

Complete Streets DESIGN Guidelines



MPO
Committees
October 2017

Goals

- Develop a context sensitive design framework and typical sections
- Provide local practitioners with Complete Streets design guidance
- Emphasize multimodal safety and mobility across every element
- Connect with FDOT Complete Streets Implementation including Context Classification Guide and new FDOT Design Manual



Process

- MPO Complete Streets Policy adopted in March 2016
- Complete Streets Working Group reviewed each step of the document development
 - Best practice Design Guideline documents
 - Palm Beach MPO CSDG initial document outline
 - Multimodal typology framework (street type and land use type)
 - Design criteria



Complete Streets DESIGN Guidelines



BENEFITS OF COMPLETE STREETS

People who live in neighborhoods with sidewalks on roads are 47% more likely to be active at least 30 minutes per day.

Increased physical activity promotes better grades, school attendance, and classroom behavior.

Pedestrian street activity increases support of local businesses, expands employment opportunities, and promotes reinvestment into the local economy.

If 100,000 car trips were replaced by bike trips once a month, it would cut carbon dioxide (CO₂) emissions by 3,764 tons/year.

\$9,700 is the average annual savings from choosing to ride transit instead of driving alone.

Every \$1 communities invest in transit generates \$4 in economic returns.

Homes with higher Walk Scores sell for between \$4,000 and \$34,000 more.

Increased pedestrian street activity acts as self-policing, deterring criminal behavior.





Table of Contents

Summary of Primary Topics	7	3. Multimodal Street Typology Framework	31
Street Typology	7	Framework	33
Land Use Typology	7	Typologies	34
Flexibility in Design	8	Street Type Table	35
Sidewalk Zones	8	Street Types	36
Lane Width	9	Land Use Type Table	41
Separated Bicycle Lanes	9	Land Use Types	42
1. Introduction	11	Street and Land Use Maps	48
Purpose	13	4. Blended Typology Approach	55
Background	14	Introduction	57
Existing Design Guidance	19	Design Dimensions for Street Type and Land Use Context Combinations	61
2. Best Practices	23	Pedestrian Realm/Streetside Design Guidance	66
Introduction	25	Roadway Realm Design Guidance	72
Review of Example Design Guidelines	25	Intersection Design Guidance	83
Flexibility in Design	27	5. Implementation	91
		Adopt a Complete Streets Policy	93
		Build Complete Streets	93
		Demonstrate Success	98

Chapters

Sections

Links Take You Directly There



Acronyms and Glossary

AASHTO - American Association of State Highway and Transportation Officials

ADA - Americans with Disabilities Act

ADT - Average Daily Traffic

APBP - Association of Pedestrian and Bicycle Professionals

APTA - American Public Transportation Association

ASCE - American Society of Civil Engineers

Bicycle Box - A signalized intersection traffic control device that provides a designated space between the intersection stop bar and an advance stop bar, intended to provide bicyclists a space in which to wait in front of stopped motor vehicles during the red phase to improve visibility at the start of the green phase.

Bicycle Lane - Delineated roadway space for preferential use by bicyclists and marked with the bicycle lane symbol and arrow

**Acronyms and Glossary
included with over 60
terms defined**



Chapter Dividers with Local Photos



1

Introduction





Summary of Primary Topics

- Street Typology
- Land Use Typology
- Flexibility in Design
- Sidewalk Zones
- Lane Width
- Separated Bike Lanes



Flexibility in Design

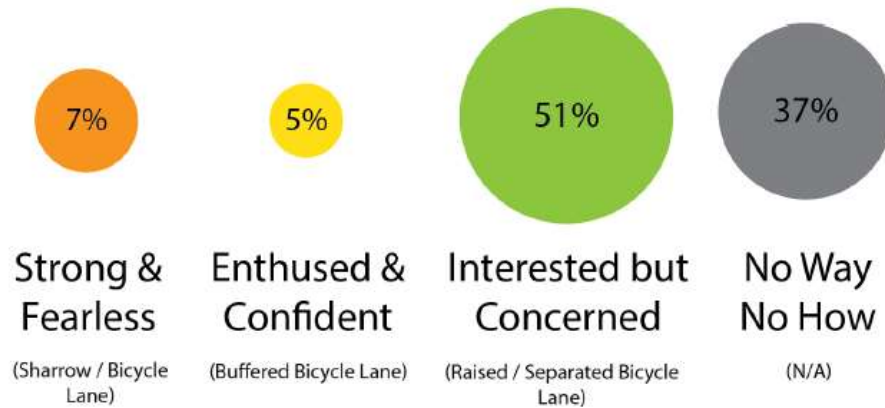
- FAST Act encourages flexibility in design to meet needs of all users
- *Toward More Flexible Design*, (FHWA-HRT-16-003)
- FDOT Complete Streets Policy
- FDOT Context Classification Guide and FDOT Design Manual (FDM)





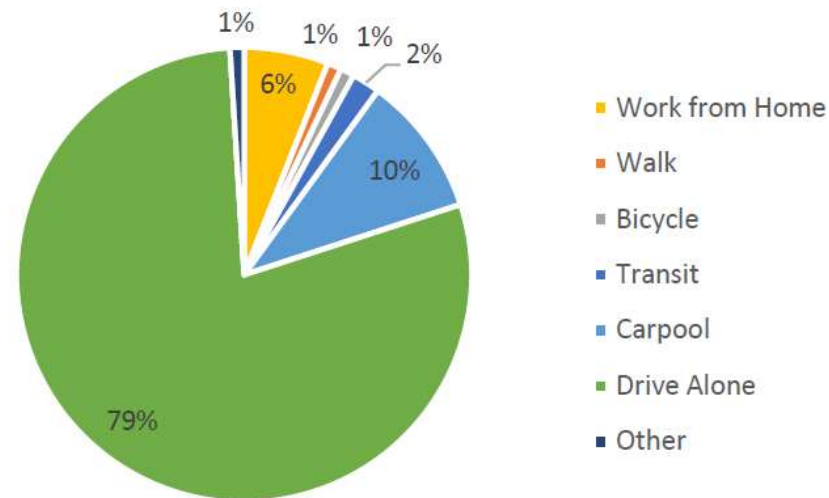
Mode Split

Four Types of Cyclists



Source: Dill & McNeil, TRB 2016

Existing Palm Beach County Mode Split



2040 LRTP	Actual	Goals
Walk	1%	5%
Bicycle	1%	3%
Transit	2%	5%

Complete Streets DESIGN Guidelines



Street Typology

Complete Streets are developed from a philosophy that streets have many different roles, functions, and characteristics depending on their context. Focus is placed on the type of trips served including pedestrian, bicyclist, transit, and motor vehicle trips. The design objectives for a particular street are revealed from a greater understanding and analysis of the different roles of the street. Based on an analysis specific to Palm Beach County roads and streets, a street typology consisting of five categories was developed. The table below shows the relationship between traditional functional classifications and the street typologies for these guidelines.

- Limited Access Facilities - LA
- Major Corridors - MC
- Main Connectors - CN
- Community Connectors - CC
- Neighborhood Streets - NS

Table 3-1 Generalized Relationship between Street Typology and Functional Classification Excluding LA Facilities

	Major Corridors	Main Connectors	Community Connectors	Neighborhood Streets
Principal Arterial		N/A	N/A	N/A
Minor Arterial	N/A		N/A	N/A
Collector	N/A			N/A
Local	N/A	N/A	N/A	

Land Use Typology

Land uses are categorized more broadly than the traditional zoning designations. Streets can thus respond to changes in the building form and function, elements which transcend whether a particular building is an office or apartment building. These land use typologies focus on building and parking orientation, in addition to the potential uses, as the orientation can affect the types of trips a building supports.

- Urban Core - UC
- Urban General - UG
- Suburban - SB
- Rural Town - RT
- Rural - RU
- Natural - NA

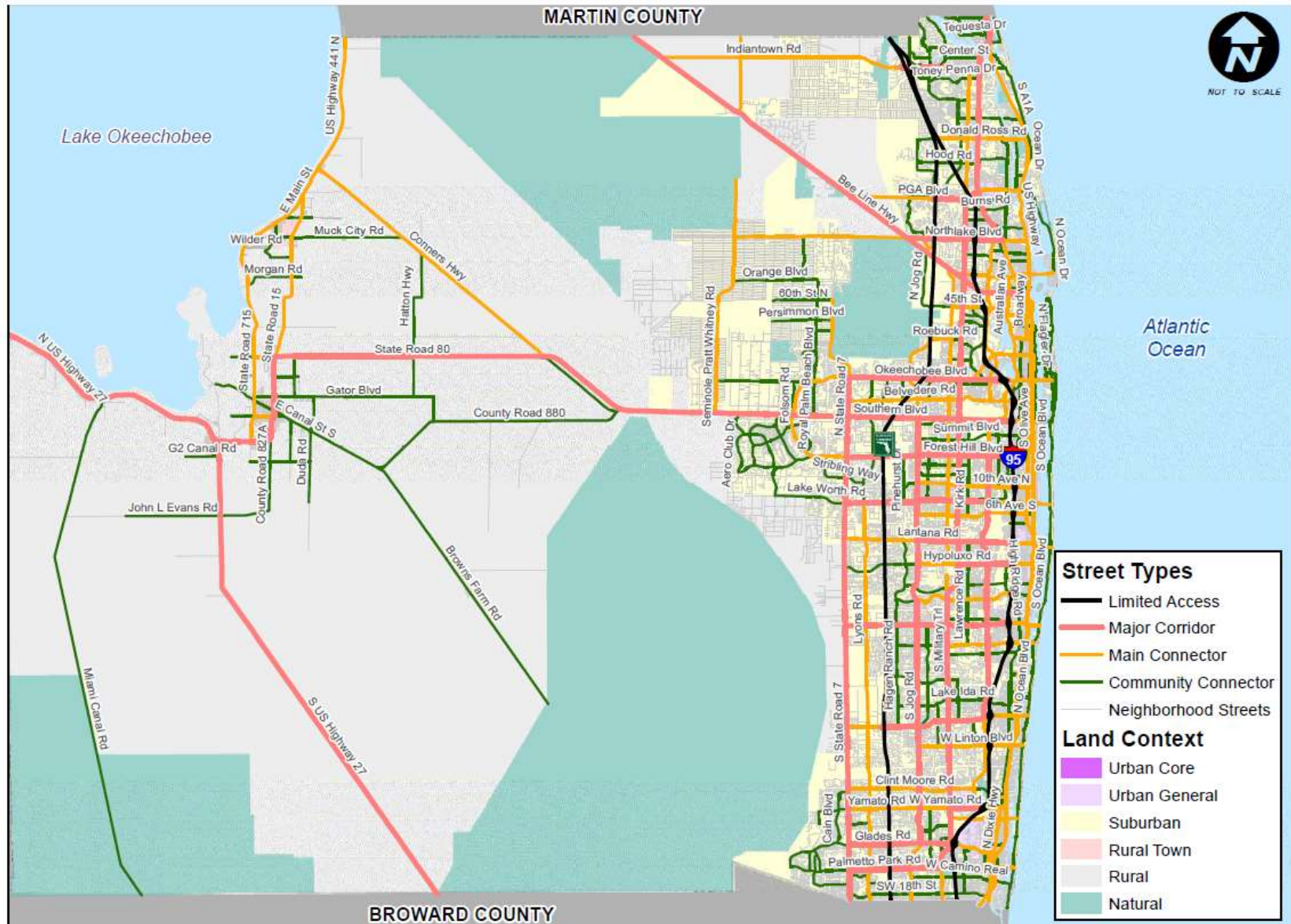
Table 3-2 Roadway Miles by Street Type and Land Use Excluding LA Facilities and Neighborhood Streets

	Major Corridors	Main Connectors	Community Connectors	Total
Urban Core	0.00	14.40	6.82	21.22
Urban General	7.10	71.92	46.02	125.04
Suburban	196.82	204.37	313.24	714.43
Rural Town	5.00	4.42	11.28	20.70
Rural	73.47	58.59	123.51	255.56
Natural	0.00	0.00	0.00	0.00
Total	282.38	353.69	500.87	1136.95

Complete Streets DESIGN Guidelines



Street and Land Use Maps





Blended Typology Approach

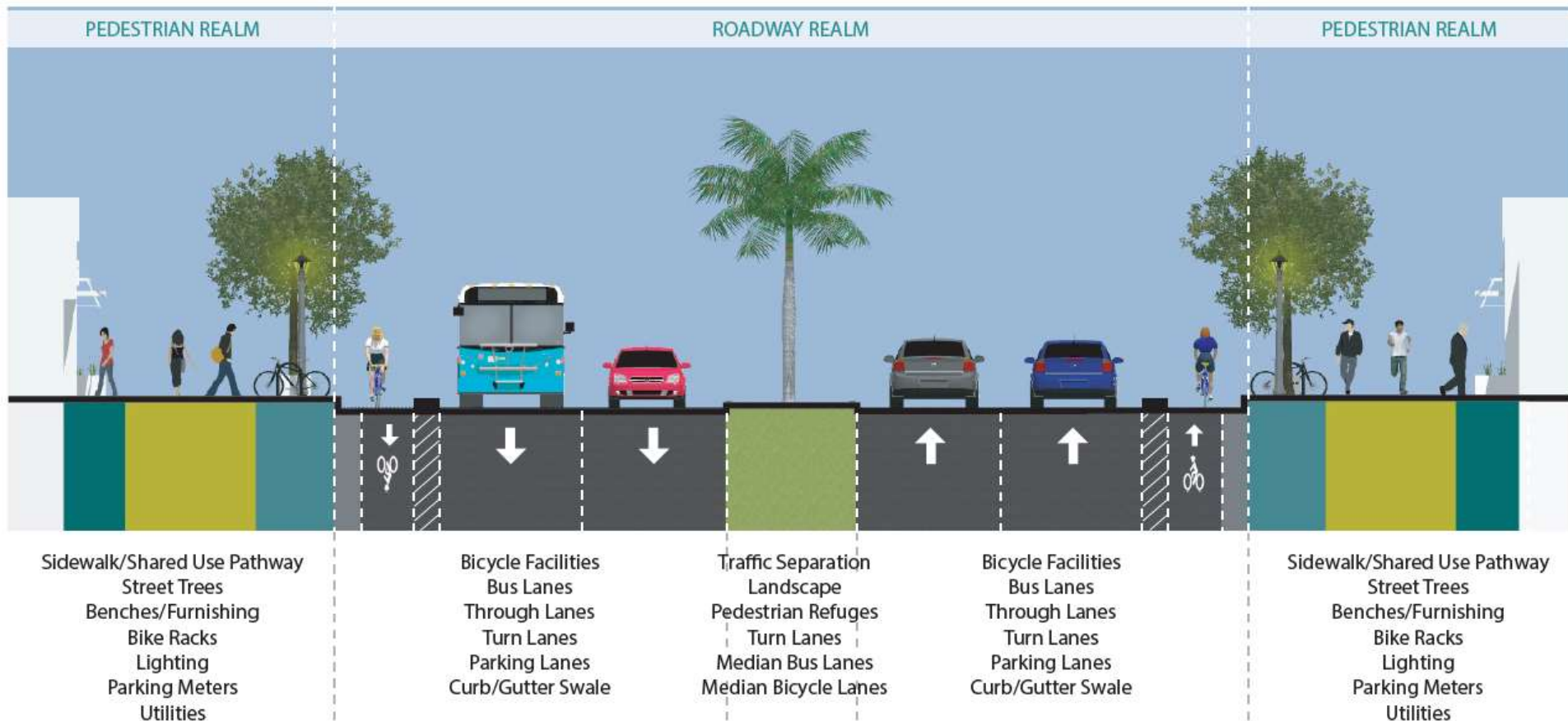


Figure 4-1 Street Elements in the Pedestrian Realm and the Roadway Realm

Complete Streets DESIGN Guidelines



MAJOR CORRIDOR

PEDESTRIAN REALM

ROADWAY REALM



Typical (Constrained)	Frontage Zone (ft)	Pedestrian Zone (ft)	Furnish- ing Zone (ft)	Curb Zone (ft)	Bicycle Facility (ft)	Through Lane (ft)	Through Lane (ft)	Through Lane (ft)	Half of Center Median (ft)	Total ROW Width (ft)
Urban Core	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Urban General	0	7	0	2	8	11	11	11	10	120
Suburban	0	7 (6)	0	2	8 (4)	11	11	11	10	120 (110)
Rural Town	2	10	6	2	8	11	11	N/A	10	120
Rural	5	12	5	24	10	12	12	N/A	30	220
Natural	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

NOTES

- Dimensions shown in the table reflect typical values with constrained values shown in parentheses.
- Separated bicycle lanes are preferred because they are most likely to attract a wider range of bicyclists.
- Design speeds of 50 mph or greater may require greater separation between through lane and a raised separator.
- Where driveway density and/or drainage concerns prevent the introduction of separated bicycle lanes, buffered bicycle lanes are acceptable.
- Turn lane will exist in median space where applicable.
- When used, on-street parking should be provided in the roadway realm with a total width of 8 feet, which may be inclusive of an 18-inch gutter pan on curb-and-gutter roadways.
- N/A refers to street type and land use typology combinations that do not occur within Palm Beach County.
- In Rural areas, curb zone accommodates swale and drainage.



MAIN CONNECTOR

PEDESTRIAN REALM

ROADWAY REALM



Typical (Constrained)	Frontage Zone (ft)	Pedestrian Zone (ft)	Furnish- ing Zone (ft)	Curb Zone (ft)	Bicycle Facility (ft)	Through Lane (ft)	Through Lane (ft)	Half of Center Median (ft)	Total ROW Width (ft)
Urban Core	1	6	2	2	4	10	10	5	80
Urban General	3 (1)	8	4	2	8 (4)	10	10	10	110 (80)
Suburban	3 (1)	10	5 (2)	2	8	11	11	10	120 (80)
Rural Town	3	12	9	2	8	11	N/A	15	120
Rural	1	6	2	15	8	11	N/A	15	120
Natural	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

NOTES

- Dimensions shown in the table reflect typical values with constrained values shown in parentheses.
- Design speed in urban core and urban general areas is assumed to be 35 mph or less.
- Separated bicycle lanes are preferred because they are most likely to attract a wider range of bicyclists.
- Where driveway density and/or drainage concerns prevent the introduction of raised bicycle lanes, buffered bicycle lanes are acceptable.
- Turn lane will exist in median space where applicable.
- When used, on-street parking should be provided in the roadway realm with a total width of 8 feet, which may be inclusive of an 18-inch gutter pan on curb-and-gutter roadways.
- N/A refers to street type and land use typology combinations that do not occur within Palm Beach County.
- In Rural areas, curb zone accommodates swale and drainage.



COMMUNITY CONNECTOR

PEDESTRIAN REALM

ROADWAY REALM



Typical (Constrained)	Frontage Zone (ft)	Pedestrian Zone (ft)	Furnishing Zone (ft)	Curb Zone (ft)	Bicycle Facility (ft)	Through Lane (ft)	Half of Center Median (ft)	Total ROW Width (ft)
Urban Core	4	10	6	2	8	10	*	80
Urban General	3	10	6	2	8	11	*	80
Suburban	3 (1)	10 (8)	6 (3)	2	8 (5)	11	*	80 (60)
Rural Town	3	12	9 (4)	2	8	11	15	120 (110)
Rural	1	6	2	15 (13)	8 (5)	11	15 (0)	120 (80)
Natural	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

NOTES

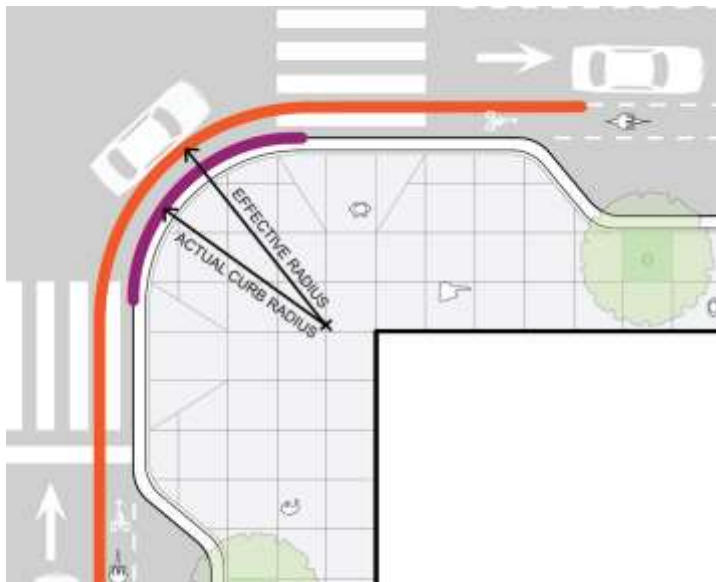
- Dimensions shown in the table reflect typical values with constrained values shown in parentheses.
- Design speed in any land use with 10' lanes is assumed to be 35 mph or less.
- Separated or raised bicycle lanes are preferred because they are most likely to attract a wider range of bicyclists.
- Where driveway density and/or drainage concerns prevent the introduction of separated or raised bicycle lanes, buffered bicycle lanes are acceptable.
- When used, on-street parking should be provided in the roadway realm with a total width of 8 feet, which may be inclusive of an 18-inch gutter pan on curb-and-gutter roadways.
- N/A refers to street type and land use typology combinations that do not occur within Palm Beach County.
- *Median not applicable for urban core, urban general, and suburban land uses. Opposing directions may be separated by traffic striping.



Curb Radii

Table 4-1 Actual and Effective Curb Radii

	Land Use Context	Actual Curb Radius	Effective Curb Radius (the vehicular path) ^{(1),(2)}
Major Corridor ⁽⁴⁾	All intersection corners w/o vehicle turns	5'	N/A
	UC, UG	15'	20'
	SB, RT	25'	30'
	RU, NA	40'	45'
Main Connector ⁽⁴⁾	All intersection corners w/o vehicle turns	5'	N/A
	UC, UG	15'	20'
	SB, RT ⁽³⁾	25'	30'
	RU, NA	35'	40'
Community Connector	All intersection corners w/o vehicle turns	5'	N/A
	UC, UG	15'	25'
	SB, RT ⁽³⁾	25'	30'
	RU, NA	25'	30'
Neighborhood Streets	All intersection corners w/o vehicle turns	5'	N/A
	UC, UG	15'	20'
	SB, RT	15'	20'
	RU, NA	15'	20'





Pedestrian Realm

- Three zone approach
 - Furnishing zone
 - Pedestrian zone
 - Frontage zone



**Frontage, pedestrian, and furnishing
zones on Clematis Street in West Palm
Beach, FL**



Sidewalk/Shared Use Pathway
Street Trees
Benches/Furnishing
Bike Racks
Lighting
Parking Meters
Utilities



Roadway Realm

- Lane Width
 - Lane Width Reduction
 - Lane Elimination
- Design Speed
- Target Speed
- Curb Zone
- Bicycle Facilities
- Transit Facilities

Table 4-4 Bicycle facility target and constrained widths

Element	Target		Constrained	
	Lane	Buffer	Lane	Buffer
Separated Bicycle Lane	7'	3'	5'	3'
Two-way Separated Bicycle Lanes	12'	3'	8'	3'
Raised Separated Bicycle Lane	6.5'	1' for vertical element	4'	1' for vertical element
		3' (next to parked cars)		3' (next to parked cars)
Two-way Median Bicycle Lanes	12'	6' (3' for each side)	8'	6' (3' for each side)
Buffered Bicycle Lane	4'	3'	4'	2'
Conventional Bicycle Lane	6'	n/a	4'	n/a
Contra-Flow Bicycle Lane	6'	3'	5'	6"



Separated Bicycle Lanes



Separated bicycle lane in Tampa, Florida



Parking separated bicycle lane



Intersection Realm

- Traffic Control Elements
- Intersection Geometry
- Intersection Safety
- Pedestrian Elements
- Bicycle Elements
- Transit Elements
- Placemaking



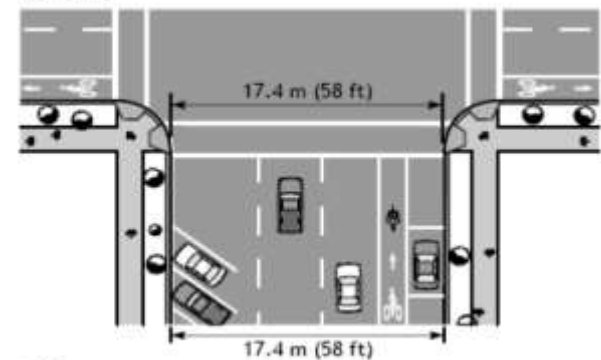


Curb Ramp

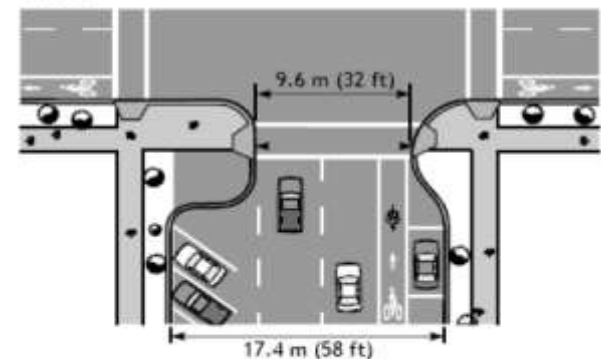
Table 4-6 Recommended Curb Ramp Dimensions

	Land Use Context	Constrained	Target	Maximum
Curb Ramp Width	All	4'	Width of Pedestrian Walking Zone	Width of Sidewalk Realm
Curb Extension Width	All	4'	8'	Do not block an existing or potential bicycle lane
Curb Extension Length	All	Width of Curb Ramp	20'	As needed to improve pedestrian visibility and prohibit parking near intersection
Crossing Refuge Island Width	All	6'	10'	Width of Median

Before



After

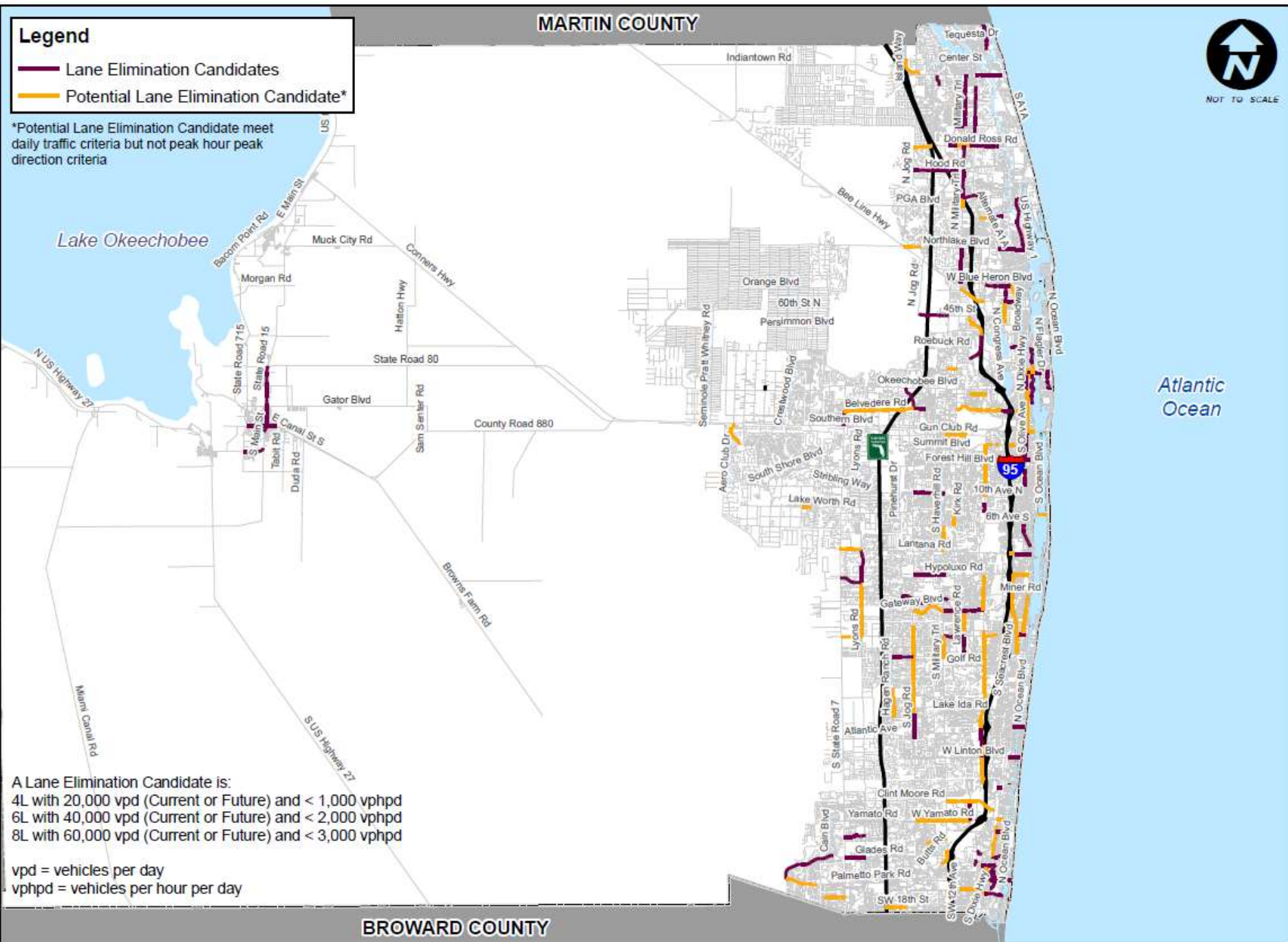


**Example of a curb extension reducing the pedestrian crossing distance;
Source: FHWA**

Legend

- Lane Elimination Candidates
- Potential Lane Elimination Candidate*

*Potential Lane Elimination Candidate meet daily traffic criteria but not peak hour peak direction criteria



A Lane Elimination Candidate is:

4L with 20,000 vpd (Current or Future) and < 1,000 vphpd

6L with 40,000 vpd (Current or Future) and < 2,000 vphpd

8L with 60,000 vpd (Current or Future) and < 3,000 vphpd

vpd = vehicles per day

vphpd = vehicles per hour per day

BROWARD COUNTY

MARTIN COUNTY



Lake Okeechobee

Atlantic Ocean

Legend

Flexible Right-of-Way Corridors

BROWARD COUNTY

A Flexible Right-of-Way Corridor is:
 2L with ROW > 60-ft
 4L with ROW > 100-ft
 6L with ROW > 140-ft

