic volumes, narrow right-of-way, or that provide access to single-family residences; on these streets cyclists should share lanes with vehicle travel. Common treatments to facilitate shared lanes include signage, pavement markings, and bike route and bicycle boulevard designations.
- 2.3. Bicycle lanes should be provided on all new collector roadways and evaluated on all new arterial roadways.
- 2.4. The addition of bicycle lanes as part of restriping, resurfacing, and rehabilitation projects on existing arterial and collector roadways must be evaluated, in accordance with the City Complete Streets Ordinance.
- 2.5. The combination of separated bicycle lanes (also called protected bike lanes or cycle tracks) and sidewalks may be developed where a trail, sidewalk, and bicycle lane are all required in the BTFP.
- 2.6. In locations not identified on the LRBS or BTFP maps, bikeways and/or trails may be required if they connect or close a gap in the existing system.

Comment [RMM1]: All Figures, tables, section numbers and cross references will be updated and reconciled at final draft.

3. Bikeways and Trails Design Guidance

3.1. Bicycle Lane Design

- 3.1.1. A bicycle lane is a lane on the roadway that has been designated by striping and pavement markings for preferential or exclusive use by bicyclists.
- 3.1.2. Bicycle buffers are the physical space that separates bicyclists from motorists. Buffers may consist of pavement markings or some form of vertical separation. See section 3.4 for additional guidance on separated bicycle lanes with vertical barriers. See NACTO Urban Bikeway Design Guide for guidance on bicycle buffer design options.
- 3.1.3. Required bicycle lane and buffer widths are provided in Table 1. Wider bicycle lanes and/or striped buffers are desirable on higher speed roadways. Following the Comprehensive Plan's Priority Street Element Matrix, wider widths for bike lanes and bike buffers should be included on corridors where bike lanes are a priority. Bicycle buffers are appropriate on streets with higher speeds and traffic volumes, and/or as right-of-way allows.
- 3.1.4. Bicycle lanes may be implemented on existing roadways by reducing automobile travel lane and median widths, reducing the number of travel lanes, and/or reconsidering the need for parking. New or reconstructed bike lanes will not be installed if they cannot meet minimum national guidance recommendations.
- 3.1.5. Bike lanes narrower than those shown in Table 1 may be considered where bike lanes are desirable but available right-of-way is insufficient. In constrained right-of-way situations, the widths of bicycle lanes, auto travel lanes, and medians must meet minimum national guidance recommendations.
- 3.1.6. Bicycle lane width does not include the gutter pan.
- 3.1.7. Bicycle lanes shall be constructed or reconstructed level and flush with roadside gutter pans with no more than 5/8-inch difference.
- 3.1.8. Bicycle lanes shall be constructed to avoid hazardous conditions that might force awkward or unsafe bicycle movements. Storm drainage facilities and other utilities shall be designed and located to minimize impacts.
- 3.1.9. Improvements to intersections with bicycle lanes, including resurfacing, shall include bicycle-sensitive signal actuation. Where possible, intersections should be designed to provide safe infrastructure for cyclists. See NACTO Urban Bikeway Design Guide for marking detection area and detection operation, as well as intersection treatments.
- 3.1.10. Where on-street parallel parking is present and bicycle lanes are located to the left of automobile parking, a minimum combined width of 13 feet is required, with a recommended 7-foot-wide parallel parking stall and a 6-foot-wide bike lane. The gutter pan may be included in the parking stall width.
- 3.1.11. Alternate paving options may be used for bicycle lanes, including permeable pavement to address drainage and storm water run-off issues, or to improve the visibility of the bicycle lane by using a different material or pavement color.

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Table 1 – Roadway Elements

<i>Corridor Type</i>	<i>Location</i>	<i>Design Speed (MPH)</i>	<i>Frontage Zone</i>	<i>Sidewalk Width</i>	<i>Landscape / Buffer Zone</i>	<i>Bike Lane Width</i>	<i>Bike Buffer</i>	<i>Bike Lane Width</i>
<i>Premium Transit</i>	Inside Center	30-35	1-2.5'	10-12'	6-8'	6-6.5'	0-3'	10-12'
	Outside Center	35-55	1-2.5'	8-10'	6-8'	6-7'	1.5-3'	10-12'
<i>Major Transit</i>	Inside Center	30-35	1-2.5'	10-12'	6-8'	5-6.5'	0-3'	10-12'
	Outside Center	35-55	1-2.5'	6-10'	6-8'	6-7'	1.5-3'	10-12'
<i>Multi-Modal</i>	Inside Center	30-35	1-2.5'	10-12'	6-8'	5-6.5'	0-3'	10-11'
	Outside Center	35-45	1-2.5'	6-10'	6-8'	6-7'	1.5-3'	10-11'
<i>Commuter</i>	Inside Center	30-35	1-2.5'	10'	6-8'	5-6.5'	1.5-3'	10-12'
	Outside Center	40-55	1-2.5'	6'	6-8'	6-7'	3-5'	10-12'
<i>Main Street</i>	Main Street	25-30	1-2.5'	10-12'	6-8'	5-6.5'	0-3'	10-11'
<i>Other Arterial</i>	Inside Center	30-35	1-2.5'	10'	6-8'	5-6.5'	0-3'	10-11'
	Outside Center	35-55	1-2.5'	6'	5-6'	6-7'	1.5-3'	10-11'
<i>Minor Arterial</i>	Inside Center	30-35	1-2.5'	10'	6-8'	5-6.5'	0-3'	10-11'
	Outside Center	35-40	1-2.5'	6'	5-6'	6-6.5'	1.5-3'	10-11'
<i>Major Collector</i>	Inside Center	25-30	1-2.5'	10'	5-6'	5'	0-3'	10-11'
	Outside Center	30-35	1-2.5'	6'	5-6'	5-6'	0-3'	10-11'
<i>Minor Collector</i>	Inside Center	25-30	1-2.5'	10'	5-6'	5'	0-3'	10-11'
	Outside Center	30-35	1-2.5'	6'	5-6'	5-6'	0-3'	10-11'
<i>Local</i>	Both	18-25	See Local Roads Section	6'	5-6'	Shared Lane		See Local Road Section

3.2. Paved Trail Design

3.2.1. Paved trails, also called multi-use trails or shared-use trails, are separate facilities that are dedicated for pedestrians and cyclists. Trails are designed for use by people of all abilities transportation and recreational purposes. Trails are physically separated from vehicular traffic and are either within the roadway right-of-way or within an easement.

3.2.2. The preferred trail width is 12 feet, with 14 feet for high-use areas and long distance routes, as defined in the LRBS. A trail width of 10 feet may be used in constrained conditions. Whenever possible, easements for trails shall be configured so that a clear field of view for the trail user is provided from each end of the trail.

3.2.3. The minimum right-of-way required for a trail on one side of a roadway is 20 feet. This allows for 5 feet setback from curb, 12 feet trail width, and 3 feet from property line.

3.2.4. A minimum 2-foot shoulder adjacent to both sides of the trail is required to be constructed of compacted base course, subgrade, or crusher fines, with cross-slopes of no more than 2%.

3.2.5. A minimum 3-foot buffer is required between the private property line or any vertical structures and the trail, which may include the compacted shoulder.

Figure 1. Figure 1: Basic Trail Requirements

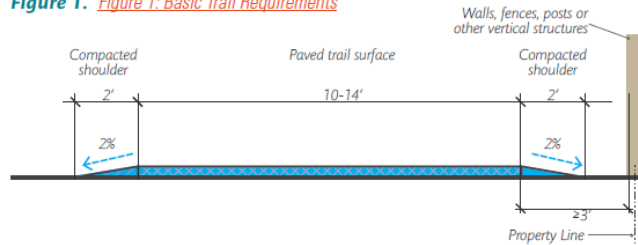


Figure 2. Figure 2: Trail and Sidewalk Example

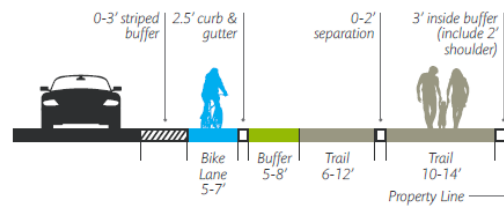


Figure 3. Figure 3: Trail in Lieu of a Sidewalk where Trail Meets Recommended Width of 12-14'

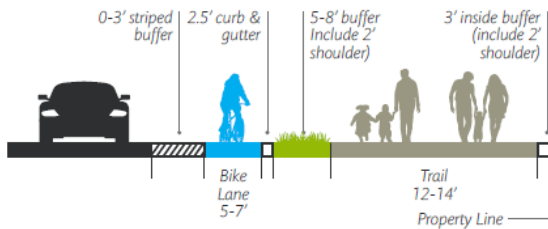
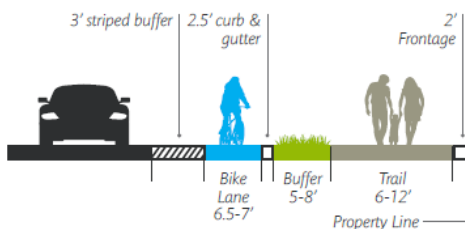


Figure 4. Figure 4: Combination of Sidewalk and Separated Bike Lane/Cycle Track



3.2.6. Trail cross slope shall not exceed 2%. To ensure ADA compliance, it is recommended that cross-slopes be designed for a maximum of 1.5% to allow for tolerance in construction. Trail design should carefully consider compound slopes when there is both a cross slope and running slope. See the Pedestrian Facilities section for slope definitions and requirements.

3.2.7. Trail Running Slope

3.2.7.1. The trail running slope may match but not exceed the general grade established by the adjacent roadway or right-of-way easement.

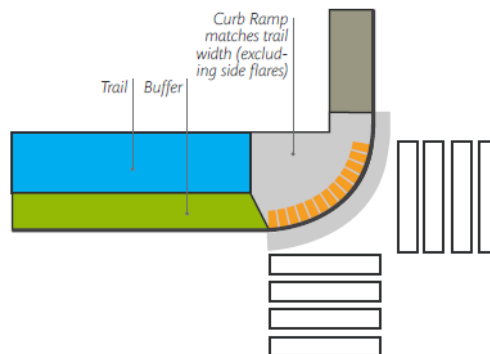
3.2.7.2. Trails not located within a roadway right-of-way shall have a maximum grade of 5% unless designed as an access ramp (with a maximum running slope of 8.3%). Steeper grades may be allowed for short stretches in circumstances with topographical or other constraints.

3.2.7.3. Landings and rest areas shall be provided on extended grades to allow users to stop and rest. The landings should be located outside the trail through lanes, particularly for steep trails and high-use trails.

3.2.7.4. Advance warning signs can be used to identify trail locations with slopes that greatly exceed ADA guidelines, due to the slope of the road or other unavoidable topographic constraints.

3.2.8. Curb ramps are required to provide access between elevated trails and road surfaces. See the Curb Ramp Requirements element of the Pedestrian Facilities section for additional guidance. For trails, ramp width should match the trail width, excluding side flares. (Figure 5) At no point should the access way or ramp be narrower than 10 feet at intersections where a trail is present. Ramps should be free of vertical obstructions.

Figure 5. *Blended transition ramp with matching trail and ramp width*



3.2.9. Future trails within a roadway right-of-way may not be constructed in lieu of a sidewalk without approval of the City Engineer in consultation with the Parks and Recreation Department. Any trails constructed in lieu of a sidewalk must meet recommended trail width dimensions (12-14 feet) and recommended landscape buffer from Table 1 as if it were a sidewalk.

3.2.10. Follow City Bikeways & Trails Facility Plan guidance for equestrian accommodations for trail and bridge design where there is known equestrian use and facilities near Open Space.

3.2.11. Follow AASHTO Guide for the Development of Bicycle Facilities for guardrail requirements for trails next to steep slopes.

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3.2.12. Alternate paving options may be used on paved trails, including permeable pavement, to address drainage and storm water run-off issues. Different pavement materials or colors may also be used to fit in with the natural context in locations near major public open spaces.

3.3. Trail Alternative: Sidewalk and Separated Bicycle Lane

3.3.1. Where future trails and bicycle lanes are shown in combination on the BTFP or LRBS, an alternative design involving a sidewalk and one-way separated bike lanes/cycle tracks may be applied, with approval of the City Engineer.

3.3.2. Sidewalk design for this alternative shall follow requirements specified in the Pedestrian Facilities section.

3.3.3. The one-way separated bikeway/cycle track design shall follow the NACTO Urban Bikeway Design Guide, in conjunction with other national guidance.

3.4. Separated Bicycle Lane Design

3.4.1. Separated bicycle lanes, also called protected bicycle lanes or cycle tracks, include some form of vertical element to separate the bicycle lane from automobile travel lanes. The vertical element may include tubular markers, moveable planters, raised curb, or vehicle parking. Another option is to raise the cycle track to the level of the sidewalk or to an intermediate level between the sidewalk and the roadway.

3.4.2. General recommended separated bicycle lane dimensions involve a 6.5-foot lane and a 3-foot buffer. The ranges provided in Table 1 allow sufficient flexibility for striped buffered bicycle lanes or cycle tracks to be implemented within the recommended dimensions. Two-way cycle tracks are discouraged. See NACTO Urban Bikeway Design Guide for separated bicycle lane/cycle track design guidance.

3.4.3. Separated bicycle lanes are most appropriate along roadways with higher travel speeds and for connections between and within Comp Plan-designated Centers.

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3.5. Bicycle Route Design

- 3.5.1. Bicycle routes are designated roadways in which cyclists share roadway space with motorists. There is no designated infrastructure, though bicycle routes should have appropriate directional and informational signing. See NACTO Urban Bikeway Design Guide and AASHTO Guide for the Development of Bicycle Facilities for further guidance including guidance on wayfinding and shared lane markings.
- 3.5.2. Marking shared auto and bicycle travel lanes is one approach to treating existing roadways with constrained rights-of-way and existing bicycle lanes that do not meet the minimum design standards. This option is only appropriate on roads with low average travel speeds and preferably with low traffic volumes. The sign “Bicycles May Use Full Lane” is the preferred signage to indicate shared-lane facilities. Sharrow lane markings, which are chevron pavement markings, are one way to improve the visibility of a shared roadway.
- 3.5.3. Bicycle routes are most appropriate on low-volume, low-speed roadways. Bicycle routes may feature some traffic calming elements, and may be marked with sharrows.

3.6. Bicycle Boulevard Design

- 3.6.1. Bicycle boulevards are enhanced bike routes designed to encourage the through-movement of bicycles while maintaining local access for motor vehicle travel. Traffic calming devices are used to control motor vehicle speeds and discourage through-vehicle trips. These devices may include diverters, speed humps, traffic circles, or planters that allow through-access by bicycles only. For further guidance, see the NACTO Urban Bikeway Design Guide, the AASHTO Guide for the Development of Bicycle Facilities, and the City Bikeways and Trails Facility Plan.
- 3.6.2. Bicycle boulevards are most appropriate on low-volume, low-speed roadways with direct access to destinations. Ideally they should be at least two miles long. Bicycle boulevards may be parallel to roadways with bicycle lanes to provide lower-stress alternative routes.