



Streets Research + Overview

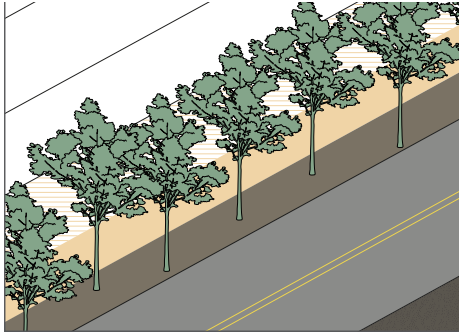
This attachment includes: key definitions, staff research, applicable sections of the Rio29 Small Area Plan and staff recommendations.

What are "streets"?

Form-based codes address the relationship between building facades and the public realm, presented in both words and diagrams/visuals. According to the Form Based Codes Institute (FBCI), public standards are one of the five main elements of a form-based code. This specifies elements in the public realm including sidewalks, travel lanes, street trees, furniture and on-street parking.

Key Definitions | Streetscape Elements

Below are brief, conceptual definitions of different types of streetscape elements recommended by the Rio29 Small Area Plan.



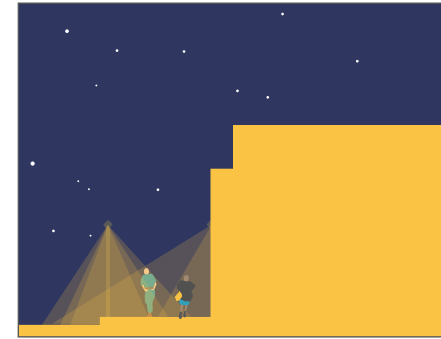
Street Trees

Trees planted along the street in the public right of way to provide shade, reduce stormwater runoff, support clean air and create a comfortable environment for street users.



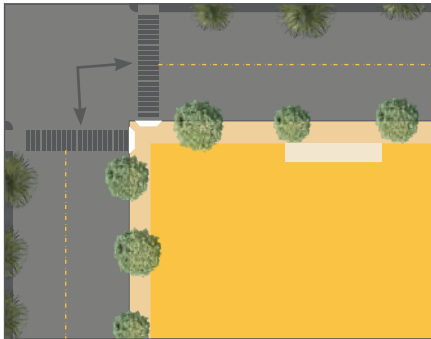
Stormwater Control Measures

Facilities or site design techniques that help to manage the path, storage and release of stormwater runoff. Examples include bioswales and inlet/outlet structures.



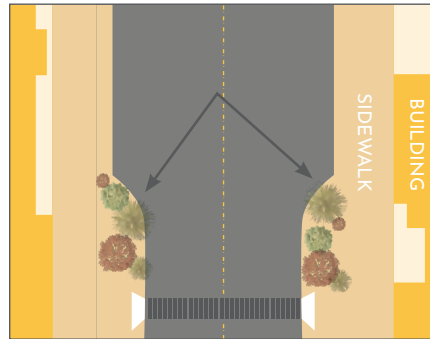
Pedestrian Scale Lighting

Street lighting that is located on the sidewalk close to the curb or within the pedestrian zone to light the walkway and create a positive, safe space for night time activities.



Marked Crosswalks

A painted portion of the roadway at an intersection that indicates space for pedestrians to access adjacent streets or properties.



Curb Extension (Bulb Outs)

An extended or wider sidewalk that reduces the distance pedestrians have to cross and increases their visibility approaching vehicles. This is a traffic calming (slowing) measure.



Pedestrian-Only Street

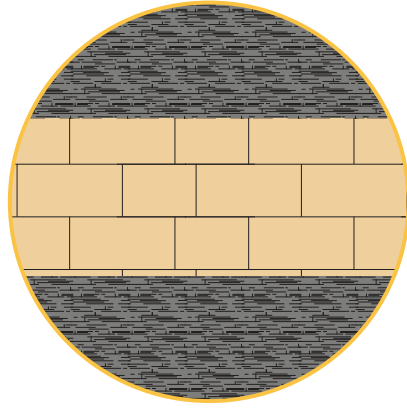
Streets closed to motorized vehicles. A local example of this type of street is the Downtown Mall in the City of Charlottesville.

Key Definitions | Streetscape Elements



Pedestrian Signals

Devices used at signalized intersections to notify pedestrians when it is safe to cross the street.



Special Paving

Paving treatments that are used to identify pedestrian spaces, bring unique character to an area and/or slow vehicular traffic



Sidewalk Planters/Landscaping

Living trees, shrubs, ground cover and/or other natural features that can be used to soften or mitigate the effects of roadways for pedestrians



High Visibility Crosswalks

Crosswalks that have highly visible design features like unique paving, flashing lights or are raised to slow vehicular traffic and enable safe space for pedestrians to cross.



Street Furniture

Features associated with a street that enhance its character and use by pedestrians, including benches, tables, waste bins, kiosks, newspaper stands, etc.



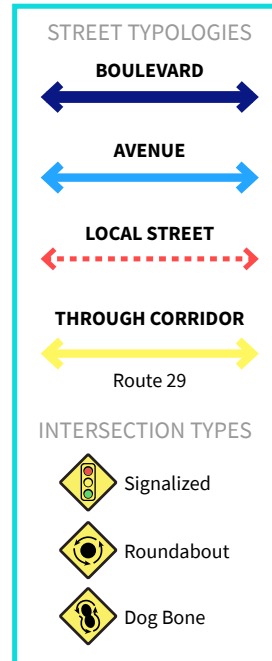
Enhanced Transit Stop

Transit waiting areas designed with amenities for waiting riders. Examples of amenities include curb extensions, benches, covered waiting areas, and/or digital updates on arrival times.

Connectivity Plan

FUTURE STREET NETWORK

The Connectivity Plan proposes a grid-like street network for Rio29. A connected grid can better connect existing and future residents on the periphery of the Plan to Rio29's center of activity (ie. the "Core" area, which is detailed in the next chapter). A connected grid can also connect neighborhoods to one another without diminishing the quality or the character of the neighborhoods within or around Rio29. Proposed streets should be designed for motorists, pedestrians, bicyclists, and transit riders. The grid network provides more direct routes to destinations that will allow people to more easily walk, bike, or drive to locations within Rio29.



Streets shown in the Connectivity Plan that are dotted convey the approximate street locations. The Street network overall shows a conceptual plan that achieves the Plan's goals for connectivity. Redevelopment and new development in Rio29 will determine the exact placement of streets.

STREET DESIGN AND SCALE

The Connectivity Plan proposes a hierarchy of streets based on street capacity (how many people, cars, bikes, and buses it can accommodate) and function. The scale and design of streets should be both a reflection of a street's capacity as well as a street's role in the network.

As an example, a street that is designed to hold a high amount of traffic can traverse through different areas of the community and serve different functions along its length. One segment can be designed to carry traffic quickly through an area and another segment of the same street can be designed as a main street, serving as a destination for the community, while still maintaining the same capacity through both segments.

In Rio29, the boulevard (Rio Road) is an example of a street serving these different functions. The boulevard is the highest capacity street that connects traffic from outside Rio29 to Rio29's activity center. Within this center, or "Core" area of Rio29 (detailed in the Character chapter), Rio Road should be designed as a main street with slower traffic speeds so that all modes of transportation can interact safely. When designed appropriately, the boulevard can maintain its high capacity through the Core without altering the neighborhood character.

The street design and function can also impact what uses are appropriate along a street. Many businesses seek busier streets that provide drive-by-traffic and therefore they often prefer to be located on a high capacity street within the slower-speed Core area. Residents, however, do not want cars driving quickly through their neighborhoods, and may choose to locate in the Core along roads where speeds are slower. The resulting street could have a mix of uses and become an activity center for the area.

Alternatively, some residents may not wish to live along the high capacity streets but still want easy access to the Core area. Local streets can provide quieter streets with

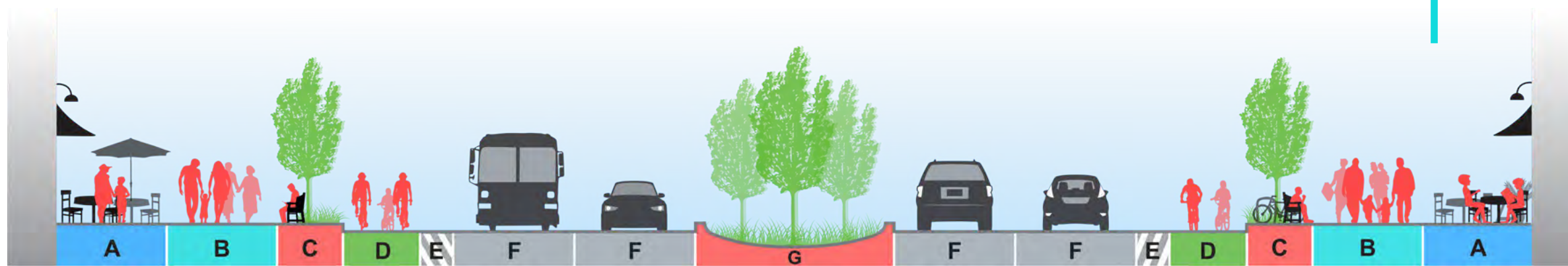
NOTE: Street sections shown on the next several pages were developed using guidance from the Virginia Department of Rail and Public Transportation's Multimodal System Design Guidelines, The National Association of City Transportation Officials Urban Street Design Guidelines, and The Virginia Department of Transportation's (VDOT) Road Design Manual. Best practice recommendations from these guidelines were adjusted to reflect existing conditions and local preferences.

Cross sections depict "optimal" dimensions or a range of allowable street element dimensions. Variations and reductions to widths may be permitted to accommodate special circumstances, such as existing streets with constrained rights-of-way, and where an equivalent alternative can be provided. Appropriate transitions to adjacent properties must be provided where width reductions are permitted. Reductions in road width may be permissible, where deemed appropriate by VDOT. Furthermore, flexibility needs to be provided to allow for streets to evolve over time as needed. All public streets are subject to VDOT approval.

Standards and Guidelines

Boulevard

Rio Road East & West



Boulevards (4 lanes across) are large scale, landscaped streets designed to be high capacity streets with low speeds. Rio Road is the only proposed Boulevard in Rio29. It is expected that Rio Road will continue to function as a high capacity 4-lane roadway that serves both local and through traffic. Significant improvements to bicycle and pedestrian facilities along Rio Road will allow this street to also serve as a bicycle and pedestrian boulevard.

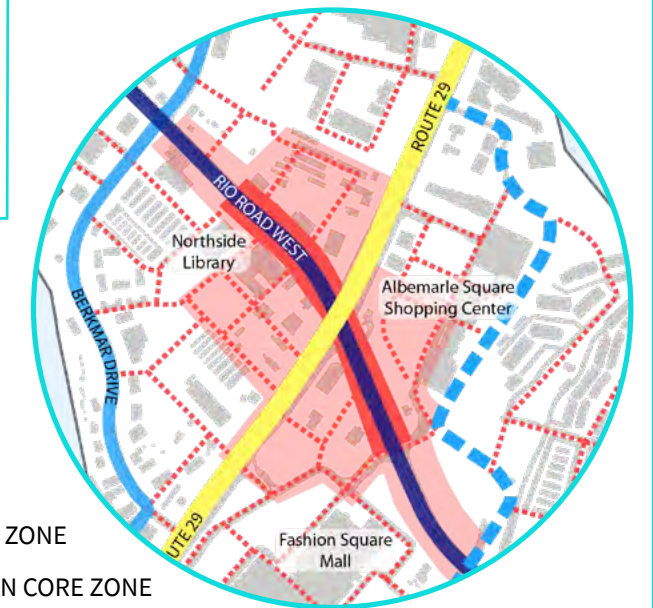
The median along Rio Road can serve a variety of purposes. It can contribute to traffic calming by being visually interesting; it can contribute to the tree canopy and beautification of the street; and it can provide a break for pedestrians crossing the street. Where space allows, the medians should also be designed to contain bioswales. Bioswales are landscape elements designed to remove debris and pollution from stormwater runoff and can be an important contributor to the regional stormwater treatment in Rio29.

Streets **Inside of the Core** are intended to be placemaking streets with speeds of 25 - 30 mph. Land uses include more retail, room for café tables, more focus on pedestrian activities/seating, and wider facilities. Parking is easily accessible: the Rio Core has plenty of off-street parking adjacent to uses.

Streets **Outside of the Core** are intended to be connectors with speeds of 30 - 35 mph. These will have less retail, more office/residential, no café tables, less space for gathering, more room for ease of travel/narrower facilities. Parking is not a central feature.

What is the Core?

The **Core** is intended to have the highest development intensity. Streets in the Core area (see map below) should have wider pedestrian sections and wider bike lanes to accommodate the heavier flow of pedestrian and bike traffic. For more information on the Core Zone, see page 25.



		Inside of the Core	Outside of the Core
		Dimensions	Dimensions
A	Frontage Zone	3'-10'	3'-10'
B	Pedestrian Zone	10'¹	6-8'¹
C	Separation Zone	6'	6'
D	Bike Lane	5'	5-7'
E	Buffer Zone	3'²	3'²
F	Lane Width	10.5'	11'
G	Median	6'-10'	6-10'

¹ A Shared-Use path may be provided in lieu of bicycle/pedestrian facilities outside of the core if deemed appropriate by Transportation Planning staff and can provide for appropriate transition to adjacent facilities.

² Buffer zone can be reduced in width where a physical barrier is provided and where appropriate transitions are provided to adjacent properties, if deemed appropriate by VDOT and Planning staff.

EXISTING CONDITIONS



Rio Road West, Looking NE



Rio Road East, Looking NW

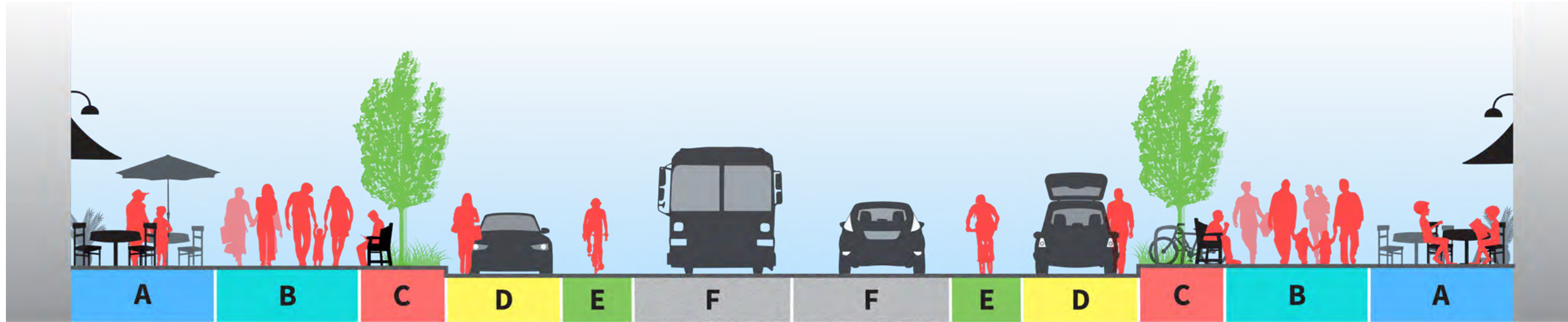
PRECEDENTS



Rendering of West Florissant Avenue "Great Streets Project" St. Louis, Missouri

Avenue

Berkmar and Hillsdale Drive



Streets **Inside of the Core** are intended to be placemaking streets with speeds of 25 - 30 mph. Land uses include more retail, room for café tables, a focus on pedestrian activities/seating, and wider facilities.

Streets **Outside of the Core** are intended to be connectors with speeds of 25 - 35 mph. These will have less retail, more office/residential, no café tables, less space for gathering, more room for ease of travel/narrower facilities.

Avenues (2 lanes across) are intermediate-sized landscaped streets designed to be medium capacity streets with low speeds. Hillsdale Drive and Berkmar Drive are both Avenues. Avenues in Rio29 have only two travel lanes but are still designed to carry a significant volume of both automobile and bicycle/pedestrian traffic. An important feature of the Connectivity Plan is the interconnection between Hillsdale and Berkmar Drive. The Plan proposes an extension of Hillsdale Drive east of Fashion Square Mall and Albemarle Square with a roundabout at Rio Road. Berkmar Drive is realigned to a signalized intersection with Route 29 and connects to the new Hillsdale Drive south of Fashion Square Mall. Alternative alignments and intersection treatments could be possible for these streets, but it is important that connectivity between the two streets be provided.

The Avenue shown for future Hillsdale Drive in the Northeast quadrant of the Plan is an alignment identified by the current property owner. However, as shown, this street would interfere with areas of preserved slopes and a future greenway trail. The final design and alignment of this portion of street should be sensitive to these features and be designed in a way to not disturb the slopes and to maintain a greenway connection in this area.

Inside of the Core **Outside of the Core**

		Dimensions	Dimensions
A	Frontage Zone	3'-10'	3'-10'¹
B	Pedestrian Zone	10'	6'-8'
C	Separation Zone	6'	6'
D	Parking Zone	8'²	8'²
E	Bike Lane	5'³	5'³
F	Lane Width	10.5'	11'

¹ Larger frontage zones could be approved by exception, when a street is near the Core, to allow for a future transition for a wider pedestrian zones and to accommodate outdoor seating as the area grows.

² Appropriate locations for on-street parking should be determined in collaboration with Planning and VDOT staff during project design. On-street parking is not expected or required for the entire length of the street.

³ A buffer may be added if necessary. A Shared-Use path may be provided in lieu of bicycle/pedestrian facilities outside of the core, if deemed appropriate by Transportation Planning staff and VDOT and can provide for appropriate transition to adjacent facilities.

EXISTING CONDITIONS



Berkmar Drive



Hillsdale Drive

PRECEDENTS

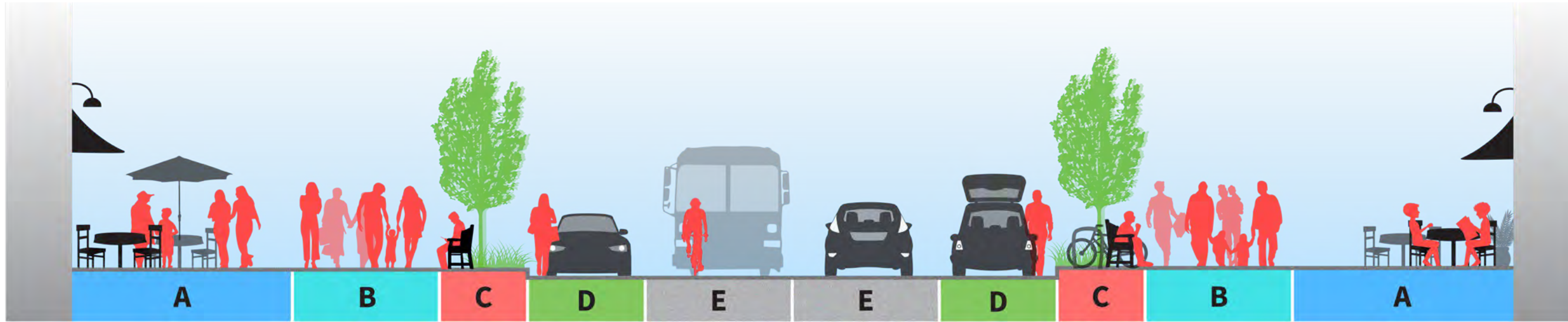


Multimodal Street Cumberland County, PA



Midtown Atlanta Atlanta, GA

Local Streets



Streets **Inside of the Core** are intended to be placemaking streets with speeds of 25 - 30 mph. Land uses include room for café tables and wider facilities.

Streets **Outside of the Core** are intended to be connectors with speeds of 30 - 35 mph. These will have no café tables, more lawns/front yard space, and narrower facilities.

Local Streets are low-capacity, low-speed streets that form the majority of Rio29's the street network. Local Streets are expected to fill in as redevelopment of private property occurs. Local Street locations on the Connectivity Plan are conceptual and do not need to be located exactly as shown. At a minimum, the same number of streets and connections should be provided and block sizes should be between 200-600 feet where possible, depending on location (see the Character Chapter for more on block size).

		Inside of the Core	Outside of the Core
		Dimensions	Dimensions
A	Frontage Zone	5'-15'	5'-15' ¹
B	Pedestrian Zone	10' ²	6'
C	Separation Zone	6'	6'
D	Parking Zone	8' ³	8' ³
E	Lane Width	9'-10'	9'-10'

¹ Larger frontage zones could be approved by exception when a street is near the Core to allow for a future transition for wider pedestrian zones and to accommodate outdoor seating as the area grows.

² Reduction to 8' pedestrian zone may be permitted where right-of-way limitations exist and appropriate transitions are provided to adjacent properties, if deemed appropriate by Planning staff.

³ Appropriate locations for on-street parking should be determined in collaboration with Planning and VDOT staff during project design. On-street parking is not expected or required for the entire length of roadways.

EXISTING CONDITIONS



Rio East Court



Greenfield Terrace

PRECEDENTS



Decatur, GA



Hudson, OH

Street Design Standards

Case Study: San Francisco Better Streets Plan

Neighborhood Residential

Neighborhood residential streets are quieter residential streets with relatively low traffic volumes and speeds. Though they have low levels of activity relative to other street types, they play a key role to support the social life of a neighborhood.

Residential streets should feel safe, comfortable, and cared for. Residents may think of the street outside their home as an extension of their home or a neighborhood commons. Improvements should focus on slowing traffic, providing useable space and amenities, and making improvements that encourage residents to take pride and ownership of the streetscape outside their front door.

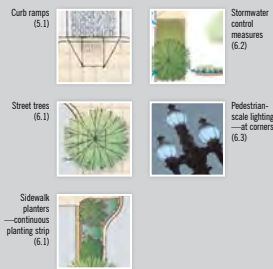
Considerations

- Need for traffic calming in some cases
- Need for increased public open space
- Opportunities for community stewardship
- Frequent driveway cuts



▲ Neighborhood residential streets are San Francisco's front yards, and should encourage neighborly interaction

Standard Improvements



Additional Guidelines

- Neighborhood residential streets with wider crossings (generally > 40') or higher traffic volumes and speeds (generally > 25 mph) should consider corner curb extensions and marked crosswalks.
- Neighborhood residential streets may include a continuous landscaped permeable strip in the Furnishings Zone.
- For specific stormwater control measures, see Section 6.2.
- Special paving in furnishings zone and site furnishings should also be considered as capital and maintenance budgets allow.

The Better Streets Plan creates a unified set of standards, guidelines, and implementation strategies to govern how the City of San Francisco designs, builds, and maintains its pedestrian environment.

The Plan seeks to balance the needs of all street users, with a particular focus on the pedestrian environment and how streets can be used as public space. The Plan reflects the understanding that the pedestrian environment is about much more than just transportation – that streets serve a multitude of social, recreational and ecological needs that must be considered when deciding on the most appropriate design.

While this is not an example of a form-based code, staff used this Plan as a reference for developing design standards by street type for the Rio29 area.

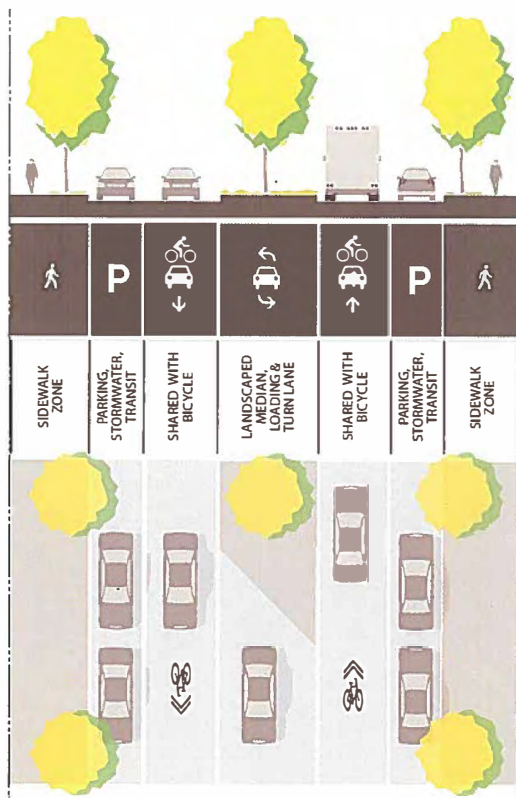
Link: <https://sfplanning.org/resource/better-streets-plan>

Street Design Standards

Case Study: City of Lacey, WA - Woodland District

FIGURES 16.24.050-2 THROUGH 9, STREET AND THROUGH CONNECTION TYPES

FIGURE 16.24.050-2, 6TH AVENUE



The Woodland District Hybrid Form-Based Code is an example of a code that works to transition an auto-oriented suburban area into a walkable urban and transit-ready environment. According to the Form-Based Code Institute (FBCI), innovations worthy of emulation include the distinct descriptive intents for each of the three designated districts and the definitions and illustrations of street types.

Link: <https://formbasedcodes.org/content/uploads/2016/05/Ordinance-1487-Woodland-District-Form-Based-Code-02.25.16.pdf>



Staff Recommendation

Staff recommends using the Rio29 Small Area Plan's Future Street Network Map to establish the basis for Rio29's conceptual street network. The sections for each street type (Boulevard, Avenue and Local Streets) shall be used in conjunction with the following street improvements table to develop design standards for each street type.

These "standard", "optional" and "not permitted" street improvements were developed in collaboration with the Rio29 Steering Committee and through online and in-person community engagement (Attachment 3).

How might this look for the Rio29 area?

Below is a list of proposed street types for the Rio29 area. Destination streets are a new street type crafted during this phase through work with the Steering Committee.

Boulevard

Boulevards are 4-lane, landscaped streets designed to be high capacity with low speeds. Rio Road is the only proposed Boulevard in the Small Area Plan. It is expected that Rio Road will continue to function as a high capacity 4-lane roadway that serves both local and through traffic.

Avenue

Avenues are 2-lane, intermediate-sized landscaped streets designed to be medium capacity with low speeds. Hillsdale Drive and Berkmar Drive are both Avenues.

Local

Local streets are low-capacity, low-speed streets that form the majority of Rio29's street network. Local streets are expected to fill in as the redevelopment of private property occurs. Local Street locations in the Connectivity Plan are conceptual and do not need to be located exactly as shown. At minimum, the same number of streets and connections should be provided with specified block sizes.

Destination

Destination streets are intended to include all Local Streets *inside the Core* and may extend into other character areas. These streets have a higher level of standard improvements, concentration of mixed uses, street amenities and public spaces. Essentially, these "destinations" are places people go to. Destination streets should be continuous, not interrupted and have logical extensions from the Core to other character areas.

Rio29 Street Improvements Table

	Boulevard	Avenue	Local	Destination
Lighting	S	S ³	S	S
Street Trees	S	S	S	S
Street Furniture	S	O	O	S
High Visibility Crosswalks with Signals	S ¹	S	S ⁴	S ⁶
Landscaped Medians	S	O	O	O
Enhanced Transit Stop ⁵	S ²	S	S ⁵	S
Protected Bicycle Facilities	S	O	O	O
Bike Parking	S	O	O	S
Shared Use Path	O	O ¹	O	O
Special Pavers	O	O	O	S
Pedestrian-Only Streets	NP	NP	O	O
Green Infrastructure/ Stormwater Control Measures	O	O	O	S
On-Street Parking	NP	O	O	S

S¹: High visibility crosswalks with a signal are required, but occur at a lower frequency than on local streets

S²: On Boulevards, transit stops must have an associated bus pullout

S³: Lighting at a specified interval is required, but at a less frequent interval than Boulevards.

S⁴: Marked crosswalks are required on Local Streets. High visibility and signalized crosswalks are not.

Enhanced Transit Stop⁵: Enhanced transit stops are only required at locations that are currently served or will be served by CAT in the future.

S⁶: Marked crosswalks using special pavers are required.

O¹: Shared use paths may be provided in lieu of on-street protected bike facilities.

S = Standard improvement (required)

O = Optional improvement

NP = Not Permitted