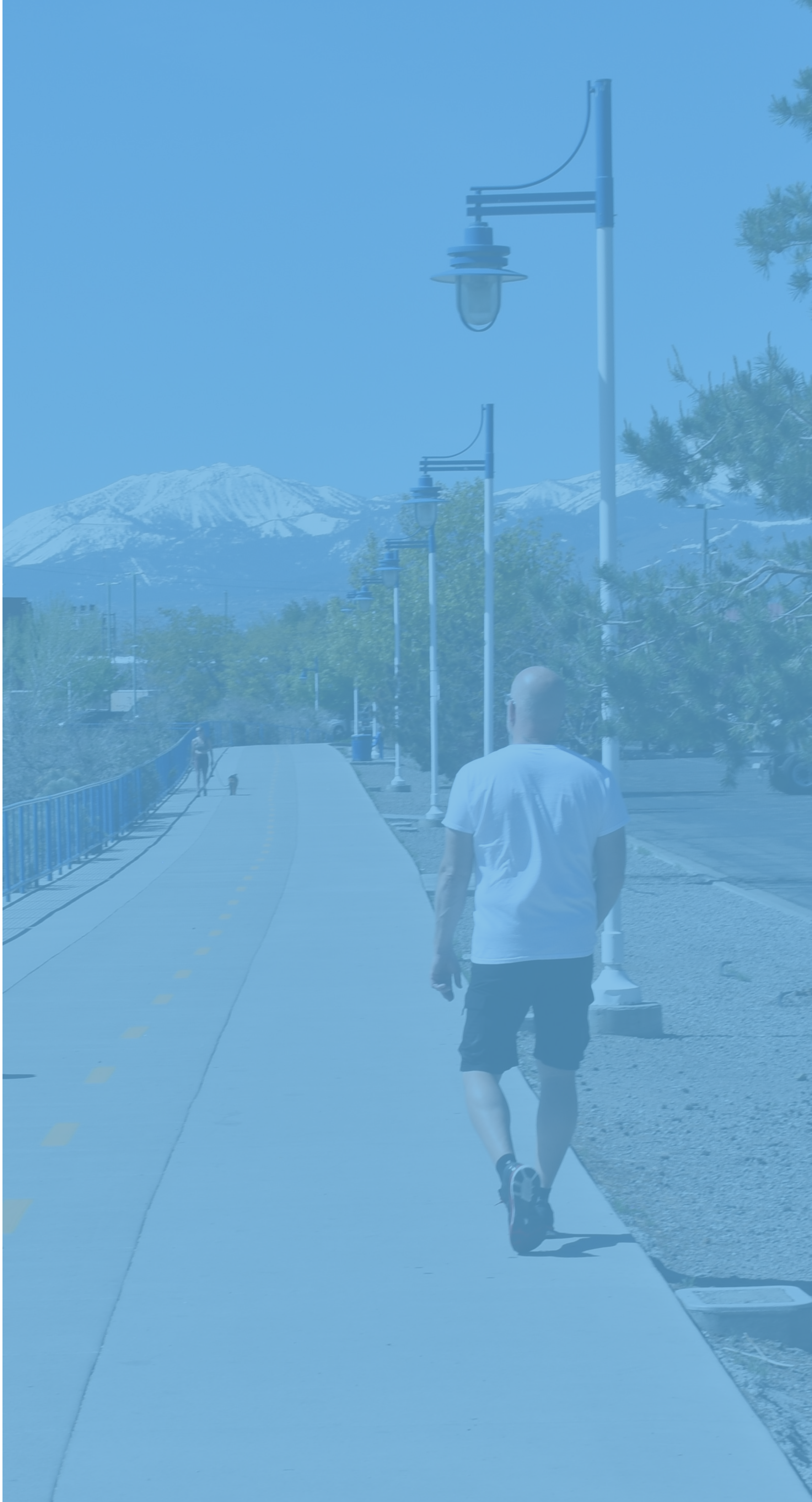
Appendix C: RTC Washoe Street Typology Guide



RTC STREET TYPOLOGY GUIDE

The RTC Street Typology Guide represents a systematic approach to prioritizing the safety and comfort of pedestrians and cyclists in Washoe County. The ten street typologies included in this guide serve as practical examples, illustrating how active transportation can be implemented across diverse street types within the region while exemplifying safe and comfortable designs for pedestrians and cyclists in Washoe County.

What is a Typology?

Streets and roads throughout the Truckee Meadows serve a variety of purposes and needs; from a major six-lane roadway facilitating freight traffic and high volumes of vehicles through industrial zones to two-lane neighborhood streets with a mix of people walking, biking, and driving to their destinations. While the specific needs along each road vary from block to block, the plan has identified 10 different types of streets or "typologies," considering factors such as volumes, speeds, widths, and land use contexts. This Guide addresses this variety by providing a toolbox to practitioners for improving bicycle and pedestrian experiences in a variety of roadway environments. The designs considered in this Guide aim to identify opportunities for reassigning the existing space within the public rights-of-way, creating a safer and more comfortable network for people walking and biking of all ages and abilities.

Plumb Lane (Reno, NV)

How were the typologies developed?

The street typologies included in this section were developed following an in-depth analysis of the existing roadway network functional classifications, average annual daily traffic, posted speeds, and the existing standard roadway design details from the City of Reno, City of Sparks, and Washoe County. Existing regional roadways[1] were divided into ten categories to provide practitioners and the public with a sufficiently broad array of options to address various contexts and roadway types.

Preferred active transportation facilities and spatial dimensions are identified for each street typology based on the most recent guidance available from a variety of national best practice documents including:

- FHWA Bikeway Selection Guide
- FHWA Small Town and Rural Multimodal Networks
- FHWA Safe Transportation for Every Pedestrian (STEP)
- FHWA Proven Safety Countermeasures
- NACTO Don't Give Up At the Intersections
- NACTO Urban Bicycle Design Guide
- NACTO Designing for All Ages & Abilities

While the preferred facility is identified as the most appropriate for this street type, some circumstances or local conditions may prevent the implementation of the most preferred facility type for people walking or biking, which may require consideration of alternative design options.

1 New regional roadways will be assigned a typology based on identified functional classification and land use context.

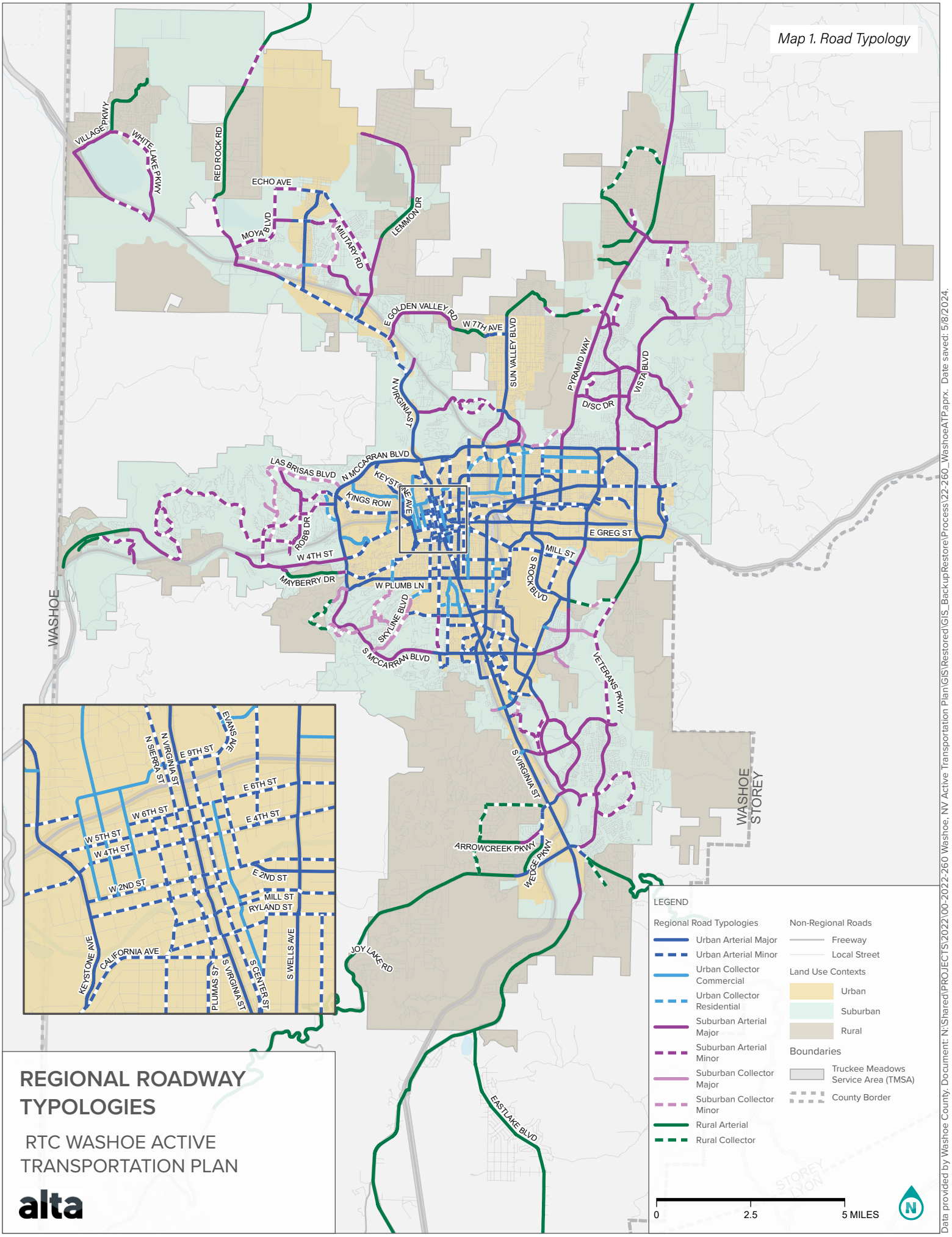
How should this guide be used?

The RTC Street Typology Guide is a starting point for how to accommodate people walking, biking, and rolling (or using active transportation modes) within regional roadway projects in the Truckee Meadows based on the best available guidance from around the country.

The facility design concepts identified in this guide are intended to help improve safety and enhance the comfort of the transportation network for people walking and rolling around the Truckee Meadows, however, this guide is intended to be adapted into the context of each roadway project. As the variability of the Truckee Meadows is vast, so too is the adaptability of the typologies guide. This guide establishes a baseline for practitioners, local agency staff, stakeholders, and the public when considering active transportation needs on different roadway design projects throughout the City. This guide assigns a typology to each existing regional roadway in the Truckee Meadows which is highlighted on Map 1.

To use this guide, follow the steps identified below:

1. Identify applicable Street Typology for the select roadway (Map 1).
2. Identify typology preferred facilities for bicyclists and pedestrians. Consider engineering judgment, local needs, and feasibility to define final facility type.
3. Select applicable design enhancements for the select roadway (Table 2) based on engineering judgement


Map 1. Road Typology
VILLAGE PKWY
WHITE LAKE PKWY
RED ROCK RD
ECHO AVE
MOYA BLVD
MILITARY RD
LEMMON DR
E GOLDEN VALLEY RD
W 7TH AVE
SUN VALLEY BLVD
PYRAMID WAY
VISTA BLVD
DISC DR
N VIRGINIA ST
LAS BRISAS BLVD
N MCCARRAN BLVD
KEYSTONE AVE
TINGS ROW
ROBB DR
W 4TH ST
MAYBERRY DR
W PLUMB LN
E GREG ST
MILL ST
S ROCK BLVD
SKYLINE BLVD
S MCCARRAN BLVD
VETERANS PKWY
WASHOE
S VIRGINIA ST
ARROWCREEK PKWY
WEDGE PKWY
WASHOE
STOREY
JOY LAKE RD
EASTLAKE BLVD
N SIERRA ST
N VIRGINIA ST
EVANS AVE
E 9TH ST
E 6TH ST
W 6TH ST
E 4TH ST
W 5TH ST
W 4TH ST
W 2ND ST
E 2ND ST
MILL ST
RYLAND ST
KEYSTONE AVE
CALIFORNIA AVE
PLUMAS ST
S VIRGINIA ST
S CENTER ST
S WELLS AVE
LEGEND
Regional Road Typologies
Urban Arterial Major
Urban Arterial Minor
Urban Collector Commercial
Urban Collector Residential
Suburban Arterial Major
Suburban Arterial Minor
Suburban Collector Major
Suburban Collector Minor
Rural Arterial
Rural Collector
Non-Regional Roads
Freeway
Local Street
Land Use Contexts
Urban
Suburban
Rural
Boundaries
Truckee Meadows Service Area (TMSA)
County Border
0
2.5
5 MILES
N
REGIONAL ROADWAY TYPOLOGIES
RTC WASHOE ACTIVE TRANSPORTATION PLAN
alta
Data provided by Washoe County. Document: N:\Shared\PROJECTS\2022\00-2022-260 Washoe, NV Active Transportation Plan\GIS\Restored\GIS_BackupRestore\Process\22-260_WashoeATP.aprx. Date saved: 5/8/2024.

What does this guide NOT do?

1. This guide **does NOT** address all issues which may arise in roadway design; engineering judgement must be used to review, refine, and evaluate recommendations for each roadway.
2. This guide **does NOT** supersede established design manuals or guidance.
3. This guide **does NOT** override engineering judgement or neighborhood desires.
4. This guide **does NOT** prescribe a specific design for all street types.

McCarran Boulevard (Sparks, NV)

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Street Typology—Roadway and Intersection Design Elements

The design of our roadways significantly impacts the experience of pedestrians and cyclists. Elements like lane widths, crosswalk design, and dedicated bike lanes can influence safety, comfort, and overall ease of navigating the streets. To assist in creating a more welcoming environment for all users, this table presents the typical appropriateness of various design elements for corridors and intersections. This table is not meant as a one-size-fits-all solution, but rather an array of options to consider and review during the design process, allowing for tailored solutions for each unique corridor segment. Table 2, included on the following page, provides additional guidance on the applicability of common crossing improvements for people walking and biking.

Table 1. Roadway and Intersection Design Elements

	Rural		Suburban				Urban				Additional Resources
	Arterial	Collector	Arterial Major	Arterial Minor	Collector Major	Collector Minor	Arterial Major	Arterial Minor	Collector Com.	Collector Res.	
Speed Management **This strategy focuses on placing objects in the roadway which result in either a horitzontal (neckdowns, chicanes, median islands) or vertical deflection (Speed Tables / Speed Humps / Speed Cushions). Special consideration should be taken for vertical deflection to avoid impacts to emergency vehicle routes.**											
Neckdowns	■	★	■	■	●	★	■	■	●	★	FHWA Traffic Calming ePrimer 3.17
Chicanes	■	★	■	■	●	★	■	■	●	★	FHWA Traffic Calming ePrimer 3.5 & 4.3
Median Islands	★	★	★	★	★	★	★	★	★	★	FHWA Traffic Calming ePrimer 3.18
Speed Tables / Speed Humps / Speed Cushions	■	★	■	■	●	★	■	■	●	★	FHWA Traffic Calming ePrimer 4.1

★ Element likely appropriate for consideration based on guidance
● Element may be appropriate, requires further engineering review
■ Element not appropriate
[1] Except slip lanes

FHWA Safe Transportation for Every Pedestrian (STEP)
FHWA Proven Safety Countermeasures (PSC)
NACTO Urban Bikeway Design Guide (UBDG)
NACTO Don't Give Up At The Intersection (DGUAI)
NACTO Urban Street Design Guide (USDG)

FHWA, "Traffic Calming ePrimer - Module 3", FHWA Highway Safety Programs (Feb 2017). Available at https://highways.dot.gov/safety/speed-management/traffic-calming-eprimer

	Rural		Suburban				Urban				Additional Resources
	Arterial	Collector	Arterial Major	Arterial Minor	Collector Major	Collector Minor	Arterial Major	Arterial Minor	Collector Com.	Collector Res.	
Intersection Geometry **Adjusting specific dimensions of an intersection or the overall design can help to reducing speeds for vehicles while they enter the intersection thus reducing the intensity of crashes. The methods below can be applied to reduce speeds and volumes of vehicles travel through intersections. An engineering study must be performed prior to implementing a change of intersection control type (i.e. roundabout)**											
Curb Radii	★	★	★	★	★	★	★	★	★	★	NACTO USDG
Diverters / Modal Filtering	■	●	■	■	■	●	■	■	■	●	FHWA Traffic Calming ePrimer 3.21
Neighborhood Traffic Circles	■	■	■	■	★	★	■	■	★	★	FHWa Traffic Calming ePrimer 3.7 & 4.4
Roundabouts	★	★	★	★	★	★	★	★	★	★	FHWA Traffic Calming ePrimer 3.
Crossings **Increasing the visibility of crossings and reducing total crossing distances can help to improve crossing safety for active modes and enhance connectivity. These strategies can be applied at existing or new crossing locations.**											
Marked Crosswalks	★	★	★	★	★	★	★	★	★	★	FHWA PSC
Curb Extensions	★	★	★	★	★	★	★	★	★	★	NACTO USDG
Raised Crosswalks	■[1]	●	■[1]	■[1]	●	●	■[1]	■[1]	●	●	FHWA Traffic Calming ePrimer 3.14
Median Crossing Islands	★	★	★	★	★	★	★	★	★	★	FHWA STEP & PSC
Rectangular Rapid-Flashing Beacons	●	★	●	●	★	★	●	●	★	★	FHWA STEP & PSC
Bike Intersection Treatments **The following treatments provide additional safety for bicyclists at intersections by providing clear crossing paths and space at intersections. The application of bicycle treatments below should be considered at all intersections of high-separation bicycle facilities (shared use paths & cycle tracks)**											
Bike Signals	★	★	★	★	★	★	★	★	★	★	NACTO - UBDG
Bike Boxes	■	★	■	■	★	★	■	■	★	★	NACTO - UBDG
Two-stage Turn boxes	★	★	★	★	★	★	★	★	★	★	NACTO - UBDG
Protected Intersections	●	●	★	★	★	★	★	★	★	★	NACTO - DGUAI

★ Element likely appropriate for consideration based on guidance
● Element may be appropriate, requires further engineering review
■ Element not appropriate
[1] Except slip lanes

FHWA Safe Transportation for Every Pedestrian (STEP)
FHWA Proven Safety Countermeasures (PSC)
NACTO Urban Bikeway Design Guide (UBDG)
NACTO Don't Give Up At The Intersection (DGUAI)
NACTO Urban Street Design Guide (USDG)

Table 2 provides additional guidance from the FHWA on the applicability of common crossing improvements for people walking and biking. This table is included to help provide a starting point for identifying appropriate crossing measures during the neighborhood planning process.

Table 2. Application of Pedestrian Crash Countermeasures by Roadway Feature

Roadway Configuration	Posted Speed Limit and AADT								
	Vehicle AADT <9,000			Vehicle AADT 9,000–15,000			Vehicle AADT >15,000		
	≤30 mph	35 mph	≥40 mph	≤30 mph	35 mph	≥40 mph	≤30 mph	35 mph	≥40 mph
2 lanes (1 lane in each direction)	❶ 2 4 5 6	❶ 5 6 7 9	① 5 6 ❼ ❾	❶ 4 5 6	❶ 5 6 7 9	① 5 6 ❼ ❾	❶ 4 5 6 7 9	① 5 6 7 9	① 5 6 ❾
3 lanes with raised median (1 lane in each direction)	❶ 2 3 4 5 7 9	❶ ❸ 5 7 9	① ❸ 5 ❼ ❾	① 3 4 5 7 9	① ❸ 5 ❼ ❾	① ❸ 5 ❼ ❾	① ❸ 4 5 7 9	① ❸ 5 ❼ ❾	① ❸ 5 ❾
3 lanes w/o raised median (1 lane in each direction with a two-way left-turn lane)	❶ 2 3 4 5 6 7 9	❶ ❸ 5 6 7 9	① ❸ 5 6 ❾	① 3 4 5 6 7 9	① ❸ 5 6 ❼ ❾	① ❸ 5 6 ❾	① ❸ 4 5 6 7 9	① ❸ 5 6 ❾	① ❸ 5 6 ❾
4+ lanes with raised median (2 or more lanes in each direction)	❶ ❸ 5 7 8 9	❶ ❸ 5 7 8 9	① ❸ 5 8 ❾	① ❸ 5 7 8 9	① ❸ 5 ❼ 8 ❾	① ❸ 5 8 ❾	① ❸ 5 ❼ 8 ❾	① ❸ 5 8 ❾	① ❸ 5 8 ❾
4+ lanes w/o raised median (2 or more lanes in each direction)	❶ ❸ 5 6 7 8 9	① ❸ 5 ❻ 7 8 9	① ❸ 5 ❻ 8 ❾	① ❸ 5 ❻ 7 8 9	① ❸ 5 ❻ ❼ 8 ❾	① ❸ 5 ❻ 8 ❾	① ❸ 5 ❻ ❼ 8 ❾	① ❸ 5 ❻ 8 ❾	① ❸ 5 ❻ 8 ❾

Given the set of conditions in a cell,

- # Signifies that the countermeasure is a candidate treatment at a marked uncontrolled crossing location.
- ● Signifies that the countermeasure should always be considered, but not mandated or required, based upon engineering judgment at a marked uncontrolled crossing location.
- ○ Signifies that crosswalk visibility enhancements should always occur in conjunction with other identified countermeasures.*

The absence of a number signifies that the countermeasure is generally not an appropriate treatment, but exceptions may be considered following engineering judgment.

1. High-visibility crosswalk markings, parking restrictions on crosswalk approach, adequate nighttime lighting levels, and crossing warning signs
2. Raised crosswalk
3. Advance Yield Here To (Stop Here For) Pedestrians sign and yield (stop) line
4. In-Street Pedestrian Crossing sign
5. Curb extension
6. Pedestrian refuge island
7. Rectangular Rapid-Flashing Beacon (RRFB)**
8. Road Diet
9. Pedestrian Hybrid Beacon (PHB)**

**Refer to Chapter 4, 'Using Table 1 and Table 2 to Select Countermeasures,' for more information about using multiple countermeasures.*

***It should be noted that the PHB and RRFB are not both installed at the same crossing location.*

This table was developed using information from: Zegeer, C.V., J.R. Stewart, H.H. Huang, P.A. Lagerwey, J. Feaganes, and B.J. Campbell. (2005). Safety effects of marked versus unmarked crosswalks at uncontrolled locations: Final report and recommended guidelines. FHWA, No. FHWA-HRT-04-100, Washington, D.C.; FHWA. Manual on Uniform Traffic Control Devices, 2009 Edition. (revised 2012). Chapter 4F, Pedestrian Hybrid Beacons. FHWA, Washington, D.C.; FHWA. Crash Modification Factors (CMF) Clearinghouse. http://www.cmfclearinghouse.org/; FHWA. Pedestrian Safety Guide and Countermeasure Selection System (PEDSAFE). http://www.pedbikesafe.org/PEDSAFE/; Zegeer, C., R. Srinivasan, B. Lan, D. Carter, S. Smith, C. Sundstrom, N.J. Thirsk, J. Zegeer, C. Lyon, E. Ferguson, and R. Van Houten. (2017). NCHRP Report 841: Development of Crash Modification Factors for Uncontrolled Pedestrian Crossing Treatments. Transportation Research Board, Washington, D.C.; Thomas, Thirsk, and Zegeer. (2016). NCHRP Synthesis 498: Application of Pedestrian Crossing Treatments for Streets and Highways. Transportation Research Board, Washington, D.C.; and personal interviews with selected pedestrian safety practitioners.

Street Typology Guide Considerations and Notes

Street typology design concepts and facility preferred widths are a starting point but must be applied to the real-world contexts of each individual street. RTC will help guide the application of the typology guide to streets while considering overall feasibility and constructability compared to the community desire and engineering judgement. This section identifies key considerations for the application of the Street Typology Guide. These considerations apply to all typologies included in this guide.

1. The RTC and local agency may adjust the facility design type based on engineering judgement, local needs, and issues of constructability.
2. While it may not be feasible to incorporate significant improvements into all RTC projects, the RTC will identify the scale of improvement which is most appropriate for implementation within upcoming projects[2] and identify future projects to address more significant improvements which may require additional funding and planning. RTC will program identified projects based on priority and community need of the improvement(s).
3. A comprehensive review of safety and traffic operations is required to determine the optimal configuration for each project. This includes factors like the appropriate number of travel lanes, the presence and design of bicycle lanes, the selection of pedestrian crossing facilities, and the implementation of countermeasures detailed in Table 1. Engineering judgement, relevant guidelines, and community desires will all be considered when making these crucial decisions on a project-by-project basis.

Street Typology Notes and Disclaimers

1. Absolute minimum bicyclable width of ridable surface for two-way bicycle facilities in pinchpoints / constrained areas should be 8 feet – absolute minimum widths should only be applied at pinchpoints / constrained areas. The minimum bicyclable width (ridable surface) for two-way facilities should be 10 feet, with a preferred width of 12+ feet.
2. Absolute minimum bicyclable width of ridable surface for one-way facilities is 4 feet, to be used in pinchpoints / constrained areas – absolute minimum bicyclable widths should only be applied at pinchpoints / constrained areas.
3. Shared Use Paths and Cycle Track widths should be wider than preferred widths when significant bicycle & pedestrian volumes are present or anticipated. Additional separation may be required between pedestrians and bicyclists in areas with high volumes of people walking and biking. Therefore, Shared Use Paths may not be appropriate or feasible in dense urban areas without being appropriately sized with space clearly delineated. Separate facilities are recommended within dense urban environment.
4. The ridable facility width as identified in this guide is not inclusive of the gutter pan.

2 Under the current Streets & Highways policy, the RTC considers active transportation elements within each new roadway project, capacity roadway project, active transportation project, and pavement preservation project.

Which High-Separation Facility is the right one?

RTC Washoe is dedicated to providing a low-stress and connected network for people walking and biking in the Truckee Meadows through a context sensitive application of the latest national guidance. As such, the RTC Typology Guide identifies high-separation facilities including Cycle Tracks (One-way or Two-way) and Shared Use Paths as the preferred way to accommodate people walking and biking on collectors and arterials. These facilities provide the highest level of separation and comfort for the user on regional roads and provide the preferred level of comfort and separation across all typologies. Due to the variety of bicycle and pedestrian activity levels and intensity of development patterns present across urban, suburban, and rural contexts the need for separation between people walking, biking, and driving on regional roads will vary by context. In urban areas where volumes of people walking and biking are typically higher it is preferred to provide separate space for people walking, biking, and driving through the use of a sidewalk, cycle track, and vehicle lanes. In suburban and rural areas where volumes of people walking and biking are typically lower than urban areas, a shared-use path is typically optimal for both people walking and biking as the smaller number of users can more easily share the same space. RTC's approach to providing separation between user groups across the three different land use contexts is highlighted in Table 3. As shown, the preference is to separate all modes in urban areas and separate people driving and people using active modes in suburban and rural contexts. The secondary levels of separation also provide high levels of comfort when properly designed in the given context. The least preferred level of separation allows vehicles and bicyclists to mix in the same space or provide separation through paint alone. Without adequate traffiic calming measures to reduce vehicle speeds and volumes, this level of separation may result in higher levels of traffic stress than desired. When adequate speed and volume management strategies are applied to keep calm vehicle traffic on neighborhood roads, this level of separation can provide a valuable connection on local roadways.


Cycle Track - Victorian Ave


Shared Use Path - Veterans Parkway


Bike Lane - Plumb Lane

Specific facilities will be identified for individual regional roads during the Neighborhood Planning process which will consider the area land use, the potential conflicts with driveways, right-of-way constraints, and the level of access required for destinations on each side of the roadway. Table 4 presents typical applications for each facility type and key factors for practitioners to consider when selecting the right high-separation facility on regional roadways. Practitioners are encouraged to consider all high-separation facilities during the conceptual design process and use the table below as a starting point for selecting the facility that is most appropriate to the specific corridor context.

Table 3. Preferred Separation of Modes on regional roads by Land Use Context in the Truckee Meadows

Separation of modes	Example facility / facilities	Urban	Suburban	Rural
	One-way Cycle Tracks and sidewalk	★★★	★★	★★
	Shared Use Path	★★	★★★	★★★
	Bike lanes, traffic calmed streets	★	★	★

★★★ - Optimal level ★★ - Secondary level ★ - Least preferred level

Table 4. High-Separation Bicycle and Pedestrian Facilities in the Truckee Meadows

Facility	One-Way Cycle Track	Two-Way Cycle Track	Shared Use Path
Typical Applications	▪ Streets with parking lanes ▪ Streets with high bicycle volumes ▪ Streets with high motor vehicle volumes and / or speeds ▪ Most appropriate in urban areas	▪ Streets with few conflicts such as driveways or cross-streets on one side of the street ▪ Streets which lack room for a one-way cycle track on both sides of the street ▪ One-way streets where contra-flow bicycle travel is desired ▪ Streets with more destinations on one side of the street ▪ Streets with extra right of way on one side ▪ Most appropriate in urban areas	▪ Streets with parking lanes ▪ Streets with medium to high bicycle volumes ▪ Streets with high motor vehicle volumes and / or speeds ▪ Most appropriate in areas with low to moderate pedestrian volumes and limited conflicts with fronting land uses. ▪ Streets with additional right-of-way ▪ Along parks, rivers, green space, highways or corridors where there are limited conflicts with vehicles
Considerations	▪ Special consideration should be given at transit stops to manage bicycle and pedestrian interactions ▪ May not be appropriate in areas with low-bicycle demand	▪ Most appropriate on one-way streets. May be applied on two-way streets where conflicts with the two-way cycletrack can be minimized through bike signals and other intersection treatments. ▪ Require additional consideration on streets with significant number of commercial driveways and side-street crossings ▪ Special consideration should be given at transit stops to manage bicycle and pedestrian interactions ▪ Require good signage to alert drivers to contraflow bicycle traffic ▪ Require bicycle signals at signalized intersections ▪ May not be appropriate in areas with low-bicycle demand	▪ Where Shared Use Paths terminate it may be necessary to transition users to a facility on the opposite side of the road ▪ Potential for conflicts at commercial driveways with contra-flow bicyclists ▪ Require additional consideration on streets with significant number of commercial driveways and side-street crossings ▪ Where sufficient roadway width or right of way is available in the rural context, designers may consider simultaneous provision of both shared-use path and bicycle accessible shoulders to serve a diverse range of user types

CYCLE TRACKS:

Land Use - For use inside built-up urban areas where a moderate to high volume of bicyclist and pedestrians is expected

SHARED USE PATHS:

Land Use - Generally appropriate outside of densely built-up areas, and also as a corridor connection within built-up areas.

NACTO, "Urban Bikeway Design Guide - 2nd Edition. Pages 27 - 41", Island Press (2014). Available at https://nacto.org/publication/urban-bikeway-design-guide/

FHWA, "Small Towns & Rural Multimodal Networks Guide. Pages 4-3 to 4-18", FHWA, (2016). Available at https://ruraldesignguide.com/

Street Typology Cutsheets—A How To Guide:

Each street typology is presented in a two-page cutsheet below which includes four key elements to help identify the right typology, select the preferred facility and consider examples of potential configurations. This section provides a brief explanation of each element of the cutsheet.

ROADWAY CHARACTERISTICS

Provides a concise overview of essential road characteristics that are typical to roads within each typology. Characteristics include the right of way (ROW) width, number of typical lanes, average to maximum daily traffic counts, and a range of typical low to high posted speed limits.

BIKE FACILITIES

Highlights preferred facilities in green and secondary facilities in blue; additional facilities to accommodate bicyclists are also included for consideration. All facilities include a preferred and minimum widths for the facility and associated buffer. Facilities which are feasible but may not achieve the identified goals are also highlighted.

CROSS-SECTIONS (EXISTING & CONCEPTUAL)

Showcases a cross-section of typical existing condition for each typology including the typical pedestrian and bicycle facility types, number of lanes, and a sampling of typical land uses which are found along the typology. Conceptual configurations of the existing conditions are also included in this section for consideration of different improvements types. Concepts include both long-term and quick-build style improvements.

PEDESTRIAN FACILITIES

Details the facility types that designate dedicated space and space buffer for pedestrians. The table includes preferred and minimum facility widths required for each facility type.

Quick-build improvements are included in typologies in to showcase potential configurations; more information on this style of improvements is provided on the following page.

Quick-build Improvements

Quick-build rapidly implements cost-effective safety enhancements for bicycles, pedestrians, or traffic, using adaptable materials that can be easily modified or removed. These initiatives typically transition from concept to reality within relatively short timeframes, providing immediate benefits in walking and bicycling safety. This allows local governments to test design concepts which reallocate street space.

RTC's approach to reallocating street space focuses on leveraging opportunities for more efficient use of space by applying the following hierarchy:

1. Utilize available shoulders
2. Narrow travel lanes
3. Remove excess travel lanes
4. Remove excess / underutilized parking
5. Reallocate / adjust vehicle capacity
6. Remove highly utilized vehicle parking - Strategies for off-setting potential impacts to vehicle parking that can be incorporated into quick build project designs include:

- Removing parking on only one side
- Converting parrallel parking to reverse-angle parking on one-side

Quick-build projects can last for years with proper maintenance or reconstruction using more durable materials. Quick-build improvements allow for projects from neighborhood plans to be swiftly implemented with potential for enduring improvements guided by public input and usage patterns.

The overarching aim is to more rapidly establish a secure, interconnected network of comfortable, protected, and connected facilities for walking, bicycling, and micromobility than would otherwise be possible when exclusively using permanent materials.

Quick-build improvements can be implemented using a wide variety of low-cost materials based on the length of the project and overall need for protection on the road. Common materials which have proven effective in installations across the country are show on the following pages and highligted within the typologies to showcase the potential applications for different quick build treatments. Quick-build projects are intended to be located in high use areas in order to focus resources in areas with the greatest need and potential users.

When designing a quick-build project, practitioners should take care to identify materials that match the proposed duration of the project. More durable materials should be used on projects with longer proposed durations in order to reduce maintenance needs and potential safety hazards from barrier materials which may be damaged.

For more information regarding materials and considerations for quick-build projects, please see the following resources:

- NACTO - Urban Street Design Guide – Interim Design Strategies
- California Bicycle Coalition—Quick-build Guide
- Tactical Urbanist's Guides: Tactical Urbanism Materials and Design Guide
- People for Bikes: Quick-build for Better Streets

The recent quick build project on 5th St (above) in Reno helped the RTC test the parking protected bike lane design

Common Quick Build Materials

Surface Mounted Flexible Guide Posts - $

Primary Use: Bikeway separation (spacing 8′ to 20′ (50′ max) intervals)

Additional Uses: Bike Corrals, Median Island, Curb Extension, Pedestrian Plaza Spaces, Parklets, Mini Roundabout, Traffic Circles

Durability: Very durable due to plastic material and flexibility

Maintenance: Requires occasional maintenance, repair/replace when damaged, may be removed for winter and snow clearing.

Parking Curbs (Pre-Cast Concrete Curbs) - $$

Primary Use: Spatial separation / barrier for bikeways (2′ to 10′ (50′ max) intervals) and pedestrian facilities

Additional Uses: Bike Parking, Curb Extensions, Median Islands

Durability: Highly durable, Concrete and welded rebar frame makes this highly durable

Maintenance: Rare maintenance required, Install vertical delineators (with posts &/or ribbons) at 25′ to 50′ intervals to help identify curb location.

Large Planters - $$-$$$

Primary Use: Spatial separation / barrier for bikeways and pedestrian facilities

Additional Uses: Bike Corrals, Median Island, Curb Extension, Pedestrian Plaza Spaces, Parklets.

Durability: Level of durability varies based on material (fiberglass, plastic, concrete)

Maintenance: Requires occasional maintenance, repair/replace when damaged, refer to manufacturing specification for water system maintenance.

$-$$$ - Order of magnitude cost

Common Quick Build Materials

Impact Resistant Delineator Posts - $$

Primary Use: Spatial separation / barrier for bike ways (spacing 8′ to 20′ (50′ max) intervals)

Additional Uses: Median Island, Curb Extension, Pedestrian Plaza Spaces, Mini Roundabout, Traffic Circles

Durability: Very durable due to plastic material and flexibility

Maintenance: Requires occasional maintenance, repair/replace when damaged, may be removed for winter and snow clearing.

Water Filled Plastic Barriers - $$

Primary Use: Spatial separation / barrier for bikeways. Can be used for pedestrian facilities if there are no gaps between each unit.

Additional Uses: Median Island, Roadway Closures, Parklets

Durability: Plastic material can withstand vehicular impact. Filled with water or sand to enhance stability.

Maintenance: Low maintenance, repair/replace when damaged, Sand advised for areas with freezing temperatures.

Concrete Jersey Barriers - $$-$$$

Primary Use: Spatial separation / barrier for bikeways. Can be used for pedestrian facilities if there are no gaps between each unit.

Additional Uses: Median Island, Bridge, Pedestrian Plaza Spaces, Intersections

Durability: Highly durable, Concrete and welded rebar frame makes this highly durable

Maintenance: Low/rare maintenance, repair/replace when damaged

URBAN ARTERIAL (MAJOR)

Typical Existing Roadway

Average of Right-of-Way (ROW): 129 feet

Typical Lanes: 4 to 6 lanes

Average to Maximum ADT: 18,000 to 31,500

Posted Speed Limits: 35-45 mph

Description: Largest urban roads for moving people efficiently surrounded by high/medium density uses (office, commercial, residential, industrial).

Examples:

- *S. Virginia Street*
- *Wells Avenue*
- *N. McCarran Boulevard*
- *Prater Way*

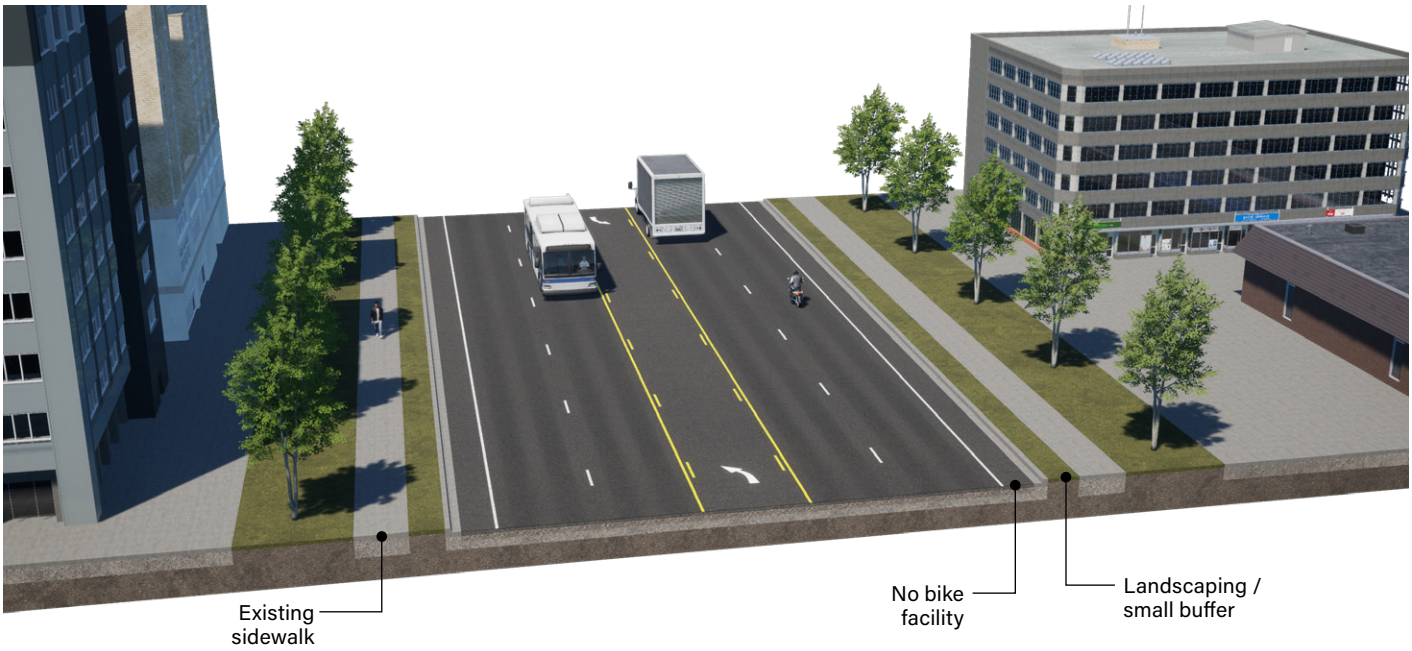
	Preferred	Minimum
One-Way Cycle Track (track/buffer)	**12' (7'/5')**	**9' (6'/3')**
Two-Way Cycle Track (track/buffer)	**16'+ (12'/4+')**	**13' (10'/3')**
Shared-Use Path (path/buffer)	**19' (12'/7')**	**15' (10'/5')**
Buffered bicycle lane (includes buffer)	12' (7'/5')	9' (6'/3')
Bicycle Lane (On-Street parking not permitted, curb and gutter present)	*7'*	*5'*

	Preferred	Minimum
Sidewalk	**8 - 12'**	**6'**
Sidewalk Buffer (travel lane)	**5' - 7'**	**5'**

LEGEND:

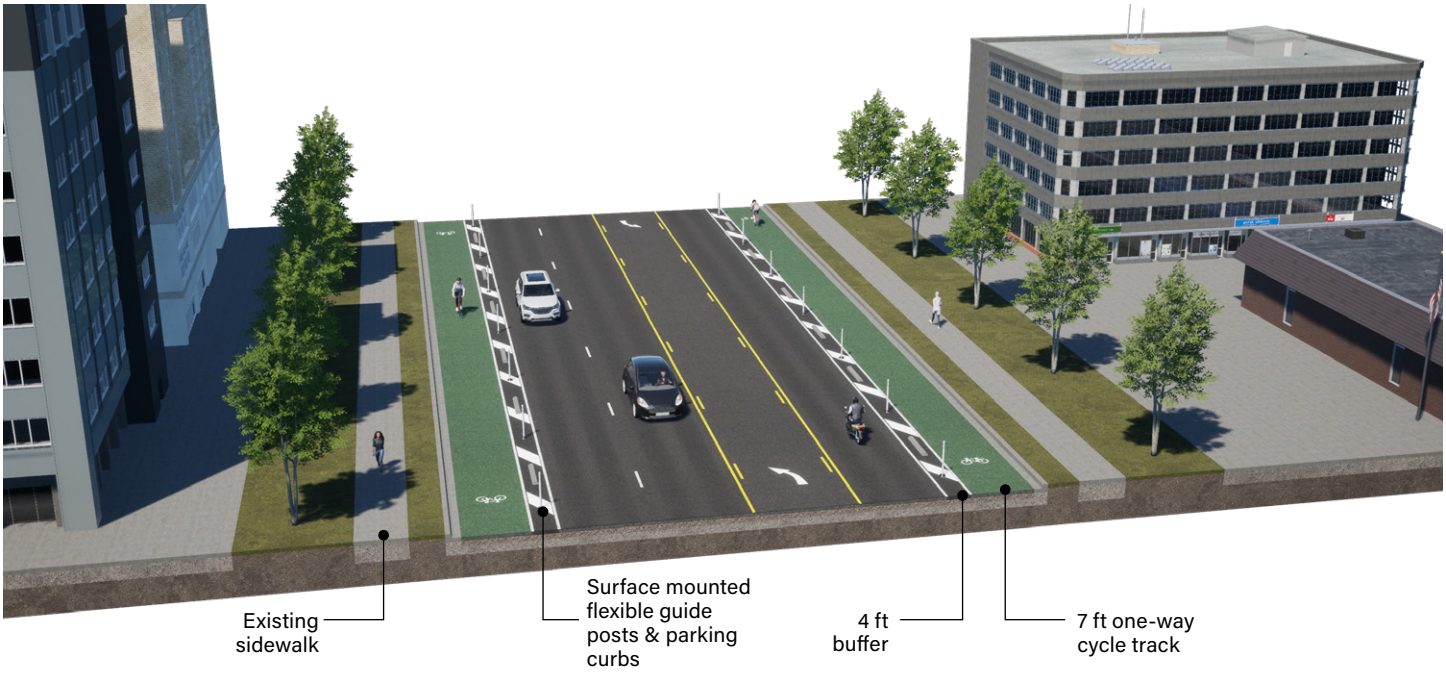
Preferred Facility Type
Secondary Facility Type
Additional Facility Types for Consideration
Facilities which may not satisfy goals or FHWA Guidance

EXAMPLE OF A TYPICAL EXISTING URBAN ARTERIAL (MAJOR)

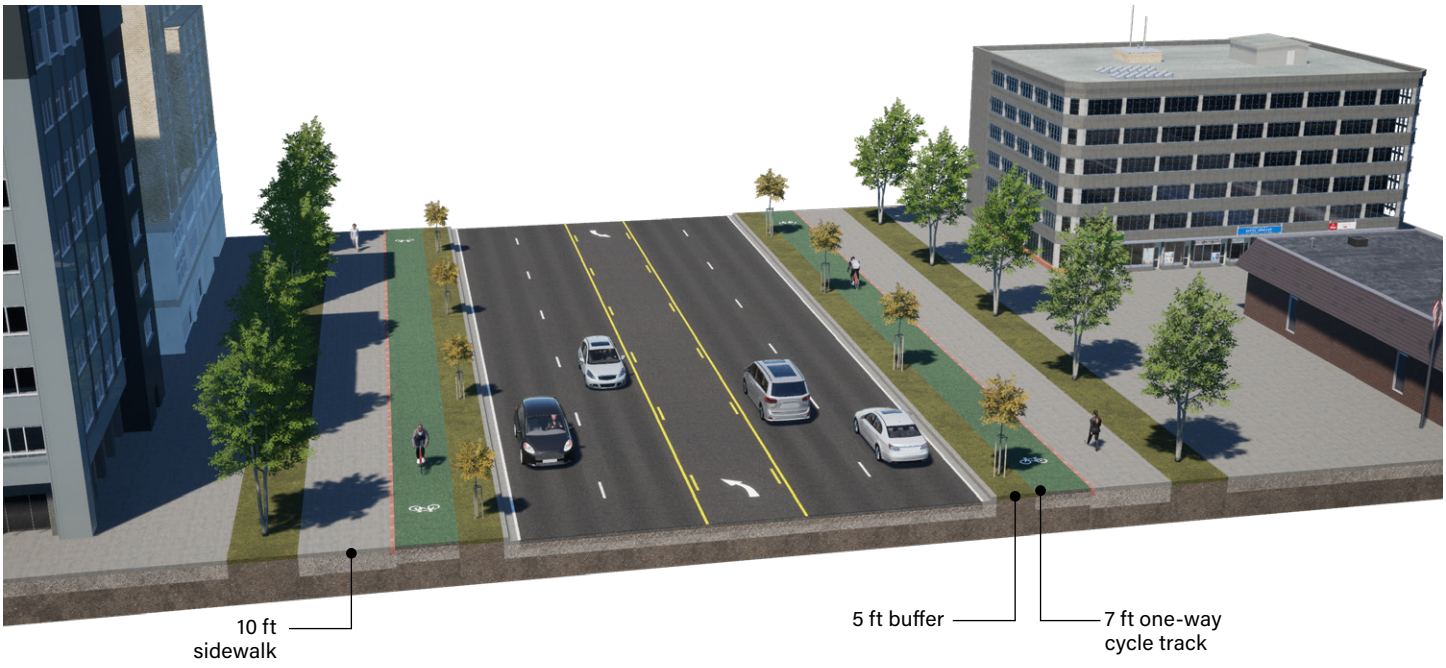


Examples of Potential Configurations

EXAMPLE OF QUICK-BUILD STYLE* IMPROVEMENT



EXAMPLE OF PREFERRED SEPARATION STYLE



**QUICK BUILD STYLE IMPROVEMENT ONLY APPLIES WITHIN EXISTING CURBS*

BIKE LANES ARE SHOWN AS GREEN FOR DIAGRAMMATIC PURPOSES ONLY

URBAN ARTERIAL (MINOR)

Typical Existing Roadway

Average of Right-of-Way (ROW): 88 feet

Typical Lanes: 3 to 4 lanes

Average to Maximum ADT: 6,600 to 14,000

Posted Speed Limits: 30 mph

Description: Large urban roads for movement of people with medium densities of commercial, residential, and office uses.

Examples:

- *W. 7th Street*
- *Plumas Street*
- *El Rancho Drive*

	Preferred	Minimum
One-Way Cycle Track (track/buffer)	**10' (7'/3')**	**7' (5'/2')**
Two-Way Cycle Track (track/buffer)	**15'+ (12'/3')**	**12' (10'/2')**
Shared-Use Path (path/buffer)	**19' (12'/7')**	**15' (10'/5')**
Buffered bicycle lane (includes buffer)	9' (6'/3'+)	7' (5'/2')
Bicycle Lane (On-Street parking not permitted, curb and gutter present)	6'	5'

	Preferred	Minimum
Sidewalk	**6' - 8'**	**6'**
Sidewalk Buffer (travel lane)	**5' - 7'**	**5'**

LEGEND:

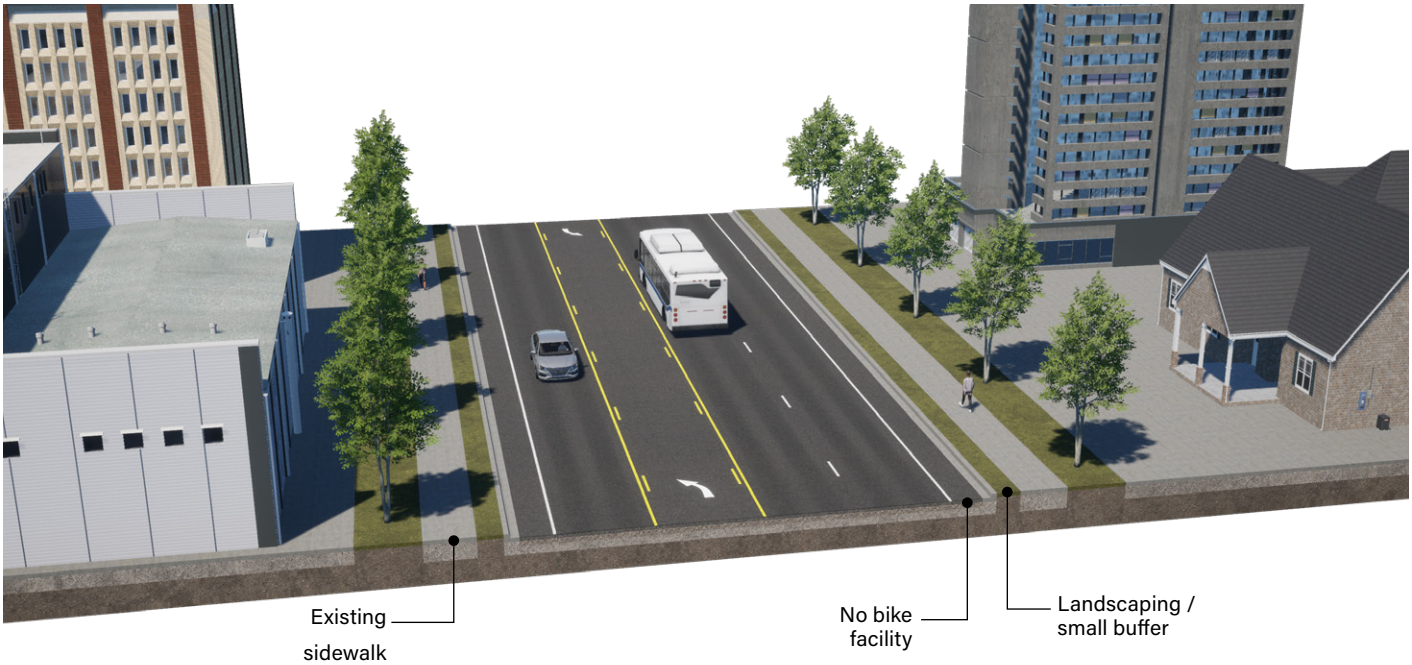
Preferred Facility Type

Secondary Facility Type

Additional Facility Types for Consideration

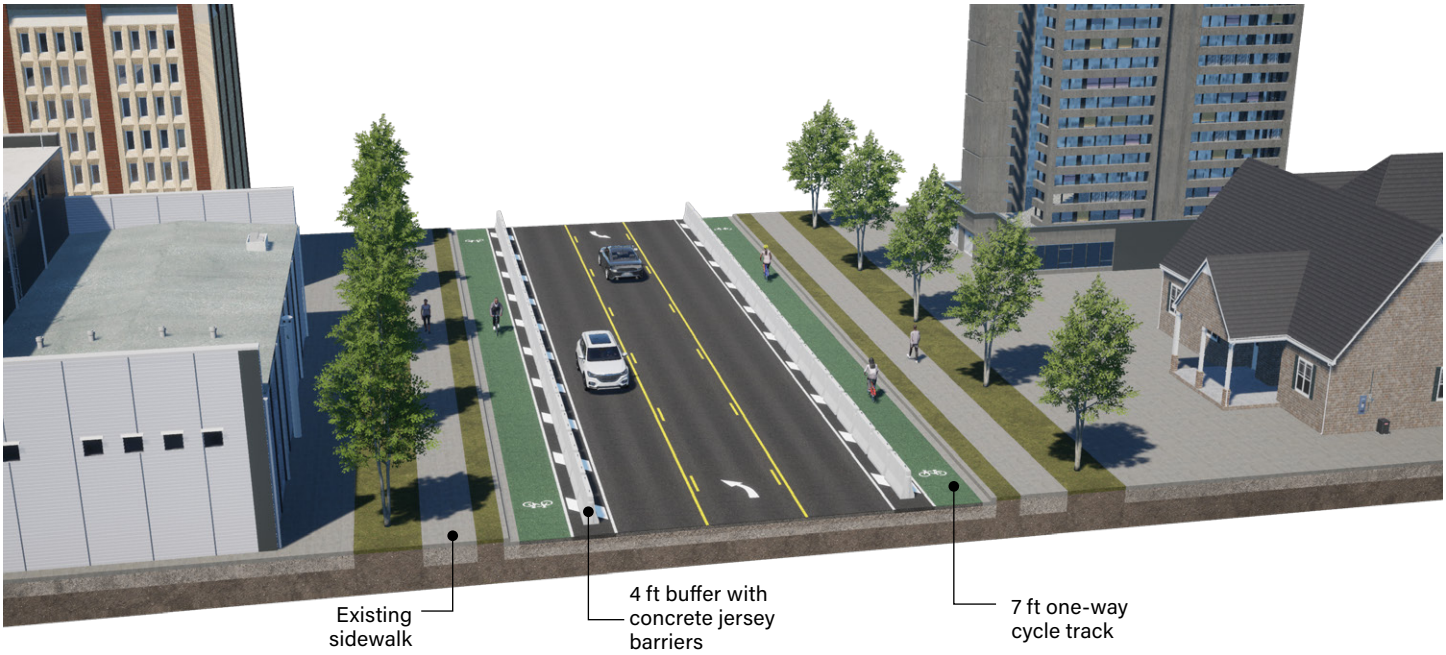
Facilities which may not satisfy goals or FHWA Guidance

EXAMPLE OF A TYPICAL EXISTING URBAN ARTERIAL (MINOR)

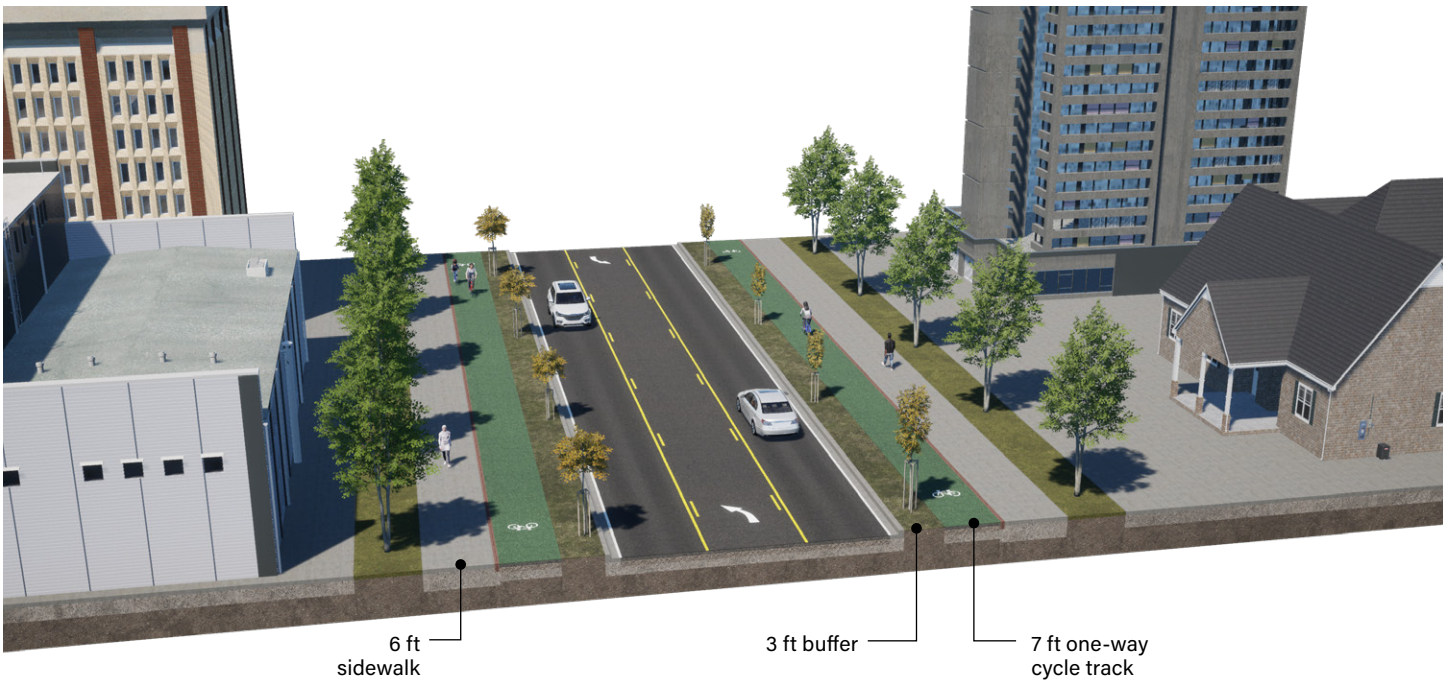


Examples of Potential Configurations

EXAMPLE OF QUICK BUILD* IMPROVEMENT



EXAMPLE OF PREFERRED SEPARATION STYLE



**QUICK BUILD STYLE IMPROVEMENT ONLY APPLIES WITHIN EXISTING CURBS*

BIKE LANES ARE SHOWN AS GREEN FOR DIAGRAMMATIC PURPOSES ONLY

URBAN COLLECTOR (COMMERCIAL)

Typical Existing Roadway

Average of Right-of-Way (ROW): 88 feet

Typical Lanes: 2 to 3 lanes

Average to Maximum ADT: 4,000 to 7,500

Posted Speed Limits: 25-30 mph

Description: Connecting urban residential and low-density commerical areas with higher speed roads.

Examples:

- *Kirman Avenue*
- *Sullivan Lane*
- *York Way*

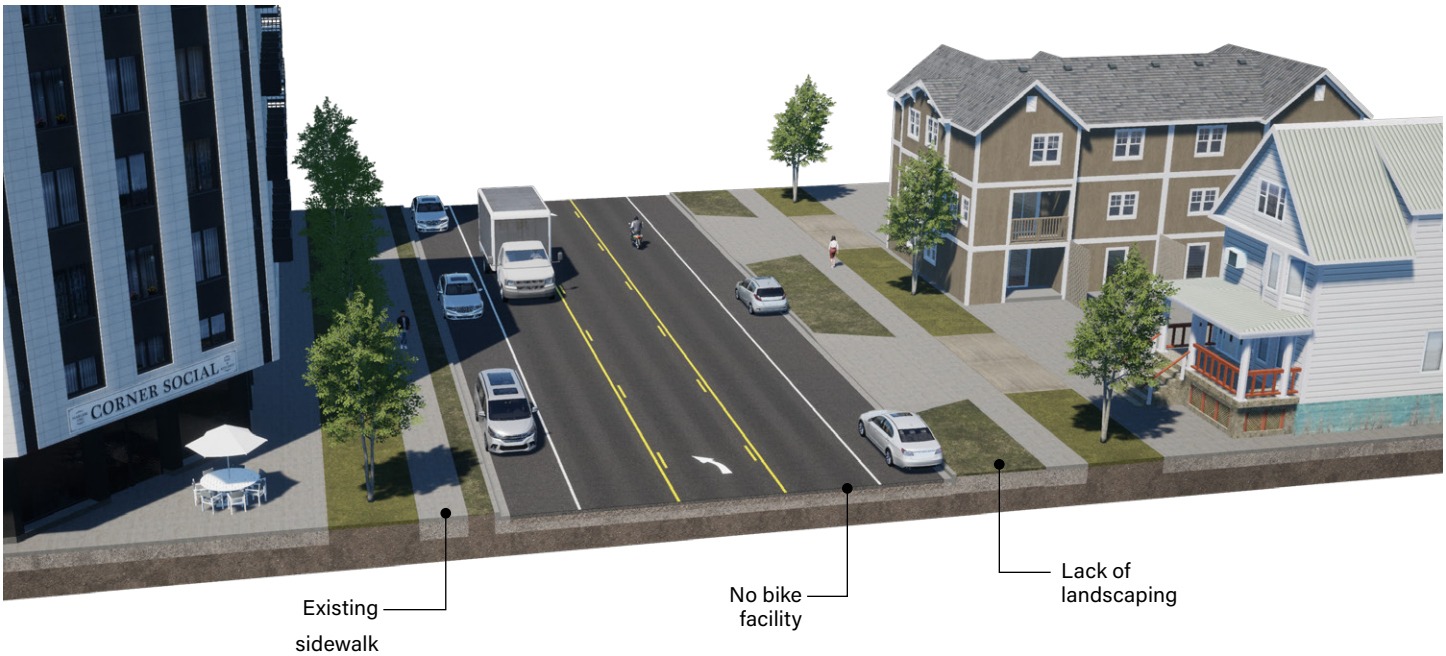
	Preferred	Minimum
One-Way Cycle Track (track/buffer)	**10' (7'/3')**	**7' (5'/2')**
Two-Way Cycle Track (track/buffer)	**15'+ (12'/3')**	**12' (10'/2')**
Shared-Use Path (path/buffer)	**19' (12'/7')**	**15' (10'/5')**
Buffered bicycle lane (includes buffer)	9' (6'/3'+)	7' (5'/2')
Bicycle Lane (On-Street parking not permitted, curb and gutter present)	6'	5'
Bicycle Lane (On-Street parking permitted)	6'	5'
*Traffic Calmed Street **	n/a	n/a

	Preferred	Minimum
Sidewalk	**6' - 10'**	**6'**
Sidewalk Buffer (on-street parking)	**6' - 10'**	**5'**
Sidewalk Buffer (travel lane)	**5' - 7'**	**5'**

LEGEND:

Preferred Facility Type
Secondary Facility Type
Additional Facility Types for Consideration
Facilities which may not satisfy goals or FHWA Guidance

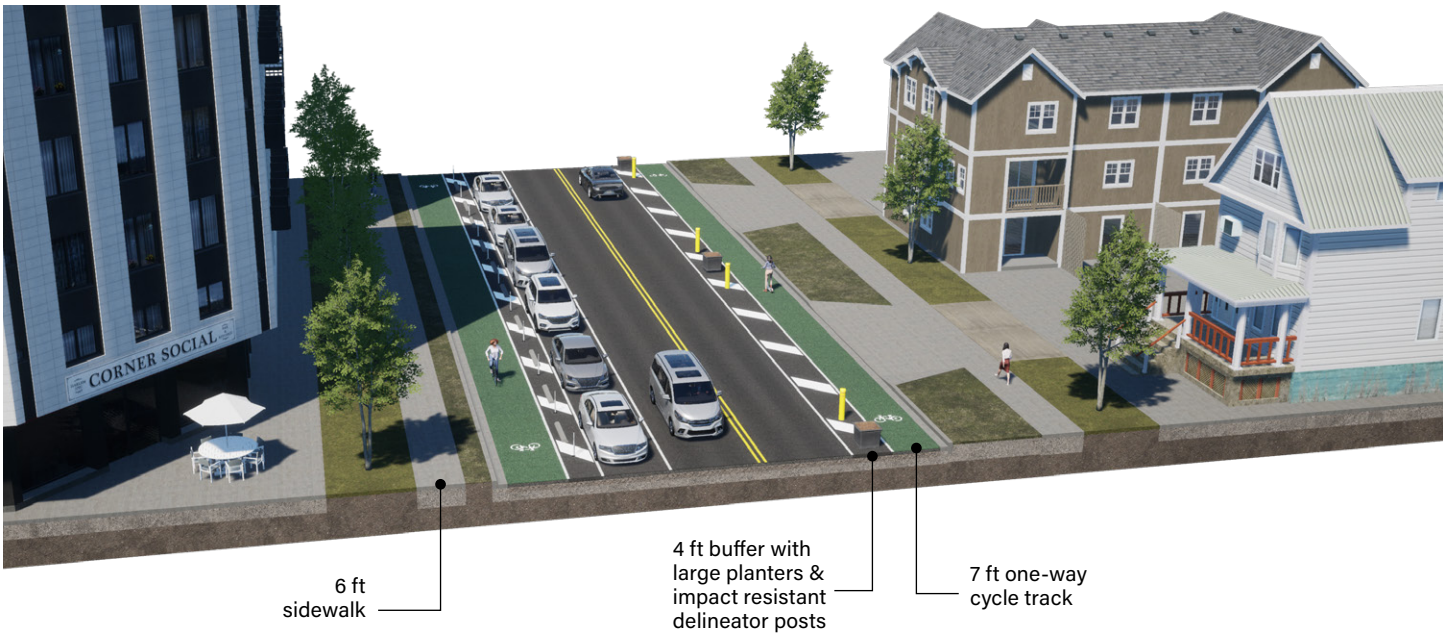
EXAMPLE OF A TYPICAL EXISTING URBAN COLLECTOR (COMMERCIAL)



**TRAFFIC CALMING APPLICABLE AS BASED ON ENGINEERING GUIDANCE, BEST PRACTICES, AND JUDGMENT.*

Examples of Potential Configurations

EXAMPLE OF QUICK-BUILD STYLE* IMPROVEMENT



EXAMPLE OF PREFERRED SEPARATION STYLE

**QUICK BUILD STYLE IMPROVEMENT ONLY APPLIES WITHIN EXISTING CURBS*

BIKE LANES ARE SHOWN AS GREEN FOR DIAGRAMMATIC PURPOSES ONLY

REMOVAL OF VEHICLE TRAVEL LANE TO BE BASED ON EXISTING VEHICLE OPERATIONS AND NEED

URBAN COLLECTOR (RESIDENTIAL)

Typical Existing Roadway

Average of Right-of-Way (ROW): 65 feet

Typical Lanes: 2 lanes

Average to Maximum ADT: 4,000 to 7,100

Posted Speed Limits: 25-30 mph

Description: Small regional roads primarily with residential uses connecting to higher speed roads.

Examples:

- *Wedekind Road*
- *Greenbrae Drive*

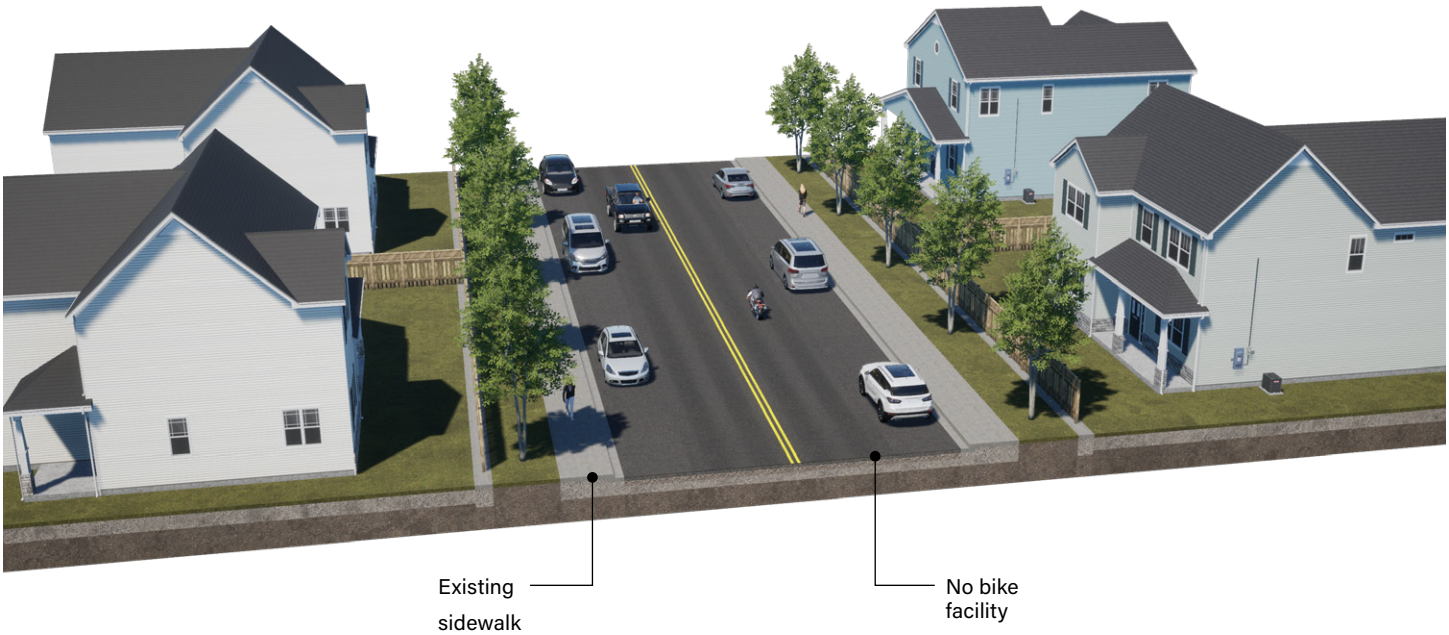
	Preferred	Minimum
One-Way Cycle Track (track/buffer)	**10' (7'/3')**	**7' (5'/2')**
Two-Way Cycle Track (track/buffer)	**15'+ (12'/3')**	**12' (10'/2')**
Shared-Use Path (path/buffer)	**19' (12'/7')**	**15' (10'/5')**
Buffered bicycle lane (includes buffer)	9' (6'/3'+)	7' (5'/2')
Bicycle Lane (On-Street parking not permitted, curb and gutter present)	6'	5'
Bicycle Lane (On-Street parking permitted)	6'	5'
*Traffic Calmed Street **	n/a	n/a

	Preferred	Minimum
Sidewalk	**6' - 8'**	**6'**
Sidewalk Buffer (on-street parking)	**5' - 7'**	**5'**
Sidewalk Buffer (travel lane)	**5' - 7'**	**5'**

LEGEND:

Preferred Facility Type
Secondary Facility Type
Additional Facility Types for Consideration
Facilities which may not satisfy goals or FHWA Guidance

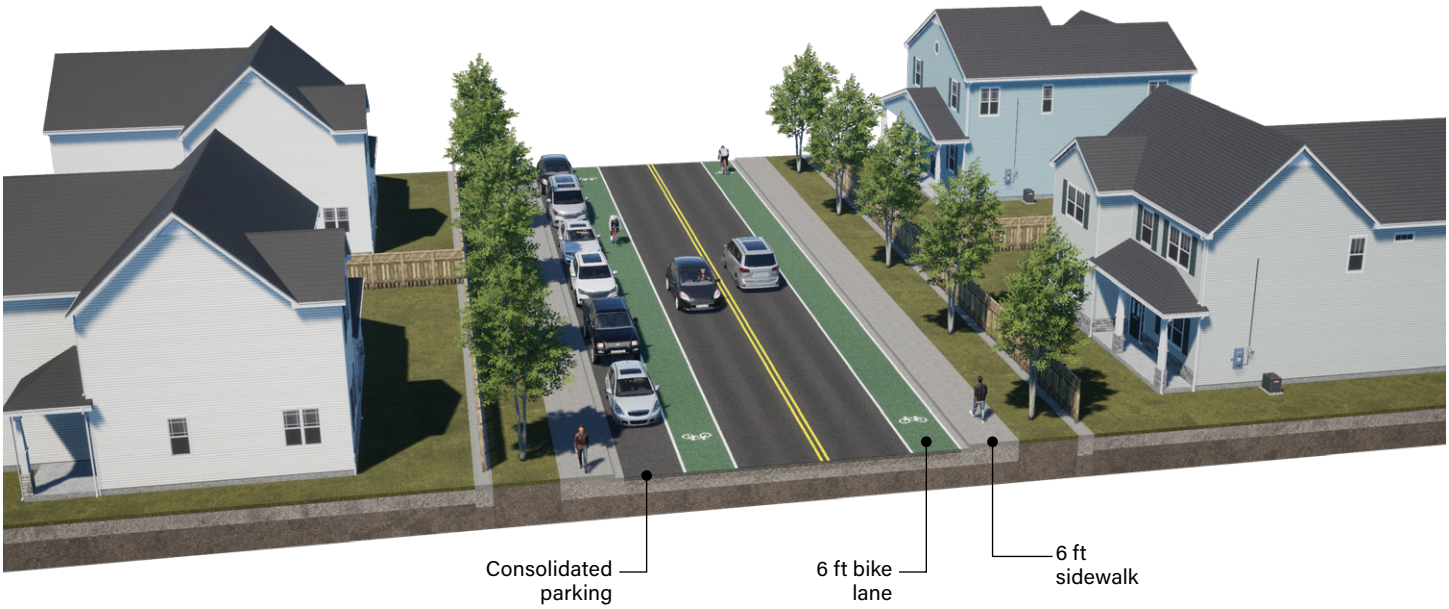
EXAMPLE OF A TYPICAL EXISTING URBAN COLLECTOR (RESIDENTIAL)



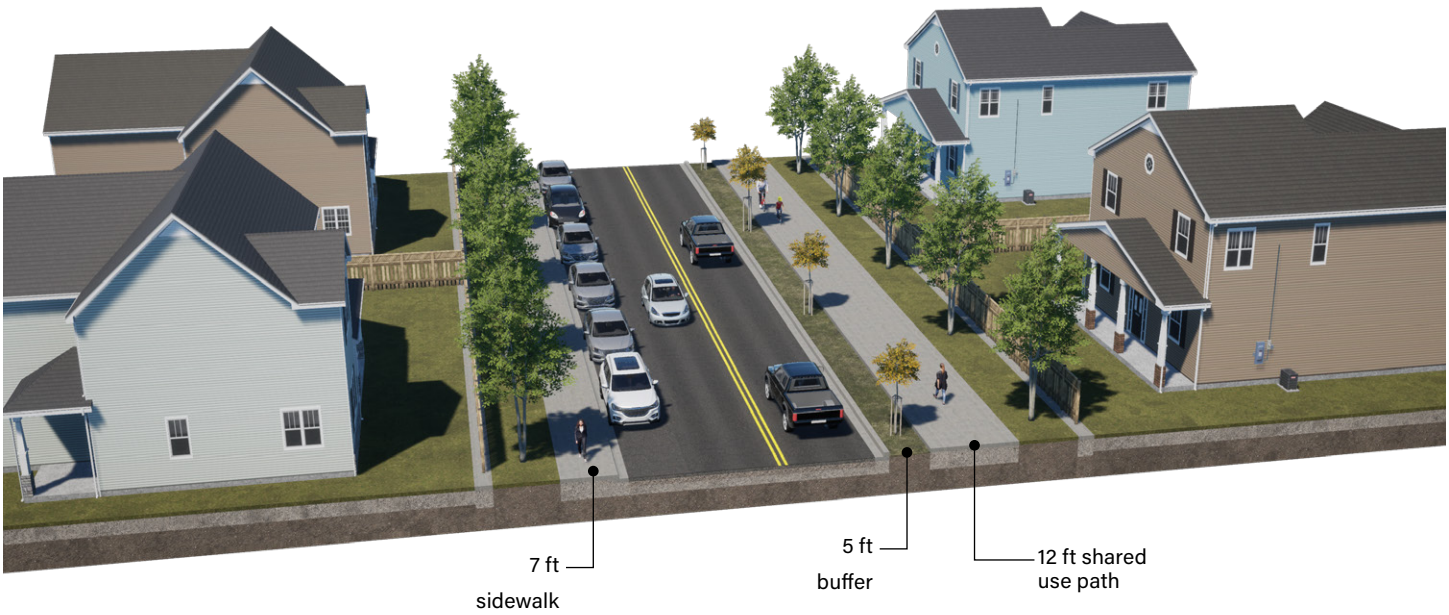
**TRAFFIC CALMING APPLICABLE AS BASED ON ENGINEERING GUIDANCE, BEST PRACTICES, AND JUDGMENT.*

Examples of Potential Configurations

EXAMPLE OF QUICK BUILD* IMPROVEMENT IN CONSTRAINED ENVIRONMENT



EXAMPLE OF SHARED PATH IN CONSTRAINED ENVIRONMENT**



**QUICK BUILD STYLE IMPROVEMENT ONLY APPLIES WITHIN EXISTING CURBS*
BIKE LANES ARE SHOWN AS GREEN FOR DIAGRAMMATIC PURPOSES ONLY

***SHARED USE PATHS MAY BE PREFERRED IN CONSTRAINED RIGHTS OF WAY TO REDUCE IMPACTS*

SUBURBAN ARTERIAL (MAJOR)

Typical Existing Roadway

Average of Right-of-Way (ROW): 135 feet

Typical Lanes: 4 to 5 lanes

Average to Maximum ADT: 15,500 to 50,000

Posted Speed Limits: 40+ mph

Description: Largest suburban roads with medium density commercial, residential, and auto-oriented land uses.

Examples:

- *S. Meadows Parkway*
- *Disc Drive*
- *Sky Vista Parkway*

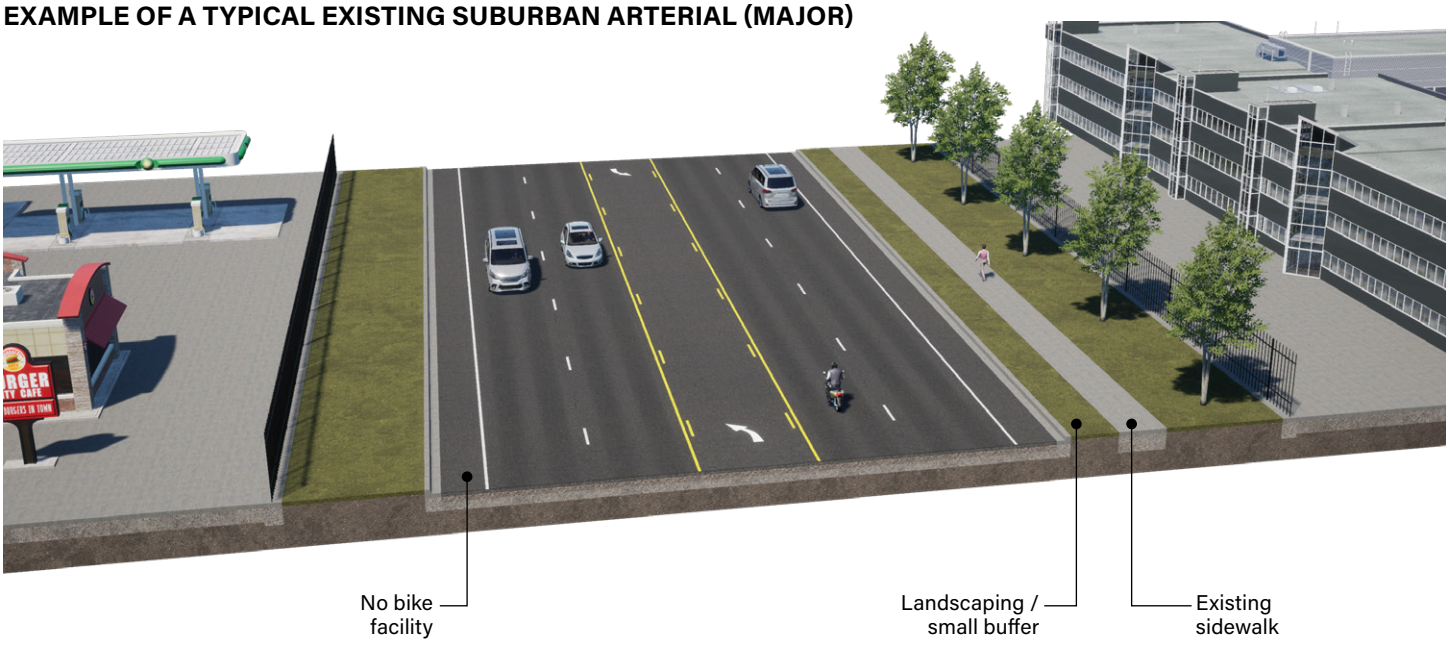
	Preferred	Minimum
Shared-Use Path (path/buffer)	**19′ (12′/7′)**	**15′ (10′/5′)**
One-Way Cycle Track (track/buffer)	**11'+ (7'/4'+)**	**10' (6'/4')**
Two-Way Cycle Track (track/buffer)	**16'+ (12'/4'+)**	**14' (10'/4')**
Buffered bicycle lane (includes buffer)	12' (7'/5')	10' (6'/4')
Bicycle Lane / Paved Shoulder (On-Street parking not permitted, no curb and gutter)	8'	6
Bicycle Lane (On-Street parking not permitted, curb and gutter present)	7'	6

	Preferred	Minimum
Sidewalk	**6′ - 10'**	**5'**
Sidewalk Buffer (travel lane)	**5' - 7'**	**5'**

LEGEND:

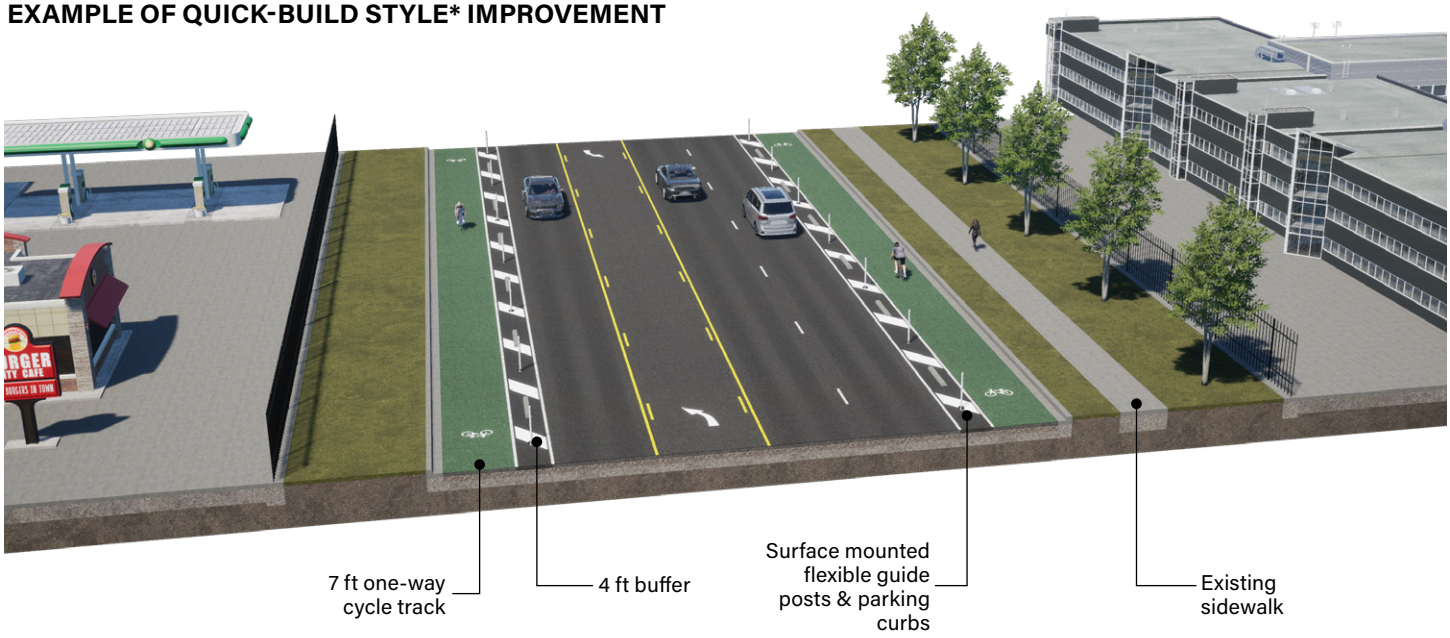
Preferred Facility Type
Secondary Facility Type
Additional Facility Types for Consideration
Facilities which may not satisfy goals or FHWA Guidance

EXAMPLE OF A TYPICAL EXISTING SUBURBAN ARTERIAL (MAJOR)



Examples of Potential Configurations

EXAMPLE OF QUICK-BUILD STYLE* IMPROVEMENT



EXAMPLE OF PREFERRED SEPARATION STYLE

**QUICK BUILD STYLE IMPROVEMENT ONLY APPLIES WITHIN EXISTING CURBS*

BIKE LANES ARE SHOWN AS GREEN FOR DIAGRAMMATIC PURPOSES ONLY

REMOVAL OF VEHICLE TRAVEL LANE TO BE BASED ON EXISTING VEHICLE OPERATIONS AND NEED

SUBURBAN ARTERIAL (MINOR)

Typical Existing Roadway

Average of Right-of-Way (ROW): 71 feet

Typical Lanes: 3 to 4 lanes

Average to Maximum ADT: 6,750 to 13,350

Posted Speed Limits: 35 mph

Description: Large suburban roads connecting primarily suburban residential areas with higher speed roadways.

Examples:

- *Rio Wrangler Parkway*
- *Baring Boulevard*

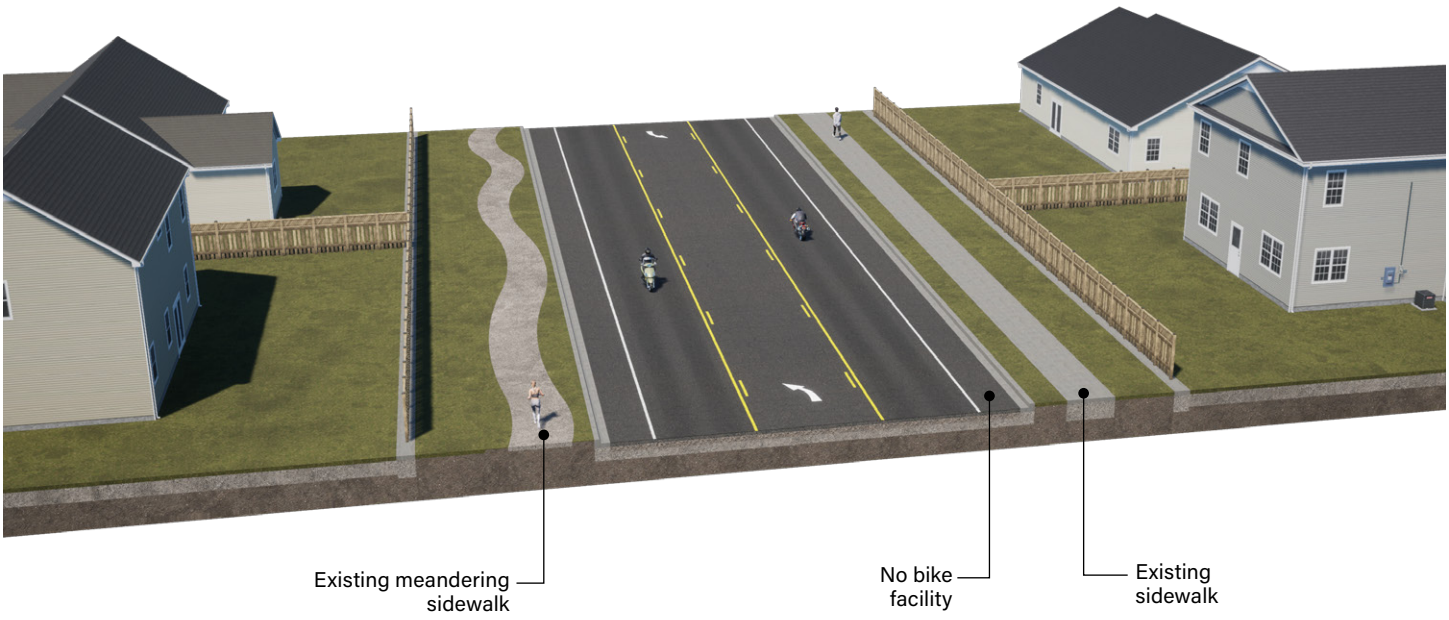
	Preferred	Minimum
Shared-Use Path (path/buffer)	**19′ (12′/7′)**	**15′ (10′/5′)**
One-Way Cycle Track (track/buffer)	**12' (7'/5')**	**9' (6'/3')**
Two-Way Cycle Track (track/buffer)	**15'+' (12'/3'+)**	**13' (10'/3')**
Buffered bicycle lane (includes buffer)	12' (7'/5')	9' (6'/3')
Bicycle Lane / Paved Shoulder (On-Street parking not permitted, no curb and gutter)	8'	6'
Bicycle Lane (On-Street parking not permitted, curb and gutter present)	8'	6'

	Preferred	Minimum
Sidewalk	**5' - 10'**	**5'**
Sidewalk Buffer (travel lane)	**5' - 7'**	**5'**

LEGEND:

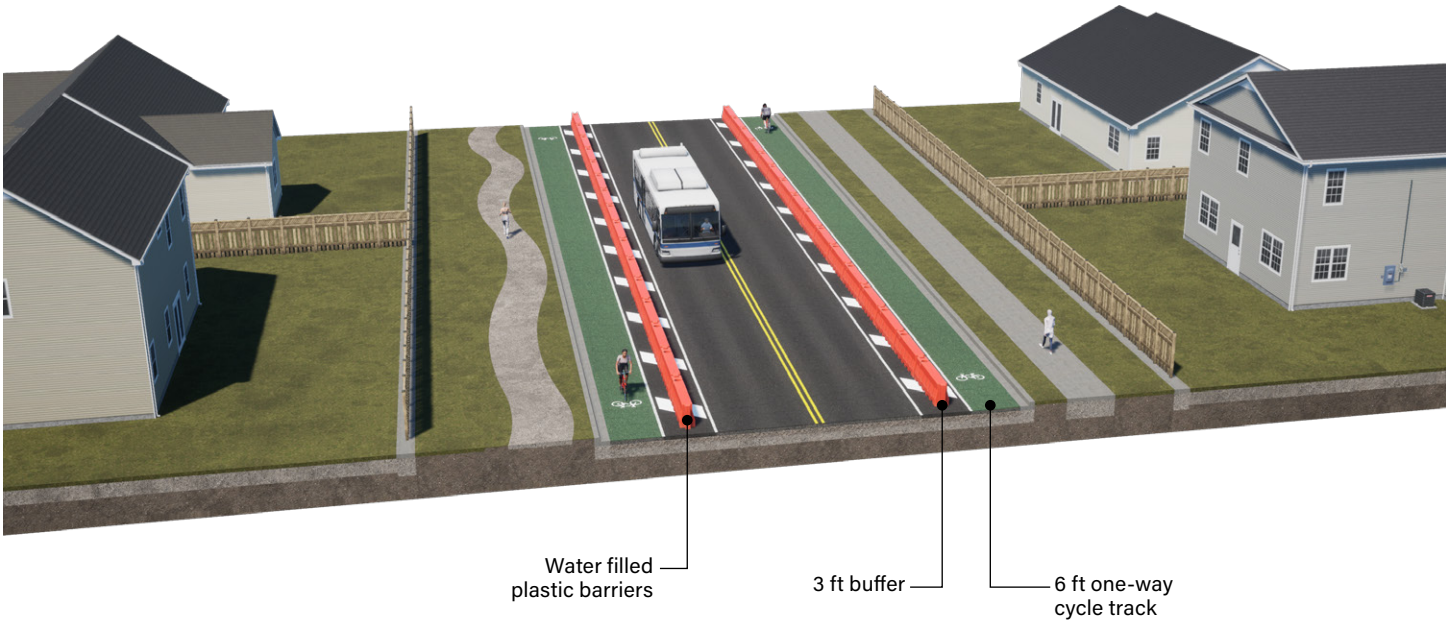
Preferred Facility Type
Secondary Facility Type
Additional Facility Types for Consideration
Facilities which may not satisfy goals or FHWA Guidance

EXAMPLE OF A TYPICAL EXISTING SUBURBAN ARTERIAL (MINOR)

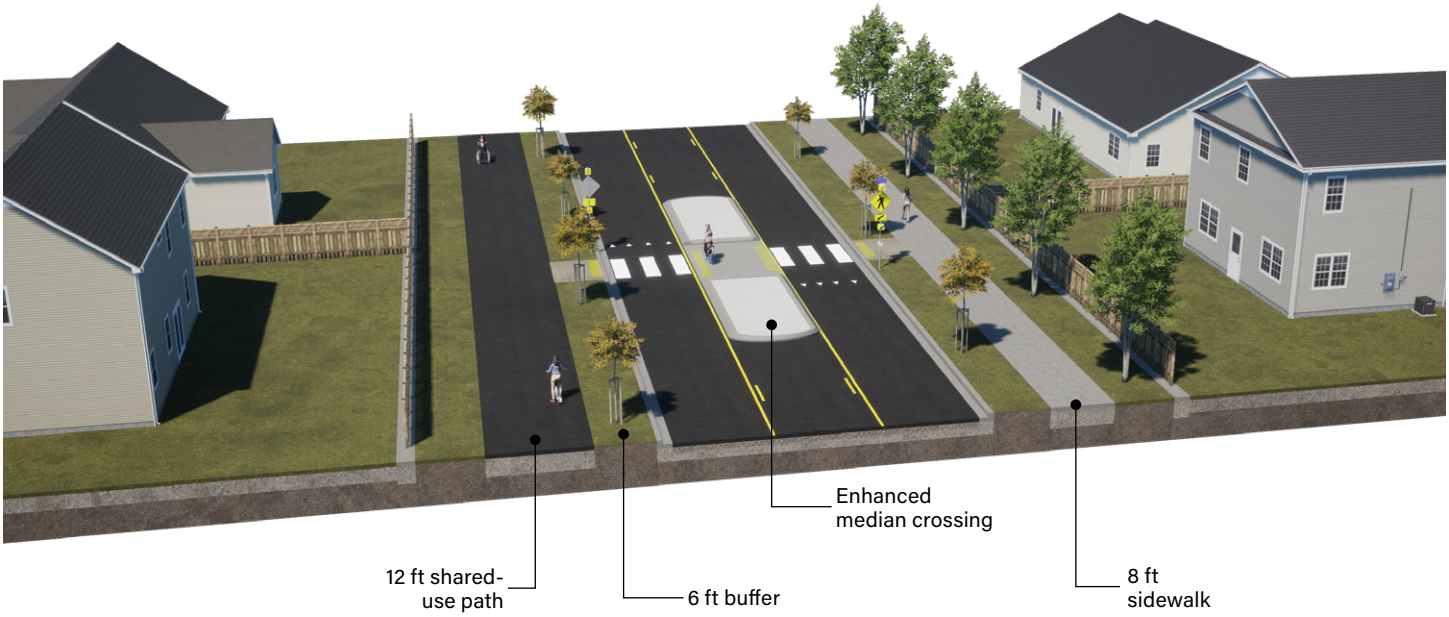


Examples of Potential Configurations

EXAMPLE OF QUICK BUILD STYLE* IMPROVEMENT



EXAMPLE OF PREFERRED SEPARATION STYLE AND MIDBLOCK CROSSING** IMPROVEMENT



**QUICK BUILD STYLE IMPROVEMENT ONLY APPLIES WITHIN EXISTING CURBS BIKE LANES ARE SHOWN AS GREEN FOR DIAGRAMMATIC PURPOSES ONLY*

***REFER TO ENGINEERING GUIDANCE FOR FHWA APPLICATION OF CROSSING TREATMENTS (TABLE 2)*

SUBURBAN COLLECTOR (MAJOR)

Typical Existing Roadway

Average of Right-of-Way (ROW): 100 feet

Typical Lanes: 2 to 3 lanes

Average to Maximum ADT: 6,500 to 20,500

Posted Speed Limits: 30 mph

Description: Provides connection between suburban residential or low density commercial / office land uses with higher speed arterial roadways.

Examples:

- *Mira Loma Drive*
- *Cashill Boulevard*

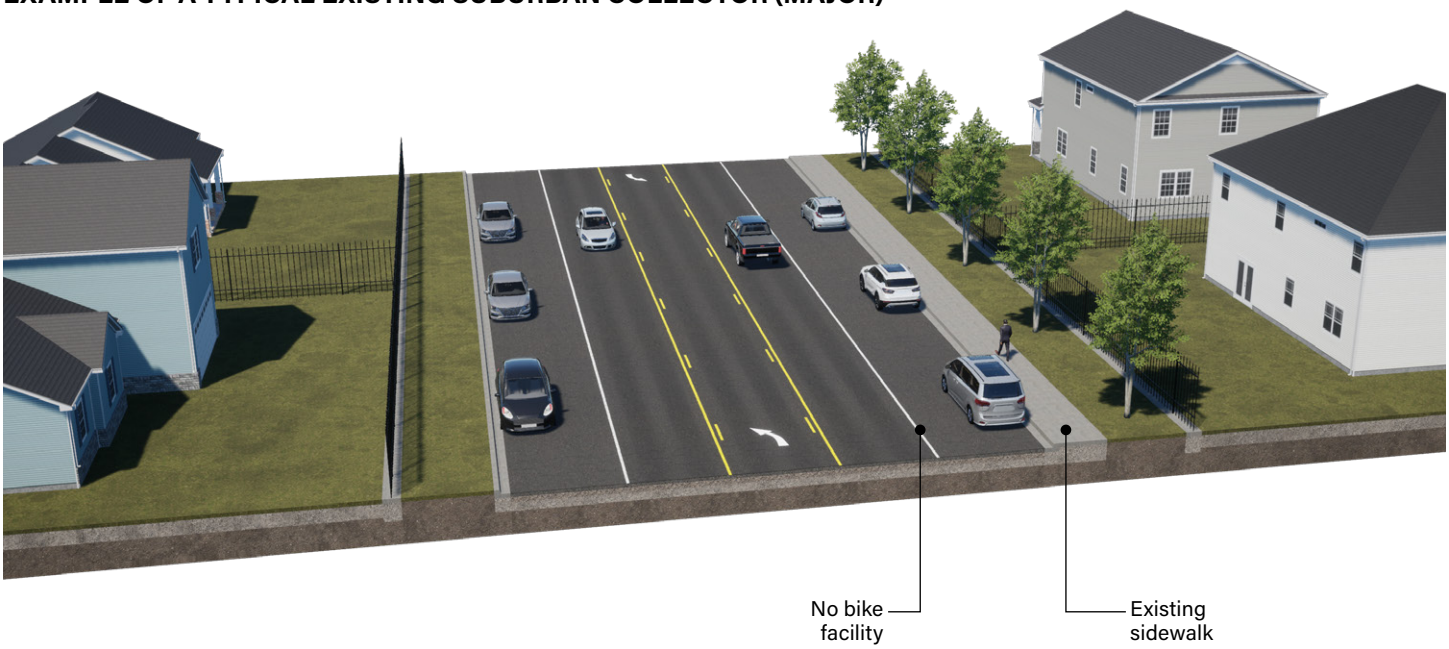
	Preferred	Minimum
Shared-Use Path	**19' (12'/7')**	**15' (10'/5')**
One-Way Cycle Track (track/buffer)	**10' (7'/3')**	**7' (5'/2')**
Two-Way Cycle Track (track/buffer)	**15'+ (12'/3'+)**	**12' (10'/3')**
Buffered bicycle lane (includes buffer)	9' (6'/3'+)	7' (5'/2')
Bicycle Lane / Paved Shoulder (On-Street parking not permitted, no curb and gutter)	8'	4'
Bicycle Lane (On-Street parking not permitted, curb and gutter present)	6'	5'
Bicycle Lane (On-Street parking permitted)	6'	5'
*Traffic Calmed Street **	n/a	n/a

	Preferred	Minimum
Sidewalk	**5' - 10'**	**5'**
Sidewalk Buffer (on-street parking)	**6'**	**3'**
Sidewalk Buffer (travel lane)	**5' - 7'**	**5'**

LEGEND:

Preferred Facility Type
Secondary Facility Type
Additional Facility Types for Consideration
Facilities which may not satisfy goals or FHWA Guidance

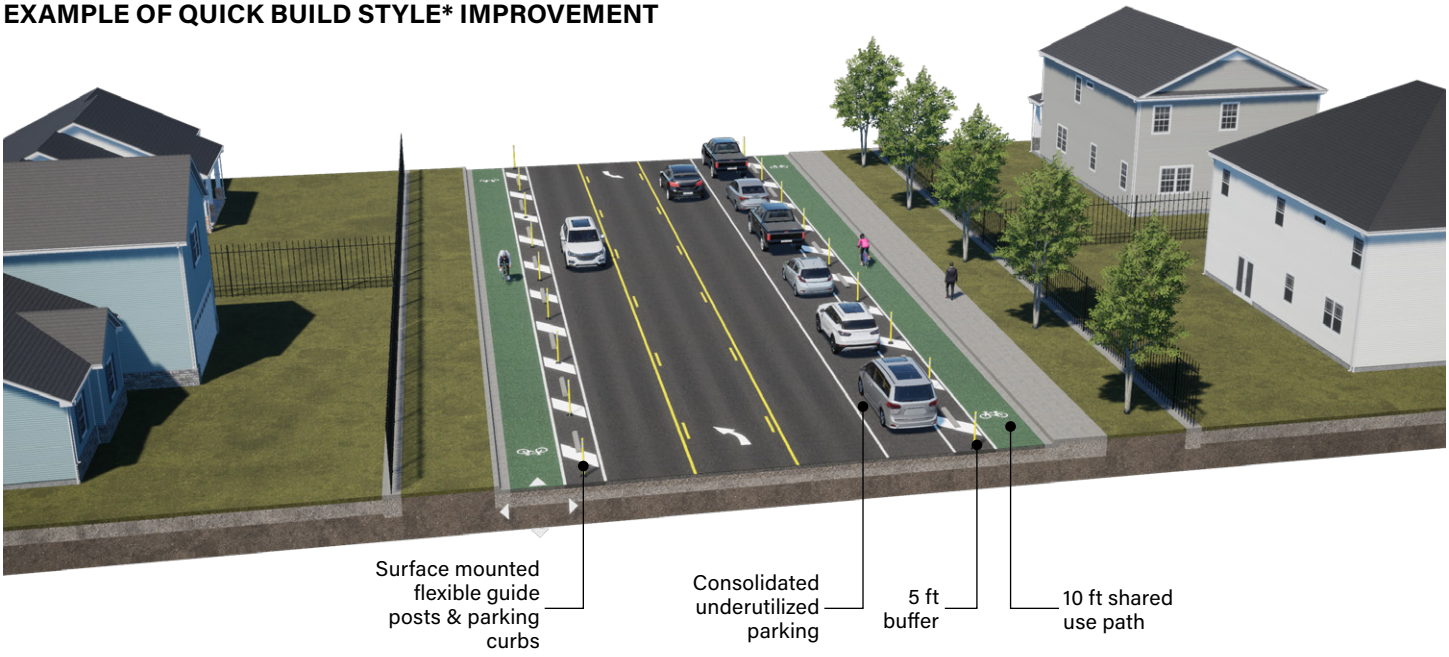
EXAMPLE OF A TYPICAL EXISTING SUBURBAN COLLECTOR (MAJOR)



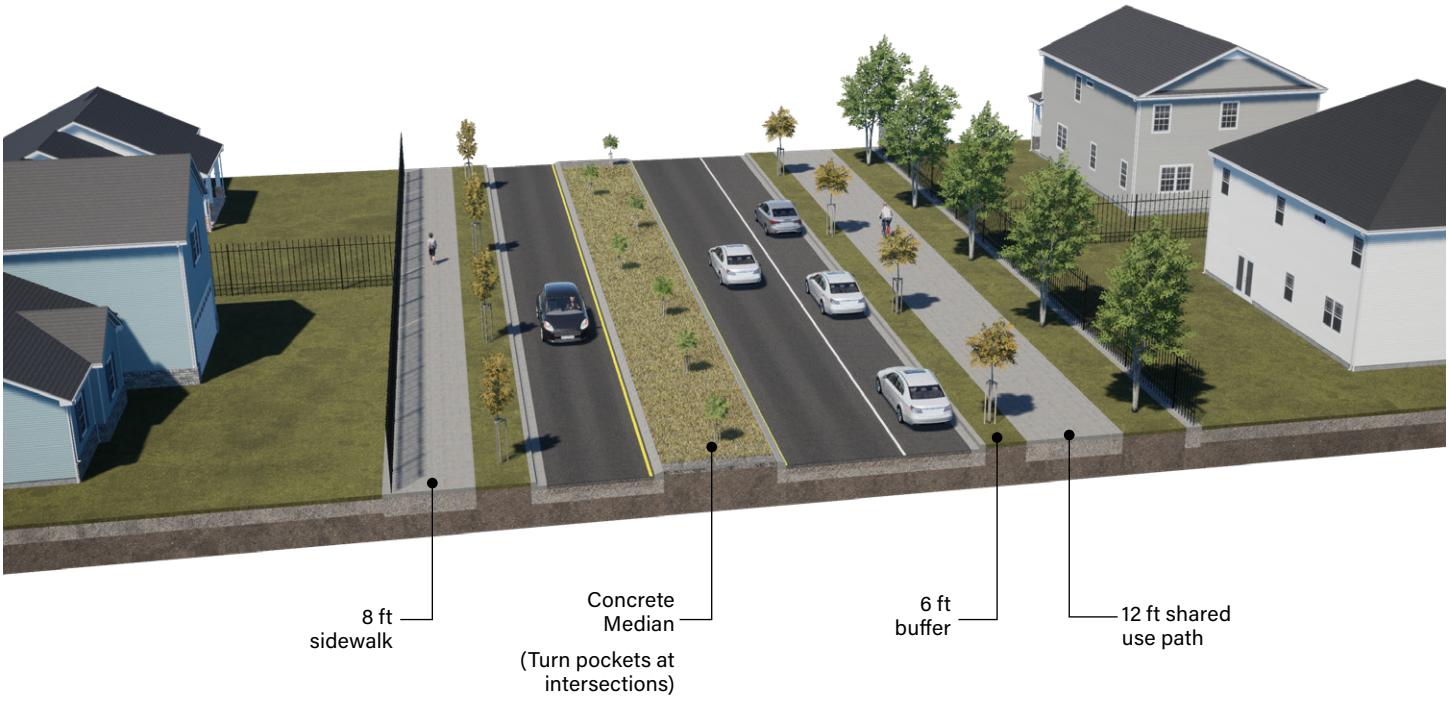
**TRAFFIC CALMING APPLICABLE AS BASED ON ENGINEERING GUIDANCE, BEST PRACTICES, AND JUDGMENT.*

Examples of Potential Configurations

EXAMPLE OF QUICK BUILD STYLE* IMPROVEMENT



EXAMPLE OF PREFERRED SEPARATION STYLE, SIDEWALK, AND MEDIAN IMPROVEMENT



**QUICK BUILD STYLE IMPROVEMENT ONLY APPLIES WITHIN EXISTING CURBS*

BIKE LANES ARE SHOWN AS GREEN FOR DIAGRAMMATIC PURPOSES ONLY

REMOVAL OF CENTER TURN LANE TO BE BASED ON EXISTING VEHICLE OPERATIONS AND NEED

SUBURBAN COLLECTOR (MINOR)

Typical Existing Roadway

Average of Right-of-Way (ROW): 63 feet

Typical Lanes: 2 lanes

Average to Maximum ADT: 3,400 to 5,250

Posted Speed Limits: 30 mph

Description: These small regional roads provide connections between suburban residential neighborhoods and higher speed roadways.

Examples:

- *Skyline Boulevard*
- *Silver Lake Road*
- *Wingfield Springs Road*

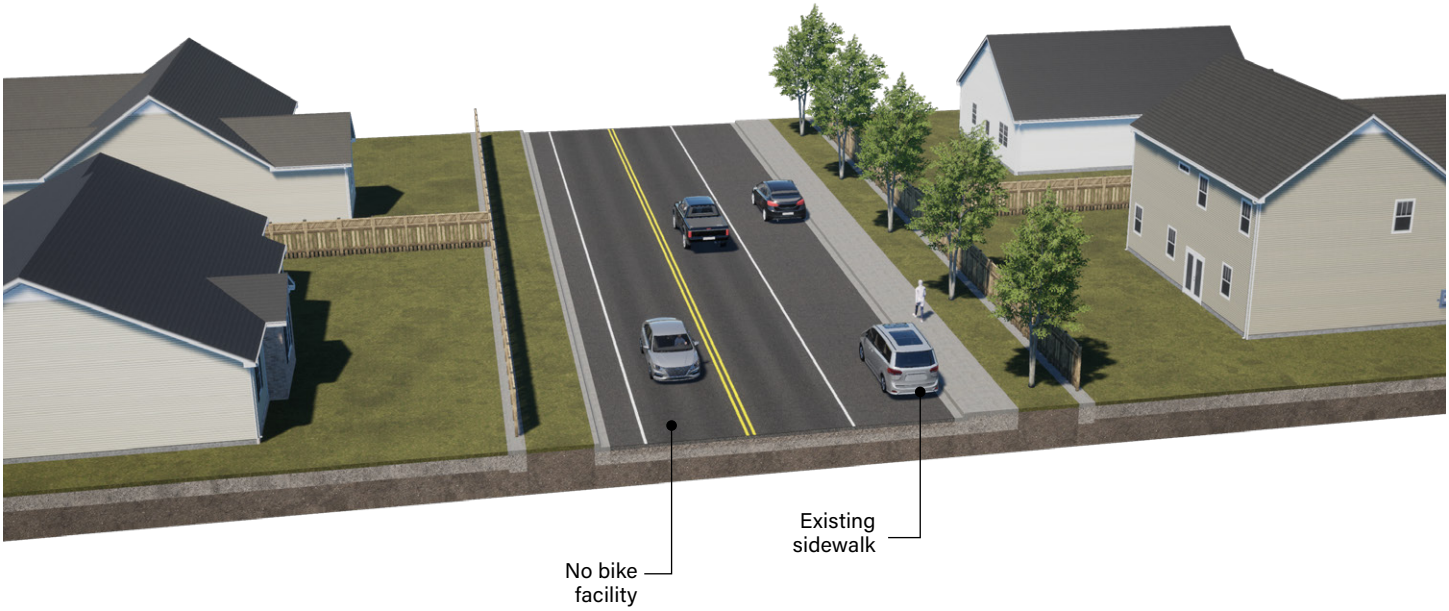
	Preferred	Minimum
Shared-Use Path	**19′ (12′/7′)**	**15′ (10′/5′)**
One-Way Cycle Track (track/buffer)	**10' (7'/3')**	**7' (5'/2')**
Two-Way Cycle Track (track/buffer)	**15'+ (12'/3+')**	**12' (10'/2')**
Buffered bicycle lane (includes buffer)	9' (6'/3'+)	7' (5'/2')
Bicycle Lane / Paved Shoulder (On-Street parking not permitted, no curb and gutter)	8'	4'
Bicycle Lane (On-Street parking not permitted, curb and gutter present)	6'	5'
Bicycle Lane (On-Street parking permitted)	6'	5'
*Traffic Calmed Street**	n/a	n/a

	Preferred	Minimum
Sidewalk	**5' - 10'**	**5'**
Sidewalk Buffer (on-street parking)	**6'**	**3'**
Sidewalk Buffer (travel lane)	**5' - 7'**	**5'**

LEGEND:

Preferred Facility Type
Secondary Facility Type
Additional Facility Types for Consideration
Facilities which may not satisfy goals or FHWA Guidance

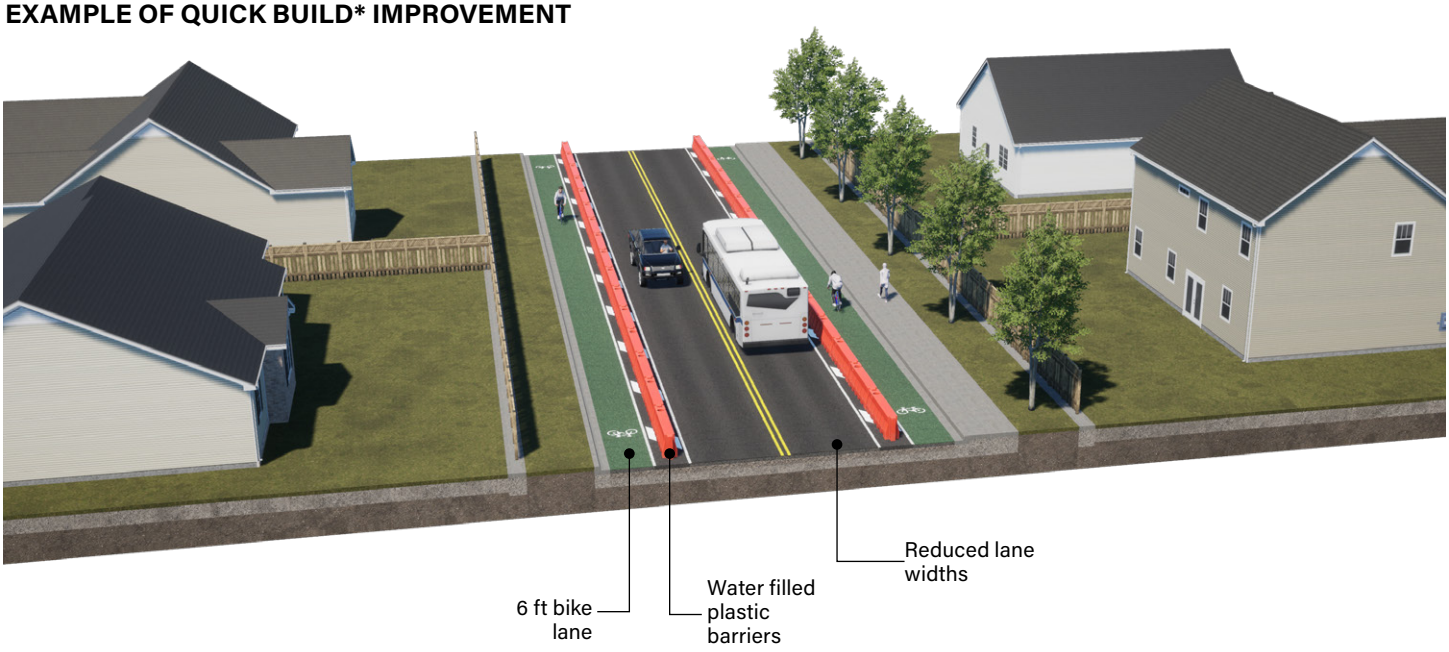
EXAMPLE OF A TYPICAL EXISTING SUBURBAN COLLECTOR (MINOR)



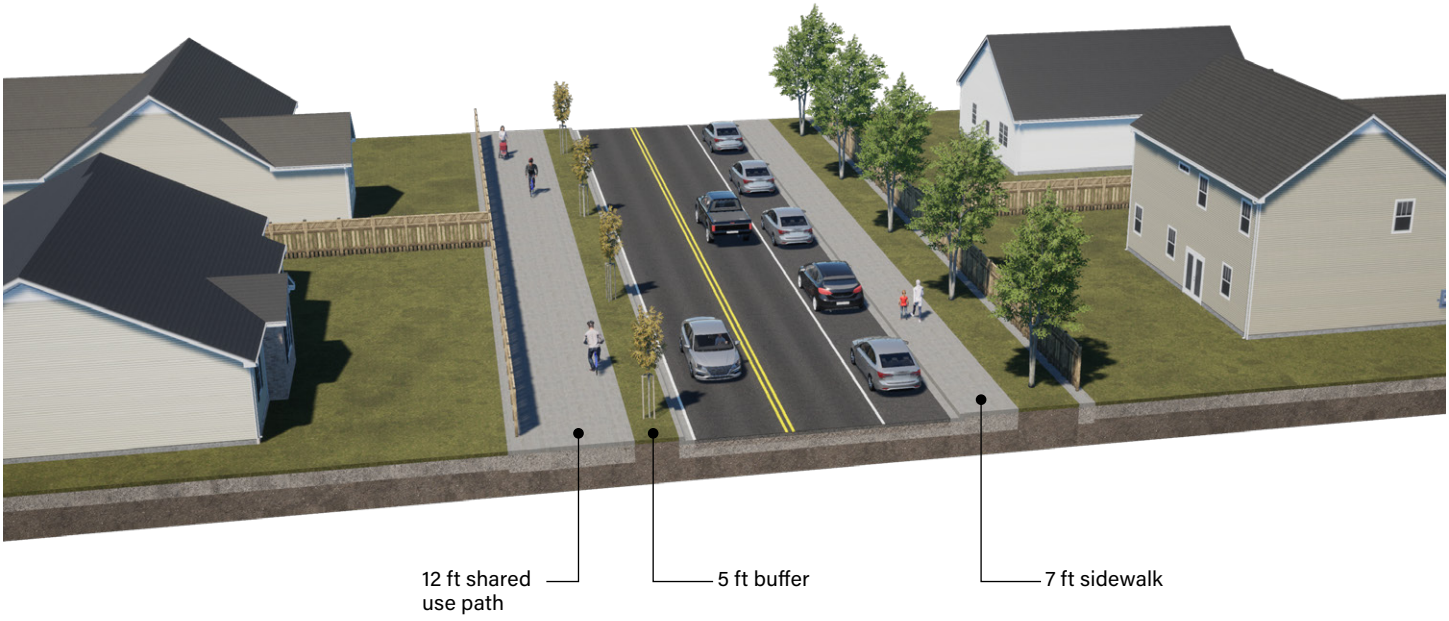
**TRAFFIC CALMING APPLICABLE AS BASED ON ENGINEERING GUIDANCE, BEST PRACTICES, AND JUDGMENT.*

Examples of Potential Configurations

EXAMPLE OF QUICK BUILD* IMPROVEMENT



EXAMPLE OF PREFERRED SEPARATION STYLE



*QUICK BUILD STYLE IMPROVEMENT ONLY APPLIES WITHIN EXISTING CURBS

BIKE LANES ARE SHOWN AS GREEN FOR DIAGRAMMATIC PURPOSES ONLY

RURAL ARTERIAL

Typical Existing Roadway

Average of Right-of-Way (ROW): 115 feet

Typical Lanes: 2 to 4 lanes

Average to Maximum ADT: 7,000 to 18,750

Posted Speed Limits: 40+ mph

Description: Rural arterials are high speed rural roadways which connect rural areas to outlying areas and suburban neighborhoods; characterised by low-density residential or industrial land uses.

Examples:

- *Red Rock Road*
- *Pyramid Highway*

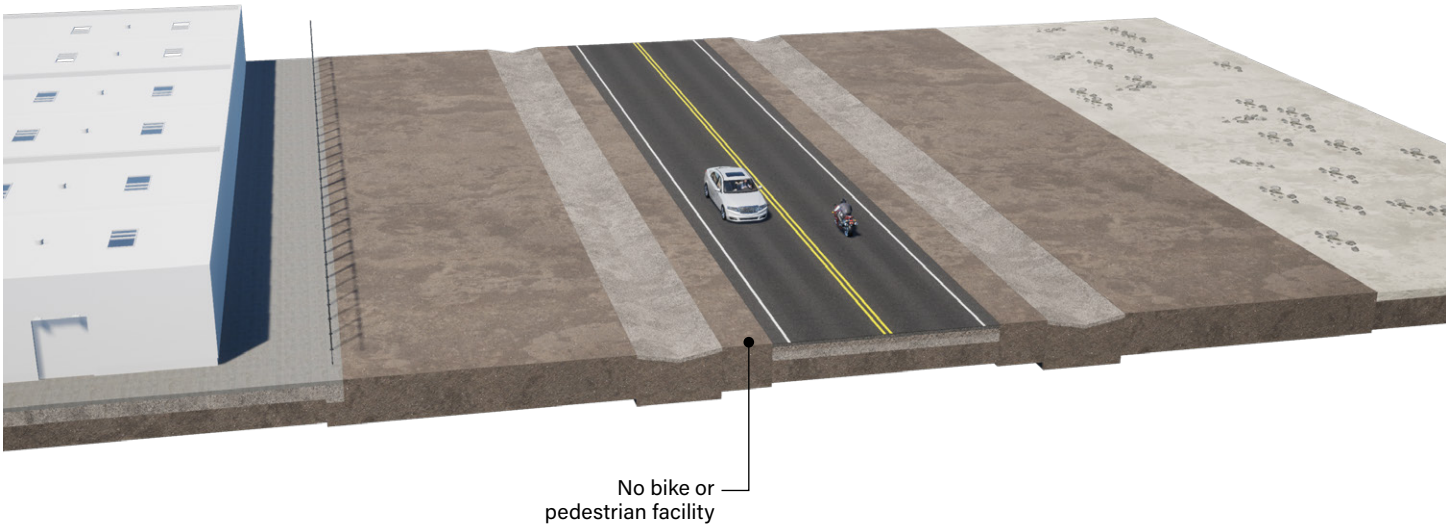
	Preferred	Minimum
Shared-Use Path	**19′ (12′/7′)**	**15′ (10′/5′)**
One-Way Cycle Track (track/buffer)	**11'+ (7'/4'+)**	**8' (5'/3')**
Two-Way Cycle Track (track/buffer)	**15'+ (12'/3+')**	**13' (10'/3')**
Buffered bicycle lane (includes buffer)	10' (6'/4'+)	8' (5'/3')
Bicycle Lane / Paved Shoulder (On-Street parking not permitted, no curb and gutter)	8'	5'

	Preferred	Minimum
Sidewalk	**5' - 7'**	**5'**
Sidewalk Buffer (travel lane)	**5' - 7'**	**5'**

LEGEND:

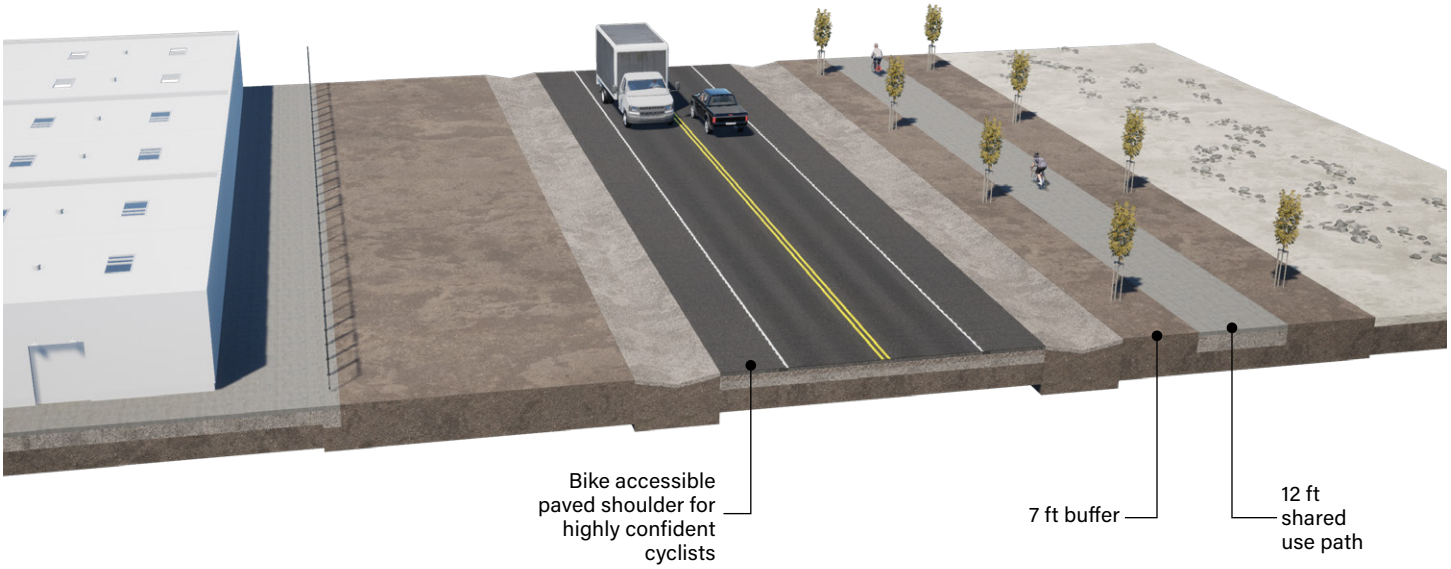
Preferred Facility Type
Secondary Facility Type
Additional Facility Types for Consideration
Facilities which may not satisfy goals or FHWA Guidance

EXAMPLE OF A TYPICAL EXISTING RURAL ARTERIAL



Examples of Potential Configurations

EXAMPLE OF PREFERRED SEPARATION STYLE



RURAL COLLECTOR

Typical Existing Roadway

Average of Right-of-Way (ROW): 78 feet

Typical Lanes: 2 lanes

Average to Maximum ADT: 3,875 to 5,900

Posted Speed Limits: 30-35 mph

Description: Connecting rural neighborhoods with higher speed roadways like rural arterials. Typically surrounded by low-density residential land uses.

Examples:

- *Thomas Creek Road*
- *Calle De La Plata*

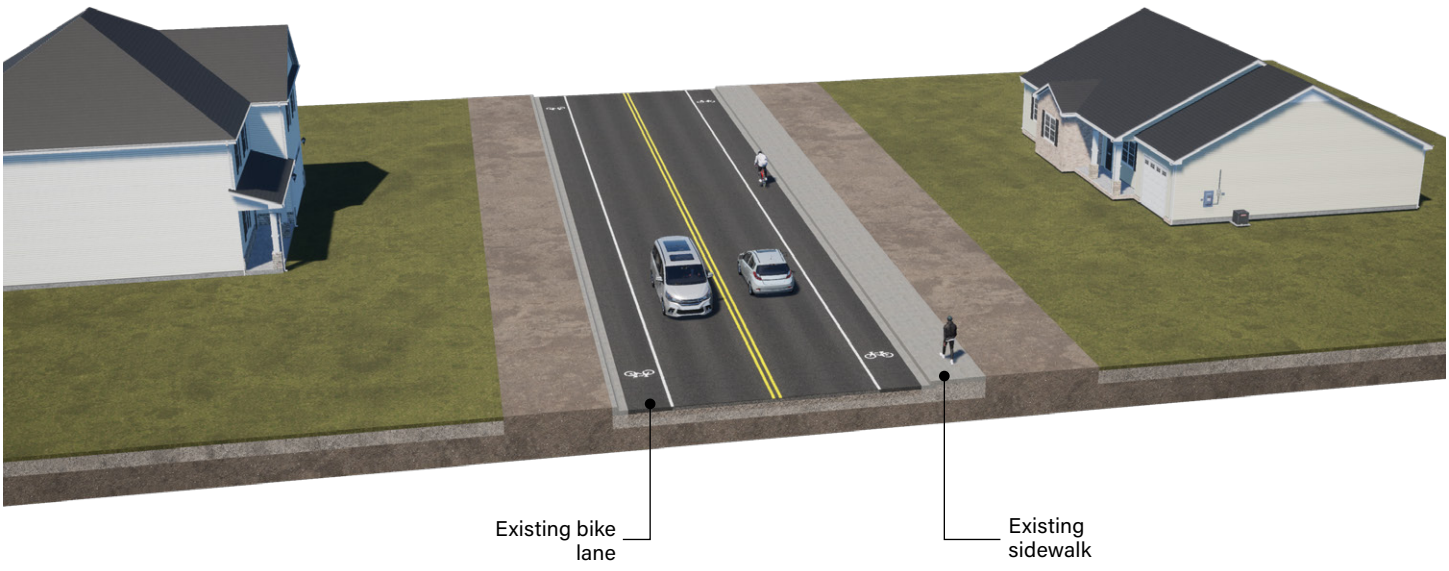
	Preferred	Minimum
Shared-Use Path	**19′ (12′/7′)**	**15′ (10′/5′)**
One-Way Cycle Track (track/buffer)	**10' (7'/3')**	**7' (5'/2')**
Two-Way Cycle Track (track/buffer)	**15'+ (12'/3')**	**12' (10'/2')**
Buffered bicycle lane (includes buffer)	9' (6'/3'+)	7' (5'/2')
Bicycle Lane / Paved Shoulder (On-Street parking not permitted, no curb and gutter)	6'	5'
Bicycle Lane (On-Street parking not permitted, curb and gutter present)	6'	5'

	Preferred	Minimum
Sidewalk	**5' - 7'**	**5'**
Sidewalk Buffer (on-street parking)	**5' - 7'**	**3'**
Sidewalk Buffer (travel lane)	**5' - 7'**	**5'**

LEGEND:

Preferred Facility Type
Secondary Facility Type
Additional Facility Types for Consideration
Facilities which may not satisfy goals or FHWA Guidance

EXAMPLE OF A TYPICAL EXISTING RURAL COLLECTOR



Examples of Potential Configurations

EXAMPLE OF PREFERRED SEPARATION STYLE