

CHAPTER

# 5.1

# CROSS-SECTIONS

## WHAT'S INSIDE

### Introduction

This section opens the chapter by introducing its contents.

### Street Hierarchy

This section reviews the street hierarchy established as part of the CTP.

### Transportation and Land Use

The content under this heading describes the connection between land use and transportation.

### Cross-Sections

Under this heading, the roadway cross-section elements and dimensions are defined.

### Median Breaks

This final section discusses roadway access control through proposed median break locations.

# Introduction

Roadway cross-sections are a vital component to a CTP because they determine the ultimate build-out of a project. This chapter culminates in defined cross-sections by first walking through street hierarchy and how the CTP creates classifications for all roadways in Town. The next section of the chapter describes the relationship between land use and transportation by tying into *Vision Holly Springs* and the Future Land Use Map. These two sections are vital components to creating cross-sections that fit the contexts of the surrounding area. After the cross-sections are detailed in their section, the chapter ends with the Median Breaks section which identifies potential locations in Town for vehicle access considerations.



# Street Hierarchy

## Roadway Classifications

The two primary demands of any roadway network are to provide access while offering mobility options. These can be in competition with one another and therefore, provide challenges when attempting to balance the needs of an entire transportation network.

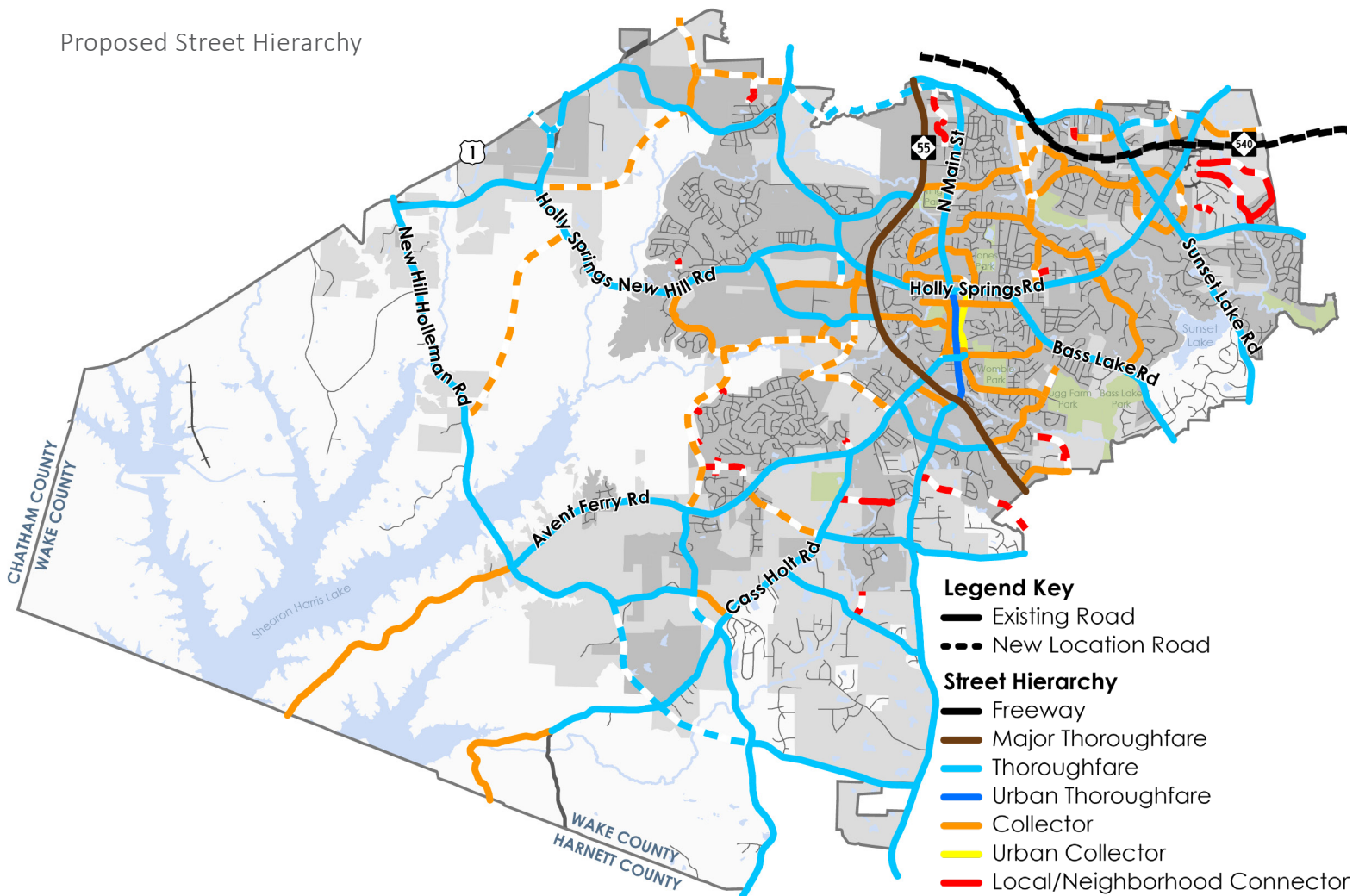
A way to provide enhanced access and mobility is by creating roadways that are responsive to the unique context and user needs along certain corridors. In Chapter 2, a functional classification system of the existing network as defined by NCDOT was shown. The street hierarchy created as part of this CTP considered both the NCDOT classification and local priorities to bridge the gap between them.

The Town of Holly Springs' street hierarchy is made up of four classifications:

- Major Thoroughfare
- Thoroughfare
- Urban Thoroughfare
- Collector
- Urban Collector
- Local/Neighborhood Connector

The map below shows the new street hierarchy for the Town of Holly Springs and reflects the proposed changes to the transportation network.

Proposed Street Hierarchy

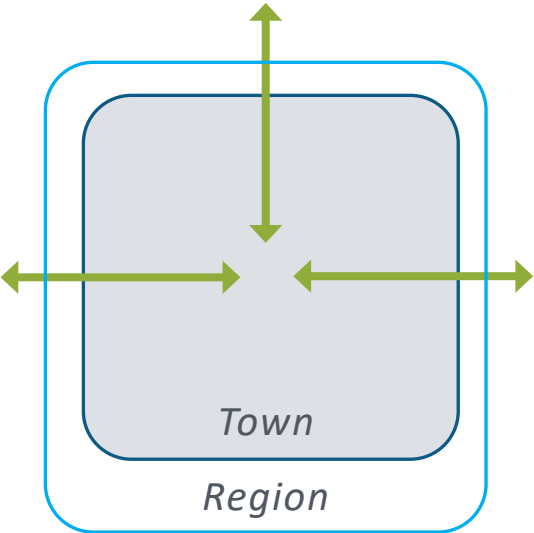


\*The Freeway Location (NC 540) will not be included in the list on the following pages.

## Major Thoroughfares

The following features are characteristic of a Major Thoroughfare:

- Has partial access control, limiting cars from making a variety of turning movements from and onto the road
- Includes a ditch-section median
- Accommodates traffic in and out of Town

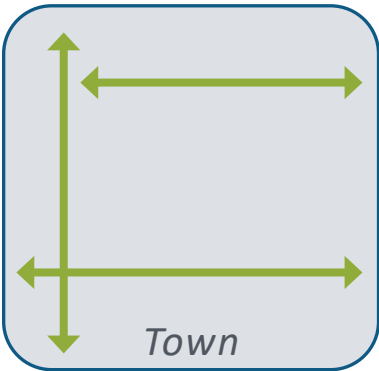


Classification	Major Thoroughfare
Local Examples	NC 55
Number of Lanes	6 travel lanes
Other Considerations	High traffic volumes

## Thoroughfares

The following features are characteristic of a Thoroughfare:

- Offers balance between local access and moving people and goods through an area
- Has lower travel speeds and volumes than a Major Thoroughfare
- Is limited in roadway width by the built environment and land use context it serves
- Includes the Urban Thoroughfare sub-category which serves the purpose of carrying traffic through denser land-use areas with smaller footprints



Classification	Thoroughfare
Local Examples	Holly Springs Road
Number of Lanes	2- 6 travel lanes
Other Considerations	Limitation on number of lanes

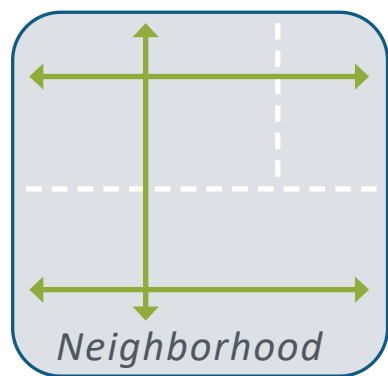


# Roadway Classifications

## Collector

The following features are characteristic of a Collector Street:

- Connects neighborhood traffic to destinations between existing neighborhoods
- Balances mobility and access by supporting local development
- Acts as a conduit for local traffic to connect to Thoroughfares
- Includes slower travel speeds
- Includes the Urban Collector category which serves the purpose of connectivity through denser land-use areas with smaller footprints



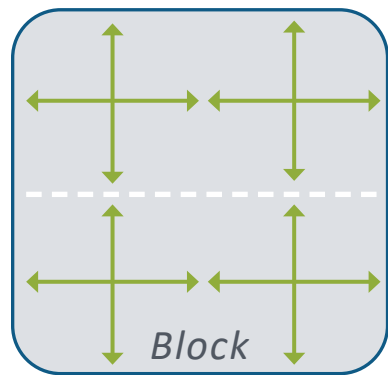
Classification	Collector
Local Examples	Grigsby Avenue
Number of Lanes	2 travel lanes to 2 travel lanes with a center turn lane
Other Considerations	Limitation on number of lanes

## Local/Neighborhood Connectors

The following features are characteristic of a Local/Neighborhood Connector:

- Provide slow-moving, local streets
- Provide block-level, local access, and safe connectivity to higher order streets

In the CTP network recommendations, neighborhood connectors are short extensions of existing local streets to provide greater connectivity through predominately residential areas. Not all future neighborhood connectors are identified in this plan, and additional stub streets may be constructed and ultimately connected to provide further interconnectivity and travel choice.



Classification	Local
Local Examples	Round About Road
Number of Lanes	2 travel lanes
Other Considerations	Limitation on number of lanes

## Classification and Funding

Federal funding programs use traditional roadway functional classifications to help determine eligibility for funding. The Town should update the functional classification to accurately reflect roadway network to stay competitive for funding opportunities. More information on transportation funding can be found in Chapter 4.

Understanding the category a road falls into within the street hierarchy provides insight to balance competing interests between right-of-way constraints, design features, and transportation modes. The type of street has direct impacts on the surrounding land uses. The next section highlights the connection between transportation and land use planning. By establishing the framework of street hierarchy, the CTP can more effortlessly propose complimentary cross-sections to achieve the vision for the Town of Holly Springs.



### Technology Spotlight

Providing en route traveler information can be a key component in managing traffic and congestion. This technology has taken off in the past 10 years with the widespread availability of Global Positioning Systems (GPS) with live traffic updates in cars and on phones. Waze even partners with municipalities to better inform local travel information.



## Connection between Transportation and Land Use

The connection between transportation and land use can highlight the synergies of long range planning. One goal of the CTP is to align the transportation recommendations with other Town policies. The strategic consideration of land use in the development of transportation recommendations was an intentional part of the planning process.

Vision Holly Springs Section 1: Land Use & Character Plan outlines various transportation needs in the Community Character Chapter. The overlapping themes between the CTP and the strategies highlighted in the Land Use & Character Plan are summarized below.



### Elements Contributing to Character

The strategies and policies focus on how the built environment can further make Holly Springs a desirable place to live, work, and recreate. Elements that impact the character of a place include creating diverse land use patterns, investing in street and block patterns, and protecting open spaces and natural resources.



### Transportation Network

The surrounding development should be considered in determining the character of a street. The street character should consider multimodal options and enhance mobility to and from destinations. An interconnected network can disperse traffic and reduce congestion.



### Street and Block Patterns

Typically, urban areas have a street grid featuring smaller blocks with more intersections. Smaller grids can create more walkable, bikeable environments. Connectivity is achieved when drivers, cyclists, pedestrians, and emergency vehicles have different street options to reach a destination.



### Parking Location

The community character is largely impacted by the location of parking. De-emphasizing static vehicles along a corridor can create pedestrian-friendly environments and attractive streetscapes. As the Town grows, placing parking behind the building frontage should be considered for all new developments. The Town could also consider using on-street parking as a buffer between cyclists and vehicles. The placement of parking should be guided by the Town's development standards.

The following table shows the character types identified in the Vision Holly Springs Section 1: Land Use & Character Plan. Understanding the characteristics of the character types can provide further insight into how to best streamline transportation and land use planning.

## Character Type Legend

<b>NA</b> Natural Area	<b>MU</b> Mixed-Use Center	<b>RC</b> Regional Center
<b>CN</b> Conservation Neighborhood	<b>NC</b> Neighborhood Center	<b>IV</b> Innovation Village
<b>RN</b> Residential Neighborhood	<b>NM</b> N. Main Street District	<b>B&amp;I</b> Business & Industrial
<b>MR</b> Mixed Residential Neighborhood	<b>DV</b> Downtown Village District	<b>SU</b> Special Use

## Transportation Characteristics

Element	NA	CN	RN	MR	MU	NC
<b>Development Character</b>	Rural	Rural	Suburban	Suburban	Suburban	Somewhat Urban
<b>Curb</b>	No	Yes	Yes	Yes	Yes	Yes
<b>Street Pattern</b>	Curvilinear	Curvilinear/Grid	Grid	Grid	Grid	Grid
<b>Connectivity</b>	Low	High in Center	Med	High	High	High
<b>Connections Circulation</b>	N/S	N/S	Neighbor./ Develop.	Neighbor./ Develop.	N/S	Internal Circulation
<b>Mode Orientation</b>	Auto	Multi-Modal	Multi-Modal	Multi-Modal	Auto/Transit	Multi-Modal
<b>Sidewalks</b>	Yes	Yes	Yes	Yes	Yes	Yes
<b>Trails/Bike Paths</b>	Some	Yes	Yes	Yes	Yes	Yes
<b>Sidewalk/Sidepath Links</b>	N/S	Residential Neighbor.	N/S	N/S	Adjacent Neighbor.	Adjacent Neighbor.
<b>Plantings</b>	Irregular/ Naturalistic	Formal Street Tree	Formal Street Tree	Formal Street Tree	Formal Street Tree	Formal Planting
<b>Furnishings</b>	No	N/S	N/S	N/S	N/S	N/S
Element	NM	DV	RC	IV	B&I	SU
<b>Development Character</b>	Urban	Urban	Urban	Urban	Industry	Dedicated by Site Use
<b>Curb</b>	Yes	Yes	Yes	Yes	Yes	
<b>Street Pattern</b>	Grid	Grid	Grid	Grid	Large Blocks	
<b>Connectivity</b>	High	High	High	High	Low	
<b>Connections Circulation</b>	N/S	N/S	N/S	N/S	N/S	
<b>Mode Orientation</b>	Multi-Modal	Multi-Modal	Multi-Modal	Multi-Modal	Auto	
<b>Sidewalks</b>	Yes	Yes	Yes	Yes	Yes	
<b>Trails/Bike Paths</b>	Yes	Yes	Yes	Yes	No	
<b>Sidewalk/Sidepath Links</b>	Adjacent Neighbor.	Adjacent Neighbor.	Adjacent Neighbor.	Adjacent Neighbor./ Commuting	Develop./ Adjacent Uses	
<b>Plantings</b>	Formal Street Tree	Formal Street Tree	Formal Street Tree	Formal Street Tree	N/S	
<b>Furnishings</b>	Seating/Bike Racks	Seating/Bike Racks	Seating/Bike Racks	Seating/Bike Racks	N/S	



## The Elements of a Road

A cross-section outlines the design elements of a given roadway in the designated right-of-way. A road's cross-section will include the number of lanes, presence of a median, provisions for bicycles and/or pedestrians, and other roadway elements that serve as a guideline during the project design phase.

Each cross-section has an identifier made up of 2-3 letters and one number. The letter/number combination represents classification and lanes (i.e., C-2B is a Collector Street with 2 Lanes and is the second of such combination). The different cross-sections are included in the table on the facing page.

The CTP was designed to be an adaptable planning document and for each cross-section, there may be more than one option. By building flexibility into the guiding planning document, the Town can be better equipped to make decisions in the future based on changing circumstances. This flexibility is also represented in the cross-section dimensions

which vary based on land use context. This gives the Town the ability to tailor roadway elements to the context that they are intended to serve while still holding developers to a set standard provided by the minimum dimensions allowable.

The following pages each include an example rendering of the cross-section and an accompanying table that identifies its specific design elements and dimensions, including both the minimum measurements and the options for a given land use context. Definitions of the design elements can be found in Appendix A, the Glossary of Terms.

This chapter should be used in tandem with the *Cross-Section Map* (page 131) and the recommendations tables in Appendix J, to create a full picture of a given project's ultimate recommendation.

## Cross-Section Options

Cross-Section	Lanes	Classification	Median	Parking	Bike	Pedestrian	Load*
LC-2A	2	Local/Neighborhood Connector or Collector	No	N/A	None	Sidewalk 2 Sides	No Load
		Collector	No	N/A	Sharrow/WOL	Sidewalk 2 Sides	No Load
		Collector	No	N/A	Sidepath	Sidewalk 1 Side	No Load
UC-1A	1	Urban Collector	No	Parking 1 Side	None	Sidewalk 2 Sides	No Load
UC-1B	1	Urban Collector	No	Parking 2 Sides	None	Sidewalk 2 Sides	No Load
		Urban Collector	No	Parking 2 Sides	Sharrow/WOL	Sidewalk 2 Sides	No Load
UC-2A	2	Urban Collector	No	N/A	Sharrow/WOL	Sidewalk 1 Side	No Load
C-2A	2	Collector	No	N/A	Sharrow/WOL	Sidewalk 2 Sides	No Load
C-2B	2	Collector	No	Parking 1 Side	None	Sidewalk 2 Sides	No Load
		Collector	No	Parking 1 Side	Sharrow/WOL	Sidewalk 2 Sides	No Load
C-2C	2	Collector	No	Parking 2 Sides	Sharrow/WOL	Sidewalk 2 Sides	No Load
		Collector	No	Parking 2 Sides	Sidepath	Sidewalk 1 Side	No Load
C-2D	2	Collector	No	Parking 2 Sides	Bike Lanes	Sidewalk 2 Sides	No Load
C-3A	3	Collector	Turn Lane	N/A	Sharrow/WOL	Sidewalk 2 Sides; Ditch Section	Load
CT-3A	3	Collector	Turn Lane	N/A	Sidepath	Sidepath	Load
		Collector	Turn Lane	N/A	None	Sidewalk 2 Sides	Load
		Collector	Turn Lane	N/A	Sharrow/WOL	Sidewalk 2 Sides	Load
		Collector or Thoroughfare	Turn Lane	N/A	Sidepath	Sidewalk 1 Side	Load
CT-3B	3	Thoroughfare	Turn Lane	Parking 1 Side	Sidepath	Sidewalk 1 Side	Load
CT-3C	3	Collector or Thoroughfare	Turn Lane	N/A	Sharrow/WOL	Sidewalk 2 Sides	Load
UT-2A	2	Urban Thoroughfare	No	Parking 1 Side	Sharrow/WOL	Sidewalk 2 Sides	Load
T-4A	4	Thoroughfare	Raised Median	N/A	None	Sidewalk 2 Sides	Load
		Thoroughfare	Raised Median	N/A	Sidepath	Sidepath	Load
		Thoroughfare	Raised Median	N/A	Sidepath	Sidewalk 1 Side	Load
T-4B	4	Thoroughfare	Raised Median	N/A	Sharrow/WOL	Sidewalk 2 Sides	Load
T-6A	6	Thoroughfare	Raised Median	N/A	Sidepath	Sidewalk 1 Side	Load
		Thoroughfare	Raised Median	N/A	None	Sidewalk 2 Sides	Load
T-6B	6	Major Thoroughfare	Median	N/A	None	None	Load

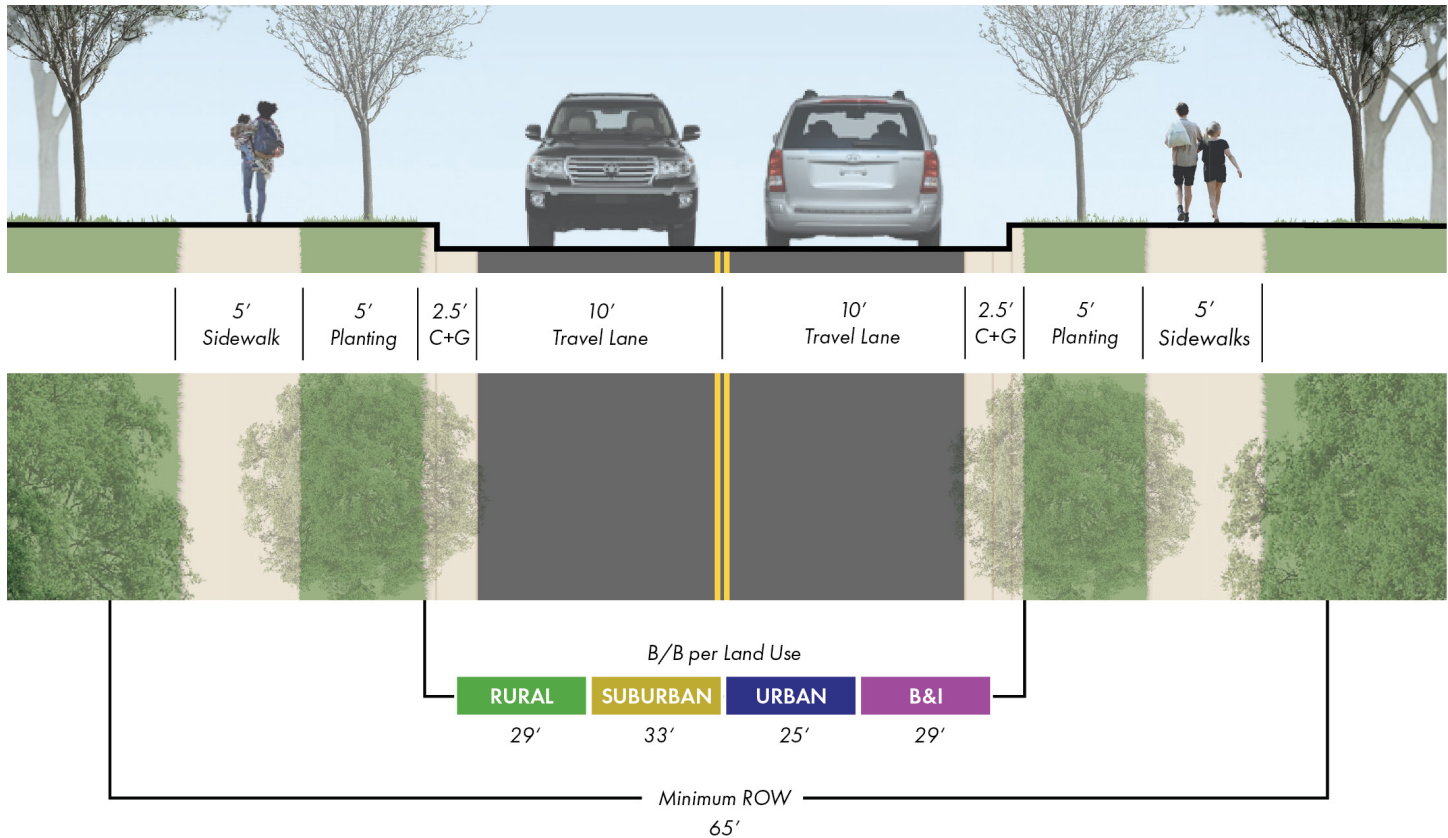
\*Load roads are intended to serve a main purpose of carrying/moving traffic; No Load roads are intended for providing connectivity to/from/between neighborhoods.

WOL = Wide Outside Lanes

# LC-2A

## Local/Neighborhood Connector or Collector | 2 Lanes

### LC-2A Minimum



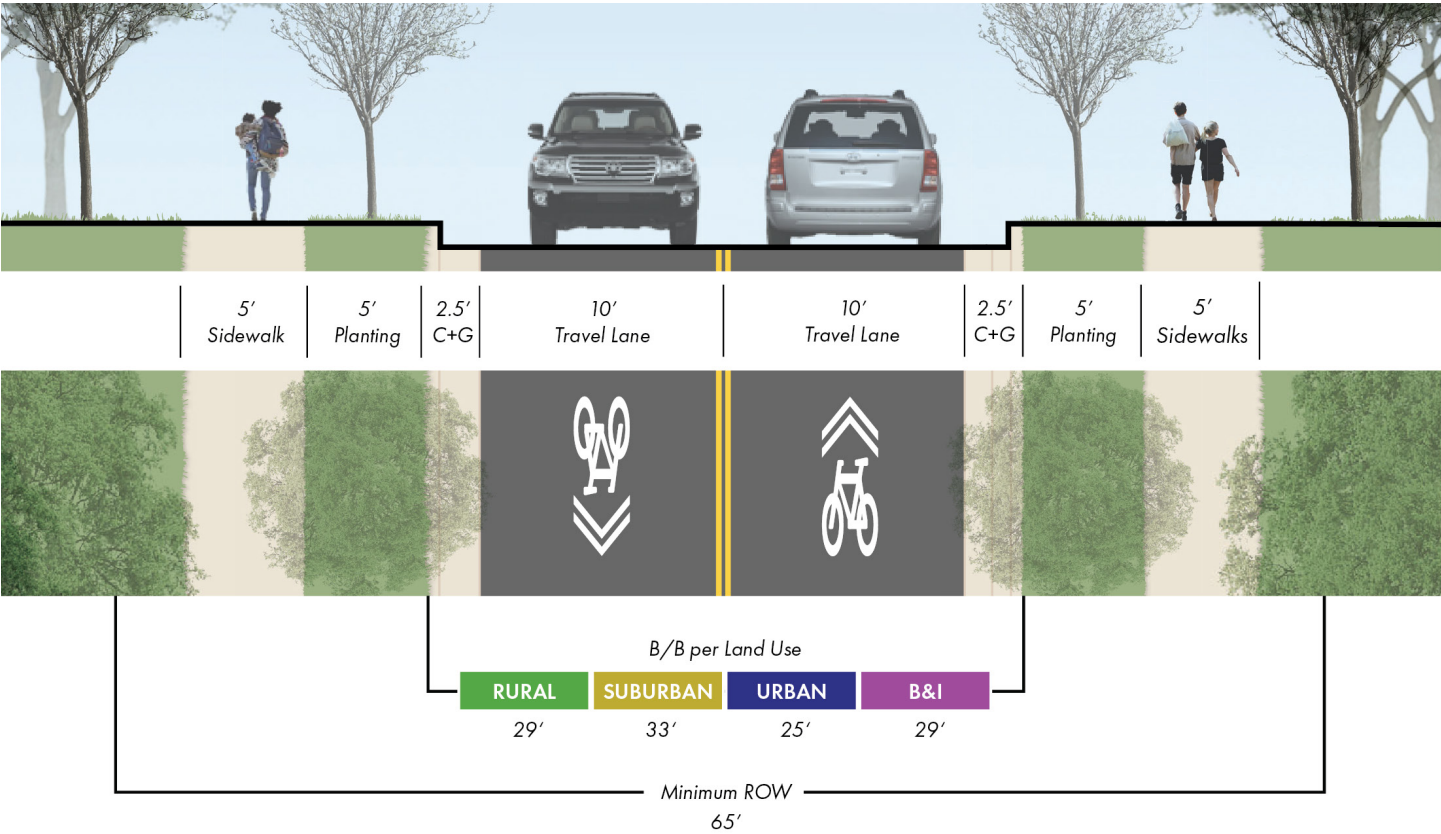
L-2A			Land Use Character Area			
Design Elements	Element Included	Minimum Dimension	Rural	Suburban	Urban	Business & Industrial
Right-of-Way (ROW)	Yes	65'	60'	65'	63'	58'
Back of Curb to Back of Curb (B/B)	Yes	25'	29'	33'	25'	29'
Travel Lanes	2 Lanes	10'	12'	14'	10'	12'
Center Turn Lane	No	-	-	-	-	-
Median	No	-	-	-	-	-
Curb and Gutter (C+G)	2 Sides	2.5'	2.5'	2.5'	2.5'	2.5'
Paved Shoulder	No	-	-	-	-	-
Planting	2 Sides	5'	6'	6'	8'	5'
On-Street Parking	Varies	-	-	Informal Parking	-	-
Sidewalk	0-1 Side*	10'	10'	10'	10'	10'
Sidewalk	1-2 Sides*	5'	5'	6'	8'	5'
Bicycle Facility	Sharrows / Wide Outside Lane*		Included in Travel Lanes			

Note 1: Right-of-Way (ROW) dimension accounts for an extra 2 feet of space on back side of cross-section elements on both sides to account for variables in design and construction (extra 4 feet total added to ROW). ROW is also rounded up to the nearest whole number.

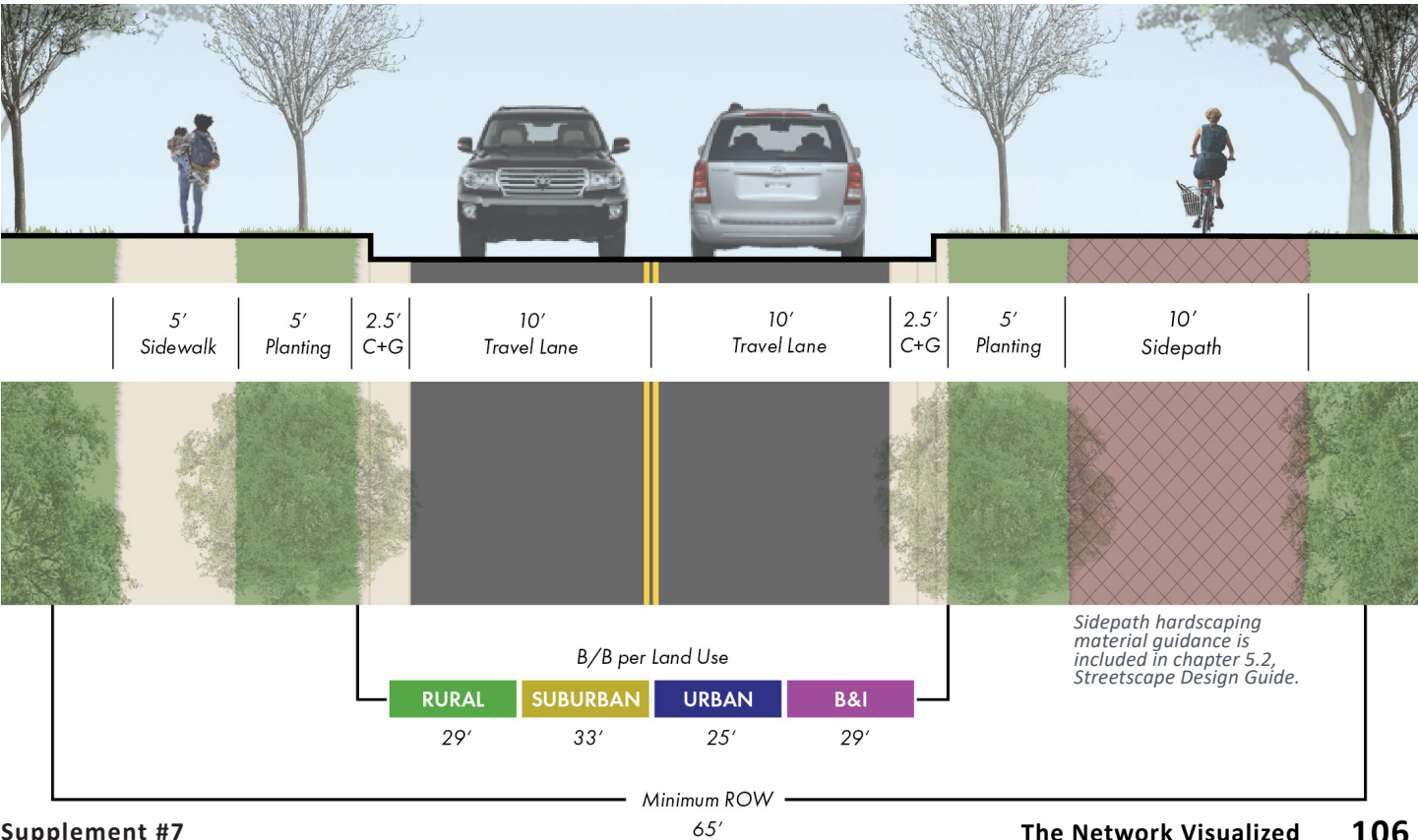
Note 2: Design elements and dimensions for Somewhat Suburban and Somewhat Urban land use characters should be considered with the respective Suburban and Urban categories.

\*Reference recommendations table in Appendix J for cross-section elements to be included for a given project.

LC-2A Alt 1 Minimum



LC-2A Alt 2 Minimum

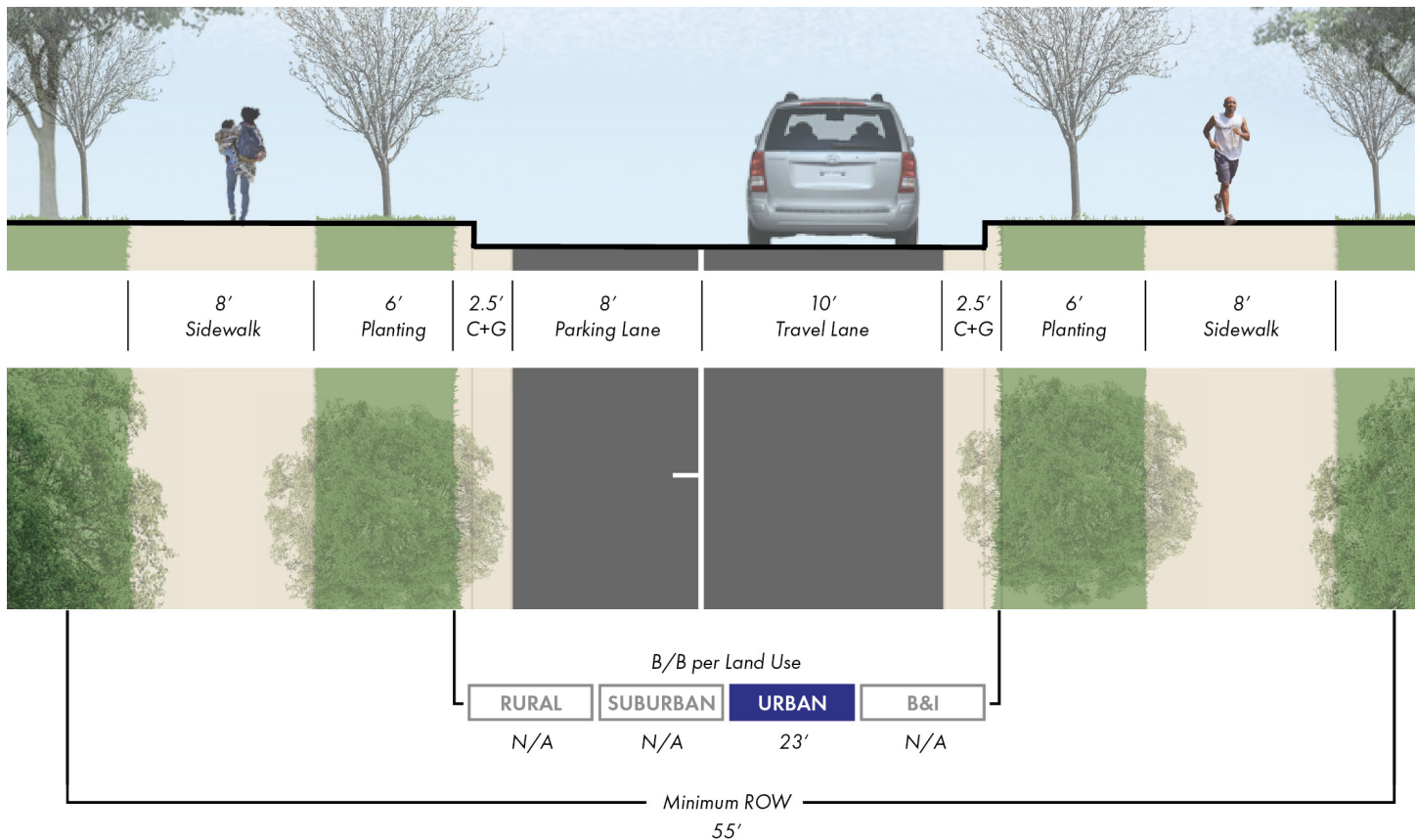




# UC-1A

## Urban Collector | 1 Lane (1-Way Use)

### UC-1A Minimum



UC-1A			Land Use Character Area			
Design Elements	Element Included	Minimum Dimension	Rural	Suburban	Urban	Business & Industrial
Right-of-Way (ROW)	Yes	55'	N/A	N/A	55'	N/A
Back of Curb to Back of Curb (B/B)	Yes	23'			23'	
Travel Lanes	1 Lane (1-Way Use)	10'			10'	
Center Turn Lane	No	-			-	
Median	No	-			-	
Curb and Gutter (C+G)	2 Sides	2.5'			2.5'	
Paved Shoulder	No	-			-	
Planting	2 Sides	6'			6'	
On-Street Parking	1 Side	8'			8'	
Sidewalk	2 Sides	8'			8'	
Bicycle Facility	No	-			-	

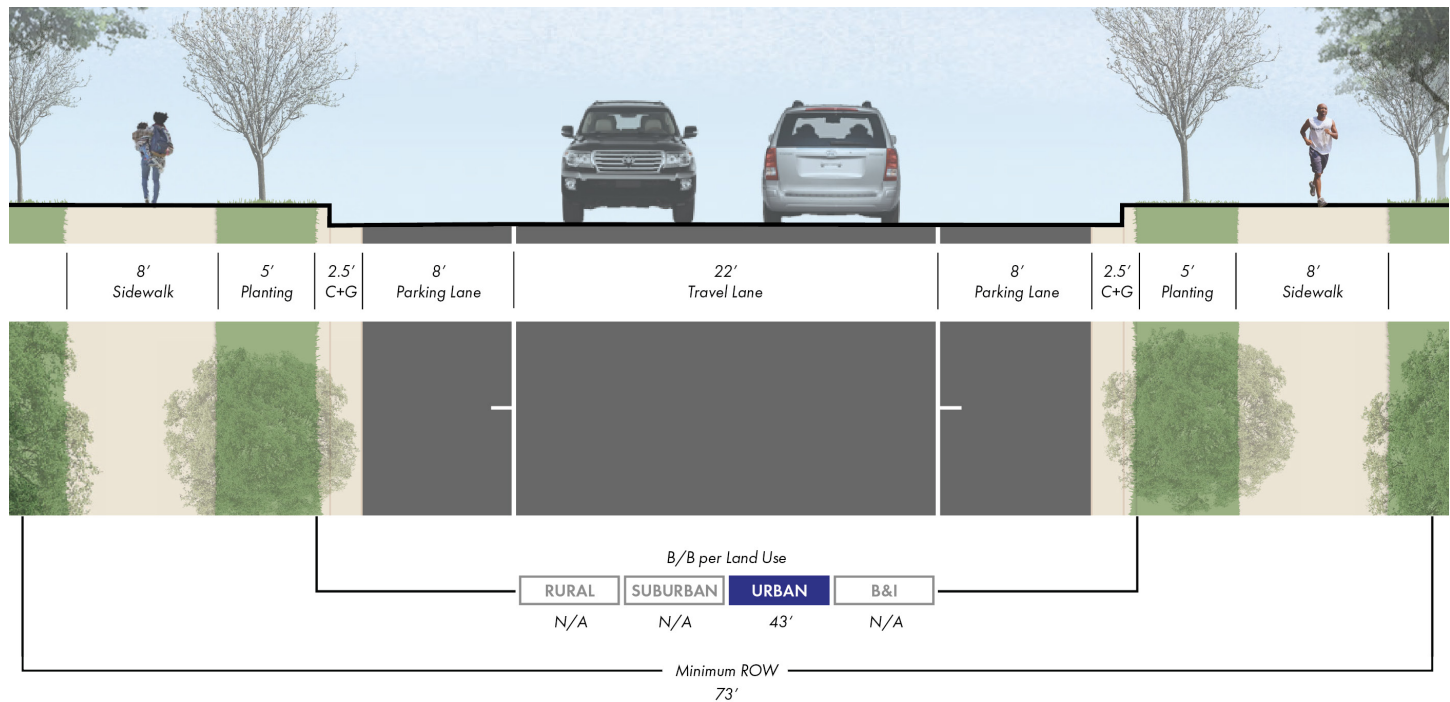
Note 1: Right-of-Way (ROW) dimension accounts for an extra 2 feet of space on back side of cross-section elements on both sides to account for variables in design and construction (extra 4 feet total added to ROW). ROW is also rounded up to the nearest whole number.

Note 2: Design elements and dimensions for Somewhat Suburban and Somewhat Urban land use characters should be considered with the respective Suburban and Urban categories.

# UC-1B

## Urban Collector | 1 Lane (2-Way Use)

### UC-1B Minimum



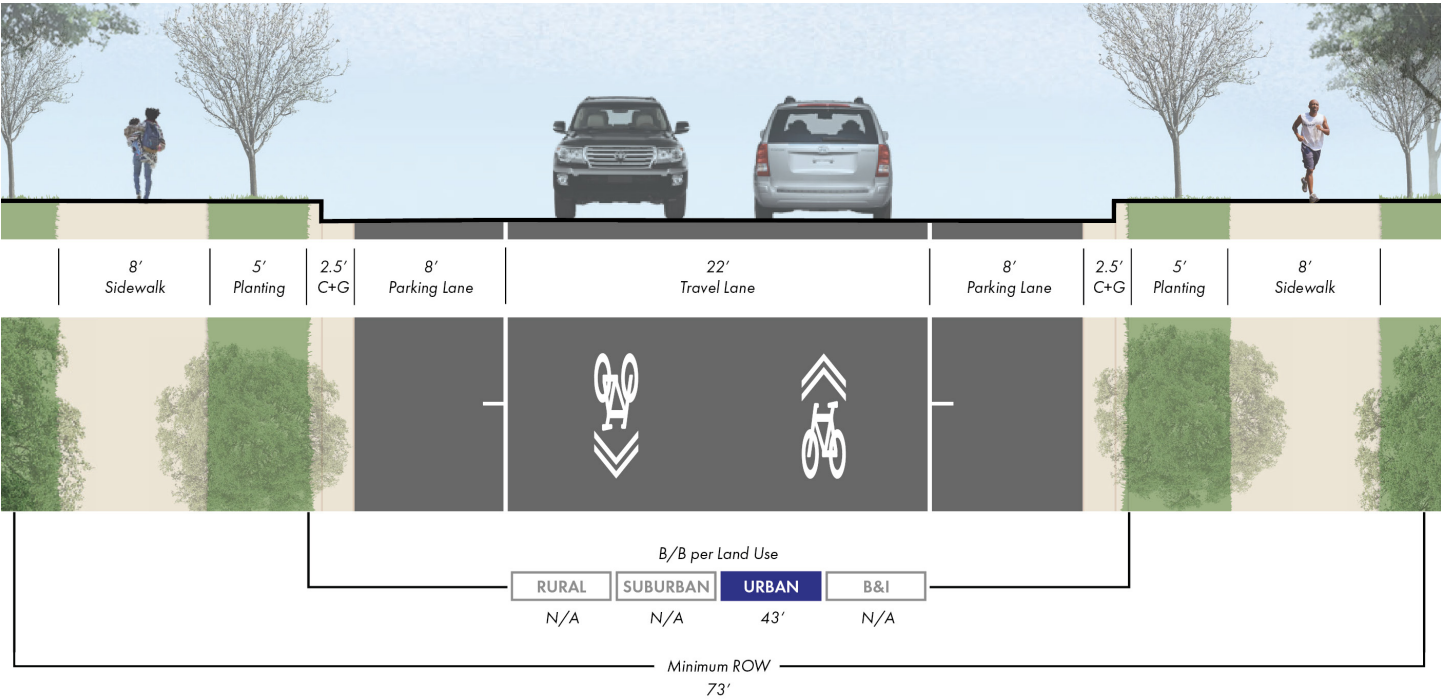
UC-1B			Land Use Character Area			
Design Elements	Element Included	Minimum Dimension	Rural	Suburban	Urban	Business & Industrial
Right-of-Way (ROW)	Yes	73'	N/A	N/A	73'	N/A
Back of Curb to Back of Curb (B/B)	Yes	43'			43'	
Travel Lanes	1 Lane (2-Way Use; Not Striped)	22'			22'	
Center Turn Lane	No	-			-	
Median	No	-			-	
Curb and Gutter (C+G)	2 Sides	2.5'			2.5'	
Paved Shoulder	No	-			-	
Planting	2 Sides	5'			5'	
On-Street Parking	2 Sides	8'			8'	
Sidewalk	No	-			-	
Sidewalk	2 Sides	8'			8'	
Bicycle Facility	Sharrow / Wide Outside Lane*				Included in Travel Lanes	

Note 1: Right-of-Way (ROW) dimension accounts for an extra 2 feet of space on back side of cross-section elements on both sides to account for variables in design and construction (extra 4 feet total added to ROW). ROW is also rounded up to the nearest whole number.

Note 2: Design elements and dimensions for Somewhat Suburban and Somewhat Urban land use characters should be considered with the respective Suburban and Urban categories.

\*Reference recommendations table in Appendix J for cross-section elements to be included for a given project.

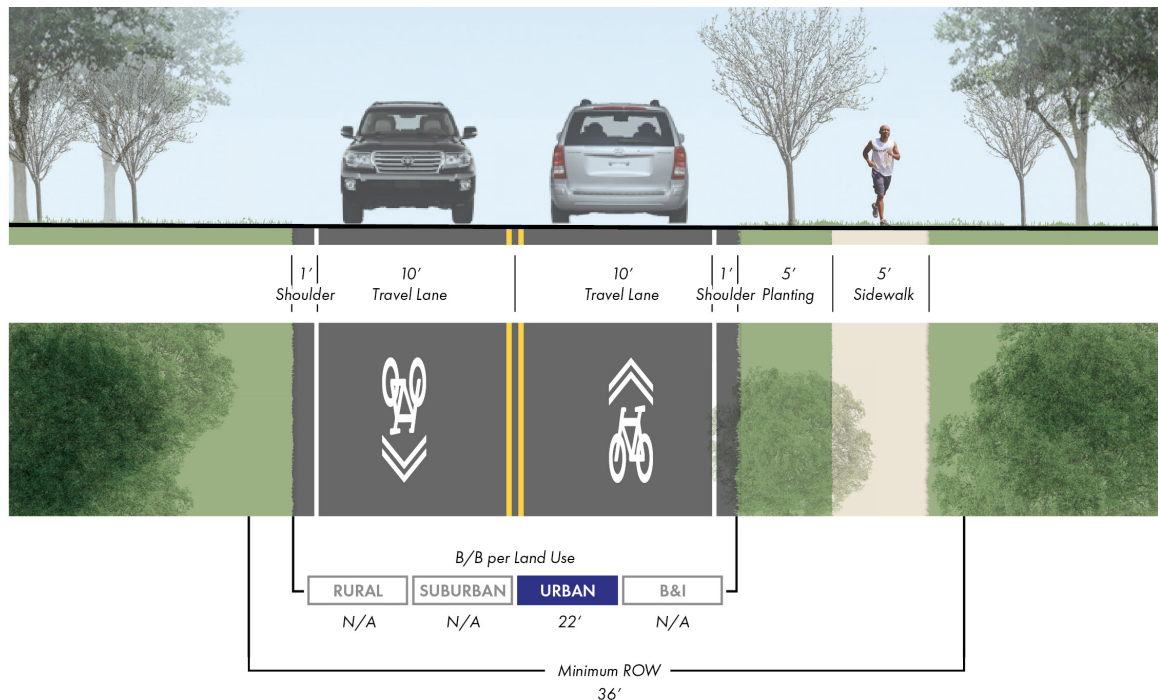
UC-1B Alt 1 Minimum



# UC-2A

## Urban Collector | 2 Lanes

### UC-2A Minimum



UC-2A			Land Use Character Area			
Design Elements	Element Included	Minimum Dimension	Rural	Suburban	Urban	Business & Industrial
Right-of-Way (ROW)	Yes	36'	N/A	N/A	36'	N/A
Back of Curb to Back of Curb (B/B)	Yes	22'			22'	
Travel Lanes	2 Lanes	10'			10'	
Center Turn Lane	No	-			-	
Median	No	-			-	
Curb and Gutter (C+G)	No	-			-	
Paved Shoulder	Yes	1'			1'	
Planting	1 Side	5'			5'	
On-Street Parking	No	-			-	
Sidewalk	No	-			-	
Bicycle Facility	1 Side	5'			5'	
	Sharrow / Wide Outside Lane*				Included in Travel Lanes	

Note 1: Right-of-Way (ROW) dimension accounts for an extra 2 feet of space on back side of cross-section elements on both sides to account for variables in design and construction (extra 4 feet total added to ROW). ROW is also rounded up to the nearest whole number.

Note 2: Design elements and dimensions for Somewhat Suburban and Somewhat Urban land use characters should be considered with the respective Suburban and Urban categories.

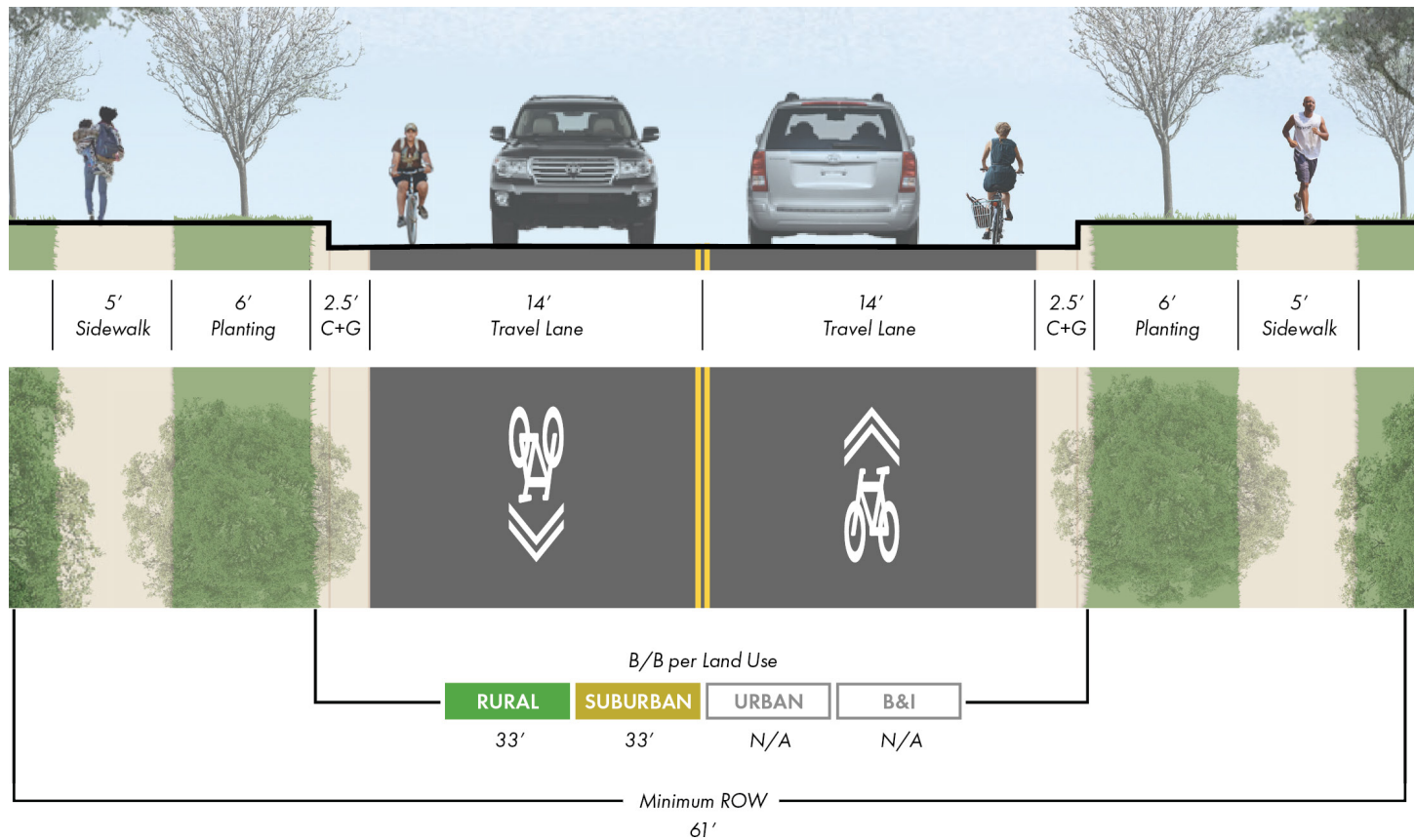
\*Reference recommendations table in Appendix J for cross-section elements to be included for a given project.



# C-2A

## Collector | 2 Lanes

### C-2A Minimum



UC-1A			Land Use Character Area			
Design Elements	Element Included	Minimum Dimension	Rural	Suburban	Urban	Business & Industrial
Right-of-Way (ROW)	Yes	61'	59'	61'		
Back of Curb to Back of Curb (B/B)	Yes	33'	33'	33'		
Travel Lanes	2 Lanes	14'	14'	14'		
Center Turn Lane	No	-	-	-		
Median	No	-	-	-		
Curb and Gutter (C+G)	2 Sides	2.5'	2.5	2.5'		
Paved Shoulder	No	-	-	-	N/A	N/A
Planting	2 Sides	6'	6	6'		
On-Street Parking	No	-		-		
Sidewalk	No	-		-		
Sidewalk	2 Sides	5'	5'	6'		
Bicycle Facility	Sharrow / Wide Outside Lane*		Included in Travel Lanes			

Note 1: Right-of-Way (ROW) dimension accounts for an extra 2 feet of space on back side of cross-section elements on both sides to account for variables in design and construction (extra 4 feet total added to ROW). ROW is also rounded up to the nearest whole number.

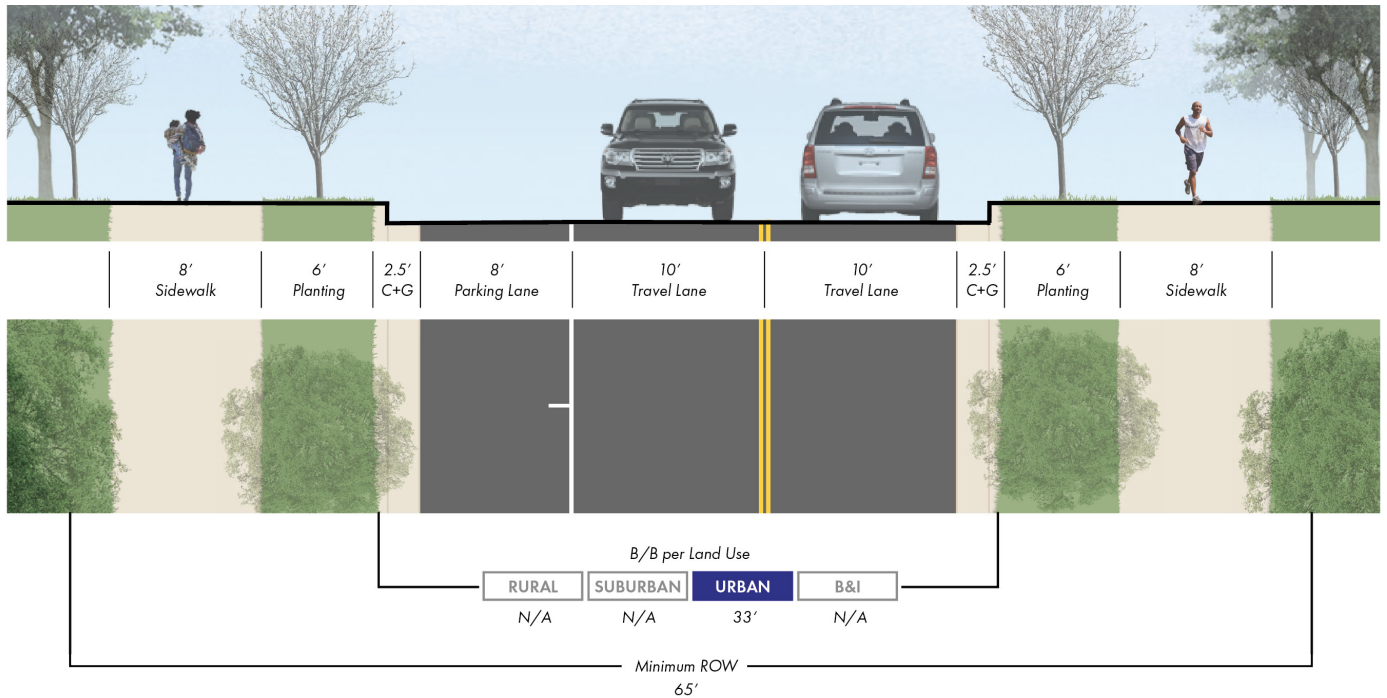
Note 2: Design elements and dimensions for Somewhat Suburban and Somewhat Urban land use characters should be considered with the respective Suburban and Urban categories.

\*Reference recommendations table in Appendix J for cross-section elements to be included for a given project.

# C-2B

## Collector | 2 Lanes

### C-2B Minimum



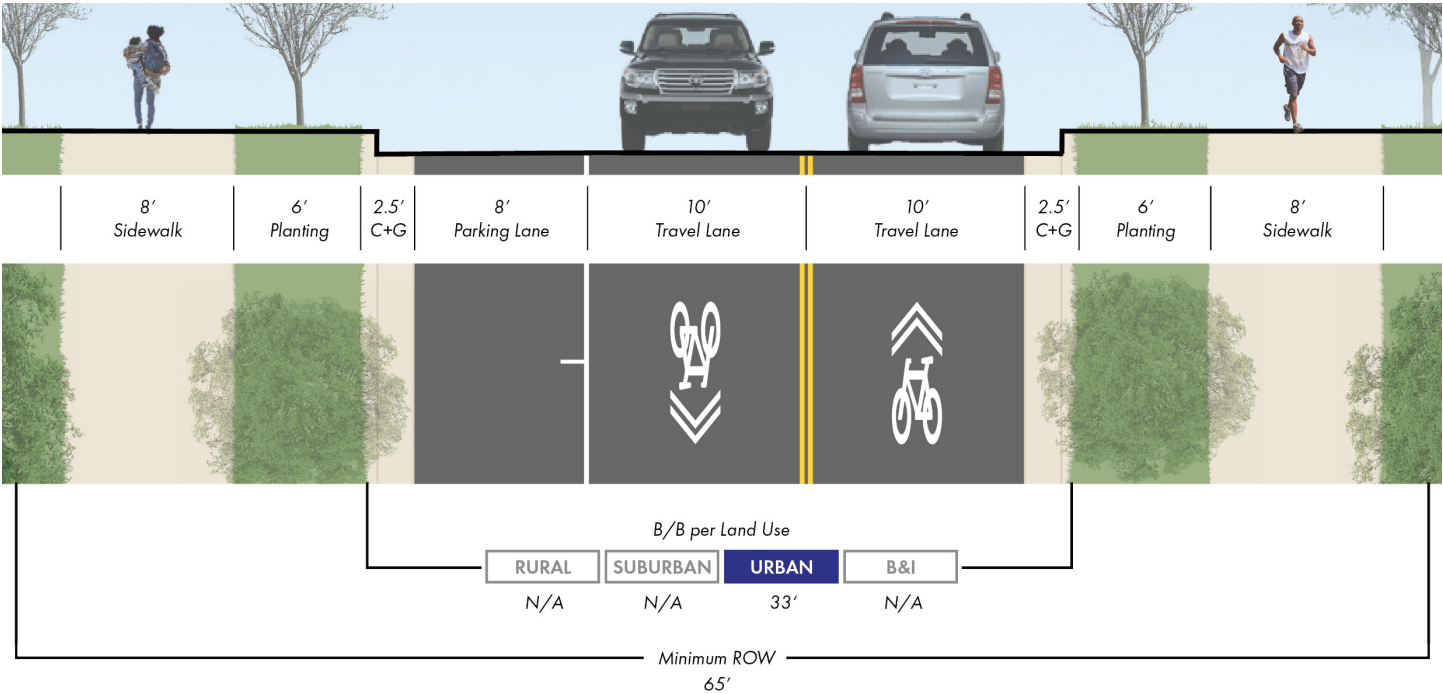
C-2B			Land Use Character Area			
Design Elements	Element Included	Minimum Dimension	Rural	Suburban	Urban	Business & Industrial
Right-of-Way (ROW)	Yes	65'	N/A	N/A	65'	N/A
Back of Curb to Back of Curb (B/B)	Yes	33'			33'	
Travel Lanes	2 Lanes	10'			10'	
Center Turn Lane	No	-			-	
Median	No	-			-	
Curb and Gutter (C+G)	2 Sides	2.5'			2.5'	
Paved Shoulder	No	-			-	
Planting	2 Sides	6'			6'	
On-Street Parking	1 Side	8'			8'	
Sidewalk	No	-			-	
Sidewalk	2 Sides	8'			8'	
Bicycle Facility	Sharrows / Wide Outside Lane*				Included in Travel Lanes	

Note 1: Right-of-Way (ROW) dimension accounts for an extra 2 feet of space on back side of cross-section elements on both sides to account for variables in design and construction (extra 4 feet total added to ROW). ROW is also rounded up to the nearest whole number.

Note 2: Design elements and dimensions for Somewhat Suburban and Somewhat Urban land use characters should be considered with the respective Suburban and Urban categories.

\*Reference recommendations table in Appendix J for cross-section elements to be included for a given project.

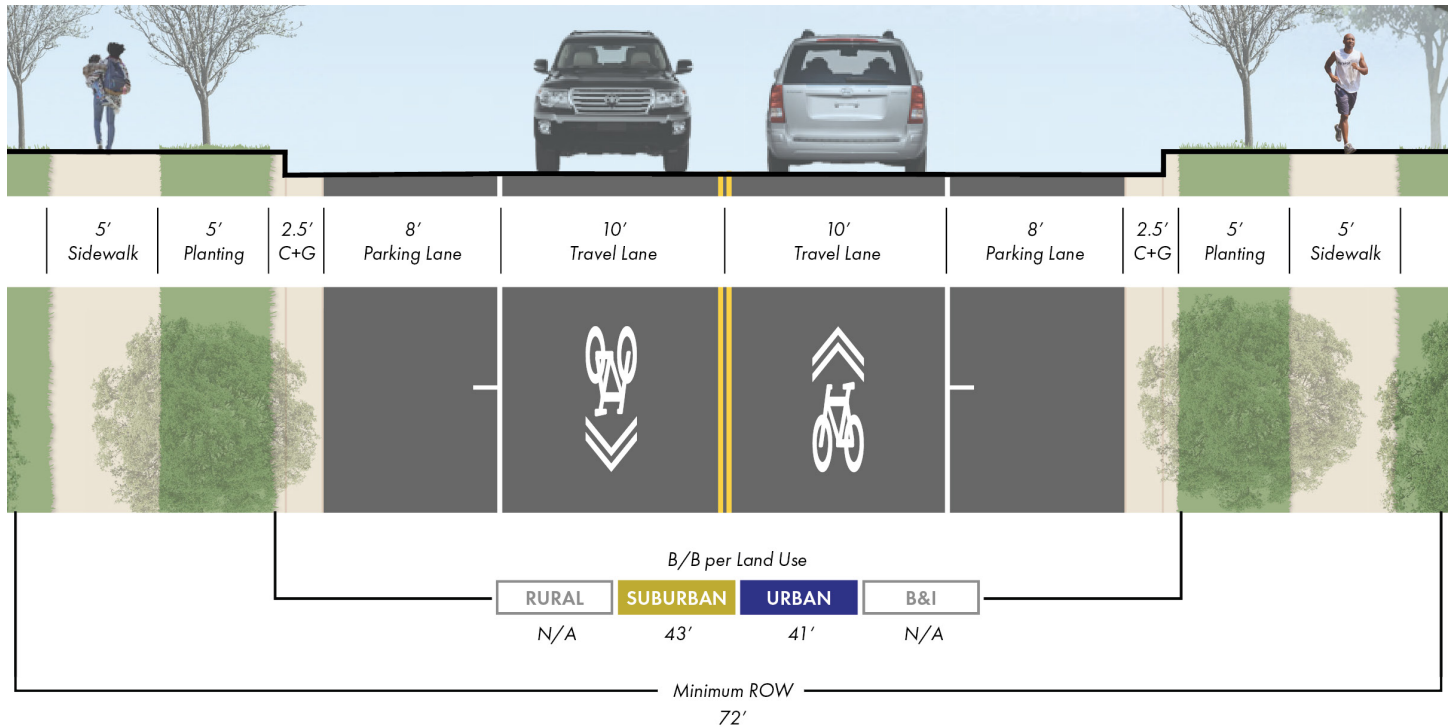
# C-2B Alt 1 Minimum



# C-2C

## Collector | 2 Lanes

### C-2C Minimum



C-2C			Land Use Character Area			
Design Elements	Element Included	Minimum Dimension	Rural	Suburban	Urban	Business & Industrial
Right-of-Way (ROW)	Yes	72'	N/A	72'	61'	N/A
Back of Curb to Back of Curb (B/B)	Yes	41'		43'	41'	
Travel Lanes	2 Lanes	10'		11'	10'	
Center Turn Lane	No	-		-	-	
Median	No	-		-	-	
Curb and Gutter (C+G)	2 Sides	2.5'		2.5'	2.5'	
Paved Shoulder	No	-		-	-	
Planting	2 Sides	5'		5'	5'	
On-Street Parking	2 Sides	8'		8'	8'	
Sidepath	0-1 Side*	10'		10'	-	
Sidewalk	1-2 Sides*	5'		5'	8'	
Bicycle Facility	Sharrow / Wide Outside Lane*		Included in Travel Lanes			

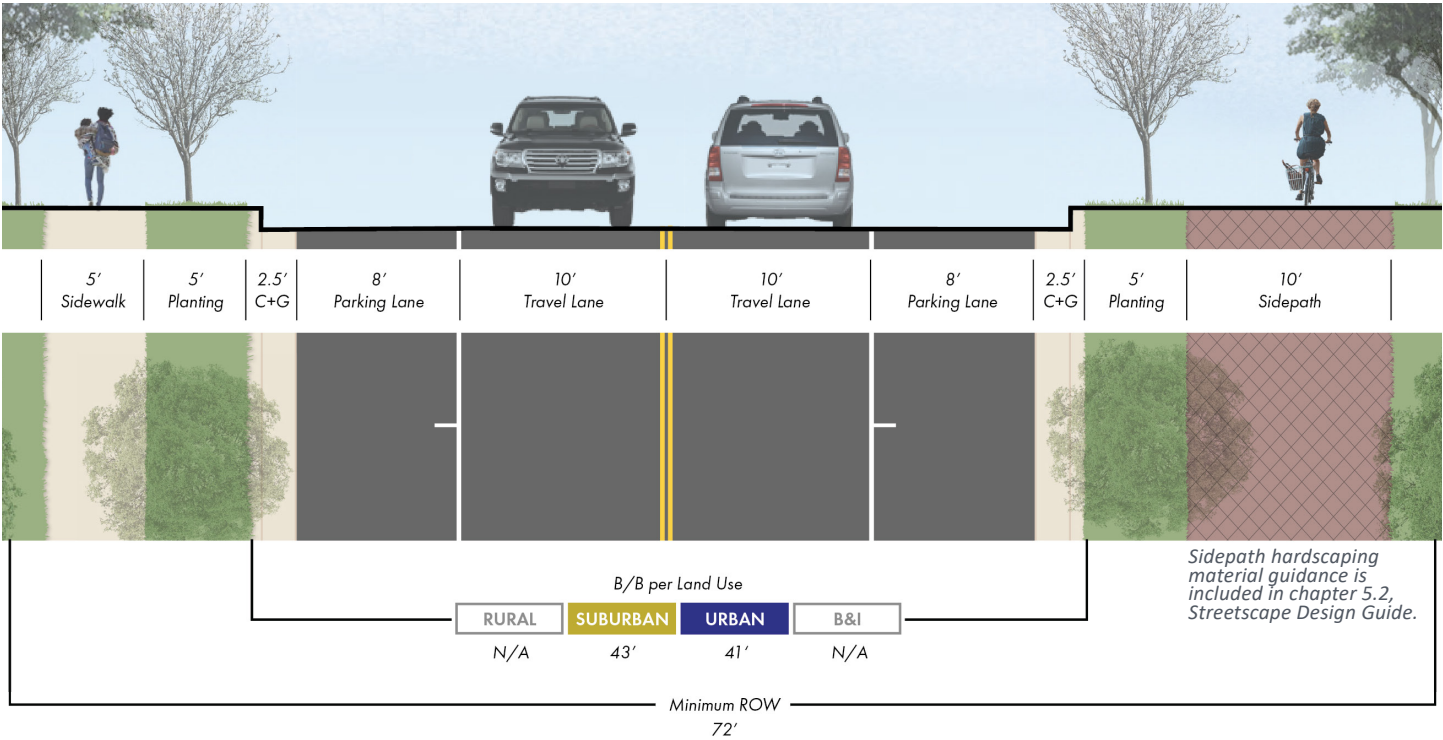
Note 1: Right-of-Way (ROW) dimension accounts for an extra 2 feet of space on back side of cross-section elements on both sides to account for variables in design and construction (extra 4 feet total added to ROW). ROW is also rounded up to the nearest whole number.

Note 2: Design elements and dimensions for Somewhat Suburban and Somewhat Urban land use characters should be considered with the respective Suburban and Urban categories.

\*Reference recommendations table in Appendix J for cross-section elements to be included for a given project.



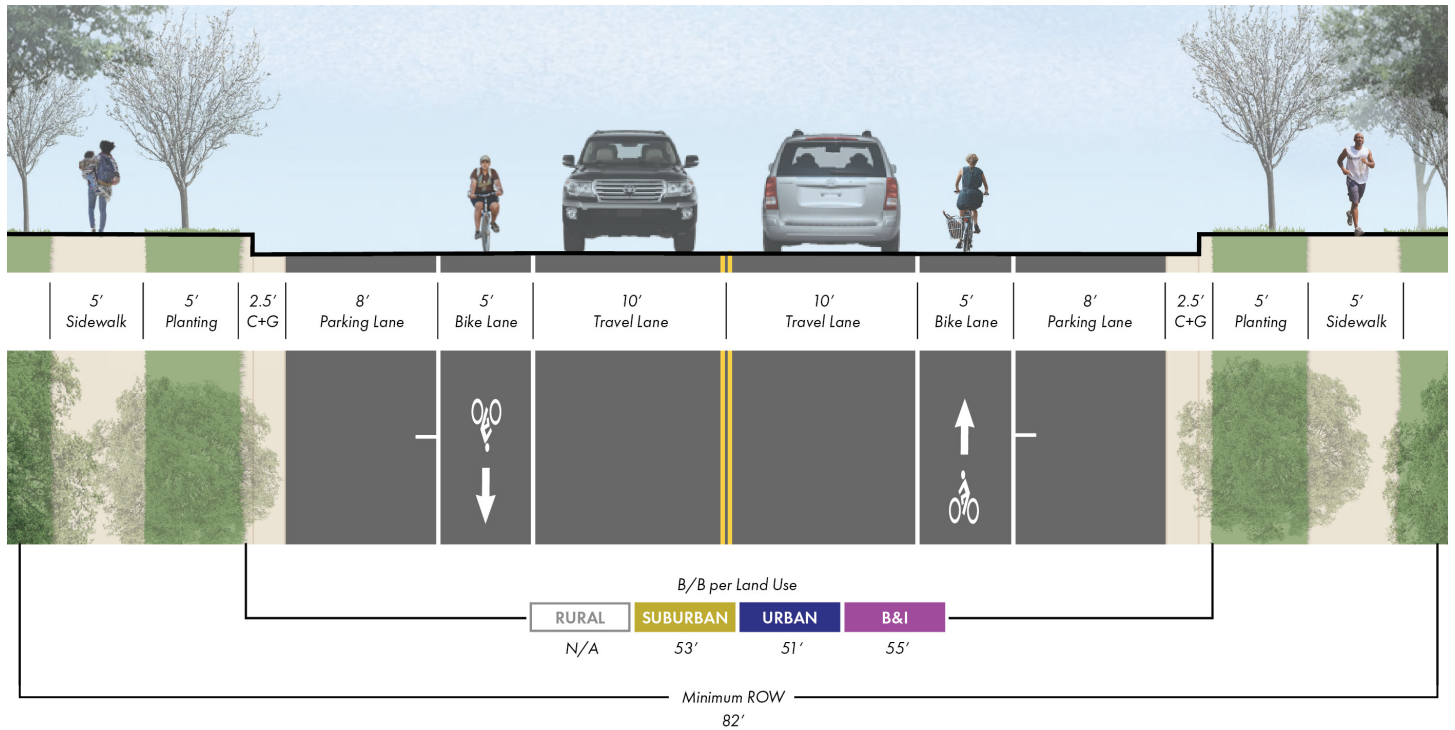
# C-2C Alt 1 Minimum



# C-2D

## Collector | 2 Lanes

### C-2D Minimum



C-2D			Land Use Character Area			
Design Elements	Element Included	Minimum Dimension	Rural	Suburban	Urban	Business & Industrial
Right-of-Way (ROW)	Yes	81'	N/A	77'	81'	79'
Back of Curb to Back of Curb (B/B)	Yes	51'		53'	51'	55'
Travel Lanes	2 Lanes	10'		11'	10'	12'
Center Turn Lane	No	-		-	-	-
Median	No	-		-	-	-
Curb and Gutter (C+G)	2 Sides	2.5'		2.5'	2.5'	2.5'
Paved Shoulder	No	-		-	-	-
Planting	2 Sides	5'		5'	5'	5'
On-Street Parking	2 Sides	8'		8'	8'	8'
Sidewalk	No	-		-	-	-
Sidewalk	2 Sides	5'		5'	8'	5'
Bicycle Facility	2 Bike Lanes	5'		5'	5'	5'

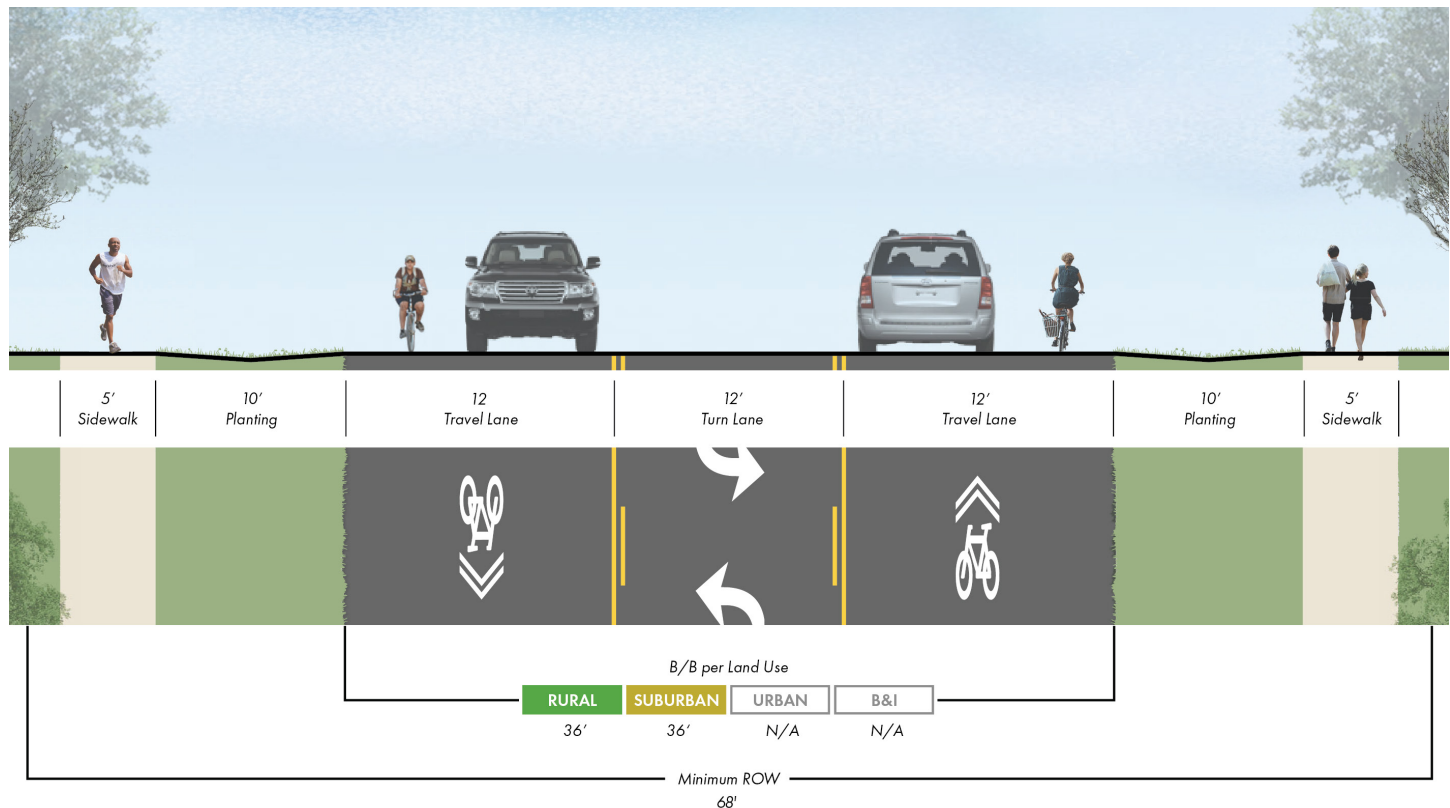
Note 1: Right-of-Way (ROW) dimension accounts for an extra 2 feet of space on back side of cross-section elements on both sides to account for variables in design and construction (extra 4 feet total added to ROW). ROW is also rounded up to the nearest whole number.

Note 2: Design elements and dimensions for Somewhat Suburban and Somewhat Urban land use characters should be considered with the respective Suburban and Urban categories.

# C-3A

## Collector | 3 Lanes

### C-3A Minimum



C-3A			Land Use Character Area			
Design Elements	Element Included	Minimum Dimension	Rural	Suburban	Urban	Business & Industrial
Right-of-Way (ROW)	Yes	68'	66'	68'		
Back of Curb to Back of Curb (B/B)	Yes	36'	36'	36'		
Travel Lanes	2 Lanes	12'	12'	12'		
Center Turn Lane	Yes	12'	12'	12'		
Median	No	-	-	-		
Curb and Gutter (C+G)	-	-	-	-		
Paved Shoulder	Yes	Included in Travel Lanes	Included in Travel Lanes		N/A	N/A
Planting	2 Sides	10'	10'	10'		
On-Street Parking	No	-	-	-		
Sidewalk	No	-	-	-		
Sidewalk	2 Sides	5'	5'	6'		
Bicycle Facility	Sharrow / Wide Outside Lane*		Included in Travel Lanes			

Note 1: Right-of-Way (ROW) dimension accounts for an extra 2 feet of space on back side of cross-section elements on both sides to account for variables in design and construction (extra 4 feet total added to ROW). ROW is also rounded up to the nearest whole number.

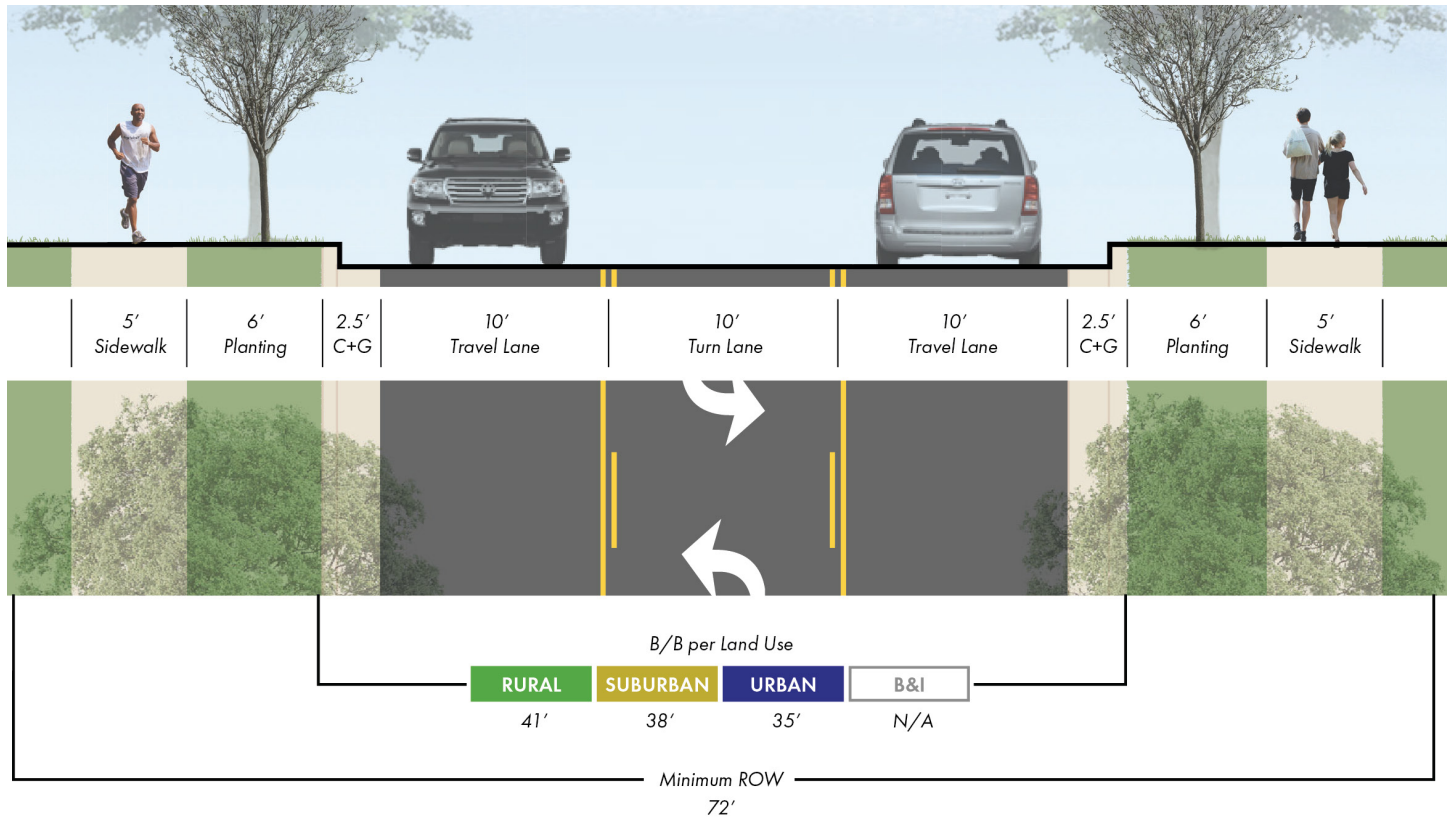
Note 2: Design elements and dimensions for Somewhat Suburban and Somewhat Urban land use characters should be considered with the respective Suburban and Urban categories.

\*Reference recommendations table in Appendix J for cross-section elements to be included for a given project.

# CT-3A

## Collector or Thoroughfare | 3 Lanes

### CT-3A Minimum



CT-3A			Land Use Character Area			
Design Elements	Element Included	Minimum Dimension	Rural	Suburban	Urban	Business & Industrial
Right-of-Way (ROW)	Yes	72'	72'	69'	71'	
Back of Curb to Back of Curb (B/B)	Yes	35'	41'	38'	35'	
Travel Lanes	2 Lanes	10'	12'	11'	10'	
Center Turn Lane	Yes	10'	12'	11'	10'	
Median	No	-	-	-	-	
Curb and Gutter (C+G)	2 Sides	2.5'	2.5'	2.5'	2.5'	
Paved Shoulder	No	-	-	-	-	N/A
Planting	2 Sides	6'	6'	6'	6'	
On-Street Parking	No	-	-	-	-	
Sidepath	0-2 Sides*	10'	10'	10'	10'	
Sidewalk	0-2 Sides*	5'	5'	5'	-	
Bicycle Facility	Sharrow / Wide Outside Lane*		Included in Travel Lanes	-	Included in Travel Lanes	

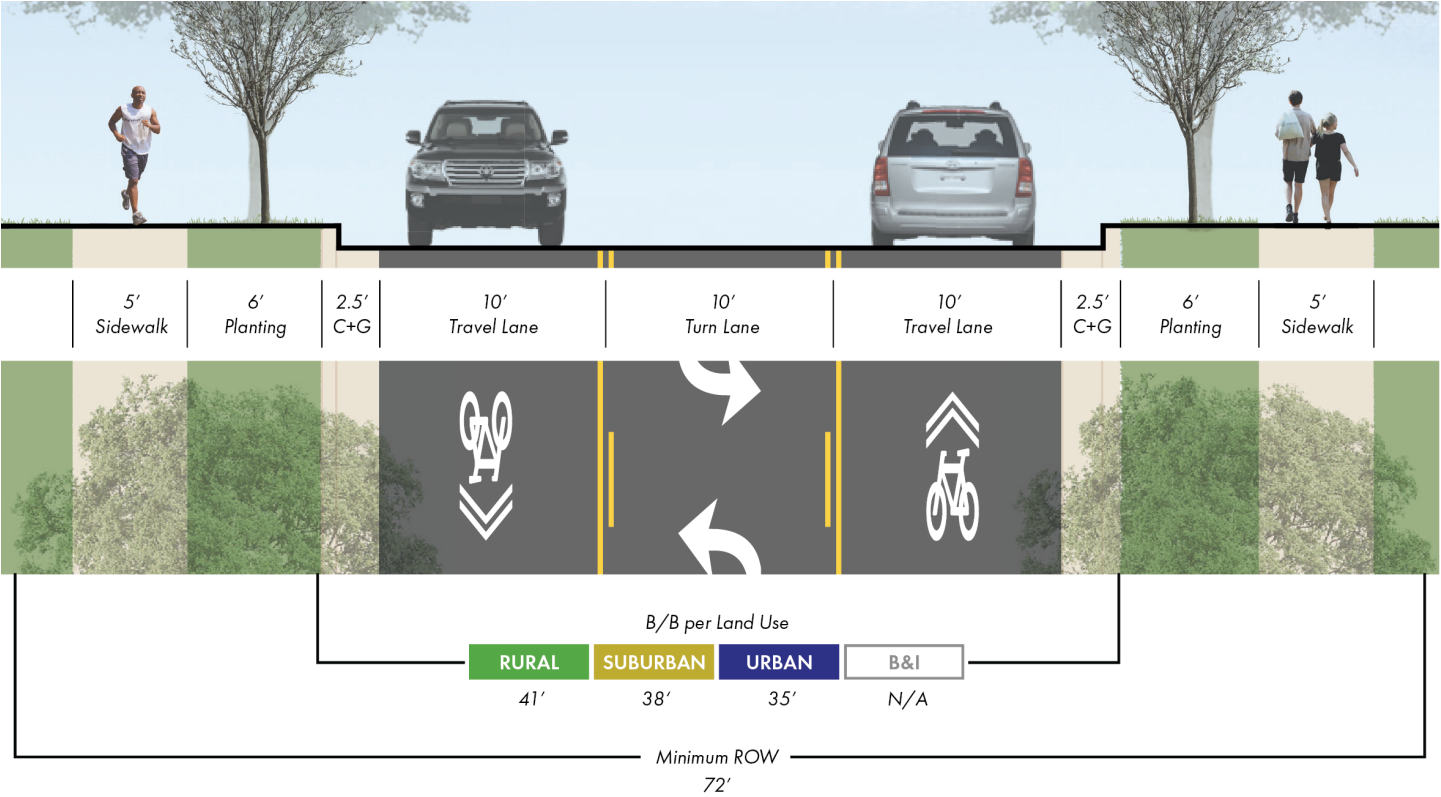
Note 1: Right-of-Way (ROW) dimension accounts for an extra 2 feet of space on back side of cross-section elements on both sides to account for variables in design and construction (extra 4 feet total added to ROW). ROW is also rounded up to the nearest whole number.

Note 2: Design elements and dimensions for Somewhat Suburban and Somewhat Urban land use characters should be considered with the respective Suburban and Urban categories.

\*Reference recommendations table in Appendix J for cross-section elements to be included for a given project.



CT-3A Alt 1 Minimum

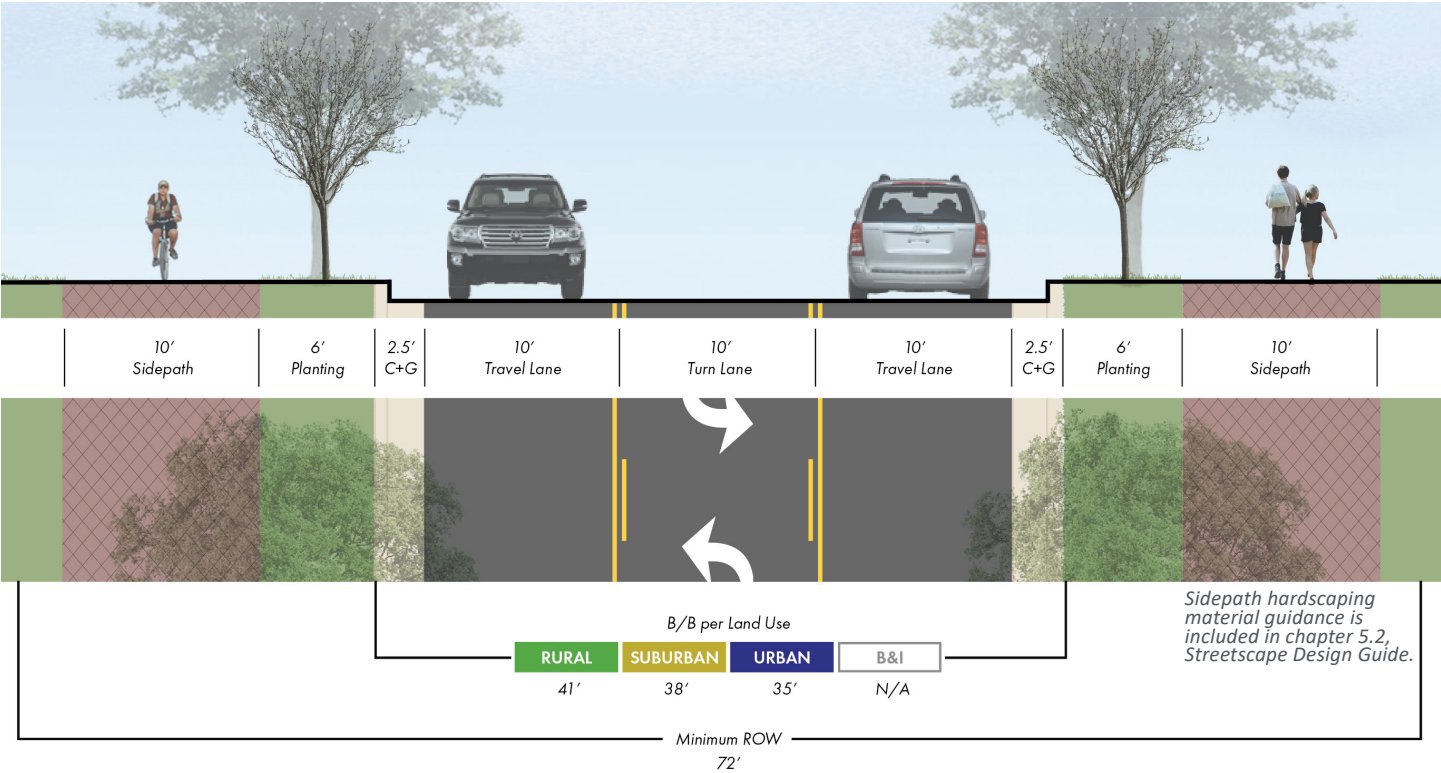


CT-3A Alt 2 Minimum





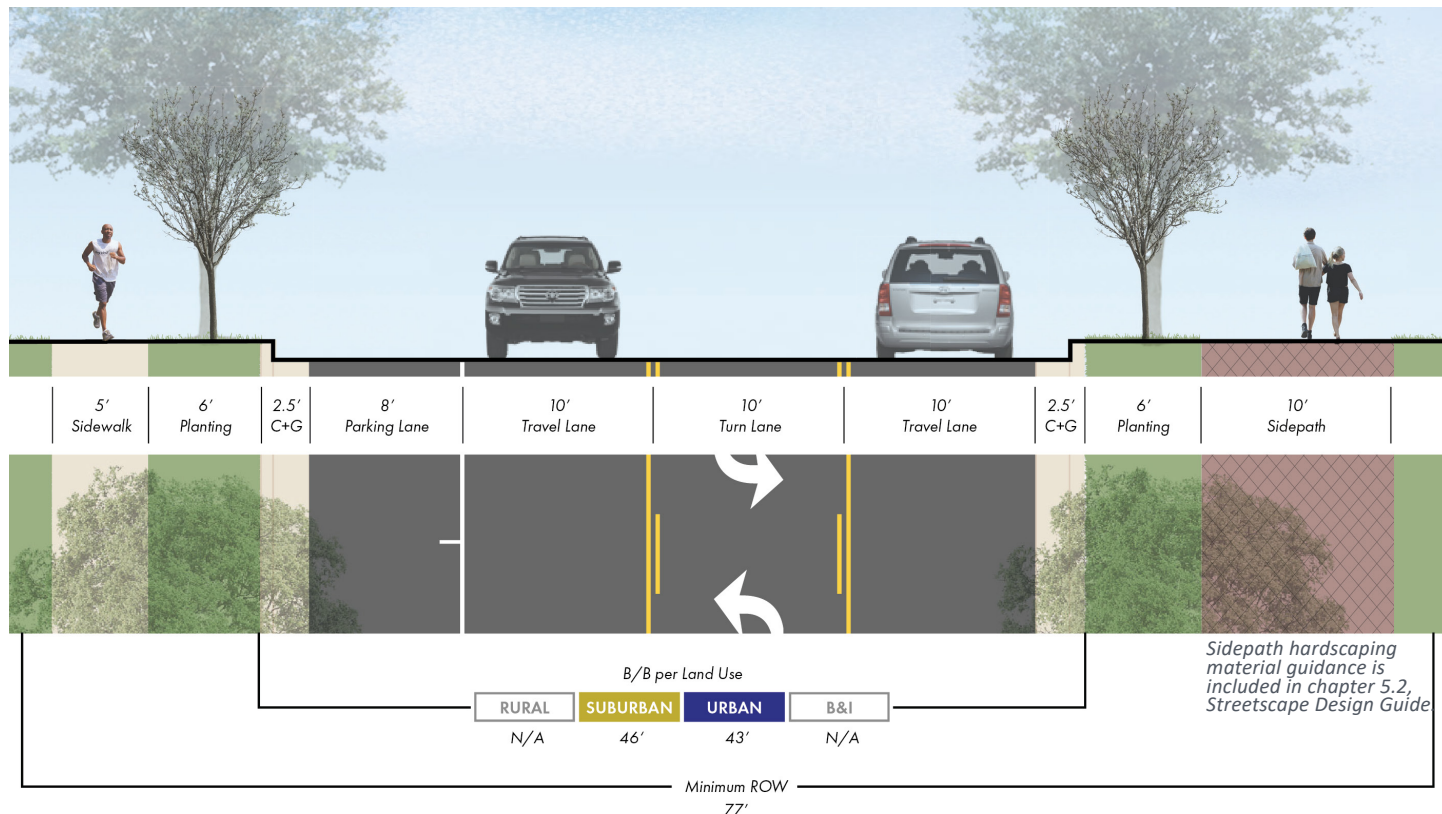
CT-3A Alt 3 Minimum



# CT-3B

## Collector or Thoroughfare | 3 Lanes

### CT-3B Minimum



C-3B			Land Use Character Area			
Design Elements	Element Included	Minimum Dimension	Rural	Suburban	Urban	Business & Industrial
Right-of-Way (ROW)	Yes	77'	N/A	77'	77'	N/A
Back of Curb to Back of Curb (B/B)	Yes	43'		46'	43'	
Travel Lanes	2 Lanes	10'		11'	10'	
Center Turn Lane	Yes	10'		11'	10'	
Median	No	-		-	-	
Curb and Gutter (C+G)	2 Sides	2.5'		2.5'	2.5'	
Paved Shoulder	No	-		-	-	
Planting	2 Sides	6'		6'	6'	
On-Street Parking	Parking 1 Side	8'		8'	8'	
Sidepath	1 Side	10'		10'	10'	
Sidewalk	1 Side	5'		5'	8'	
Bicycle Facility	No	-		-	-	

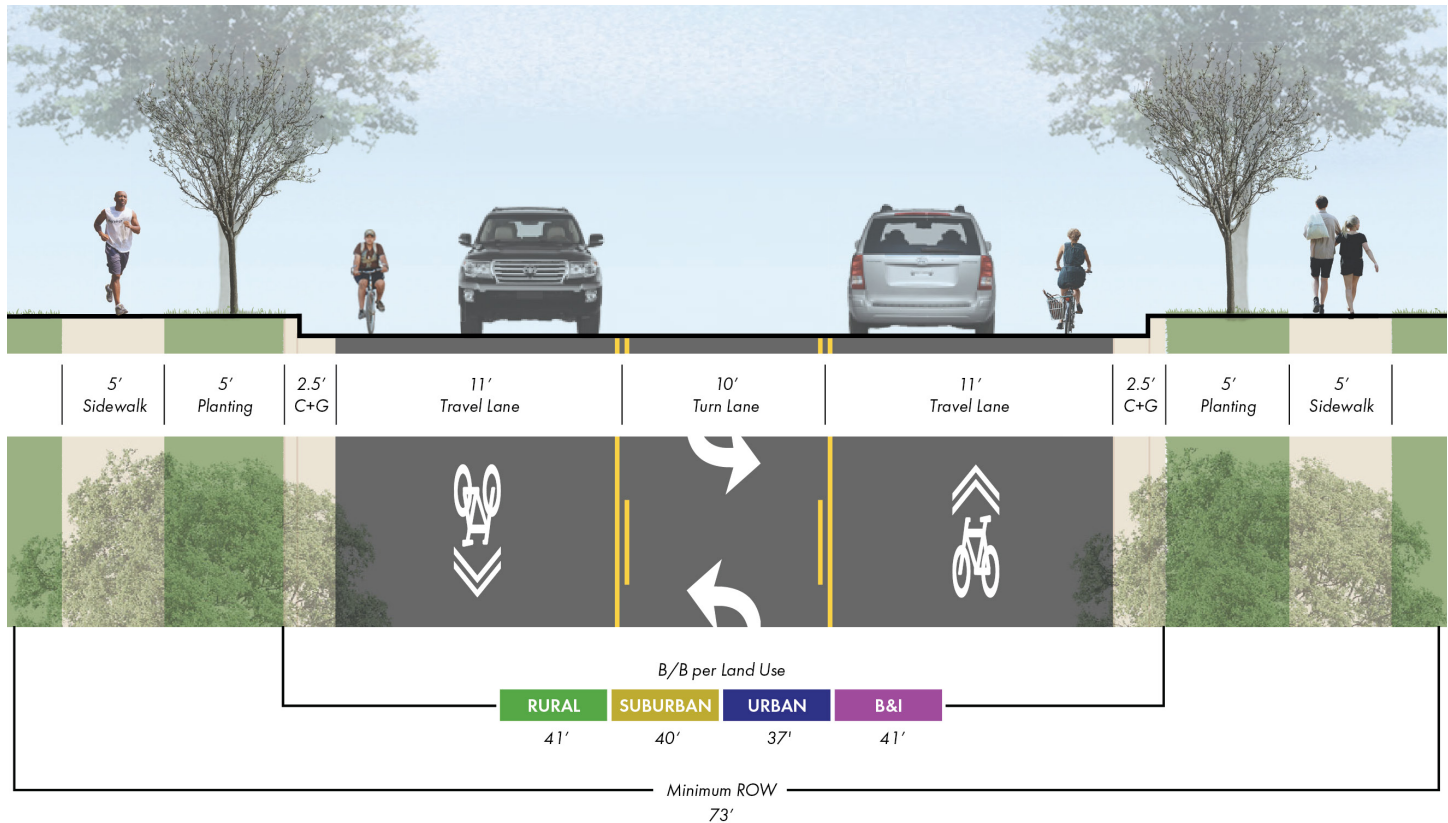
Note 1: Right-of-Way (ROW) dimension accounts for an extra 2 feet of space on back side of cross-section elements on both sides to account for variables in design and construction (extra 4 feet total added to ROW). ROW is also rounded up to the nearest whole number.

Note 2: Design elements and dimensions for Somewhat Suburban and Somewhat Urban land use characters should be considered with the respective Suburban and Urban categories.

# CT-3C

## Collector or Thoroughfare | 3 Lanes

### CT-3C Minimum



This cross-section includes the option to have a median in place of ongoing center turn lane. If warranted the minimum ROW would be 86.5'.

CT-3C			Land Use Character Area			
Design Elements	Element Included	Minimum Dimension	Rural	Suburban	Urban	Business & Industrial
Right-of-Way (ROW)	Yes	73'	67'	68'	73'	65'
Back of Curb to Back of Curb (B/B)	Yes	37'	41'	40'	37'	41'
Travel Lanes	2 Lanes	12'	12'	12'	11'	12'
Center Turn Lane	Yes	10'	12'	11'	10'	12'
Median	No	-	-	-	-	-
Curb and Gutter (C+G)	2 Sides	2.5'	2.5'	2.5'	2.5'	2.5'
Paved Shoulder	No	-	-	-	-	-
Planting	2 Sides	5'	6'	6'	8'	5'
On-Street Parking	No	-	-	-	-	-
Sidewalk	No	-	-	-	-	-
Sidewalk	2 Sides	5'	5'	6'	8'	5'
Bicycle Facility	Sharrow / Wide Outside Lane*		Included in Travel Lanes			

Note 1: Right-of-Way (ROW) dimension accounts for an extra 2 feet of space on back side of cross-section elements on both sides to account for variables in design and construction (extra 4 feet total added to ROW). ROW is also rounded up to the nearest whole number.

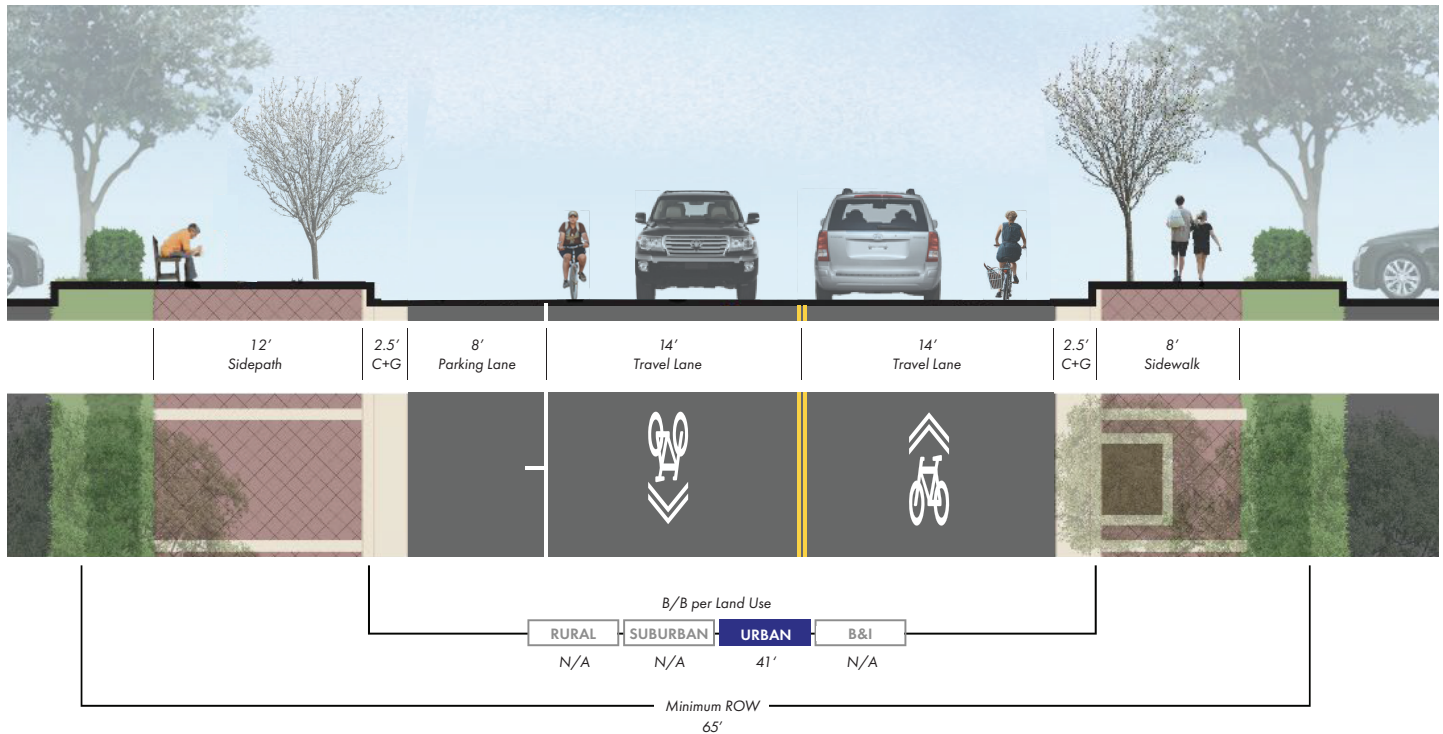
Note 2: Design elements and dimensions for Somewhat Suburban and Somewhat Urban land use characters should be considered with the respective Suburban and Urban categories.

\*Reference recommendations table in Appendix J for cross-section elements to be included for a given project.

# UT-2A

## Urban Thoroughfare | 2 Lanes

### UT-2A Minimum



UT-2A			Land Use Character Area			
Design Elements	Element Included	Minimum Dimension	Rural	Suburban	Urban	Business & Industrial
Right-of-Way (ROW)	Yes	65'	N/A	N/A	65'	N/A
Back of Curb to Back of Curb (B/B)	Yes	41'			41'	
Travel Lanes	2 Lanes	14'			14'	
Center Turn Lane	No	-			-	
Median	No	-			-	
Curb and Gutter (C+G)	2 Sides	2.5'			2.5'	
Paved Shoulder	No	-			-	
Planting	2 Sides	Included in Pedestrian Facilities			Included in Pedestrian Facilities	
On-Street Parking	1 Side	8'			8'	
Sidewalk	1 Side	12			12'	
Sidewalk	1 Side	8'			8'	
Bicycle Facility	Sharrow / Wide Outside Lane*				Included in Travel Lanes	

Note 1: Right-of-Way (ROW) dimension accounts for an extra 2 feet of space on back side of cross-section elements on both sides to account for variables in design and construction (extra 4 feet total added to ROW). ROW is also rounded up to the nearest whole number.

Note 2: Design elements and dimensions for Somewhat Suburban and Somewhat Urban land use characters should be considered with the respective Suburban and Urban categories.

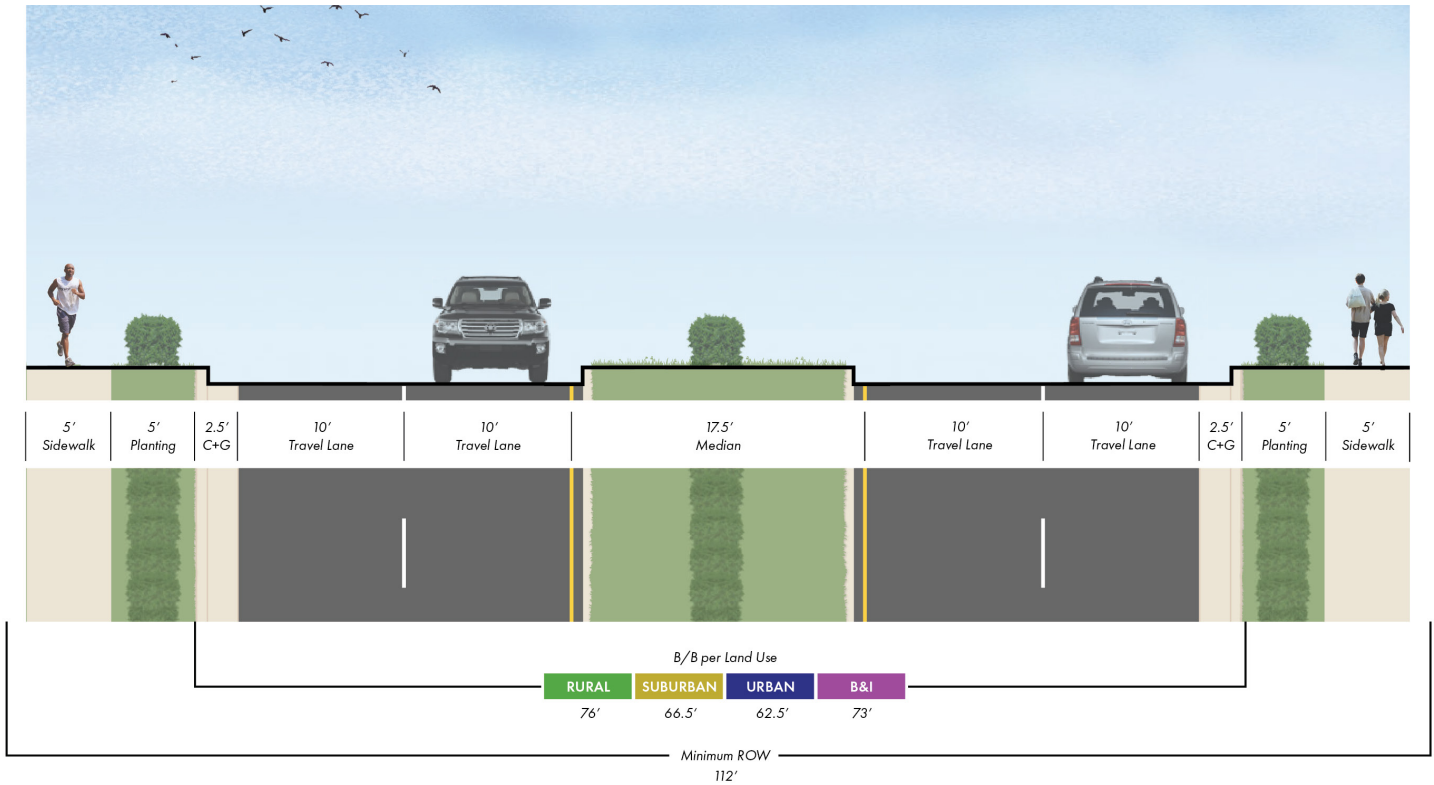
\*Reference recommendations table in Appendix J for cross-section elements to be included for a given project.



# T-4A

## Thoroughfare | 4 Lanes

### T-4A Minimum



T-4A			Land Use Character Area			
Design Elements	Element Included	Minimum Dimension	Rural	Suburban	Urban	Business & Industrial
Right-of-Way (ROW)	Yes	112'	112'	103'	103'	107'
Back of Curb to Back of Curb (B/B)	Yes	73'	76'	66.5'	62.5'	73'
Travel Lanes	4 Lanes	10'	12'	11'	10'	12'
Center Turn Lane	No	-	-	-	-	-
Median	Yes	17.5'	23'	17.5'	17.5'	20'
Curb and Gutter (C+G)	2 Sides	2.5'	2.5'	2.5'	2.5'	2.5'
Paved Shoulder	No	-	-	-	-	-
Planting	2 Sides	5'	6'	6'	8'	5'
On-Street Parking	No	-	-	-	-	-
Sidepath	0-2 Sides*	10'	10'	10'	10'	10'
Sidewalk	0-2 Sides*	5'	5'	6'	8'	5'
Bicycle Facility	No	-	-	-	-	-

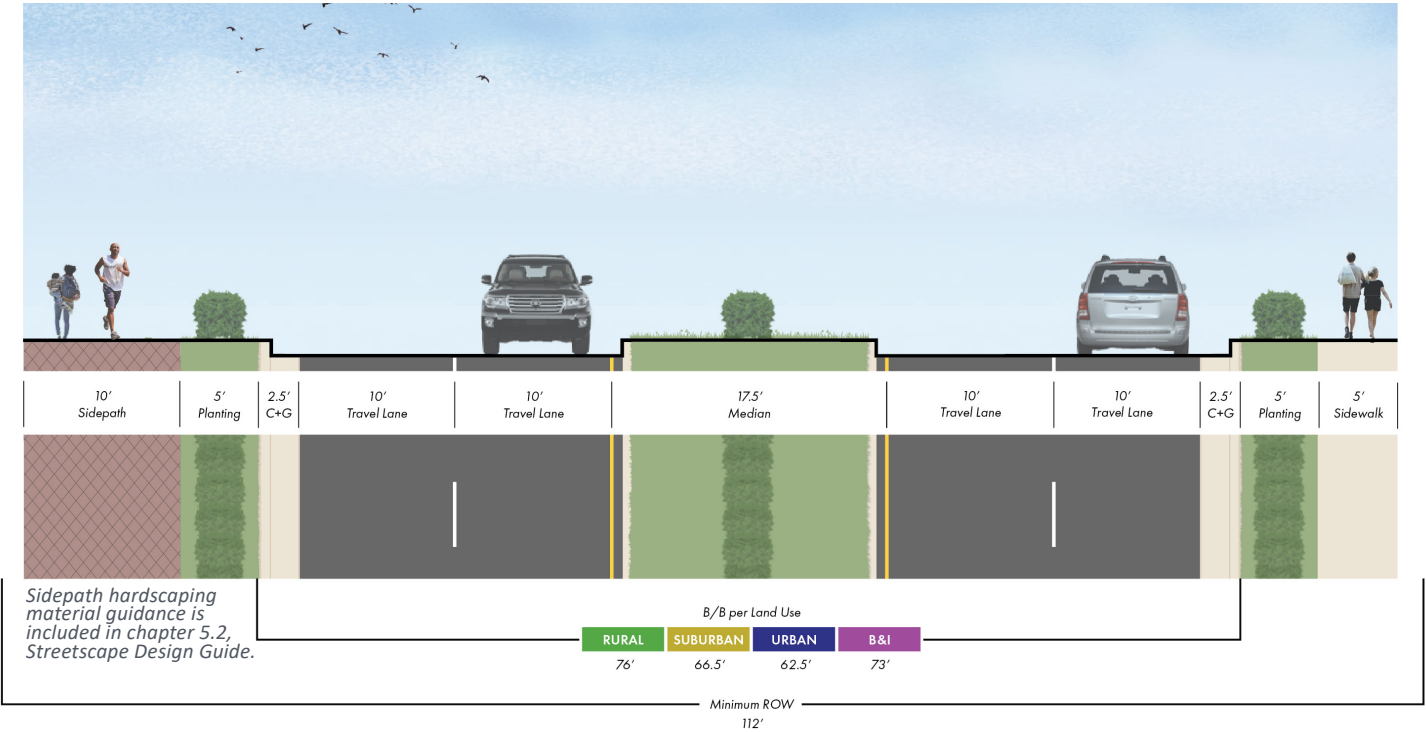
Note 1: Right-of-Way (ROW) dimension accounts for an extra 2 feet of space on back side of cross-section elements on both sides to account for variables in design and construction (extra 4 feet total added to ROW). ROW is also rounded up to the nearest whole number.

Note 2: Design elements and dimensions for Somewhat Suburban and Somewhat Urban land use characters should be considered with the respective Suburban and Urban categories.

\*Reference recommendations table in Appendix J for cross-section elements to be included for a given project.



T-4A Alt 1 Minimum



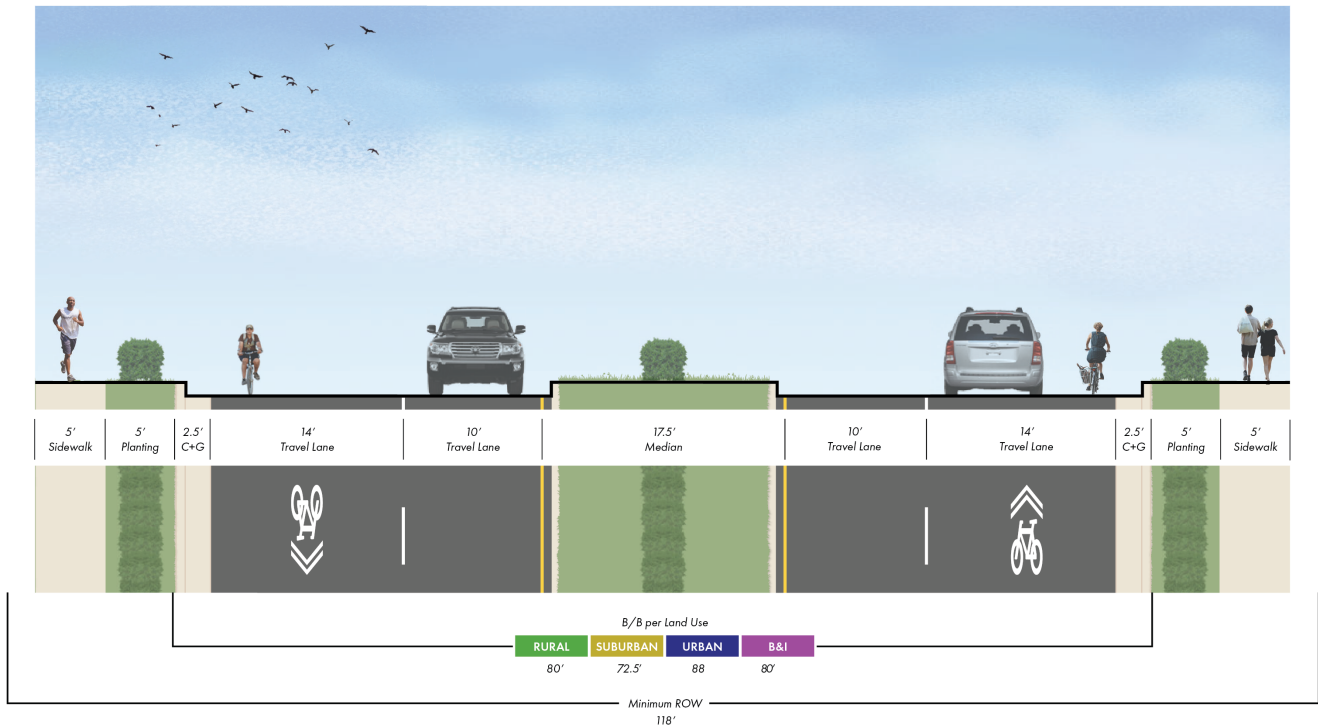
T-4A Alt 2 Minimum



# T-4B

## Thoroughfare | 4 Lanes

### T-4B Minimum



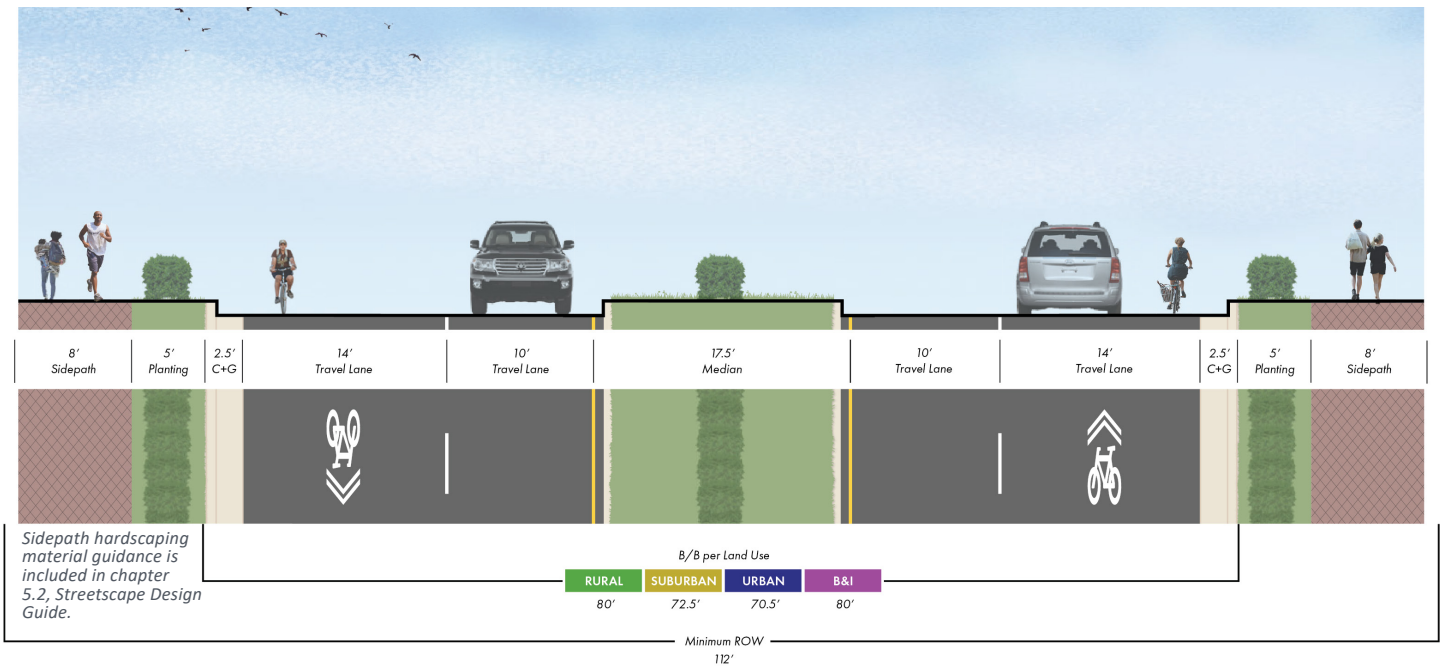
T-4B			Land Use Character Area			
Design Elements	Element Included	Minimum Dimension	Rural	Suburban	Urban	Business & Industrial
Right-of-Way (ROW)	Yes	112'	112'	105'	107'	104'
Back of Curb to Back of Curb (B/B)	Yes	70.5'	80'	72.5'	70.5'	80'
Travel Lanes (inside/outside)	4 Lanes	10'/14'	12'/14'	11'/14'	10'/14'	12'/14'
Center Turn Lane	No	-	-	-	-	-
Median	Yes	17.5'	23'	17.5'	17.5'	23'
Curb and Gutter (C+G)	2 Sides	2.5'	2.5'	2.5'	2.5'	2.5'
Paved Shoulder	No	-	-	-	-	-
Planting	2 Sides	5'	6'	6'	8'	5'
On-Street Parking	No	-	-	-	-	-
Sidpath	0-2 Sides*	8'	8'	8'	8'	-
Sidewalk	0-2 Sides*	5'	5'	6'	6'	5'
Bicycle Facility	Sharrows / Wide Outside Lane*		Included in Travel Lanes			

Note 1: Right-of-Way (ROW) dimension accounts for an extra 2 feet of space on back side of cross-section elements on both sides to account for variables in design and construction (extra 4 feet total added to ROW). ROW is also rounded up to the nearest whole number.

Note 2: Design elements and dimensions for Somewhat Suburban and Somewhat Urban land use characters should be considered with the respective Suburban and Urban categories.

\*Reference recommendations table in Appendix J for cross-section elements to be included for a given project.

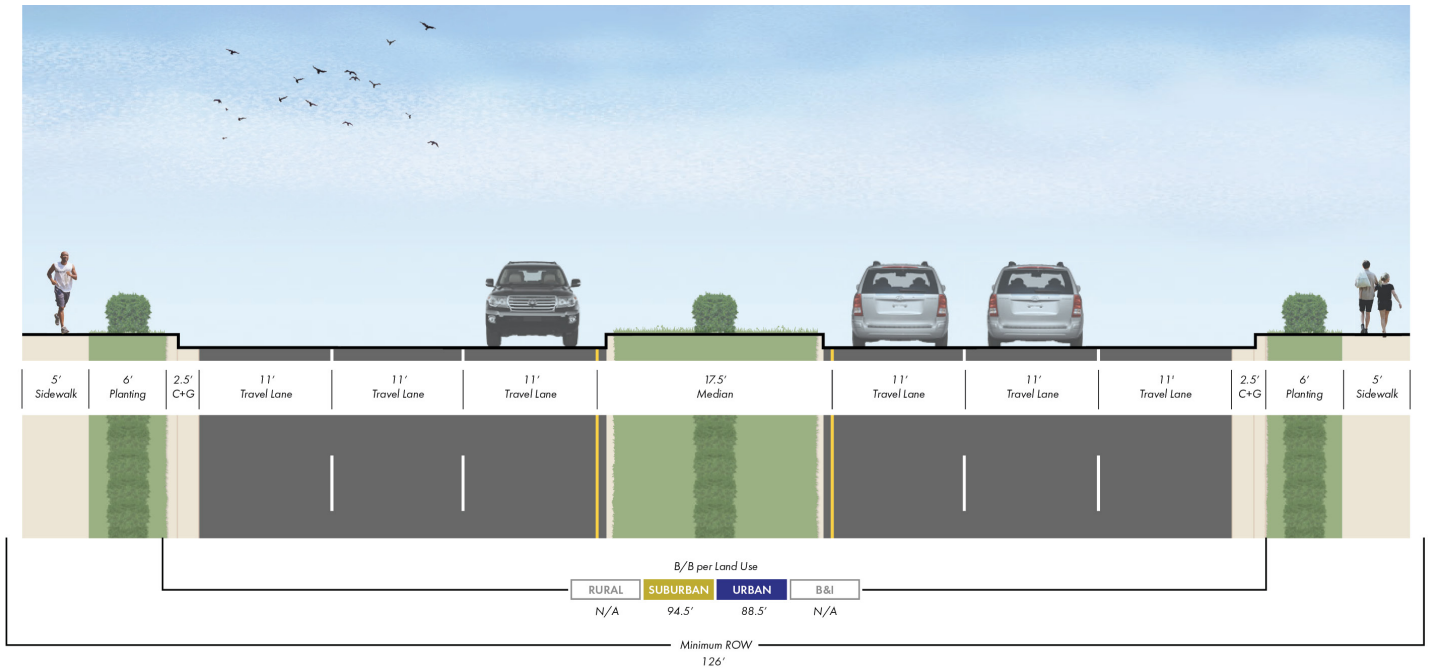
# T-4B Alt 1 Minimum



# T-6A

## Thoroughfare | 6 Lanes

### T-6A Minimum



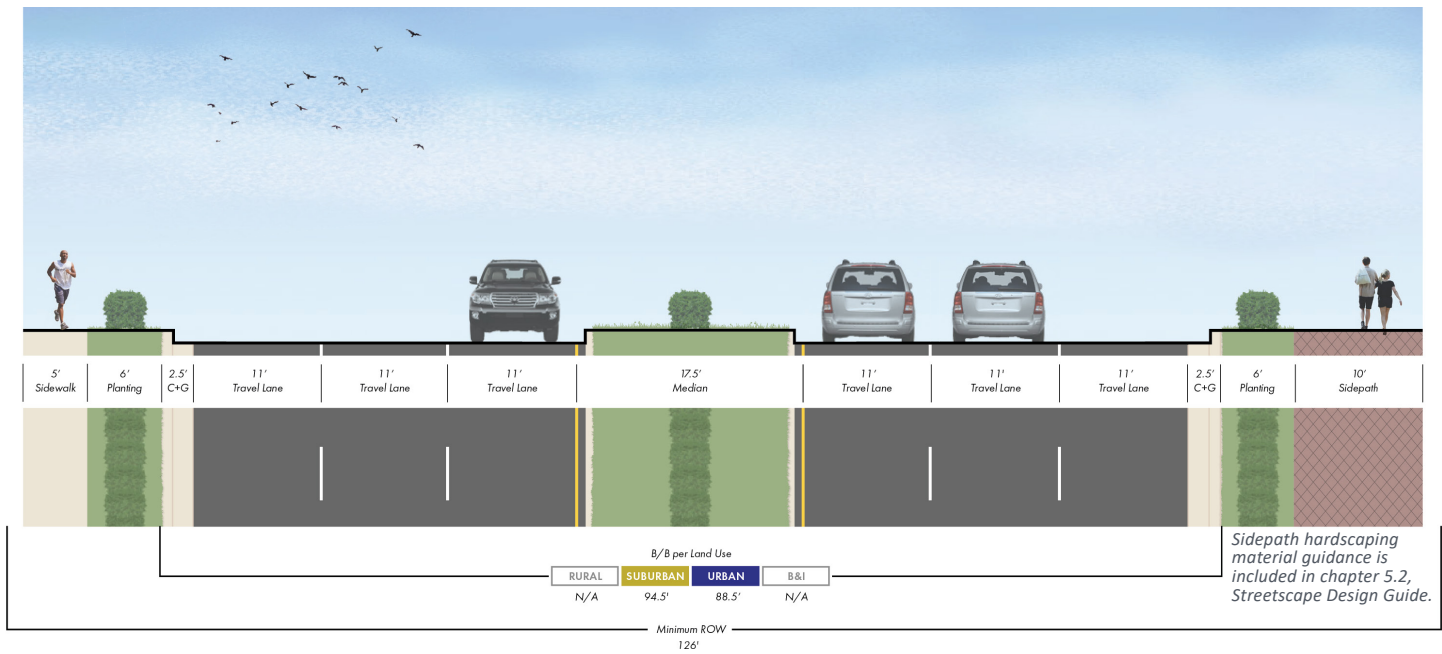
T-6A			Land Use Character Area			
Design Elements	Element Included	Minimum Dimension	Rural	Suburban	Urban	Business & Industrial
Right-of-Way (ROW)	Yes	126'	N/A	126'	121'	N/A
Back of Curb to Back of Curb (B/B)	Yes	88.5'		94.5'	88.5'	
Travel Lanes	6 Lanes	11'		12'	11'	
Center Turn Lane	No	-		-	-	
Median	Yes	17.5'		17.5'	17.5'	
Curb and Gutter (C+G)	2 Sides	2.5'		2.5'	2.5'	
Paved Shoulder	No	-		-	-	
Planting	2 Sides	6'		6'	6'	
On-Street Parking	No	-		-	-	
Sidpath	0-1 Side*	-		10'	10'	
Sidewalk	0-2 Sides*	5'		5'	6'	
Bicycle Facility	No	-		-	-	

Note 1: Right-of-Way (ROW) dimension accounts for an extra 2 feet of space on back side of cross-section elements on both sides to account for variables in design and construction (extra 4 feet total added to ROW). ROW is also rounded up to the nearest whole number.

Note 2: Design elements and dimensions for Somewhat Suburban and Somewhat Urban land use characters should be considered with the respective Suburban and Urban categories.

\*Reference recommendations table in Appendix J for cross-section elements to be included for a given project.

T-6A Alt 1 Minimum

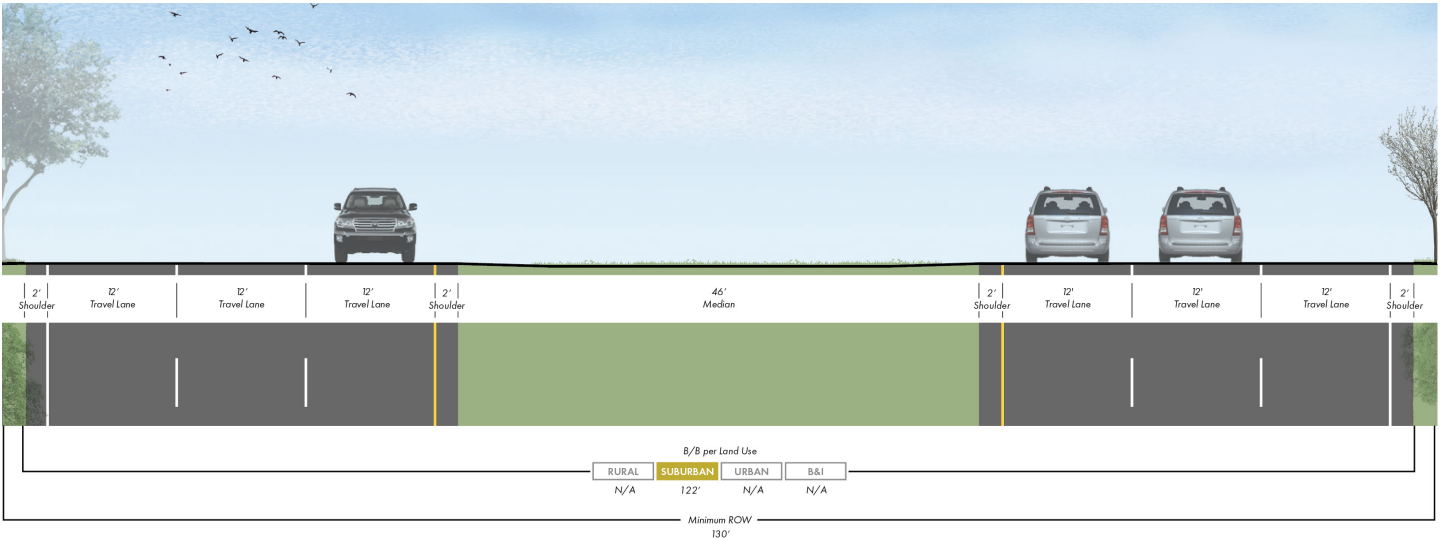




T-6B

Thoroughfare | 6 Lanes

T-6B Minimum



T-6B			Land Use Character Area			
Design Elements	Element Included	Minimum Dimension	Rural	Suburban	Urban	Business & Industrial
Right-of-Way (ROW)	Yes	130'	N/A	130'	N/A	N/A
Back of Curb to Back of Curb (B/B)	Yes	122'		122'		
Travel Lanes	6 Lanes	12'		12'		
Center Turn Lane	No	-		-		
Median	Yes	46'		46'		
Curb and Gutter (C+G)	No	-		-		
Paved Shoulder	2 Sides	2'		2'		
Planting	No	-		-		
On-Street Parking	No	-		-		
Sidepath	No	-		-		
Sidewalk	No	-		-		
Bicycle Facility	No	-		-		

Note 1: Right-of-Way (ROW) dimension accounts for an extra 2 feet of space on back side of cross-section elements on both sides to account for variables in design and construction (extra 4 feet total added to ROW). ROW is also rounded up to the nearest whole number.

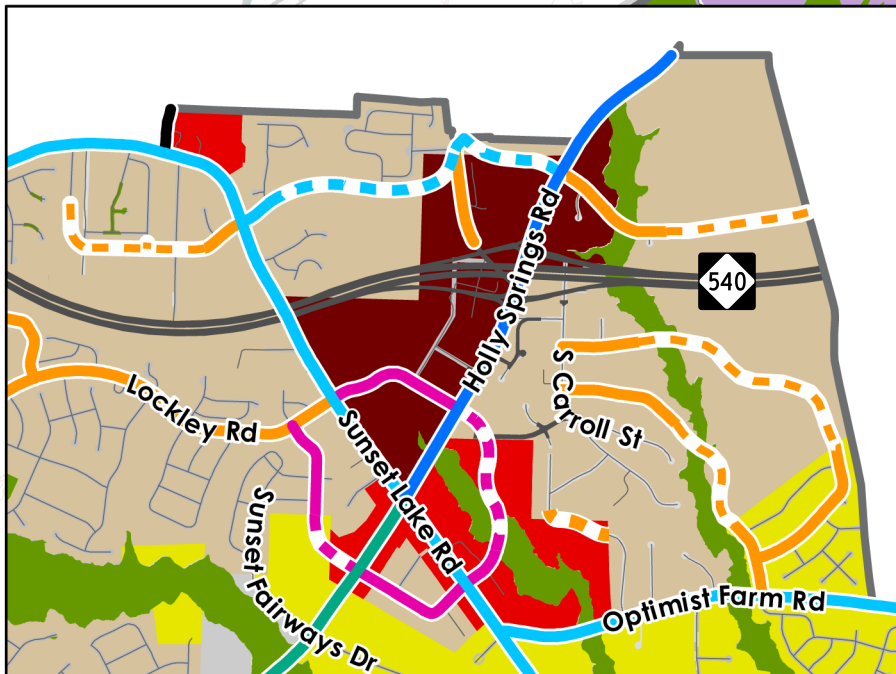
Note 2: Design elements and dimensions for Somewhat Suburban and Somewhat Urban land use characters should be considered with the respective Suburban and Urban categories.

# Cross-Section Map

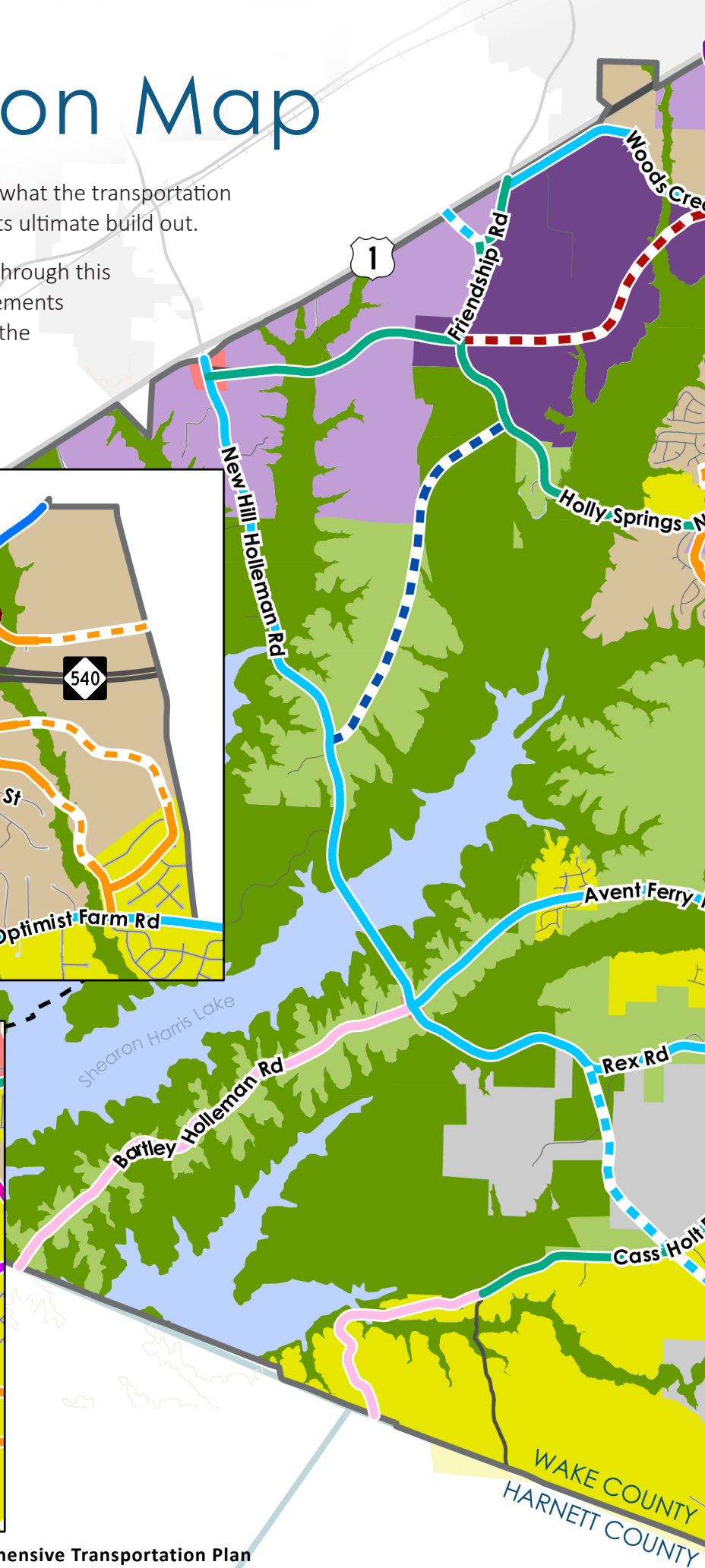
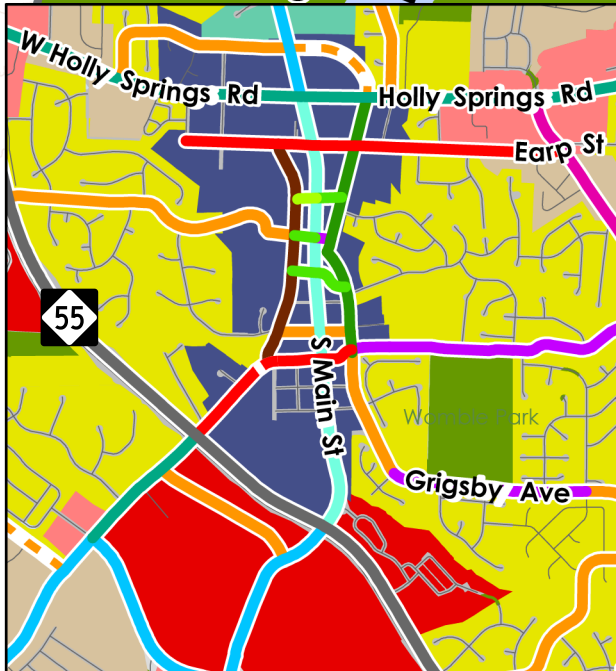
This map is a comprehensive representation of what the transportation network in Holly Springs is envisioned to be in its ultimate build out.

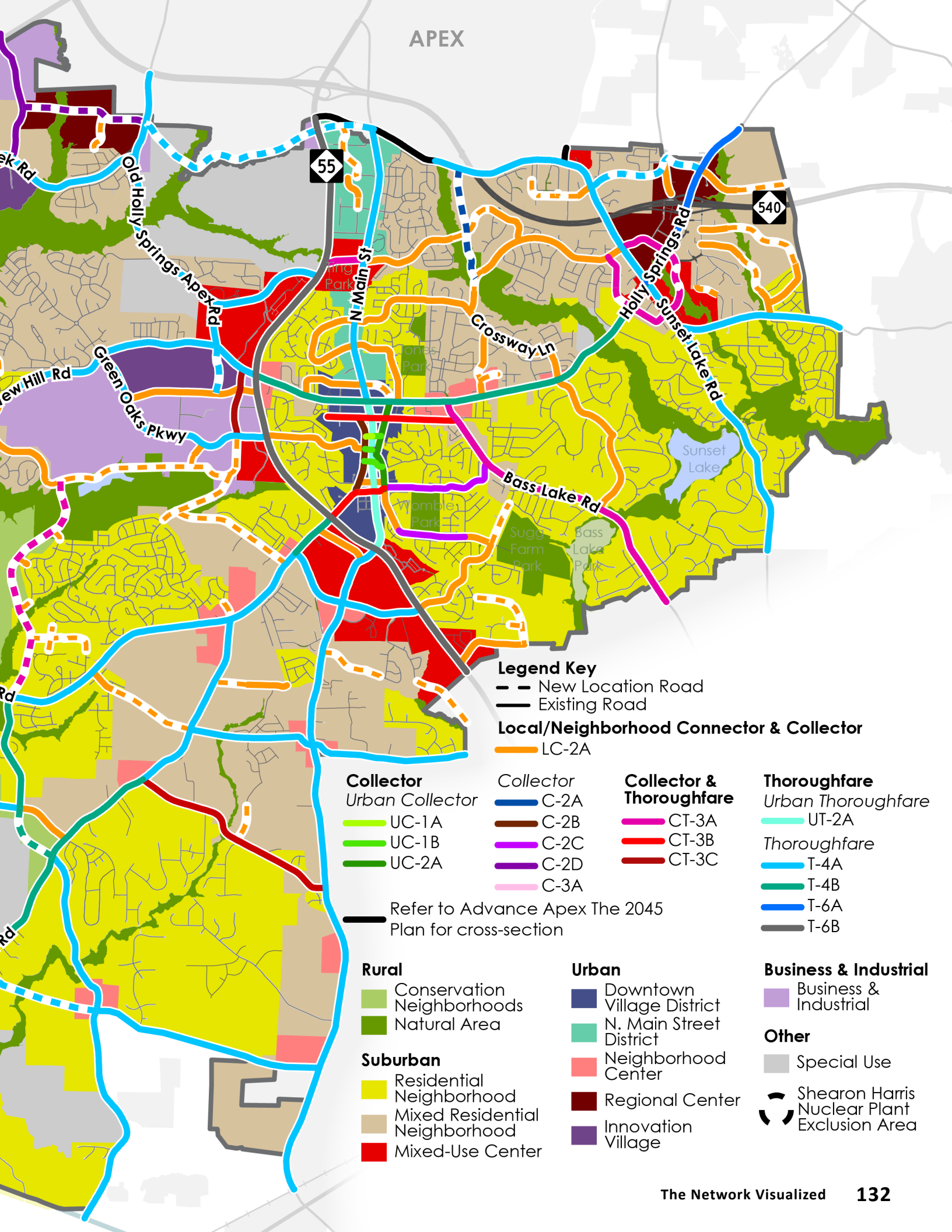
While the vision of this map can't be achieved through this CTP alone, it encompasses the cross-section elements that are both existing and proposed to capture the full transportation picture in one map.

## Northeast Gateway



## Downtown Village District





APEX

55

540

**Legend Key**

- New Location Road
- Existing Road

**Local/Neighborhood Connector & Collector**

LC-2A

**Collector**

Urban Collector

- UC-1A
- UC-1B
- UC-2A

Collector

- C-2A
- C-2B
- C-2C
- C-2D
- C-3A

**Collector & Thoroughfare**

- CT-3A
- CT-3B
- CT-3C

**Thoroughfare**

Urban Thoroughfare

- UT-2A
- Thoroughfare
- T-4A
- T-4B
- T-6A
- T-6B

Refer to Advance Apex The 2045 Plan for cross-section

**Rural**

- Conservation Neighborhoods
- Natural Area

**Suburban**

- Residential Neighborhood
- Mixed Residential Neighborhood
- Mixed-Use Center

**Urban**

- Downtown Village District
- N. Main Street District
- Neighborhood Center
- Regional Center
- Innovation Village

**Business & Industrial**

- Business & Industrial

**Other**

- Special Use
- Shearon Harris Nuclear Plant Exclusion Area

# Median Breaks

## Ways to Control Automobile Access

Medians are reserved areas that separate opposing lanes of traffic on roadways. Medians are used to control traffic movements and limit cars' access to improve traffic flow. A median break is just as it sounds—a break in a median that increases access by allowing for cars to pass through. There are several different kinds of median breaks:

### Median Crossover

The figure on the right shows a median crossover compared with a median with no break. The median crossover is a median with a gap that allows cars access to the other side of the road. This type of median break allows drivers to make a left-turns or U-turns if desired.

When new development occurs, it is important that vehicles have access to a site. By considering the location of a median crossover or median break during the design phase of a project, it will set reasonable expectations to how and where drivers can access a site.

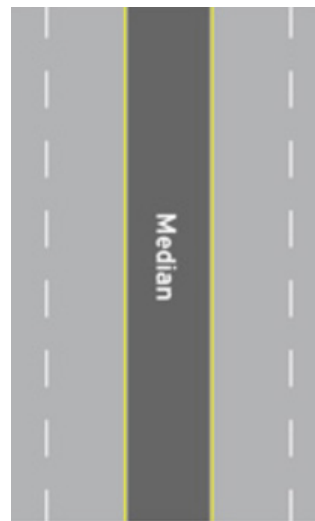
### Median Crossover with Left Turn Bay

The median crossover with left turn bay creates space for a queue of cars turning left. This type of median break is ideal for locations where there are many left-turning vehicles. In order to keep traffic moving, dedicated space for left-turning cars may be ideal.

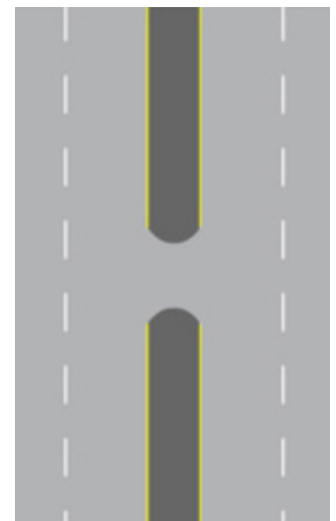
### Median Crossover with Directional Left Turn Bays

A median break with a directional left turn bay is a standard design used to enhance safety along a corridor. The break allows for queuing cars to make a protected left turn. The purpose of this design is to reduce the conflict of left-turning cars and to prevent head-on crashes.

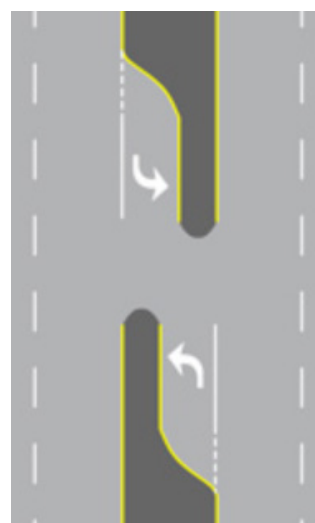
No Median Break



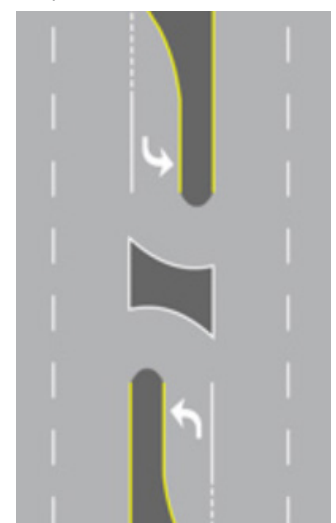
Median Crossover, No Left Turn Bay



Median Crossover, Left Turn Bay



Median Crossover, Directional Left Turn Bay



*U.S. Department of Transportation Federal Highway Administration (2014)*

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# Potential Median Breaks Map

The map below identifies the existing median break locations and potential future locations. This map does not specify the type of median break. Since median breaks are subject to Town and NCDOT approval and because needs and development are ever-changing, the potential locations identified in the map below are subject to change. By identifying potential future median break locations, the Town ultimately has a tool for communicating with developers and the continued partnership and collaboration between public and private partners should guide specific median break locations when in design.

