



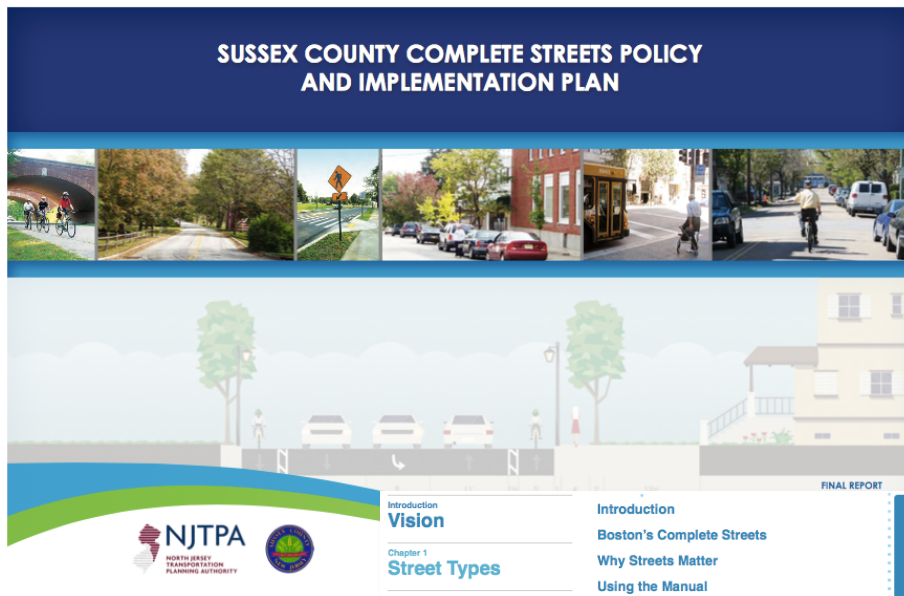
Smart Growth America

Improving lives by improving communities

Design Guidelines from the Inside Out

Rayla Bellis

Complete Streets design guidance



Introduction Vision

Chapter 1 Street Types

Chapter 2 Sidewalks

Chapter 3 Roadways

Chapter 4 Intersections

Chapter 5 Smart Curbsides

Chapter 6 Implementation

Index Navigating the Guidelines

Sidewalks Chart

Lane Widths Chart

Multimodal Intersections

Mobility Hubs

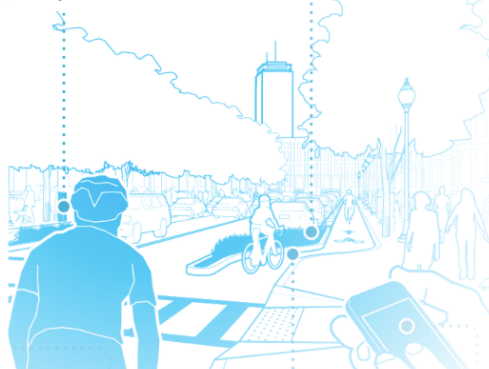
Implementation Chart

Introduction
Boston's Complete Streets
Why Streets Matter
Using the Manual
Acronyms

Order 2013 Print Version

Download Hi-Resolution
Guidelines (202MB)

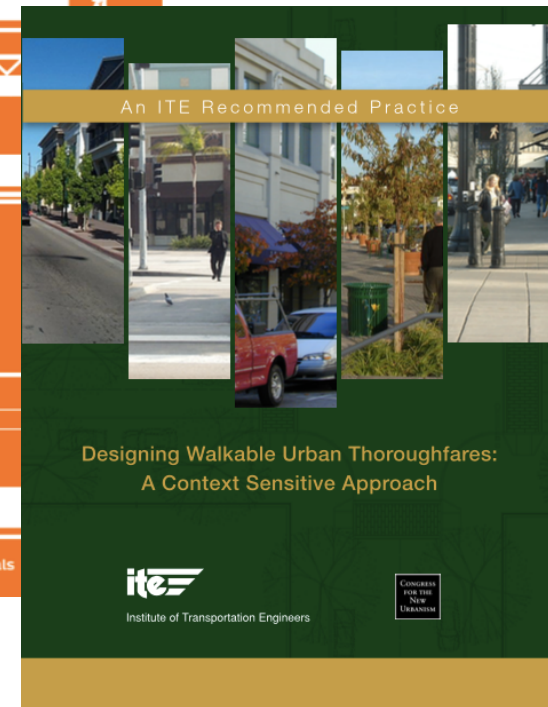
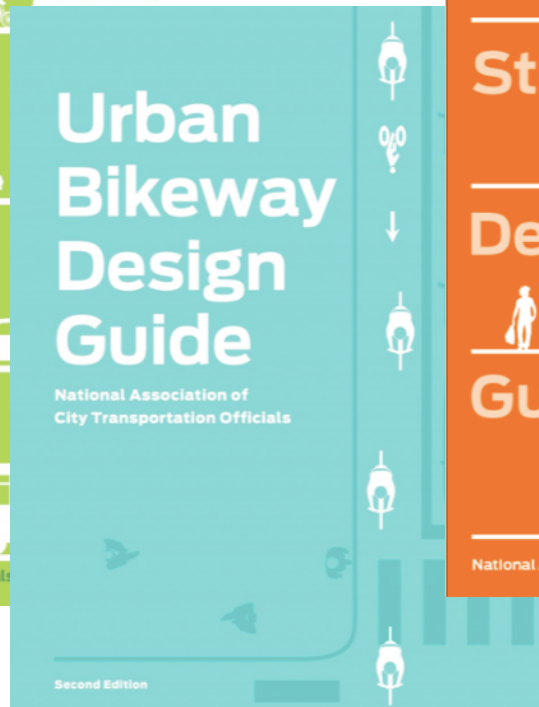
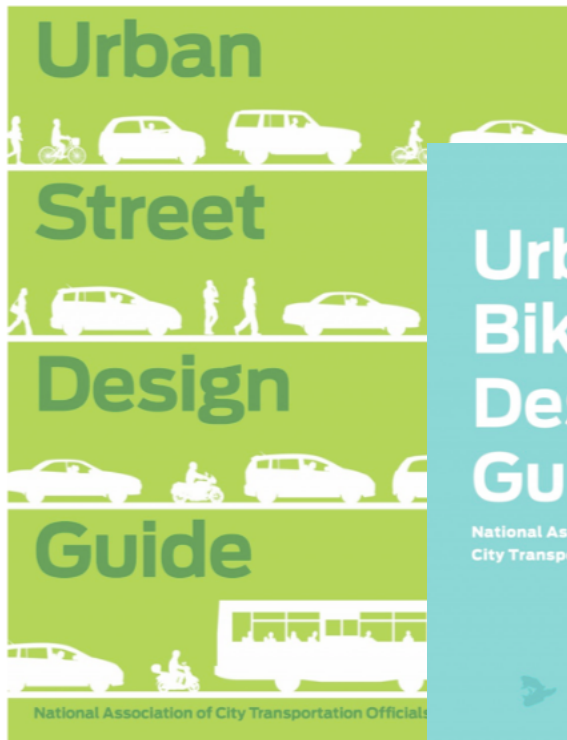
Download Low-Resolution
Guidelines (134MB)



city of new haven COMPLETE STREETS DESIGN MANUAL



Lots of national resources to draw from



NACTO guidance

Click a number for more information



Small town and rural design guidance



MIXED TRAFFIC

Bicycle Boulevard

A **bicycle boulevard** is a low-stress shared roadway bicycle facility, designed to offer priority for bicyclists operating within a roadway shared with motor vehicle traffic.



DECEMBER 2016

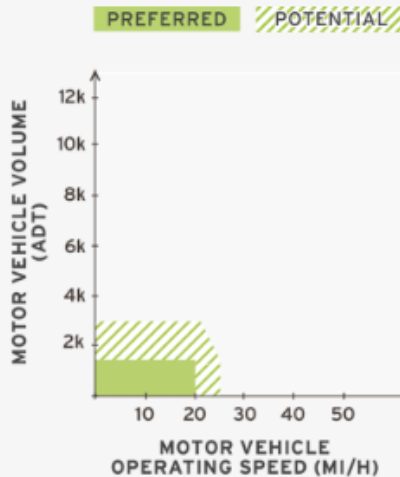
Small Town and Rural Multimodal Networks



U.S. Department of Transportation
Federal Highway Administration

Rural and small town design guidance

APPLICATION



Speed and Volume

Appropriate on local streets with low volumes and low speed. Speed and volume management may be necessary to create desired operating conditions.



Network

Local residential roadways. Not for through motor vehicle travel.



Land Use

For use inside of built up areas to connect biking and walking routes in small town street networks.



Photo Gallery

Smart Grow



Rural and small town design guidance



D11-1c



D1-1



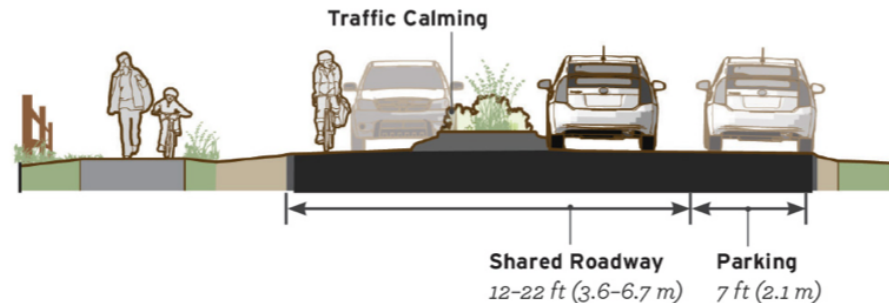
D11-1c; D1-3a

Geometric Design

Figure 2-5. *Bicycle boulevards combine road markings, traffic-calming measures, and crossing improvements designed to enhance the comfort and priority of bicyclists traveling along the route.*



Figure 2-4. Common elements of a bicycle boulevard



Why create local Complete Streets guidance?

- More calibrated to the context of the community
- Tied directly to implementation of local Complete Streets policy and/or plan

What is local Complete Streets design guidance?

A tool that:

- Establishes a vision/design philosophy
- Articulate the needs of each mode of travel
- Identifies street typologies based on road type and land use
- Recommends design elements for each street typology
- Visual examples/cross-sections

Establishes a vision

Ex. *“The City of New Haven shall require the accommodation of the safety and convenience of all users of the transportation system using a hierarchy of users which supports and encourages non-motorized transportation and prioritizes the needs of the most vulnerable users: children, the elderly and persons with disabilities. This accommodation will be executed through the application of the complete street designs guidelines described in the Complete Streets Design Manual.”*

Identifies roadway typologies

Ex. Richmond:

- Industrial streets
- Mixed-use streets
- Downtown streets
- Commercial connector streets
- Neighborhood connector streets
- Parkways



And sometimes overlays

Ex. Richmond: *“Overlays provide an added modal emphasis to some streets. While all streets will fall into a street typology, a few streets will have multiple land use and street overlays in order to provide additional guidance regarding the functional priority and other design decisions”*

- Bicycle network streets
- Transit streets
- Land use areas
- School Zones
- Vision Zero Priorities
- Freight routes

Overlays: Sussex County, NY

- Destination street
- Village Hamlet
- School zone/trail crossing/trail connector
- Scenic/historic highway
- Preservation zone
- Transit stop

OVERLAY DESTINATION STREET



This is a Main Street that is a local and regional destination and gives priority to walking. The street may be closed to traffic to facilitate festivals, arts, or dining. If open to traffic, the prevailing speed should be low enough for all users to mix comfortably.

Users

Priority User Shared space for walking, bicycling and driving

Secondary User Bicycling

Other Users Vehicles

Speed

Target Operating Speed 15 mph

Features

May include features such as wide sidewalks, visually interesting textures, benches, placemaking, low travel speeds and a distinct identity.

Recommends street elements

Richmond guidance:

	Vehicular Travel Zone							
	Median/Refuge Island (feet)		Transit Lanes (feet)		Turn Lanes (feet)		Travel Lanes (feet)	
	PREFERRED	MINIMUM	PREFERRED	MINIMUM	PREFERRED	MINIMUM	PREFERRED	MINIMUM
Downtown Streets	>6	6	11	11	10	10	11	10
Commercial Connector Streets	16	16	11	11	11	11	11	11
Neighborhood Connector Streets	>6	6	11	11	10	10	11	10
Neighborhood Residential Streets	N/A	N/A	11	11	N/A	N/A	11	10
Mixed Use Streets	>6	6	11	11	10	10	11	10
Industrial Streets	N/A	N/A	12	12	11	11	12	11
Parkways	>6	6	11	11	10	10	10	10

Recommends street elements

Richmond guidance:

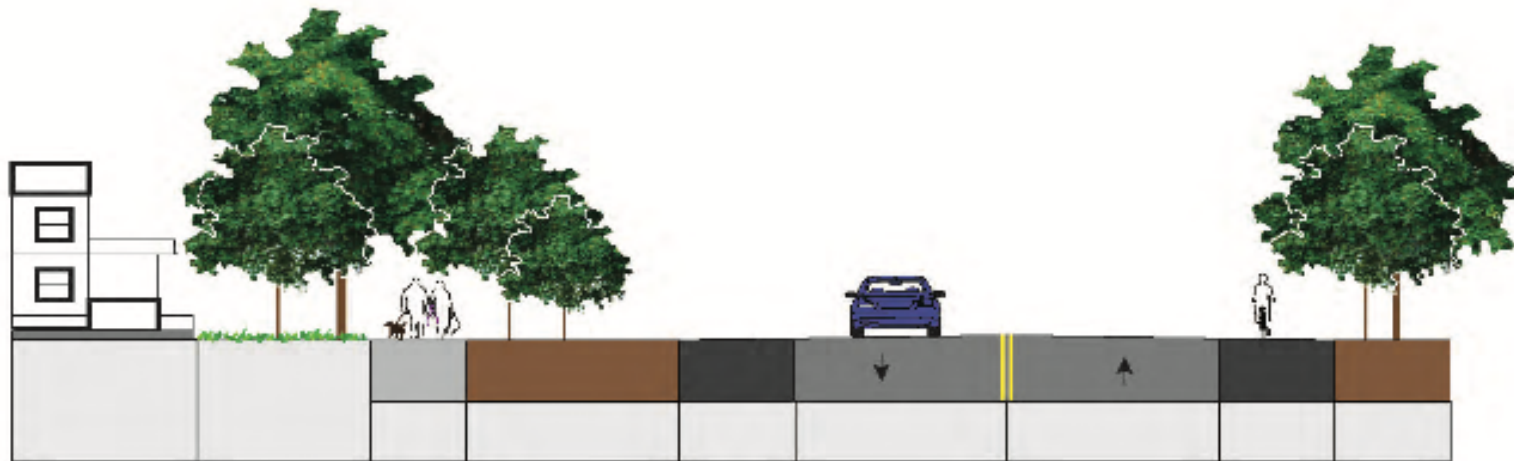
	Curbside Zone			
	Bicycle Lanes (feet)		Parking Lanes (feet)	
	PREFERRED	MINIMUM	PREFERRED	MINIMUM
Downtown Streets	>5	5	8	7
Commercial Connector Streets	>5	5	8	8
Neighborhood Connector Streets	>5	5	8	8
Neighborhood Residential Streets	N/A	N/A	7	7
Mixed Use Streets	>5	5	8	7
Industrial Streets	N/A	N/A	8	8
Parkways	>5	5	N/A	N/A



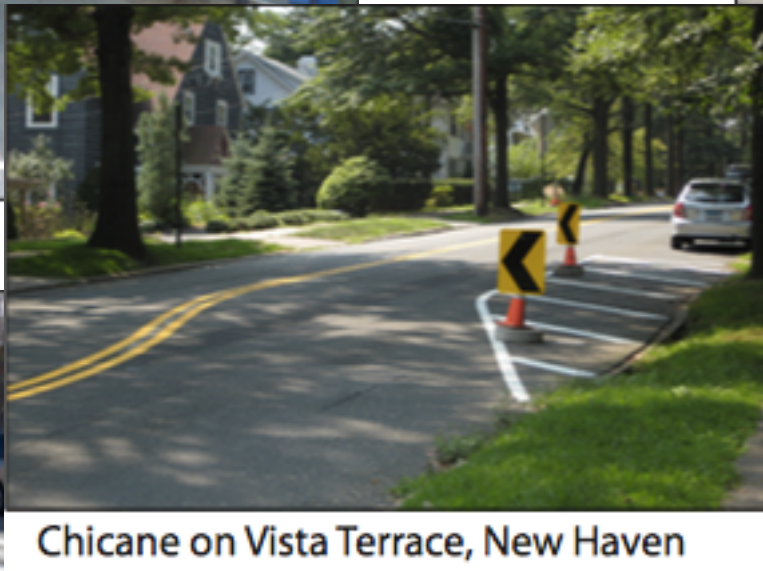
Recommends street elements

Sussex County guidance (rural highway):

Chapter VI | CONTEXT-BASED STREET AND TRANSPORTATION CORRIDOR TYPES & OVERLAYS



Recommends street elements



Roadway and Intersection Retrofits																	
		Rural Highway A	Rural Highway B	Rural Highway C	Main Street	Town Center Residential	Residential Subdivision	County Connector	Trails/Greenway	Lake Community Street	Access Road	Destination Street	Village/Hamlet	School Zone/Trail Xing	Scenic/Historic Hwy	Preservation Zone	Transit Stop
Road Diet	Lane reductions to calm traffic, improve safety, and increase multimodal level of service.	●	●	●	●	◐	◐	●	○	◐	○	●	●	●	◐	◐	○
Lane Narrowing	Restriping lanes to calm traffic.	●	●	●	●	●	●	●	○	●	●	●	●	●	●	●	○
Curb Extensions	Used at mid-block crosswalks to enhance pedestrian safety and visibility. Used at intersections to slow turning movements, increase pedestrian visibility, and shorten crossing distances. Additional space may be used for amenities such as bicycle parking, benches, and plantings.	◐	◐	●	●	●	●	◐	○	◐	◐	●	●	●	○	○	◐
Chicanes	Lane shifts to calm traffic. May be accomplished using hardscape/ bollards, alternating parking configurations (parallel and angled), or lane striping.	◐	◐	●	●	●	●	◐	○	◐	◐	●	◐	◐	○	○	○
Speed Tables	Used in neighborhoods and special zones to calm traffic and discourage cut-through traffic. May be adjusted to accommodate emergency vehicles. Generally not compatible with heavy volumes and trucks/transit.	○	○	○	◐	●	●	○	○	●	○	●	◐	◐	○	○	○
Raised Crosswalks	An effective means to slow vehicles at mid-block crossings.	○	○	◐	●	●	●	◐	○	◐	○	●	◐	◐	◐	◐	◐
Raised Intersections	An effective means to slow vehicles. May be used adjacent to destination streets, schools, parks, transit stations, and other pedestrian generators.	○	○	○	◐	●	●	○	○	○	○	●	◐	◐	○	○	○
Medians	An effective means to reduce vehicles speeds, vehicle/vehicle collisions, and pedestrian injuries. When used with crosswalks, the median serves as a refuge for pedestrians, allowing them to cross a high volume road in stages. May be used at multiuse trail crossings.	●	●	●	●	●	●	◐	○	○	○	●	●	●	◐	◐	○
On Street Parking	Can serve as buffer between travel lanes and the pedestrian zone. May function as traffic calming on residential streets by reducing effective lane width.	○	○	◐	●	●	●	◐	○	●	◐	●	●	◐	○	○	○
Gateways/ Transition Zones	Visual cues to drivers making transitions between road types and land use contexts. Used to reduce speeds and alert drivers to the presence of other road users.	●	●	●	●	●	●	●	○	●	◐	●	●	●	◐	◐	○
Roundabouts	May be used as a replacement for signalized intersections. Benefits include congestion relief and enhanced safety for users. Can pose mobility challenges to pedestrians and visually impaired pedestrians if improperly designed.	◐	●	●	●	○	○	●	○	◐	○	●	●	◐	◐	○	○
Neighborhood Roundabouts	An effective replacement for Stop/Yield intersections. Benefits include reduced right angle crashes, improved aesthetics, and lower traffic noise.	○	○	○	●	●	●	○	○	○	◐	○	○	○	○	○	○

Describes the design process

New Haven,
CT

1. Project Initiation

city
role

CITY-INITIATED PROJECTS

- Identify project location, scope and goals. Goals should be consistent with the Complete Streets Policy and Guiding Principles.

community
role

COMMUNITY-INITIATED PROJECTS

- Identify project goals. Goals should be consistent with the Complete Streets Policy and Guiding Principles (see Chapters 1 & 4 of this manual).
- Submit Complete Streets Project Request Form (see Appendix) to City Engineer.

2. Plan Development

city
role

- Review Project Request Form for community-initiated projects.
- Collect and analyze data as necessary.
- Conduct initial screening of street design tools. (Decision matrices are included in the appendices.)
- Meet with community members and stakeholders to review design options.

community
role

- Work with City staff to form consensus around design plan.

3. Funding & Design

city
role

- Rank and prioritize project.
- Identify and secure project funding.
- Develop final design.
- Secure appropriate approvals.
- Meet with community members and stakeholders to review design.

community
role

- Identify and secure outside funding sources and possible maintenance partners.

4. Installation

city
role

- Construct project
- Perform post-construction evaluation of project effectiveness
- If temporary measure installed, collect data to monitor effectiveness and hold public meeting to elicit feedback and discuss permanent options.

community
role

- Work with City to evaluate effectiveness of project.
- Perform maintenance if applicable.



Provides a framework for making tradeoffs

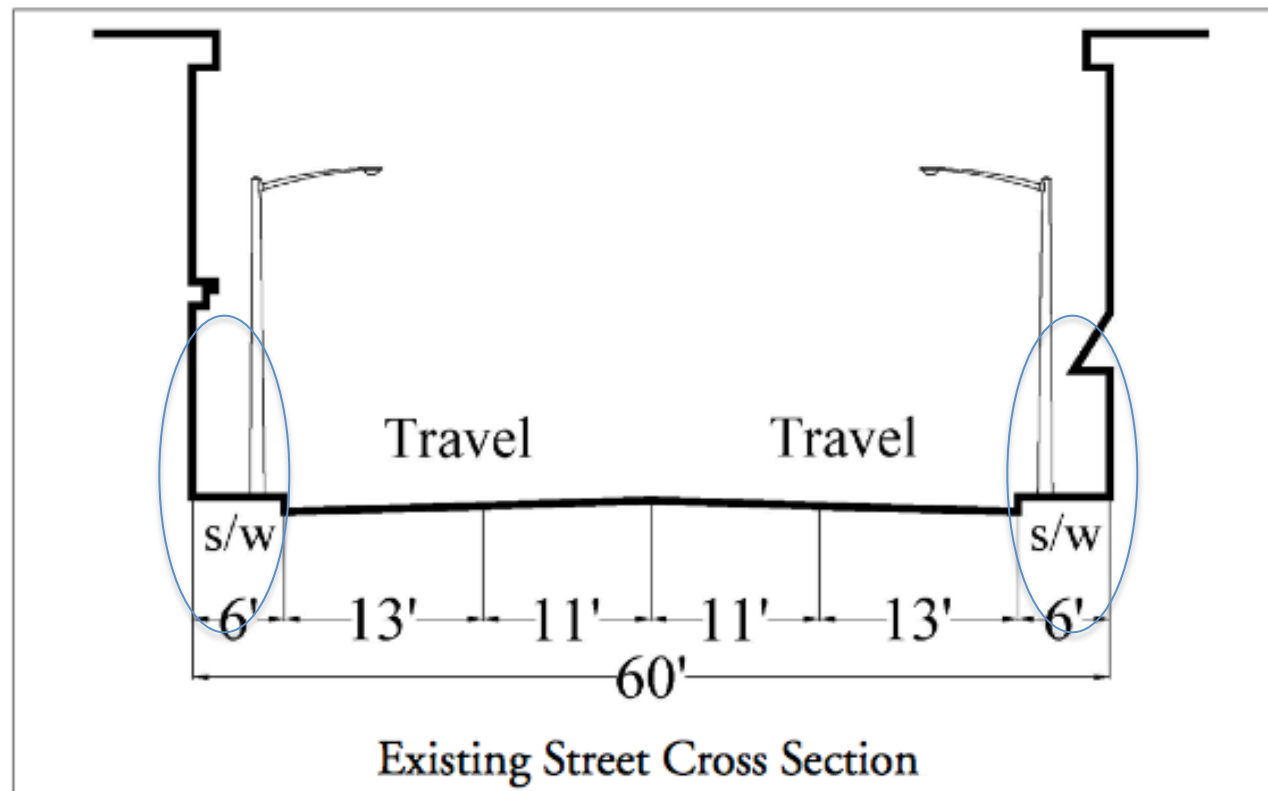
Example: Creating a retail-oriented main street

Objective:

“Convert an existing four-lane minor collector street into a commercial-oriented street that supports an adjacent mix of retail, restaurants and entertainment uses on the ground floor.”

Source: The Institute of Transportation Engineers. Designing Walkable Urban Thoroughfares: A context sensitive approach (2010).

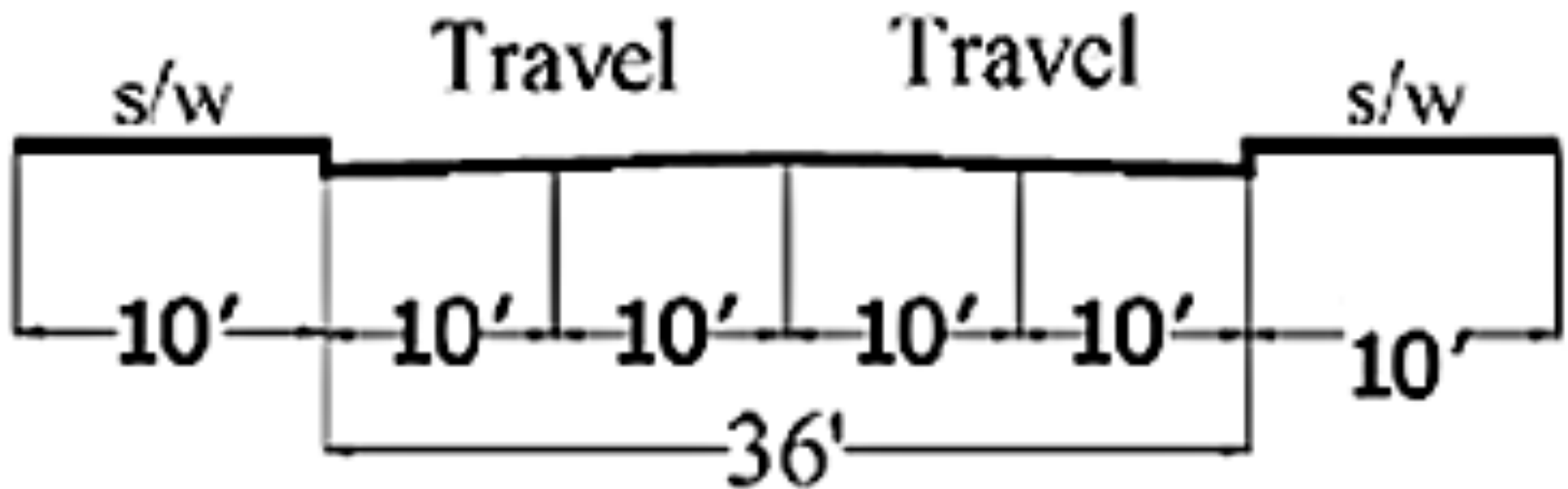
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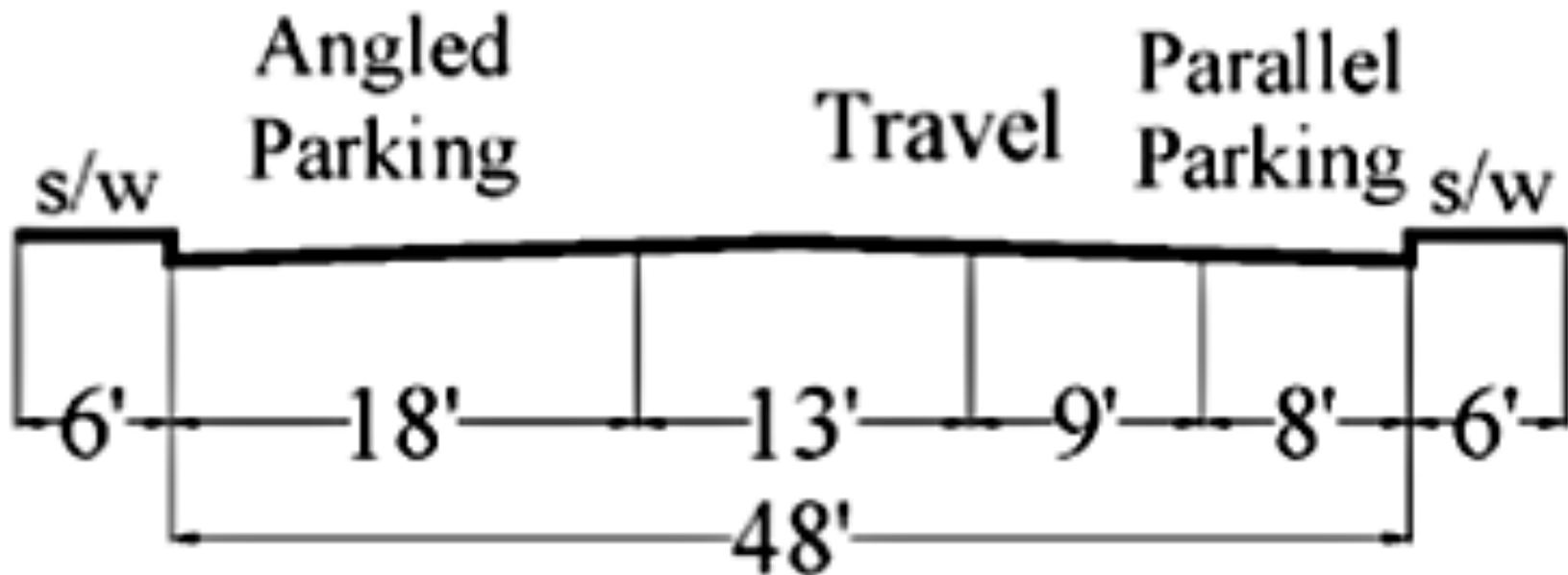
Alternative #1

Emphasize **vehicular capacity** by retaining existing four-lane section with 10-foot-wide travel lanes to allow 10-foot-wide sidewalks.



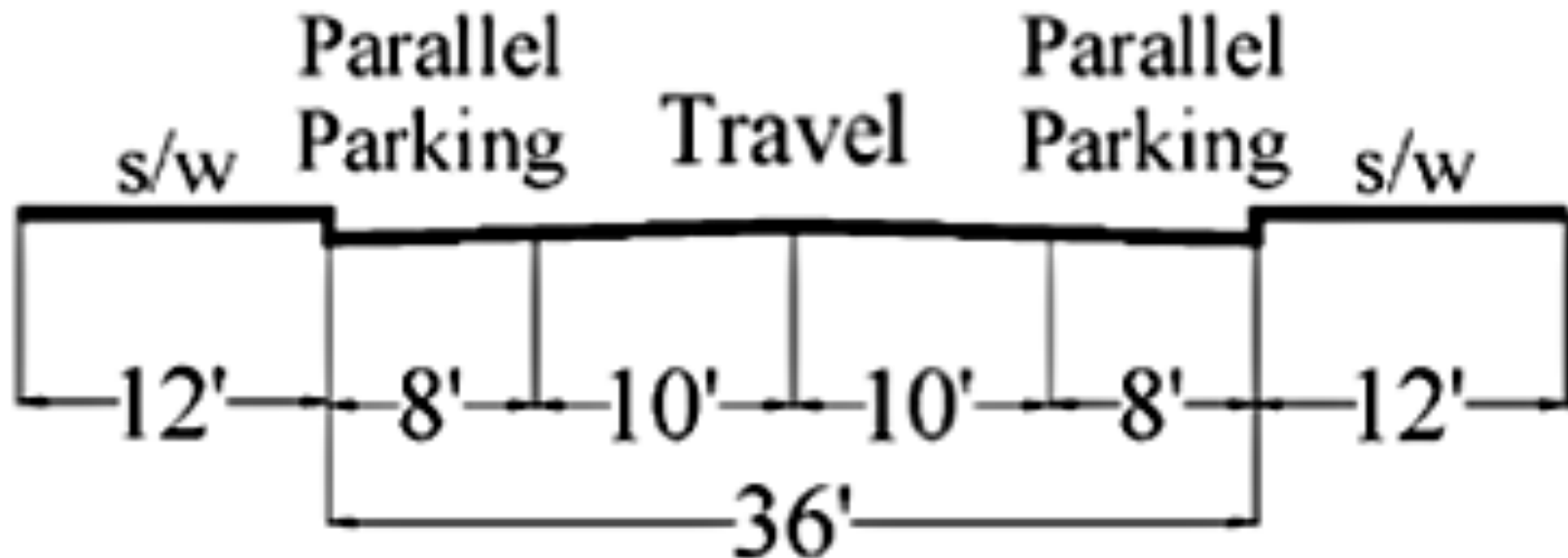
Alternative #2

Emphasize **parking** by providing angled parking on one side, parallel parking on the other side and narrowing the two remaining travel lanes.



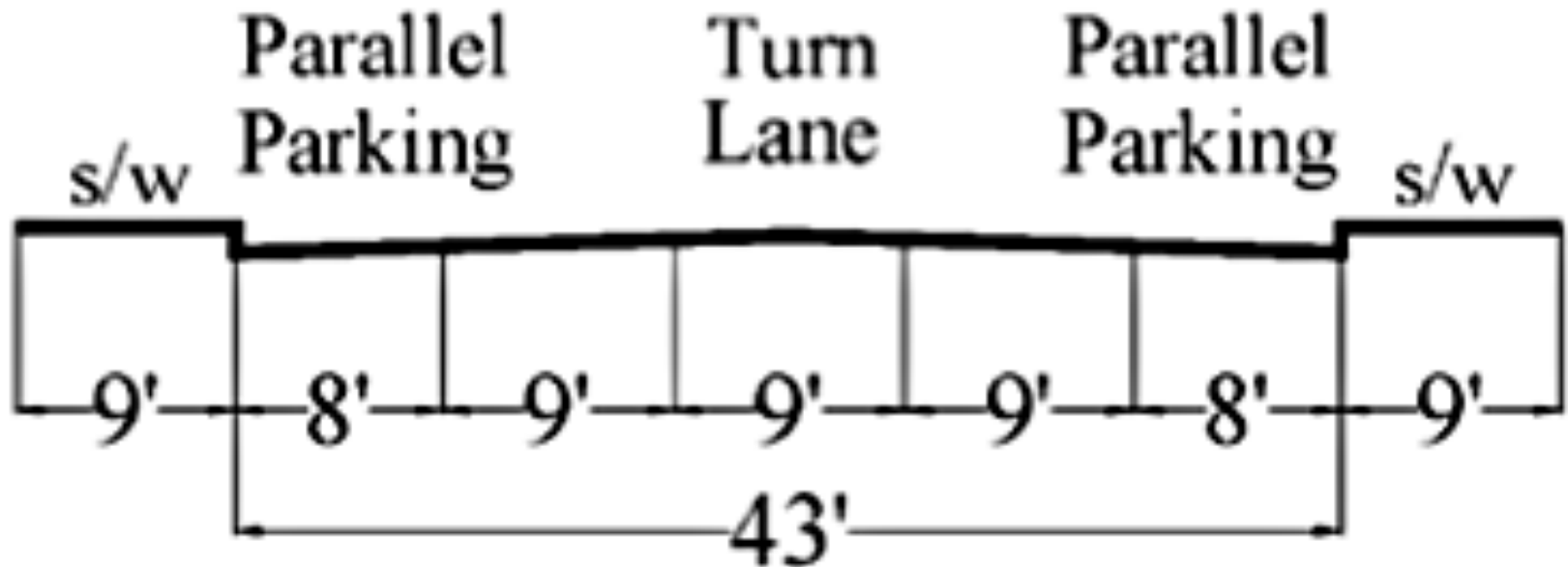
Alternative #3

Emphasize **parking and wider sidewalks** by providing parallel parking on both sides, two travel lanes and 12-foot-wide sidewalks.



Alternative #4

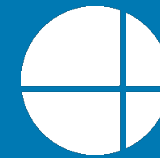
Emphasize **parking and vehicular capacity** with parallel parking on both sides, 9-foot-wide sidewalks, two travel lanes and a center turn lane.



Alternative #4































































Alternative	Parking	Sidewalk width	Vehicular capacity	Large vehicles	Ped X-ing width	Left turn lanes	Bike accommodation	Ped amenities	Speed reduced
Existing	--	--	++	--	--	--	--	--	--
1	--	++	++	--	--	-	--	++	+
2	++	--	-	+	++	++	--	--	-
3	+	++	-	++	++	-	--	++	+
4	+	-	+	--	+	++	--	-	++

WSDOT - Context and Modal Accommodation



GOVERNORS'
INSTITUTE
on community design

Initial Modal Accommodation Table

		Land-Use Context			
		Rural	Suburban	Urban	Urban Core
Roadway Type	Freeways				
	Principal Arterial	  	  	  	  
	Minor Arterial	  	  	  	  
	Collector	  	  	  	  
	Local	  	  	  	  
		<div> <div> Motor Vehicles Incl. Freight  High  Medium  Low </div> <div> Bicycles  High  Medium  Low </div> <div> Pedestrians  High  Medium  Low </div> <div>  <p>Transit compatibility not shown because it varies by route (compatibility can't be determined based on roadway type and land-use context)</p> </div> </div>			

Versus technical standards

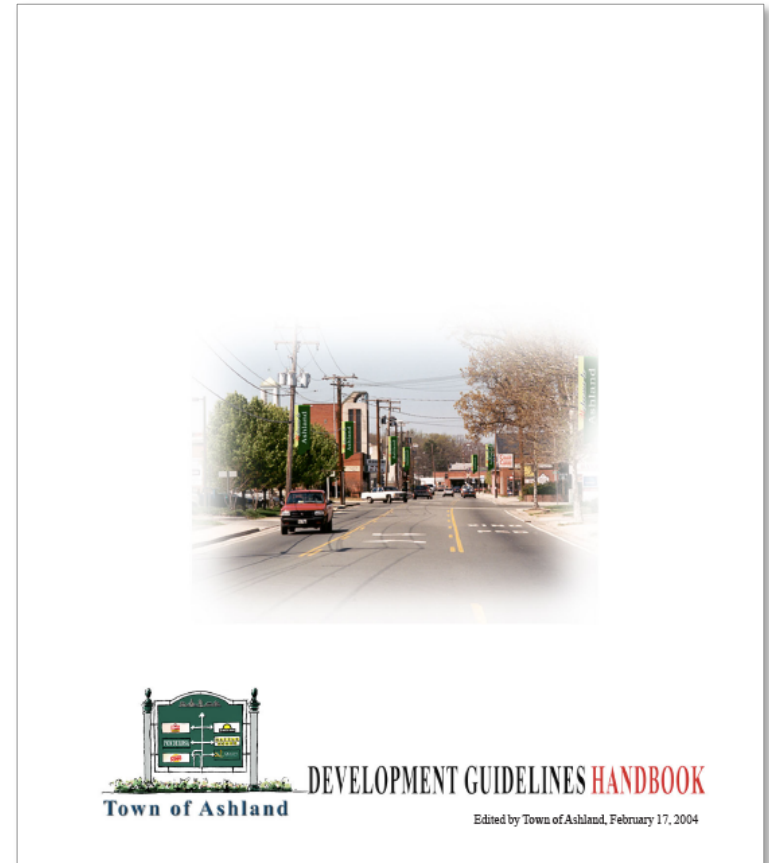
GEOMETRIC DESIGN STANDARDS FOR RURAL PRINCIPAL ARTERIAL SYSTEM (GS-1)

	TERRAIN	DESIGN SPEED (MPH)	MINIMUM RADIUS	(6) MINIMUM STOPPING SIGHT DISTANCE	MINIMUM WIDTH OF LANE	(1) MINIMUM WIDTH OF TOTAL SHOULDERS (GRADED + PAVED) CUT & FILL		(2) MINIMUM PAVED SHOULDER WIDTH		(3) MINIMUM WIDTH OF DITCH FRONT SLOPE	(4) SLOPE
						With GR	Without GR	LT.	RT.		
FREEWAYS	LEVEL	75	2215'	820'	12'	16'	12'	4'	10'	12' @ 6:1	CS-4B
		70	1821'	730'							
	ROLLING	60	1204'	570'							
	MOUNTAINOUS	50	760'	425'							CS-4E
OTHER PRINCIPAL ARTERIALS	LEVEL	70	1821'	730'	12'	14'	10'	4'	8'	10' @ 6:1	CS-4/CS-4B
		60	1204'	570'							CS-4/CS-4E
	ROLLING	60	1204'	570'						6' @ 4:1	
		50	760'	425'							
	MOUNTAINOUS	50	760'	425'							
		45	589'	360'							
		40	446'	305'							CS-3/CS-3B



Ashland's existing guidance

- In Development Guidelines Handbook
- Supports implementation of town development ordinances
- Does not address existing arterials



Ashland – Mixed use street

Ashland

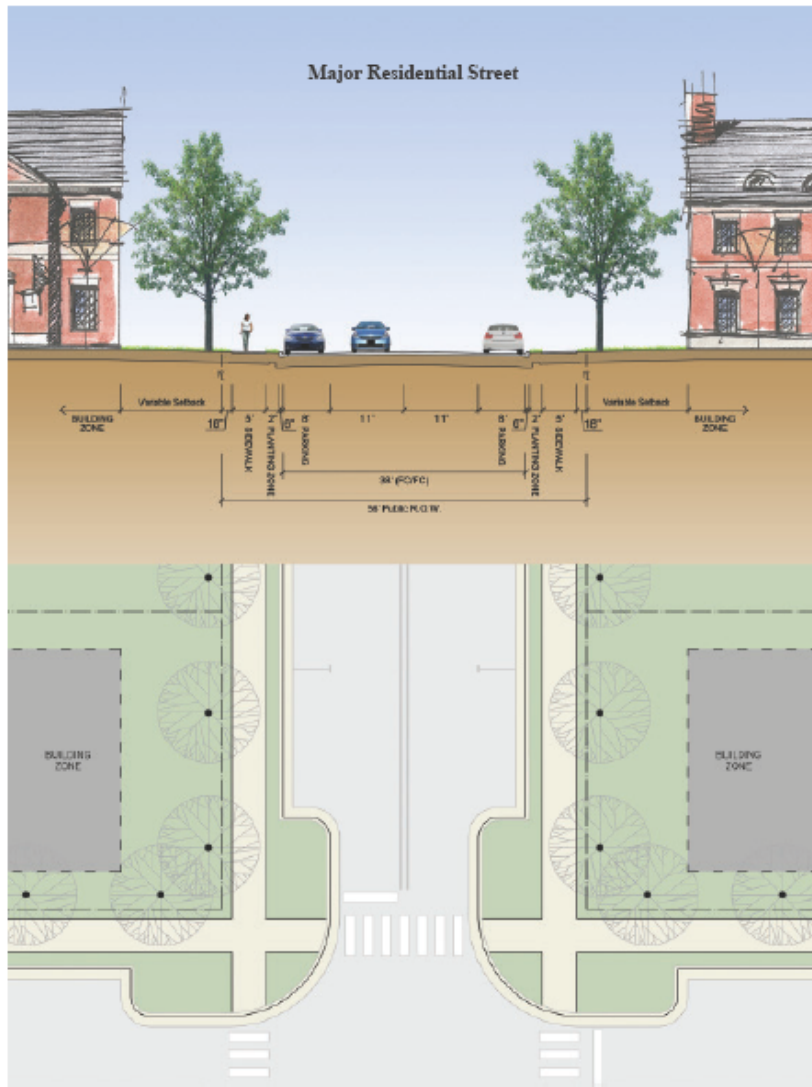
Design Guidelines Manual



Right of Way:	<i>63' ROW width</i>
Pavement:	<i>2 travel lanes – 12' lane widths</i>
Parking:	<i>Parallel spaces - 8' wide on both sides</i>
Sidewalks:	<i>12' minimum width</i>
Speed:	<i>25 mph maximum</i>
Landscape:	<i>Street trees in bumpouts</i>
Hardscape:	<i>Delineated crosswalks; street lighting, planters, public art, street furniture</i>



Ashland – Major Residential



Right of Way: *54' ROW width; 47' with one-side parking*

Pavement: *2 travel lanes – 11' wide*

Parking: *Parallel spaces - 8' wide on one or two sides*

Sidewalks: *Required 5' width*

Speed: *25 mph maximum*

Landscape: *2' grass strip; trees outside ROW*

Hardscape: *Delineated crosswalks; street lights*

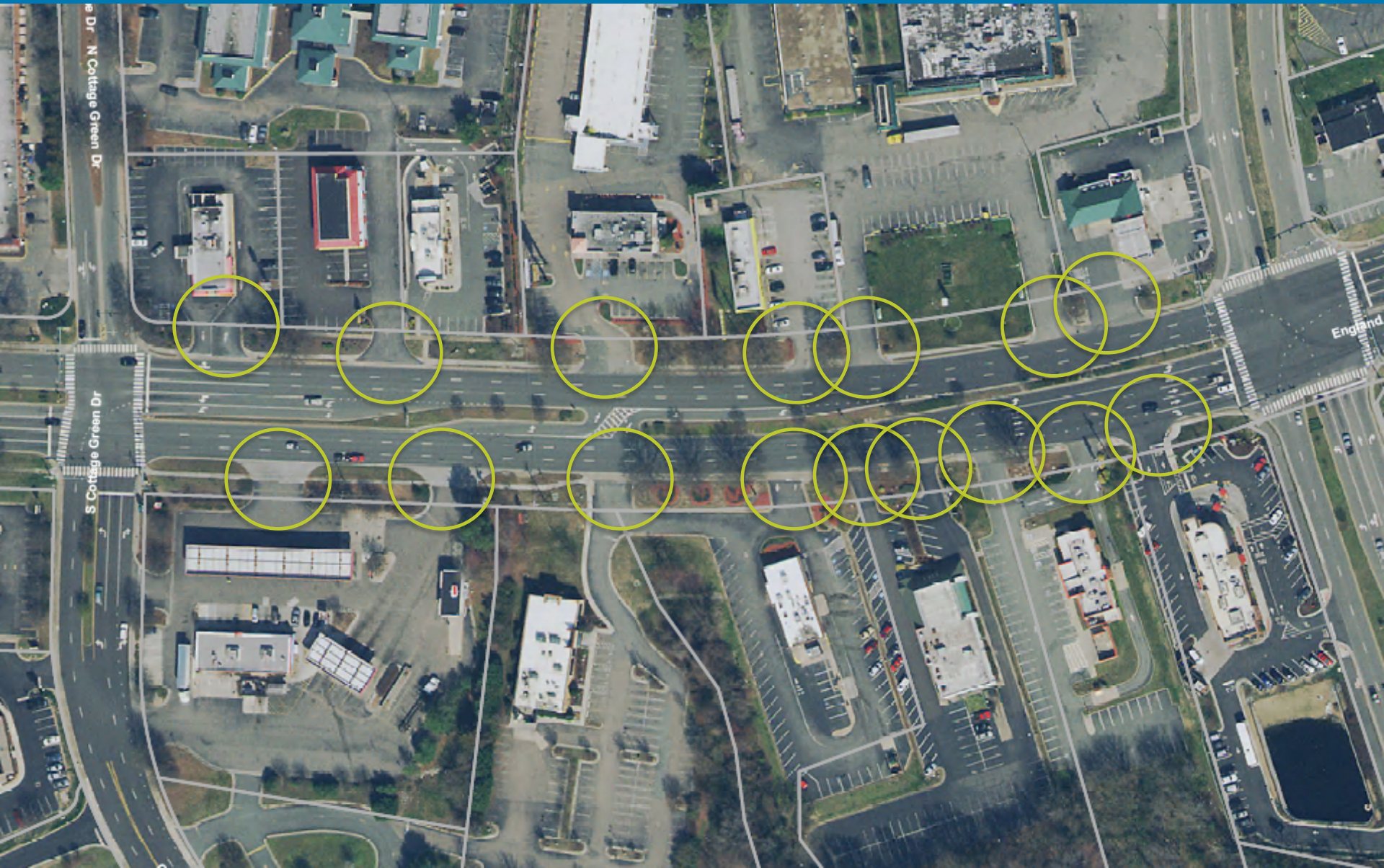


Smart Growth America
Making Neighborhoods Great Together

Limits of design guidance

- Not enforceable
- Often not geometric standards
- Won't help address land use and access management issues
- Only as good as how they're used

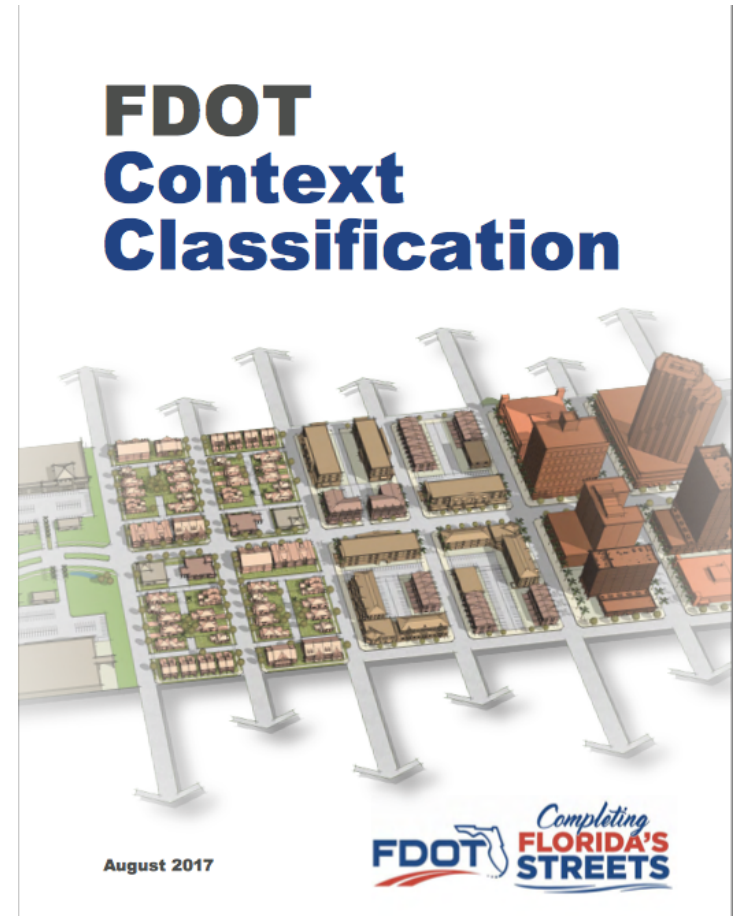
What design guidance can't do



FDOT's experience

In early 2017:

- Updated *FDOT Design Manual* (formerly the Plans Preparations Manual)
- Land use context classification guidance



In summary

Design guidance can be a very useful tool with the right policy framework and plans in place.