

DATE: 03/04/2025

STATE PROJECT NO.: 0027-0128

BRIDGE NO: 06296

LOCATION: Waterside Lane, Clinton

Bridge No. 06296 carries Waterside Lane over Hammock River in the town of Clinton, Connecticut. The existing structure consists of a single 11' travel lane with no painted shoulders, only accommodating single direction traffic. However, both the north and south approaches accommodate bi-directional traffic, contributing to substandard conditions.

The purpose of this summary is to recommend alternatives to correct the typical section of the roadway. No other design deficiencies have been addressed in this summary. Alternative 1 provides the minimum roadway width required to meet design standards. Though accommodations per CTDOT ECD-2024-4 do not apply to this project because it is a local town owned roadway, there appears to be a high likelihood of pedestrian use over this structure as it provides connectivity between a residential neighborhood and Clinton Town Beach. Alternative 2 provides the width required to incorporate both the minimum design standards as well as complete streets guidelines for bicycle and pedestrian facilities.

Alternative 1 – Minimum Width Required to Meet Standards (No Complete Streets)

Design standards are based on the criteria provided in the Highway Design Manual (HDM) – Chapter 5 Figure 5F “Local Urban Streets”. See **Figure 3** for reference.

Based on Figure 5F for Suburban Areas, a 10' travel lane in both directions with a 2' paved shoulder on either side of the roadway is required to meet minimum standards. A 5' sidewalk is recommended along the eastern side of the structure to provide connectivity across the structure. See **Figure 1** below for the recommended typical section.

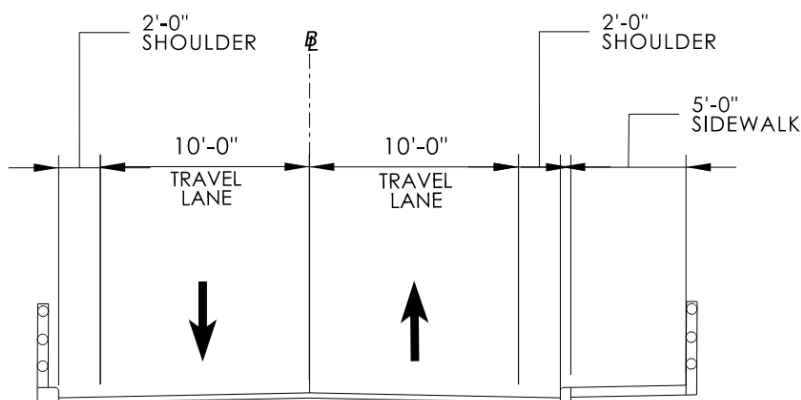


Figure 1: Alternative 1 Typical Section

Total Width: 30' (excluding parapet width)

Alternative 2 – Width Required to Meet Standards and Include Complete Streets:

Alternative 2 meets all minimum design standards but also includes the minimum width required to incorporate bicycle and pedestrian facilities per CTDOT Complete Streets Standards (based on criteria outlined in ECD-2024-4. See Attachment A).

A paved outside shoulder on either side of the roadway is recommended to be added to provide provisions for bicyclists. The minimum width for a paved outside shoulder is 5', per Exhibit 4 in ECD-2024-4.

5' sidewalks are recommended on either side of the roadway is recommended to be added to provide provisions for pedestrians. This is outlined in Section 3.2.1 within ECD-2024-4. See **Figure 2** below for the recommended typical section.

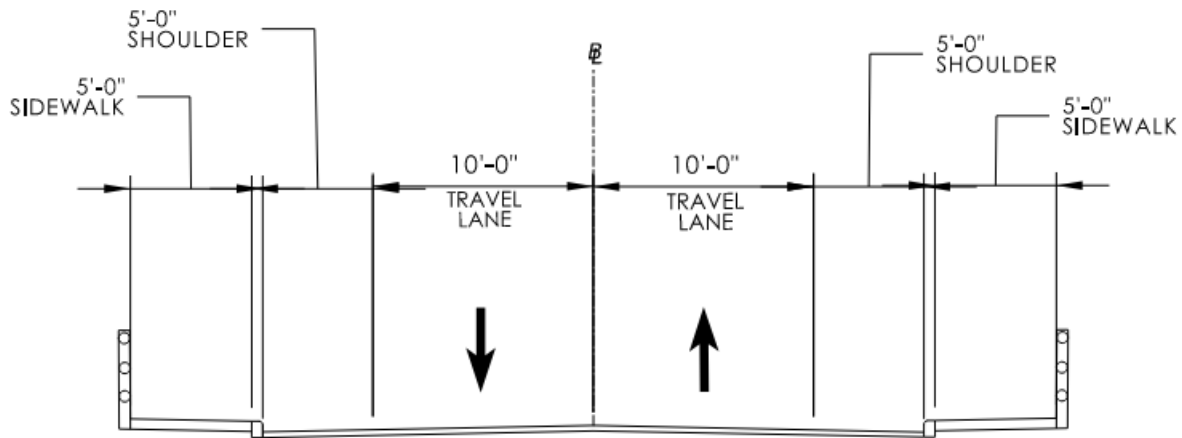


Figure 2: Alternative 2 Typical Section

Total Width: 41' (excluding parapet width)

Figure 5F

LOCAL URBAN STREETS
(New Construction/Reconstruction)

Design Element			*	Manual Section	Design Values (by Type of Area)		
					Suburban	Intermediate	Built-up
Design Controls	Design Forecast Year			6-3.02	20 Years	20 Years	20 Years
	Design Speed		x	6-2.02	25 mph – 30 mph	25 mph – 30 mph	20 mph – 25 mph
	Access Control			6-4.0	Control by Regulation	Control by Regulation	Control by Regulation
	Level of Service			6-3.0	C – D	C – D	C – D
	On-Street Parking			10-1.04	Sometimes	Sometimes	Sometimes
Cross Section Elements	Travel Lane Width		x	10-1.01	10' – 11'	10' – 11'	10' – 11'
	Shoulder Width		x	10-1.02	2' – 4'	2' – 4'	2' – 4'
	Cross Slope	Travel Lane	x	10-1.01	1.5% – 2.0% (1.5%-3.0% with curbing)	1.5% – 2.0% (1.5%-3.0% with curbing)	1.5% – 2.0% (1.5%-3.0% with curbing)
		Shoulder (W < 4')	x	10-1.02	Same as Adjacent Travel Lane		
		Shoulder (W ≥ 4')	x		4% – 6%	4% – 6%	4% – 6%
	Turn Lanes	Lane Width	x	10-1.03	10' – 11'	10' – 11'	10' – 11'
		Shoulder Width	x		2' – 4'	2' – 4'	2' – 4'
	Parking Lane Width			10-1.04	7' – 10'	7' – 11'	7' – 11'
	Sidewalk Width			10-2.01	5' Minimum	5' Minimum	5' Minimum
	Bicycle Lane	Width		15-4.0	5'	5'	5'
		Cross Slope			2%	2%	2%
	Bridge Width/Cross Slope		x	10-4.01	Curb-to-Curb: Meet Approach Roadway Width and Cross Slope Sidewalk Width: 5'-6"		
	Underpass Width			10-4.02	Meet Approach Roadway Width Plus Clear Zones		
	Right-of-Way Width			10-5.0	Project-by-Project Basis		
	Roadside Clear Zones		x	13-2.0	See Section 13-2.0		
	Fill/Cut Slopes			10-2.02	See Figure 5I		

* Controlling design criteria (see Section 6-5.0).

Figure 5F (Continued)

LOCAL URBAN STREETS
(New Construction/Reconstruction)

Design Element			★	Manual Section	Design Values (Based on Design Speed)		
					30 mph	25 mph	20 mph
Alignment Elements	Stopping Sight Distance		x	7-1.0	200'	155'	115'
	Decision Sight Distance	Maneuver		7-2.0	U: 620' SU: 535'	N/A	N/A
		Stop			490'	N/A	N/A
	Minimum Radius (e = 4%)		x	8-3.02	250'	155'	90'
	Superelevation	e _{max}		8-3.02	4.0%	4.0%	4.0%
		Rate	x		See Figure 8-3C		
	Horizontal Sight Distance			8-2.04	See Section 8-2.04		
	Maximum Grade		x	9-2.03	10%	11%	11%
	Minimum Grade			9-2.03	0.5%		
	Vertical Curvature (K-Value)	Crest		9-2.02	19	12	7
		Sag		9-3.03	37	26	17
	Minimum Vertical Clearance:	New Highway Bridge	x	9-4.0	14'-6"		
		Local Street Under ...	x		14'-3"		
Minimum Vertical Clearance (Local Street over Railroad)		x	9-4.0	Electrified: 22'-6" All Others: 20'-6"			

* Controlling design criteria (see Section 6-5.0).

U: Urban

SU: Suburban

Figure 3: Highway Design Manual (HDM) – Chapter 5 Figure 5F “Local Urban Streets”

Appendix A – ECD-2024-4



Connecticut DOT

Number: ECD-2024-4

Bureau of Engineering and Construction

Date: December 18, 2024

ENGINEERING & CONSTRUCTION DIRECTIVE

DocuSigned by:
Scott A. Hill, PE
B2666A77EB96402
Chief Engineer

Complete Streets Controlling Design Criteria
and Justification Process

1.1 Purpose and Applicability

This Directive supersedes [ECD-2023-8](#), which established three (3) controlling design criteria and associated design guidance for pedestrian facilities, bicycle facilities, and transit provisions on applicable CTDOT projects as defined in **Exhibit 1**. These new criteria will be collectively called “Complete Streets” controlling design criteria. This Directive supplements Section 6-5 of the Highway Design Manual; and supports CT General Statutes Section 13a-153f, *Accommodations and Provisions of Facilities for All Users*; CTDOT Policy Statement Ex. O -31, *Complete Streets*, dated October 23, 2014 (as revised); and Executive Order No. 21-3, *Actions That Reduce Carbon Emissions and Adapt to Climate Crisis*, dated December 16, 2021.

Exhibit 1
Applicable CTDOT projects (all must apply)

CTDOT is the project proponent.
CTDOT administers the project.
CTDOT is responsible for project funding (state or federal aid).
CTDOT controls the affected infrastructure (State Highway).

1.2 Exemptions

This Directive shall apply to all projects except for the **Exempt Projects** listed below.
Exempt Projects: The following types of projects are exempt from the need to prepare and submit the Complete Streets Justification Worksheets:

- Projects initiated under the High Friction Surface Treatment (HFST) program
- Pavement preservation/preventive maintenance activities:
 - Crack sealing and crack filling
 - Patching (HMA and/or Mastics)
 - Emulsified asphalt fog sealing

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- Bridge cyclic maintenance or condition-driven maintenance as identified in the *AASHTO Guide to Bridge Preservation*, Appendix A.
- Non-roadway maintenance actions such as mowing, catch basin cleaning, or street sweeping
- Drainage only
- Noise barrier only
- Guiderail only
- Illumination only
- Traffic signal modifications and/or component equipment replacement only
- Signing only
- Landscape only
- Non-occupied structures
- Non-vehicular access permits

*In order to claim these exemptions, the purpose and need of the project must be solely to maintain the roadway surface and the crash history must not indicate any apparent geometric deficiency.

In addition to the project type exemptions provided above, some of the controlling criteria are not applicable to every project that requires a Complete Streets Justification Worksheet. **Exhibit 2** lists all projects where a subset of the controlling design criteria would not require formal approval if the criteria are not met.

Exhibit 2
Exemptions from the Need to Comply with Complete Streets Controlling Design Criteria

(Categories of work marked with “X” require formal approval by the Chief Engineer in the event the applicable controlling design criteria is not met.)

Project Work Type	Pedestrian Facilities	Bicycle Facilities	Transit Provisions
Pavement preservation/preventive maintenance activities* [†] <ul style="list-style-type: none">• Emulsified chip sealing• Asphalt rubber chip sealing• Mill and Fill• Microsurfacing• Cape Seal• Ultra-thin bonded wearing course• Thin friction wearing course	X [†]	X	
Pavement Maintenance Resurfacing Projects (PMRP)* [†]	X [†]	X	
Pavement marking only [†]	X [†]	X	

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Sidewalk and/or curb ramps only	X		X
Work on facilities where pedestrians are not legally allowed		X	
Work on facilities where bicyclists are not legally allowed	X		X
Work on side streets where there are no existing pedestrian facilities within 1500 feet**		X	X
Work on side streets where there are no existing bicycle facilities within 1500 feet**	X		X
Work on facilities with no existing or proposed fixed-route transit service	X	X	

*In order to claim these exemptions, the purpose and need of the project must be solely to maintain the roadway surface and the crash history must not indicate any apparent geometric deficiency.

Refer to **Figures 1 & 2.

†For these types of projects, controlling criteria for pedestrian facilities shall apply to the installation of crosswalks and illumination only. ADA requirements shall be in accordance with Chapter 15 of the Highway Design Manual.

1.3 **Design Guidance**

The design guidance contained herein is intended to provide designers with sufficient flexibility to address the unique and diverse conditions encountered on Connecticut's streets and highways.

CTDOT recognizes 18 controlling design criteria which includes the 15 controlling design criteria noted in Section 6-5.02 of the Highway Design Manual and the three "Complete Streets" controlling design criteria listed below.

1. Pedestrian Facilities
2. Bicycle Facilities
3. Transit Provisions

Information on the Complete Streets controlling design criteria to be applied to CTDOT projects are contained in the most current editions of the guidance documents listed in **Exhibit 3**. Every reasonable effort should be made to design projects within the ranges of standards provided in these guidance documents.

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Exhibit 3

Applicable Design Guidance Documents

Author	Guidance Document
AASHTO	Guide for the Development of Bicycle Facilities
AASHTO	Guide for the Planning, Design, and Operation of Pedestrian Facilities
AASHTO	Guide on Geometric Design of Transit Facilities on Highways and Streets
AASHTO	A Guide on Achieving Flexibility in Highway Design
AASHTO	A Policy on Geometric Design of Highways and Streets (“Green Book”)
FHWA	Achieving Multimodal Networks
FHWA	Small Town and Rural Multimodal Networks
FHWA	Bikeway Selection Guide
NACTO	Urban Bikeway Design Guide
CTDOT	Highway Design Manual
CTDOT	Bicycle Facility Selection Guide

2.1 Complete Streets Justification Worksheets

The Complete Streets Justification Worksheets (Worksheets) provide a uniform method for considering, evaluating, and documenting design decisions for the Complete Streets controlling design criteria. The latest version of the Worksheets can be downloaded from the CTDOT’s Templates folder ([DOT Engineering Administrator - Templates - All Documents \(sharepoint.com\)](#)). The Worksheets shall be completed as follows:

For new projects:

When initiating projects, the initiating unit shall complete the Worksheets and submit to the Chief Engineer for approval as required, except for those projects included in the **Exempt Projects** list noted above. The Worksheets shall be included with the Proposed Project Information (PPI), or the Recommended Project Memorandum (RPM) and a copy provided to the Designer of the proposed project. If any changes occur that affect the Complete Streets provisions set forth in the Worksheets at project initiation, the Designer shall prepare supplemental Worksheets accordingly during design, preferably during the Preliminary Design phase (30% design), and seek approval from the Chief Engineer, as required. All completed Worksheets (original and supplemental copies) shall be retained to document project history for Complete Streets provisions.

If all Complete Streets controlling design criteria are met, the Designer shall include the Worksheets with the project files. If the Designer cannot meet the standards for any of the three (3) Complete Streets controlling design criteria that are applicable to the project, an exception to design standards is required. “Applicable to the project” means any criteria

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not identified as exempt in **Exhibit 2**, or otherwise categorically exempt from the need to prepare and submit the Worksheets. The Designer shall prepare the required documentation for the Complete Streets controlling design criteria applicable to the project that don't meet the standards and seek approval for a Design Exception from the Chief Engineer.

For applicable active projects initiated before August 31, 2023, that have not yet received Design Approval:

Wherever feasible, designers should incorporate the requirements of this Directive given considerations such as, but not limited to, project schedule, available right-of-way, geometric constraints, and project funding. Designers are required to fill out the Worksheets for each project to document design decisions regarding the accommodations for pedestrian and bicycle facilities and transit provisions. Each project shall be reviewed with the respective Division Chief to determine the feasibility of incorporating the Complete Streets provisions.

If the Complete Streets provisions are to be incorporated into the project, the process for meeting the Complete Streets controlling design criteria is the same as noted above for new projects. If the Complete Streets provisions cannot be incorporated into the project, the Worksheets shall be kept with the project files and documented in the Design Approval memo.

3.0 Complete Streets Controlling Design Criteria Guidance

The following sections are provided to define CTDOT's state-specific Complete Streets controlling design criteria.

3.1 Pedestrian Facilities

CTDOT is committed to providing facilities that are accessible to all users in accordance with all state and federal regulations. Federal regulations are issued by the United States Department of Justice (DOJ) under the 2010 ADA Standards for Accessible Design and the United States Department of Transportation (USDOT) under the 2006 ADA Standards for Transportation Facilities. It is recognized that full compliance with these regulations may not be feasible in all situations based on existing or latent field conditions. The Designer shall design pedestrian facilities in accordance with Chapters 10 and 15 of the *CTDOT Highway Design Manual*; Engineering Directive ED-2019-7, *Accessibility Guidelines in the Public Right of Way (PROWAG)*; Policy No. EX. O-42, *Sidewalks*; and the *AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities*.

3.1.1 Definitions

Pedestrian facilities may include sidewalks, buffered outside shoulders, shared use paths, or side paths.

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Buffered outside shoulder is a space for pedestrian or bicycle use that is adjacent to the travel lane and separated by a buffer area delineated by chevron or diagonal pavement markings.

Side path is a shared use path located adjacent and parallel to a roadway.

Pedestrian Safety Zones are established areas in downtown districts or community centers where there is a high level of pedestrian activity. Such zones may also be established adjacent to, or in the immediate vicinity of, a hospital property. This is a type of speed zone that allows for the speed limit to be set as low as 20 mph to reduce the risk of fatal or serious injuries to pedestrians within the zone. Pedestrian Safety Zones must be complemented by other speed reduction methods, like recommended actions from a speed management plan. The OSTA is responsible for the establishment of Pedestrian Safety Zones on State Highways and such requests shall be made to the Executive Director of the OSTA.

Urbanized areas and urban clusters are defined and published by the CTDOT Office of Policy and Planning and available through [Roadway Classification and Characteristic Maps and Dashboards | CTDOT Open Data \(arcgis.com\)](#).

Rural Town Center applies to rural areas located within developed communities. Rural town centers generally have low development densities with diverse land uses, on-street parking, sidewalks in some locations, and small building setbacks. Rural town centers may include residential neighborhoods, schools, industrial facilities, and commercial main street business districts, each of which present differing design challenges and differing levels of pedestrian and bicycle activities.

3.1.2 Requirements

Pedestrian facilities shall be provided on both sides of a roadway if any of the following apply:

- For all State Routes in urbanized areas, urban clusters, rural town centers, or pedestrian safety zones where pedestrians are legally allowed.
- For all State Routes with high likelihood for pedestrian use. Interactive mapping for these State Routes is available in the DOT TED GIS Production Portal [ArcGIS Enterprise - Bike Pedestrian Demand \(ct.gov\)](#).
- For bridges on Urban Federal-Aid Highways or on rural State Routes carrying more than 1,000 ADT¹, where pedestrians are legally allowed and where the scope of work is beyond bridge cyclic maintenance or condition-driven maintenance as identified in the *AASHTO Guide to Bridge Preservation*, Appendix A. Examples of scope of work are as follows:
 - Deck replacement

¹ Item 2 of the Policy Statement in FHWA's [Accommodating Bicycle and Pedestrian Travel: A Recommended Approach](#)

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- Superstructure Replacement
- Full replacement*

*On full replacement bridge projects where pedestrians are legally allowed along the roadway underneath the bridge, Designers shall provide adequate width between the new substructure (i.e., abutment) and the edge of roadway below the new structure, to allow for future pedestrian accommodations on both sides of the roadway.

The minimum *pedestrian facility* width is 5'-0". The minimum width of a *pedestrian facility* is exclusive of any curb width or buffer area.

Marked crosswalks shall be provided across every leg of an intersection with a traffic control signal where sidewalks are present and/or proposed.

Illumination shall be provided for marked crosswalks on all State roads.

An activated No Turn on Red/Yield to Pedestrian blank-out sign shall be used where an intersection is controlled by a traffic control signal with permissive right turn on red movements for vehicles that will cross a marked crosswalk or at concurrent pedestrian signals. A blank-out sign displays the message No Turn On Red when a pedestrian walk phase is activated at an exclusive crosswalk, or during the leading pedestrian interval of a concurrent crossing, or during the concurrent pedestrian phase when conflicting vehicles have a red indication. A blank-out sign displays the message Yield to Pedestrian when a concurrent pedestrian phase occurs when vehicles are moving parallel to the crossing. When not activated, the sign face is blank.

3.2 **Bicycle Facilities**

Designers should select *bicycle facilities* that provide bicyclists with a suitable accommodation and are feasible to implement given considerations such as, but not limited to, available right-of-way, geometric constraints, construction cost, and maintenance factors.

Bicycle Facilities shall be selected in accordance with *CTDOT's Bicycle Facility Selection Guide*.

Bicycle Facilities should be designed in accordance with the *AASHTO Guide for the Development of Bicycle Facilities*, *FHWA Bikeway Selection Guide*, and *NACTO Urban Bikeway Design Guide*.

3.2.1 **Definitions**

Bicycle facilities may include paved outside shoulders, buffered outside shoulders, bicycle lanes, buffered bicycle lanes, separated bicycle lanes, side paths, or shared use paths. Facilities may provide service in a single direction of travel ("uni-directional") or two

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directions of travel (“bi- directional”).

Paved outside shoulder is the portion of the roadway contiguous with the traveled way that accommodates stopped vehicles, emergency use, and conveyance of drainage. Paved shoulders are often used by bicyclists.

Buffered outside shoulder is a space for pedestrian or bicycle use that is adjacent to the travel lane and separated by a buffer area delineated by chevron or diagonal pavement markings.

Bicycle lane or *Bike lane* is a portion of the roadway that has been designated for preferential or exclusive use by bicycles indicated by pavement markings and, if used, signs.

Buffered bicycle lane is a bicycle lane that is separated from the adjacent general-purpose lane or parking lane by a buffer area which may include chevron or diagonal pavement markings.

Separated bicycle lane is a bicycle lane that is physically separated from motor vehicle traffic by vertical elements as well as a horizontal buffer or elevation change from the street. These may also be referred to as protected bike lanes or cycle tracks. On-street parallel or angled motor vehicle parking can serve as the vertical elements. Separated bicycle lanes can be designated for one-way or two-way travel.

Shared use path is a bikeway physically separated from motor vehicle traffic by an open space or barrier and is either within the highway right-of-way or within an independent right-of-way. Shared use paths may also be used by pedestrians, skaters, wheelchair users, joggers, and other nonmotorized users. Shared use paths are also commonly referred to as trails, multiuse paths, paths, or greenways.

Side path is a shared use path located adjacent and parallel to a roadway.

3.2.2 Requirements

Bicycle facilities shall be provided and shall provide service for each direction of vehicular travel if any of the following apply:

- For all State Routes where bicycles are legally allowed.
- For bridges on Urban Federal-Aid Highways or on rural State Routes carrying more than 1,000 ADT², where bicycles are legally allowed and where the scope of work is beyond bridge cyclic maintenance or condition-driven maintenance as identified in the *AASHTO Guide to Bridge Preservation*, Appendix A. Examples of scope of work are as follows:
 - Deck replacement
 - Superstructure Replacement
 - Full replacement

² Item 2 of the Policy Statement in FHWA’s [Accommodating Bicycle and Pedestrian Travel: A Recommended Approach](#)

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The minimum widths for various bicycle facilities are provided in **Exhibit 4**.

Exhibit 4
Minimum widths for Various Bicycle Facilities

Bicycle Facility	Minimum Width (feet)
Paved Outside Shoulder	5
Buffered Outside Shoulder *	5
Bicycle Lane	5
Buffered Bicycle Lane *	5
Separated Bicycle Lane (one-way) *	5 ¹
Separated Bicycle Lane (two-way) *	8 ²
Shared Use Path	10
Side path	10

*Minimum width excludes buffer area (minimum buffer width = 2')

¹A minimum width of 6' is required where the bicycle lane is constrained on both sides by curbs or other vertical barriers.

²A minimum width of 10' is required where the bicycle lane is constrained on both sides by curbs or other vertical barriers.

3.3 Transit Provisions

Transit Provisions shall be designed in accordance with Chapter 15 of the *CTDOT Highway Design Manual* and the *AASHTO Guide for Geometric Design of Transit Facilities on Highways and Streets*.

3.3.1 Definitions

For the purposes of this criterion, a *transit route* is any fixed-route service operated under contract with CTDOT or by a Transit District.

For the purposes of this criterion, a *transit stop* is any officially designated location used for the boarding or alighting of passengers on a *transit route*.

For the purposes of this criterion, *service area* is defined as 1/4th (quarter) mile from local fixed-route service and 2.5 miles from commuter bus fixed-route service stops (Park and Ride Lots) and rail stations.

3.3.2 Requirements

For all projects that are located within the *service area* of an existing or proposed transit route (considering both railroads and bus service) and containing facilities where pedestrians or bicyclists are legally allowed, the Designer shall coordinate with the Bureau of Public

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Transportation's Offices of Transit and Ridesharing and Rails, submit a set of 30 percent Design plans for their review and/or invite them to any planning or scoping meetings, as required.

Accessible pedestrian access shall be provided between both sides of a roadway within 400 feet of existing or proposed *transit stops*.

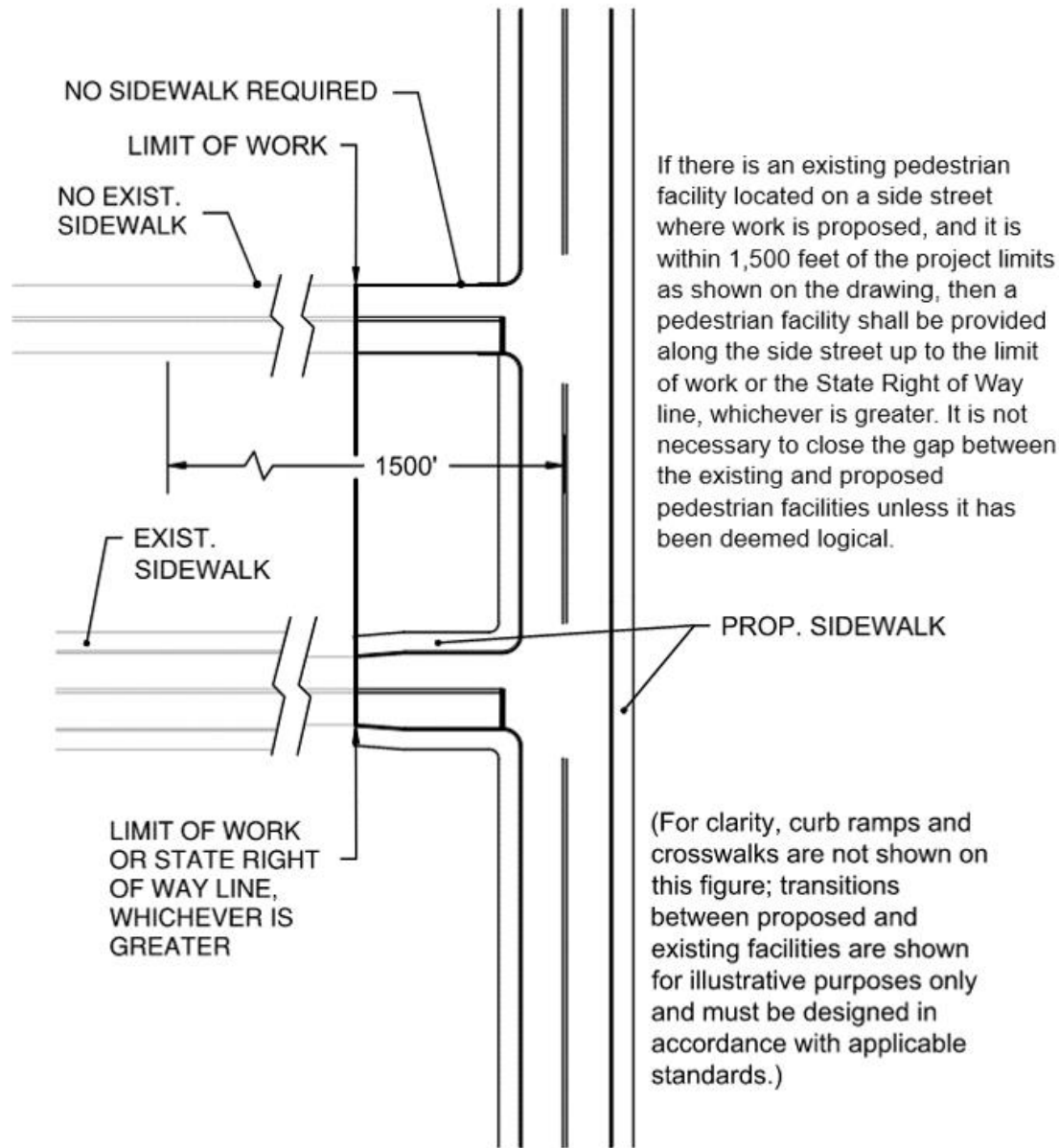
A shelter or bench shall be provided at all *transit stops* with high levels of boarding per day or low levels of frequency of service. The Designer shall coordinate with the Bureau of Public Transportation's Office of Transit and Ridesharing for guidance and/or recommendation.

Illumination shall be provided at all *transit stops*.

Existing transit stops within the project limits shall comply with ADA requirements in accordance with Chapter 15 of the *Highway Design Manual* and the *Guide Sheets for Bus Stop Enhancements*.

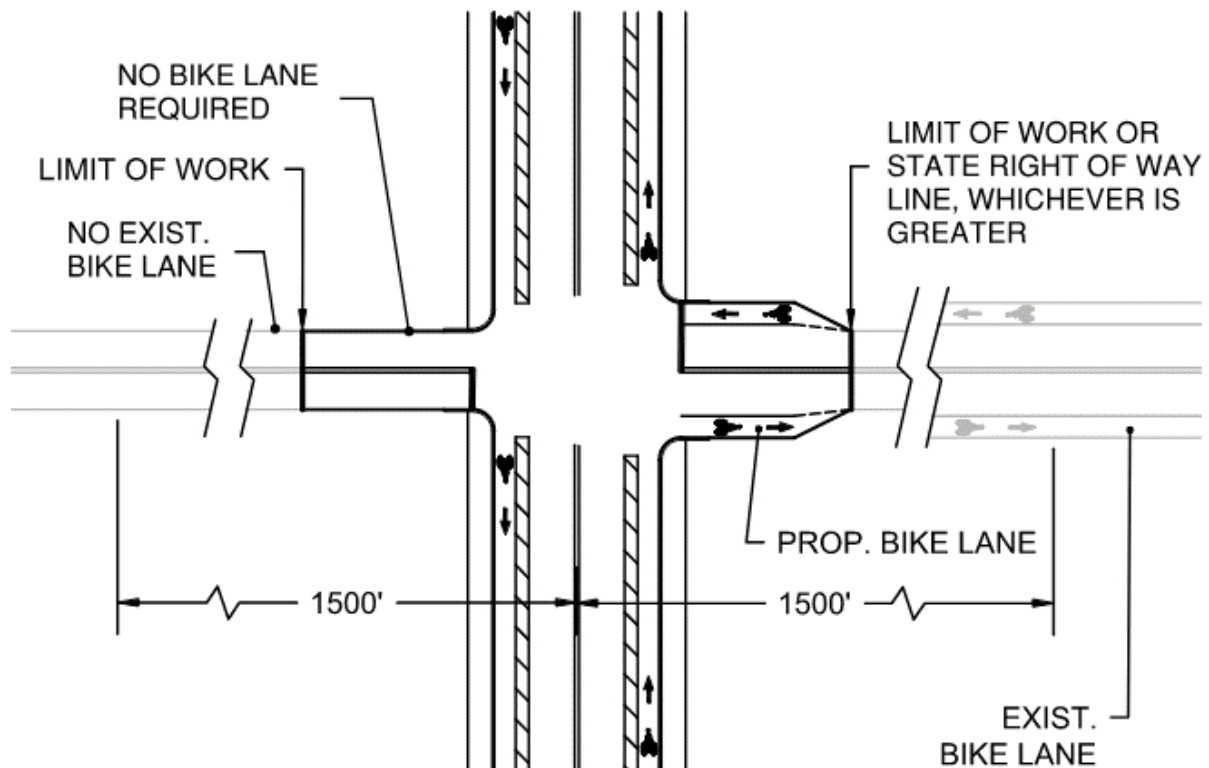
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Figure 1
Limits of Pedestrian Facilities on Side Streets



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Figure 2
Limits of Bicycle Facilities on Side Streets



If there is an existing bicycle facility located on a side street where work is proposed, and it is within 1,500 feet of the project limits as shown above, then a bicycle facility shall be provided along the side street up to the limit of work or the State Right of Way line, whichever is greater. It is not necessary to close the gap between the existing and the proposed bicycle facilities unless it has been deemed logical.

(For clarity, transitions between proposed and existing facilities are shown for illustrative purposes only and must be designed in accordance with applicable standards.)