



Image Credit: Oliver Design Studio

# 3

# PUBLIC REALM FEATURES

## **3A Streetscapes**

**3A.1 Paving in the Sidewalk and Amenity Zone**

**3A.2 Paving in the Building Zone**

**3A.3 Streetscape Furnishings and Lighting**

**3A.4 Trees**

**3A.5 Wayfinding & Interpretive Signage**

## **3B Linear Parks**

**3B.1 Livability Spines**

**3B.2 Ecological Spines**

**3B.3 Stormwater Management**

# 3

## PUBLIC REALM FEATURES

### ORGANIZING FRAMEWORK OF THE PUBLIC REALM

This chapter provides urban design guidance for public realm features, including streetscapes, linear parks, and stormwater management facilities. Additional guidance on public realm design can be found in Chapter 5, which addresses the design of Richmond Highway Transit Boulevard streetscapes and frontage, and in Chapter 6, which includes design guidance on the urban design features that distinguish individual CBCs.

As illustrated in *Graphics 2-7*, a common set of public realm features creates an organizing framework for the Richmond Highway Transit Boulevard and for each CBC, as described below. Graphic 2 illustrates these features on an area-wide scale, while *Graphics 3-7* provide details of public realm features within each CBC.

**Richmond Highway Transit Boulevard:** Includes much of the BRT system and stations, adjacent vehicular travel lanes, and associated streetscape zones and plazas.

**Gateway Streetscapes:** These are relatively short streetscape types, running perpendicular to the Richmond Highway Transit Boulevard, that link BRT station areas to the internal street networks of CBCs and that serve as gateways into the CBCs.

**Neighborhood Streetscapes:** These are streetscape types that comprise much of the internal street network within each CBC.

**Legacy Corridor (Hybla Valley-Gum Springs):** This is a special streetscape type, which highlights and interprets the history of the Hybla Valley-Gum Springs community. *Note:* The alignment and design of the Legacy Corridor is not depicted in Graphics 7A and 7B but is addressed in Chapter 6.

**Livability Spines:** These are specialized streets with linear parks that have enhanced pedestrian and bicycle connectivity along both sides of the roadway. These streets are located within the North Gateway, Penn Daw, Beacon/Groveton, and Woodlawn CBCs. The design of Livability Spines is addressed in Section 3B.1 of this chapter.

**Ecological Spines:** Linear parks along enhanced or daylighted streams. Ecological Spines are located within the North Gateway, Hybla Valley-Gum Springs, and Woodlawn CBCs. The design of each of the four types of Ecological Spines is addressed in Section 3B.2 of this chapter.

**Parks and Plazas:** These are the public open spaces within CBCs, some of which serve as major focal points and gathering spaces.

**Transit Plazas/Intersection Plazas:** These are specialized plazas at each BRT station. *Transit Plazas* are located at street corners within private developments. *Intersection Plazas* are plazas located within the public rights-of-way between Transit Plazas and the edge of curb, where pedestrians and bicyclists mix.

**Cultural Corridor (Woodlawn):** This is a proposed network of multi-use trails in the Woodlawn CBC. The Cultural Corridor should link heritage destinations while highlighting and interpreting aspects of the area's history along the trail route. *Note:* The Cultural Corridor is not depicted on *Graphic 7*, showing the Woodlawn CBC, because the route had not been finalized at the time of publication.

GRAPHIC 2: PUBLIC REALM FRAMEWORK MAP



GRAPHIC 3: NORTH GATEWAY CBC - PUBLIC REALM FRAMEWORK MAP



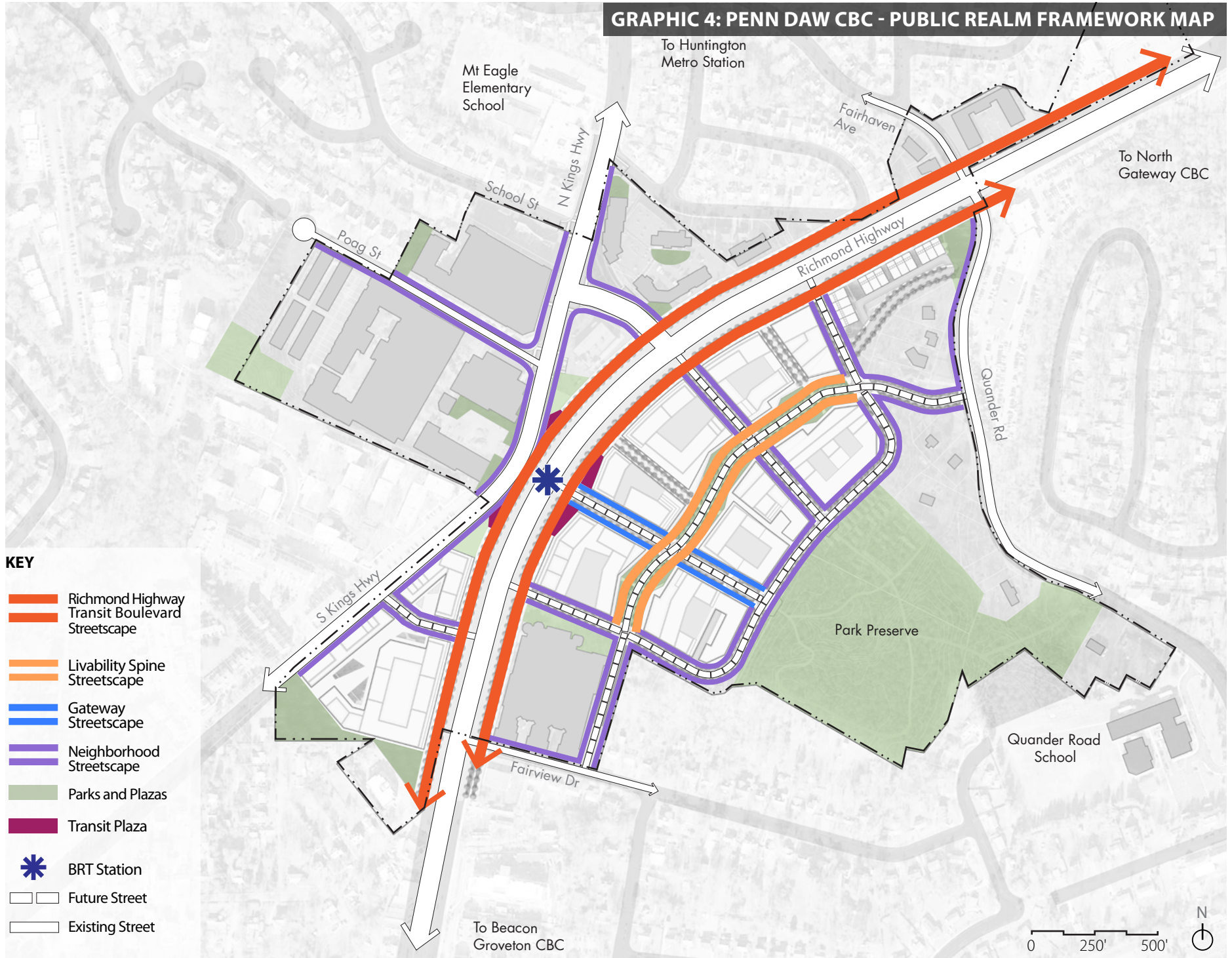
**NOTE:** Maps for the North Gateway CBC are pending approval of Plan Amendment 2018-IV-MV5

KEY

-  Richmond Highway Transit Boulevard Streetscape
-  Livability Spine Streetscape
-  Ecological Spine / Linear Park
-  Neighborhood Streetscape
-  Parks and Plazas
-  Future Street
-  Existing Street



GRAPHIC 4: PENN DAW CBC - PUBLIC REALM FRAMEWORK MAP

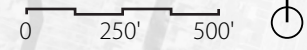
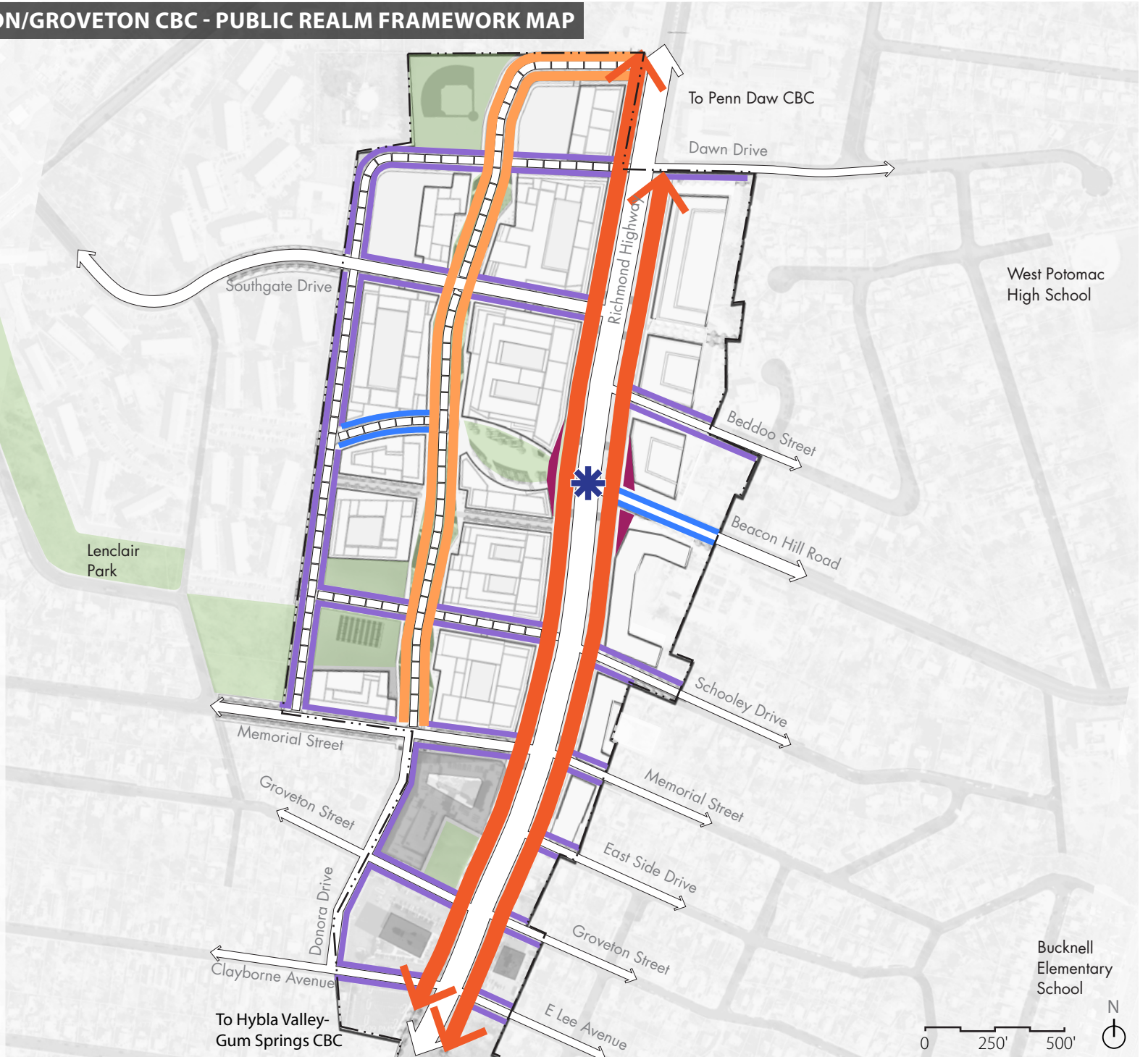


- KEY**
- Richmond Highway Transit Boulevard Streetscape
  - Livability Spine Streetscape
  - Gateway Streetscape
  - Neighborhood Streetscape
  - Parks and Plazas
  - Transit Plaza
  - BRT Station
  - Future Street
  - Existing Street

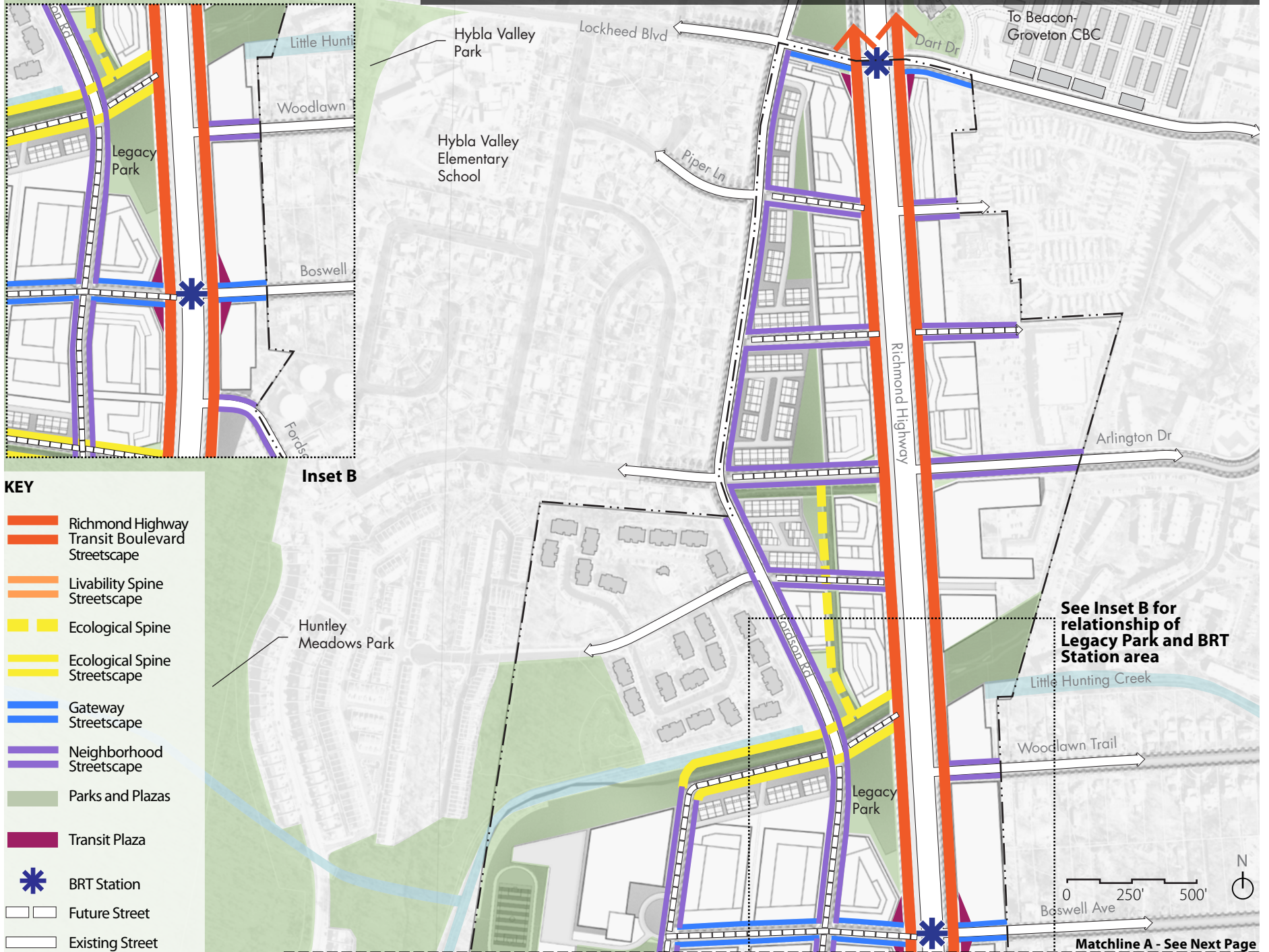
GRAPHIC 5: BEACON/GROVETON CBC - PUBLIC REALM FRAMEWORK MAP

KEY

-  Richmond Highway  
Transit Boulevard  
Streetscape
-  Livability Spine  
Streetscape
-  Gateway  
Streetscape
-  Neighborhood  
Streetscape
-  Parks and Plazas
-  Transit Plaza
-  BRT Station
-  Future Street
-  Existing Street



GRAPHIC 6A: HYBLA VALLEY-GUM SPRINGS CBC - PUBLIC REALM FRAMEWORK MAP



- KEY**
- Richmond Highway Transit Boulevard Streetscape
  - Livability Spine Streetscape
  - Ecological Spine
  - Ecological Spine Streetscape
  - Gateway Streetscape
  - Neighborhood Streetscape
  - Parks and Plazas
  - Transit Plaza
  - BRT Station
  - Future Street
  - Existing Street

**Inset B**

**See Inset B for relationship of Legacy Park and BRT Station area**

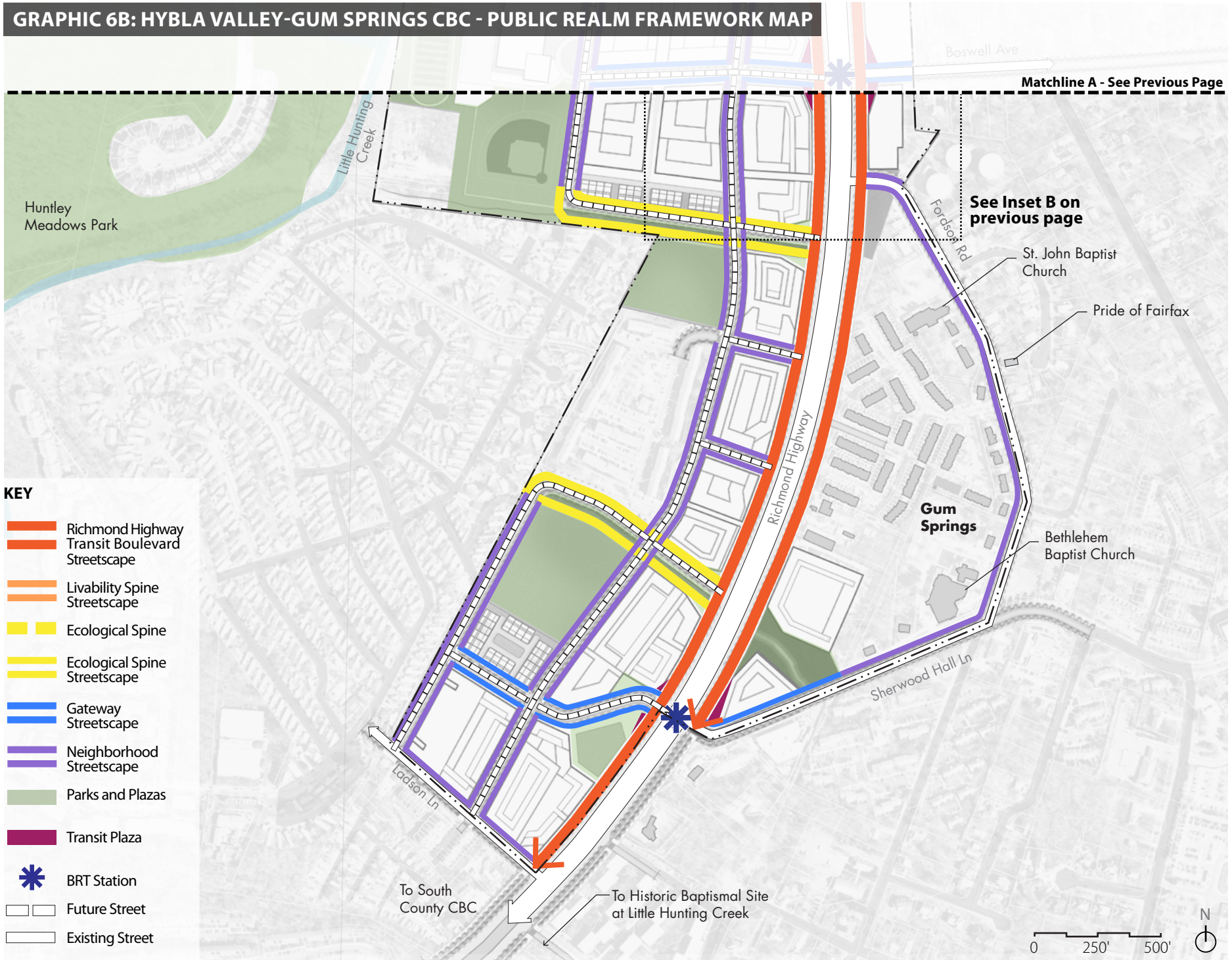


**Matchline A - See Next Page**

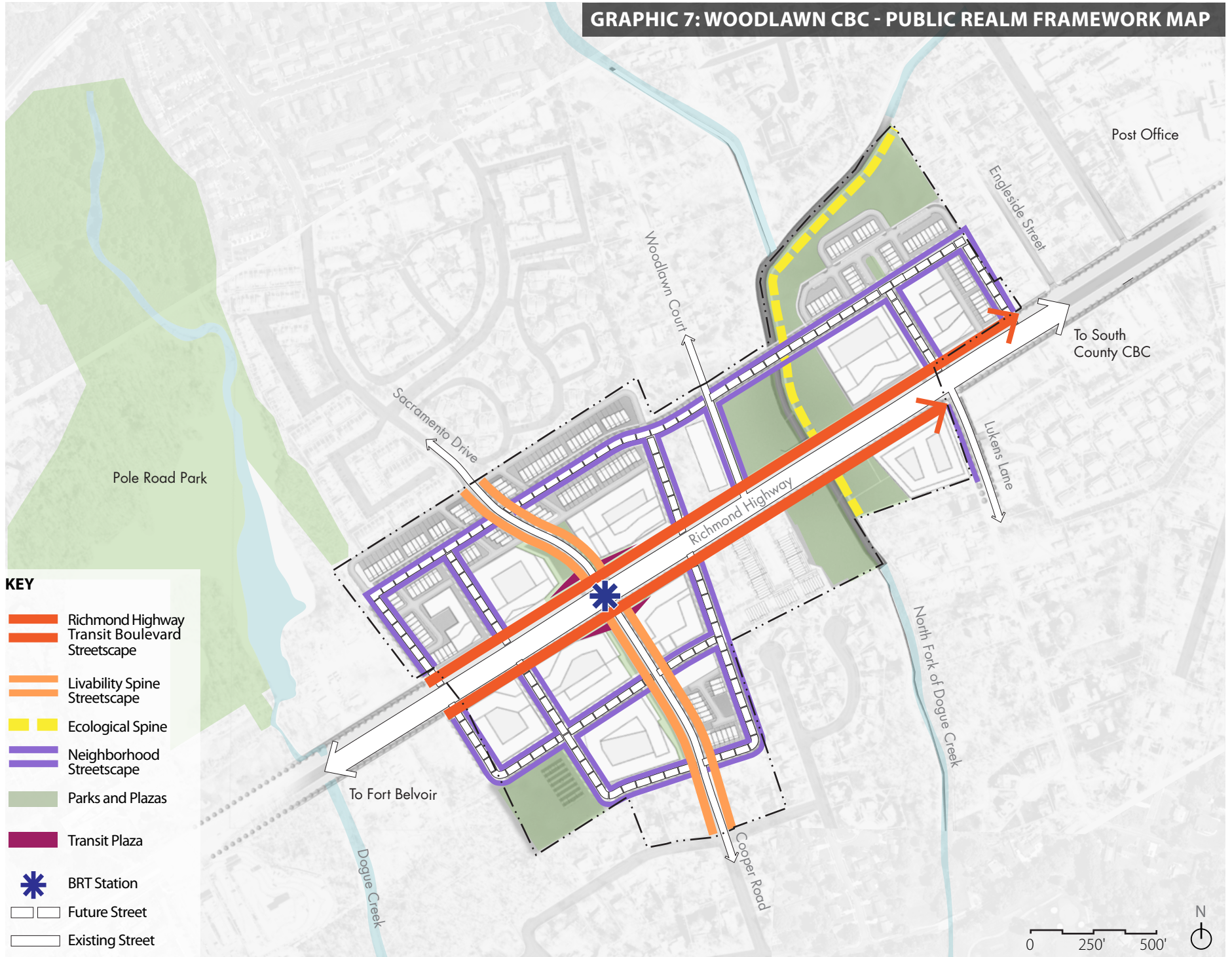


GRAPHIC 6B: HYBLA VALLEY-GUM SPRINGS CBC - PUBLIC REALM FRAMEWORK MAP

PUBLIC REALM FEATURES



GRAPHIC 7: WOODLAWN CBC - PUBLIC REALM FRAMEWORK MAP



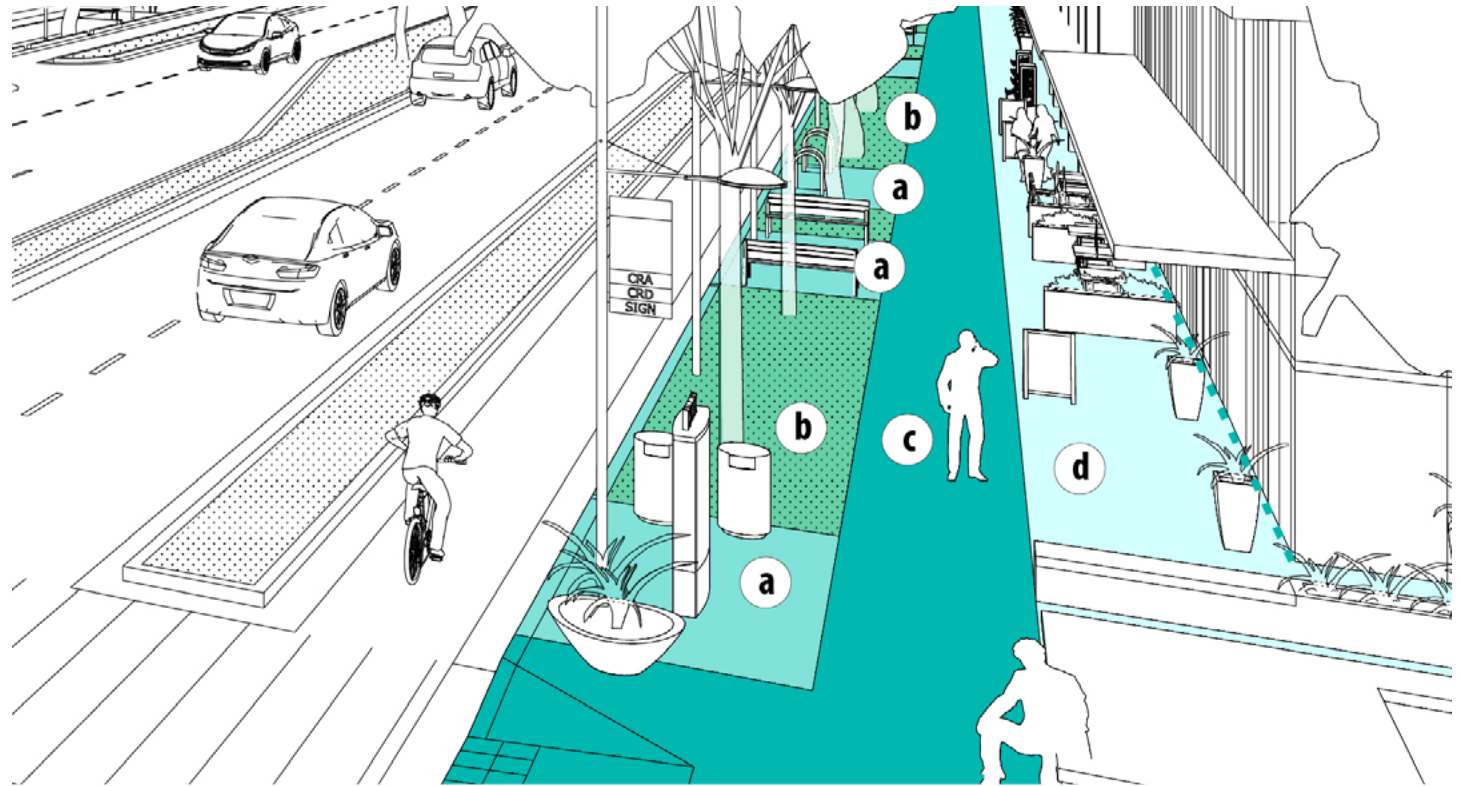
- KEY**
- Richmond Highway Transit Boulevard Streetscape
  - Livability Spine Streetscape
  - Ecological Spine
  - Neighborhood Streetscape
  - Parks and Plazas
  - Transit Plaza
  - BRT Station
  - Future Street
  - Existing Street

# 3A STREETSCAPES

The design guidance in this section addresses the different elements that comprise the streetscape, including paving, furnishings, plantings, and wayfinding. The guidance builds on that contained in *Volume I*, pertaining to the design, selection, and location of these elements.

Many recommendations in this chapter refer to specific zones of the streetscape, including the Amenity Zone, the Landscape Panel, the sidewalk, and the Building Zone. The location and function of each of these streetscape zones is summarized in *Graphic 8*. **All streetscape dimensions and the full cross-sections are provided in the “Urban Street Network Design” section of the Comprehensive Plan.**

**GRAPHIC 8: STREETSCAPE ZONES**



**a AMENITY ZONE**  
Designated for seating, bike racks and furnishings

**b LANDSCAPE PANEL**  
Reserved for street trees and plantings

**c SIDEWALK**  
Reserved exclusively for pedestrian movement without any obstructions

**d BUILDING ZONE**  
Designated for building-related elements including outdoor dining, awnings, plantings, porches, etc.

The paving for streetscapes in the Richmond Highway area is designed to serve multiple purposes. Paving should be functional, durable, easy to maintain, environmentally conscious, and easy for pedestrians of all ages and abilities to navigate. It should also provide aesthetic and placemaking benefits by helping to define the visual character and tie the area together as a whole. In select locations, the use of special pavers provides visual cues that highlight transitions in character and use.

*Suggested paving options are provided in Table 1; however, these options are not prescriptive. Alternative paving materials are acceptable as long they meet the intent of these guidelines and match the character envisioned for the Richmond Highway area.*

## DESIGN PRINCIPLES

**For consistency and durability, concrete should serve as the primary paving material.** Poured-in-place concrete is recommended as the primary paving material for streetscapes. In limited instances, a select palette of special concrete pavers should be utilized as accents to highlight special areas (e.g., Amenity Zones, Transit Plazas, Intersection Plazas, and connection points along Livability Spine walkways).

**Paving colors should integrate well in either traditional or contemporary urban environments, while enabling visual contrasts with other streetscape elements.** Paver colors should mix traditional reds into a predominately grey base to visually integrate with adjacent concrete sidewalks. Larger, rectilinear pavers provide a contemporary appearance while reducing the number of joints and maintenance. In general, paving materials and colors should be neutral and should highlight visual contrasts with vertical elements such as street furnishings, plantings, signage, and public art.

## DESIGN STRATEGIES

### 1 SIDEWALK PAVING MATERIAL

- A. Poured-in-place concrete should serve as the primary paving material for sidewalks due to its durability, ease of maintenance, lower cost relative to other materials, and ability to achieve flat and smooth surfaces for maximum accessibility. Poured-in-place concrete should be installed with a 3-foot x 3-foot joint pattern and a brushed finish. If the sidewalk is less than 6-foot wide, the scoring pattern should be half the width of the sidewalk.

### 2 AMENITY ZONE PAVING MATERIAL

- A. Special precast concrete pavers should serve as the primary paving material for the Amenity Zone of all streetscape types except for the Richmond Highway Transit Boulevard. The Richmond Highway Transit Boulevard streetscape does not have Amenity Zones in the Landscape Panel. Instead, special concrete pavers should be incorporated into buffer strips and into the Transit and Intersection Plazas (see Chapter 5 for more information).
  - i. Pavers should be rectilinear in shape with approximate dimensions of either 4-inches by 16-inches or 6-inches by 18-inches, depending on the selected manufacturer.
  - ii. Paver colors should include a mix of grey and red tones (75% grey, 25% red). Pavers with blended or high-contrast colors should be avoided.
  - iii. Pavers should be installed in a random “running bond” pattern, as illustrated in *Table 1*.

*Graphic 9 illustrates paving along Gateway and Neighborhood Streetscapes and Graphics 3-7 for maps showing streetscape types in each CBC.*

# 3A.1 PAVING IN THE SIDEWALK AND AMENITY ZONE

**STANDARD PAVING: POURED-IN-PLACE CONCRETE**



**TABLE 1: SUGGESTED SPECIFICATIONS FOR PAVING**

POURED-IN-PLACE (PIP) CONCRETE: SUGGESTED SPECIFICATIONS	
<b>Color</b>	<ul style="list-style-type: none"> <li>• Untinted, standard aggregate</li> </ul>
<b>Pattern &amp; Finish</b>	<ul style="list-style-type: none"> <li>• 3-feet x 3-feet joint pattern, or half the width of the sidewalk if less than 6-feet wide</li> <li>• Brushed finish</li> </ul>
<b>Application Locations</b>	<ul style="list-style-type: none"> <li>• All streetscape zones except those designated for special paving (see suggested specifications for precast concrete pavers below)</li> <li>• Driveway aprons</li> </ul>

**SPECIAL PAVING: PRECAST CONCRETE PAVERS (RANDOM RUNNING BOND PATTERN)**

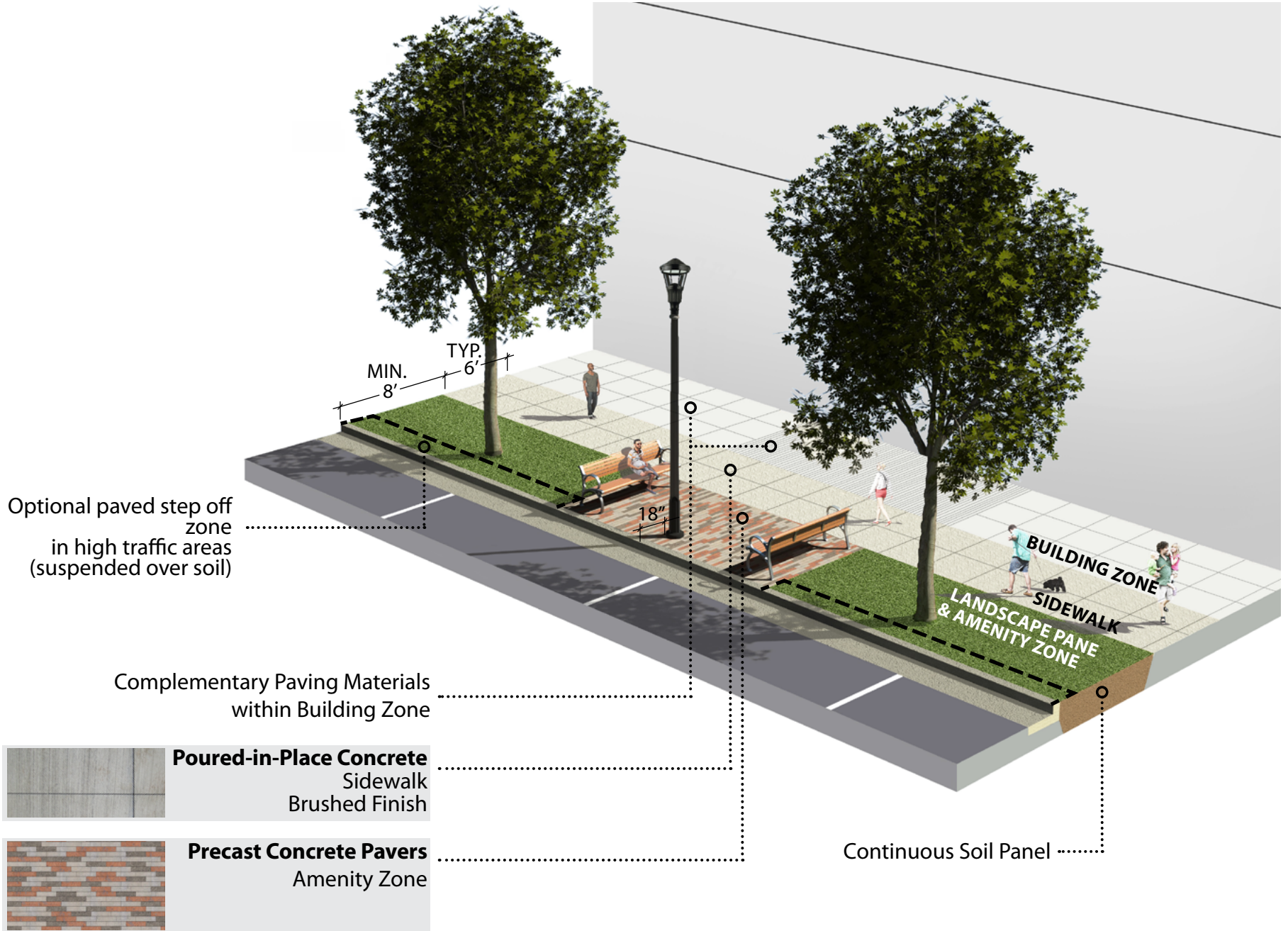


PRECAST CONCRETE PAVER: SUGGESTED SPECIFICATIONS	
<b>Color</b>	<ul style="list-style-type: none"> <li>• Blend of grey and red tones (75% grey, 25% red)</li> </ul>
<b>Pattern &amp; Finish</b>	<ul style="list-style-type: none"> <li>• Rectilinear/elongated pavers</li> <li>• Random running bond pattern</li> </ul>
<b>Application Locations</b>	<ul style="list-style-type: none"> <li>• Amenity Zones along Gateway, Neighborhood, and Livability Spine Streetscapes</li> <li>• Transit Plazas and Intersection Plazas at BRT stations</li> </ul>

**PRECAST CONCRETE PAVER MANUFACTURER OPTIONS**

Option 1:		
<i>Unilock</i>	<b>Paver Size:</b> 4"x16" (Promenade Plank paver) 2.75"-4" thick	<b>Paver 1 (25% of blend):</b> <i>Il Campo Granite (Brushed)</i>
		<b>Paver 2 (50% of blend):</b> <i>Premier (Enduracolor) Opal</i>
		<b>Paver 3 (25% of blend):</b> <i>Premier (Enduracolor) Red</i>
Option 2:		
<i>Hanover</i>	<b>Paver Size:</b> 6"x18" (Traditional Prest Brick) 2"-3" thick	<b>Paver Type 1 (25% of blend):</b> <i>Traditional Prest Brick- Charcoal</i>
		<b>Paver Type 2 (50% of blend):</b> <i>Traditional Prest Brick- Natural</i>
		<b>Paver Type 3 (25% of blend):</b> <i>Traditional Prest Brick- Quarry Red</i>

GRAPHIC 9: GATEWAY AND NEIGHBORHOOD STREETSCAPES



## 3A.2 PAVING IN THE BUILDING ZONE

### DESIGN PRINCIPLES

**Within the Building Zone, there is an opportunity for greater flexibility and creativity in paving design.** Due to its location on private property, outside of the VDOT right-of-way, a broader palette of materials and colors is suggested, provided that the paving treatment does not interrupt the unified character of the streetscape as a whole.

### DESIGN STRATEGIES

#### 1 MATERIALS AND TREATMENTS

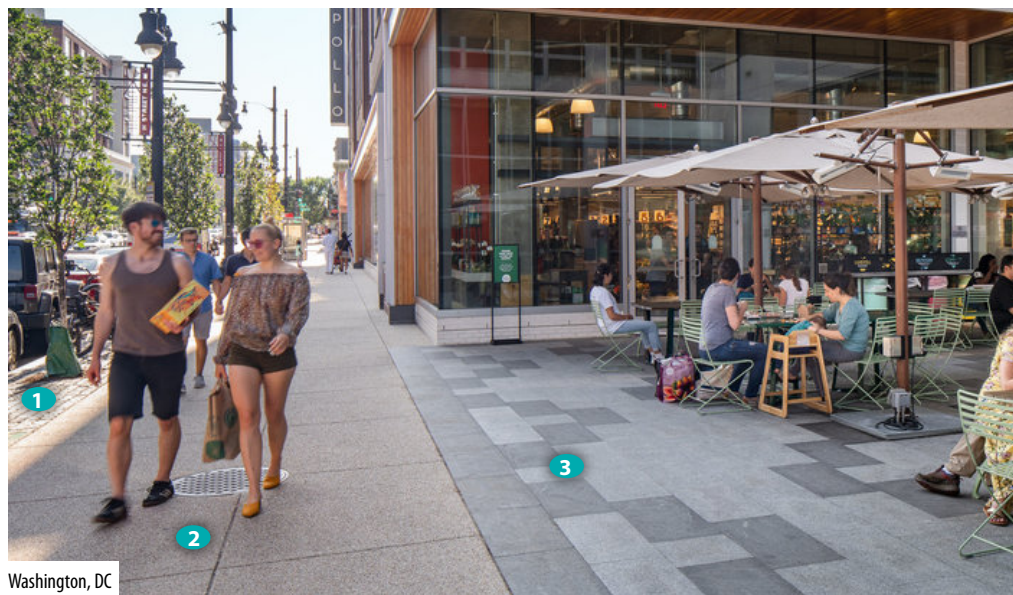
- A. Paving materials and paving design in the Building Zone should be complementary to, and compatible with, the character of the adjacent development and the design of the streetscape.

- B. Paving materials may include poured-in-place concrete, precast concrete pavers, or other high-quality paving materials.
- C. Changes in paving patterns are encouraged as a means of providing visual cues that signal changes in pedestrian patterns or land use. For example, special paving treatments may accentuate and demarcate building entrances or other zones of activity, such as outdoor seating areas.



#### REFERENCES FOR PAVING

[Volume I Urban Design Guidelines \(Sections 2A.1, 2G, 2L, and Appendix A2\)](#)  
[United States Access Board, Public Rights-of-Way Accessibility Guidelines \(PROWAG\)](#)



#### RIGHT

A streetscape that includes a compatible paving material in the Building Zone

Image Credit: Landscape Architecture Bureau

Washington, DC

- 1 This Amenity Zone is paved with pavers
- 2 This Sidewalk is paved with poured-in-place concrete
- 3 This Building Zone is paved with pavers that are compatible the those in the Amenity Zone and the Sidewalk

Streetscape furnishings - which include benches and other seating, bicycle racks, bollards, wayfinding and interpretive signs, street lights, and trash and recycling receptacles - add both functionality and vitality to the pedestrian environment. In addition to helping pedestrians feel safe and comfortable, these elements also shape the aesthetic character of a place. Along with paving, the selection and application of furnishings should help to define and unify the Richmond Highway area, while also influencing how people experience the area on foot.



Barcelona, Spain



Chicago, IL

## DESIGN PRINCIPLES

**Street furnishings should contribute to a unified visual character in the Richmond Highway area while helping to establish each CBC's context.** Two sets of furnishing options, one for the North Area and one for the South Area, are a means to unify large portions of the Richmond Highway area. While furnishings in the North and South Areas will each have a different style, certain features and materials should be consistent to provide a coordinated appearance.

**Furnishing styles should emphasize the shift between the North Area and South Area along the Richmond Highway Transit Boulevard.** The North Area and South Area (see *Graphic 10*) are treated with different families of furnishings in order to respond to and reflect the shift in character from a more contemporary aesthetic (North Area) to a more traditional one (South Area) that is compatible with the area's heritage resources.

*Suggested furnishing options for both the North and South Areas are provided in Tables 2 and 3; however, these options are not prescriptive. Alternative furnishings are acceptable as long they meet the intent of these guidelines and match the character envisioned for the Richmond Highway area.*



### REFERENCES FOR FURNISHINGS AND LIGHTING

[Volume I Urban Design Guidelines for CRDs and CRAs \(Sections 2E and 2F\)](#)  
[United States Access Board, Public Rights-of-Way Accessibility Guidelines \(PROWAG\)](#)

# 3A.3 STREETSCAPE FURNISHINGS AND LIGHTING

#### TOP LEFT

An example of contemporary furnishings  
 Image Credits: Santa and Cole

#### BOTTOM LEFT

An example of traditional furnishings  
 Image Credits: Santa and Cole



## DESIGN STRATEGIES

### 1 MATERIALS AND STYLE

- A. In selecting furnishings, aesthetic considerations should be balanced with functional concerns such as durability, ease of maintenance, and comfort. Furnishing materials and styles should adhere to the following:

#### North Area (North Gateway, Penn Daw, Beacon/Groveton)

- i. Furnishings in the North Area (North Gateway, Penn Daw, Beacon/Groveton) and adjacent SNAs should reflect a more contemporary aesthetic, characterized by clean, simple, and straight lines and an emphasis on grey/aluminum and black as predominant colors and materials, along with hardwood or synthetic wood.

#### South Area (Hybla Valley-Gum Springs, South County, Woodlawn)

- ii. Furnishings in the South Area (Hybla Valley-Gum Springs, South County, and Woodlawn) and adjacent SNAs should be characterized by a more traditional aesthetic that takes cues from traditional architecture and the area's heritage resources. These furnishings should incorporate curvilinear designs and should emphasize black as the predominant color, along with hardwood and synthetic wood materials.

#### General Criteria (All Areas)

- iii. Seating with a backrest is preferred; however, backed seating may be supplemented with additional backless options.
- iv. A broad palette of furnishings may be used in the Building Zone. Such furnishings should be complementary to, and compatible with, the North and South Area furnishings. Movable seating of all types is encouraged in the Building Zone for maximum flexibility in all weather conditions.

### 2 PLACEMENT

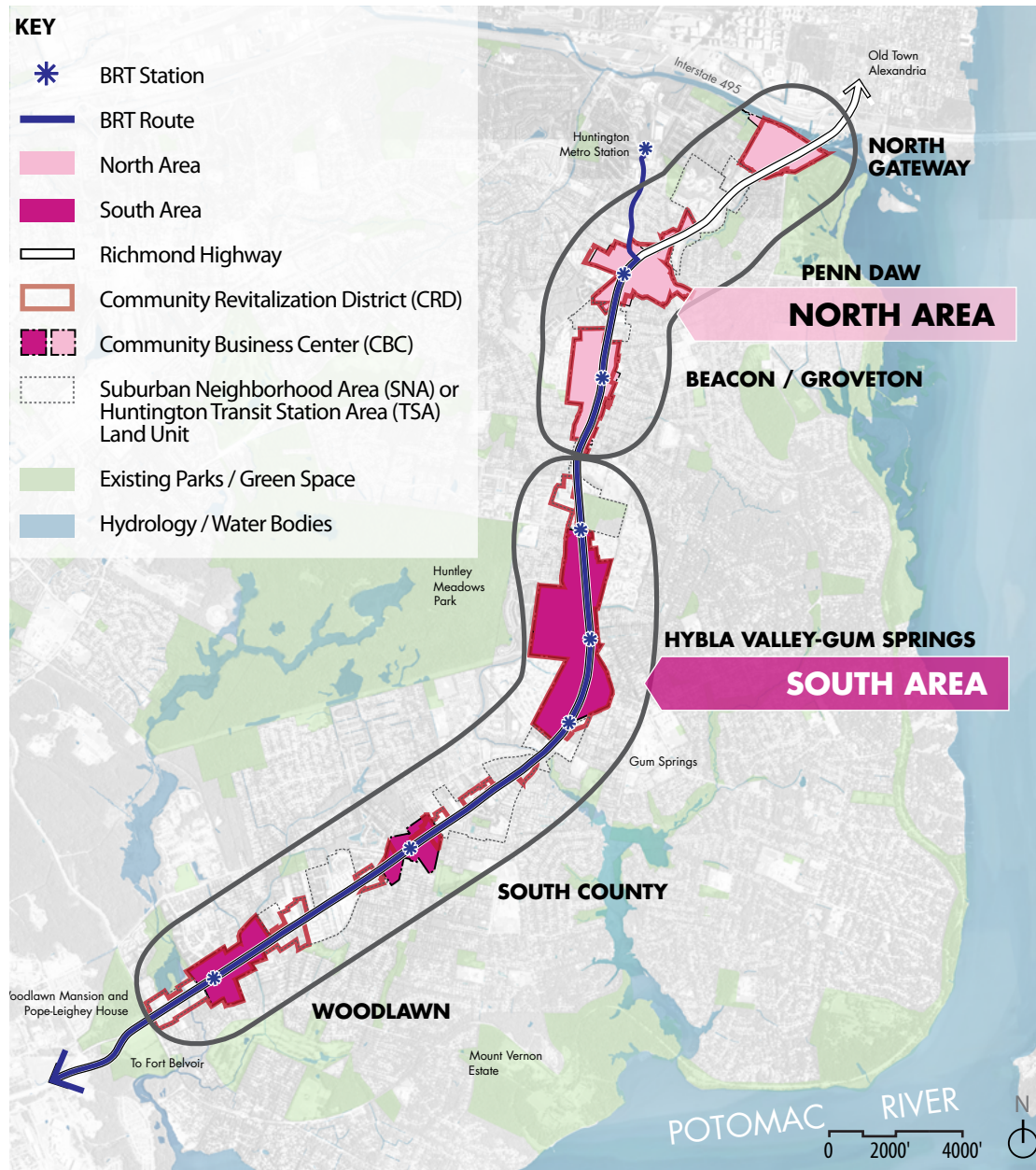
- A. Placement of furnishings along the streetscape should adhere to the following criteria.
- i. Furnishings such as benches and trash receptacles should be clustered near street intersections within the Amenity Zone. If a block is more than 500-feet in length, an additional cluster of furnishings should be located in or near the mid-block portion of the streetscape. Per Article 2-505 of the Zoning Ordinance and section 7-0305.2 of the Public Facilities Manual, furnishings should be located outside the sight triangle to preserve lines of sight at intersections.
- ii. Fixed seating placed within the Amenity Zone should be installed perpendicular to the roadway, in order to avoid situations in which people are seated with their backs facing either the sidewalks or the roadway. As an exception, bus shelters and benches for bus stops on the streetscape may be placed parallel to the roadway, as is standard practice.
- iii. Seating and furnishings should be placed in locations that maximize shade from trees or structures so that they are used year-round.
- iv. Along the Richmond Highway Transit Boulevard, furnishings should be located within the Buffer Strip, and Planting Zone facing the sidewalk.

### 3 PEDESTRIAN-SCALED STREET LIGHTING

- A. The majority of street lights on state-owned roadways are owned and maintained by Dominion Energy. The *Cutoff Round Lantern* was selected for its aesthetic quality as well as for its minimal uplighting, which enables compliance with dark sky standards.




GRAPHIC 10: RICHMOND HIGHWAY - NORTH AND SOUTH AREAS

- B. Street lights designed to illuminate roadways may be needed to supplement pedestrian-scaled street lights on roadways that are wider than two lanes.
- C. If street lights are planned outside the right-of-way, the style should follow the specifications in *Table 2* as well as in *Volume 1* (section 2F.3).
- D. Street light spacing should be determined by the site or lighting plan.






PUBLIC REALM FEATURES


**TABLE 2: SUGGESTED SPECIFICATIONS FOR FURNISHINGS**

TYPE	NORTH AREA (NORTH GATEWAY, PENN DAW, BEACON/GROVETON)	
<p><b>Benches</b></p>	<p><b>MATERIAL:</b></p> <ul style="list-style-type: none"> <li>• Metal (powder coated), wood, synthetic wood</li> </ul> <p><b>COLOR:</b></p> <ul style="list-style-type: none"> <li>• Aluminum, grey/silver color along with hardwood material</li> </ul> <p><b>FORM:</b></p> <ul style="list-style-type: none"> <li>• Rectangular with horizontal slats</li> </ul> <p><b>LENGTH:</b></p> <ul style="list-style-type: none"> <li>• 69", 72", 96" or 118" (with center arm)</li> </ul> <p><b>LOCATION:</b></p> <ul style="list-style-type: none"> <li>• Within the Amenity Zone and in clusters as specified in section 3A.3</li> </ul>	<p><b>SAMPLE OPTIONS:</b></p> <ul style="list-style-type: none"> <li>• (LEFT) Landscape Forms: Santa Cole Neoliviano   (RIGHT) Forms &amp; Surfaces: Knight Series</li> </ul> 
<p><b>Trash Receptacles (including recycling receptacles)</b></p>	<p><b>MATERIAL:</b></p> <ul style="list-style-type: none"> <li>• Metal (powder coated), wood, synthetic wood</li> </ul> <p><b>COLOR:</b></p> <ul style="list-style-type: none"> <li>• Aluminum, grey/silver, hardwood color</li> </ul> <p><b>FORM:</b></p> <ul style="list-style-type: none"> <li>• Rectangular with horizontal slats and flat front; with lid</li> </ul> <p><b>CAPACITY:</b></p> <ul style="list-style-type: none"> <li>• 24 to 30 gallons</li> </ul> <p><b>LOCATION:</b></p> <ul style="list-style-type: none"> <li>• Within the Amenity Zone and in clusters as specified in section 3A.3</li> <li>• Recycling receptacles should be co-located with trash receptacles.</li> </ul>	<p><b>SAMPLE OPTIONS:</b></p> <ul style="list-style-type: none"> <li>• (LEFT) Forms &amp; Surfaces: Apex   (RIGHT) Id: Ecoside</li> </ul> 
<p><b>Bike Racks</b></p>	<p><b>MATERIAL:</b></p> <ul style="list-style-type: none"> <li>• Metal (powder coated)</li> </ul> <p><b>COLOR:</b></p> <ul style="list-style-type: none"> <li>• Aluminum, grey/silver</li> </ul> <p><b>FORM:</b></p> <ul style="list-style-type: none"> <li>• Rectangular rack with two ground-mounted anchor points</li> </ul> <p><b>SPACING:</b></p> <ul style="list-style-type: none"> <li>• 36" (minimum); also, see <a href="#">Fairfax County Bicycle Parking Guidelines</a> for additional spacing standards</li> </ul> <p><b>LOCATION:</b></p> <ul style="list-style-type: none"> <li>• Within the Amenity Zone without encroaching on sidewalk areas; at major street intersections</li> </ul>	<p><b>SAMPLE OPTIONS:</b></p> <ul style="list-style-type: none"> <li>• (LEFT) Forms &amp; Surfaces: Cordia   (RIGHT) Landscape Forms: Concord</li> </ul> 

**TABLE 2: SUGGESTED SPECIFICATIONS FOR FURNISHINGS**

TYPE	NORTH AREA (NORTH GATEWAY, PENN DAW, BEACON/GROVETON)	
<p><b>Planters</b></p>	<p><b>MATERIAL:</b></p> <ul style="list-style-type: none"> <li>• Metal, steel</li> </ul> <p><b>COLOR:</b></p> <ul style="list-style-type: none"> <li>• Silver/grey tones</li> </ul> <p><b>FORM:</b></p> <ul style="list-style-type: none"> <li>• Rectangular</li> </ul> <p><b>LOCATION:</b></p> <ul style="list-style-type: none"> <li>• Within the Amenity Zone without encroaching on sidewalk areas</li> </ul>	<p><b>SAMPLE OPTIONS:</b></p> <ul style="list-style-type: none"> <li>• (LEFT) Landscape Forms: Sorella   (RIGHT) Tournesol: Boulevard Wood Mixed Media</li> </ul> 
<p><b>Bollards</b></p>	<p><b>MATERIAL:</b></p> <ul style="list-style-type: none"> <li>• Metal, stainless steel (powder coated)</li> </ul> <p><b>COLOR:</b></p> <ul style="list-style-type: none"> <li>• Silver/grey, with or without light fixtures</li> </ul> <p><b>FORM:</b></p> <ul style="list-style-type: none"> <li>• Rectangular</li> </ul> <p><b>LOCATION:</b></p> <ul style="list-style-type: none"> <li>• At certain intersections with high volumes of pedestrian traffic (located outside the clear zone) and/or within the Amenity Zone along roadways to guide pedestrian and automobile movement to designated areas</li> </ul>	<p><b>SAMPLE OPTIONS:</b></p> <ul style="list-style-type: none"> <li>• (LEFT) Landscape Forms: Stop   (MIDDLE &amp; RIGHT) Forms &amp; Surfaces: Tangent and Knight</li> </ul> 
<p><b>Pedestrian-Scale Street Lighting</b></p>	<p><b>MATERIAL:</b></p> <ul style="list-style-type: none"> <li>• Metal</li> </ul> <p><b>COLOR:</b></p> <ul style="list-style-type: none"> <li>• Grey with LED light fixtures</li> </ul> <p><b>FORM:</b></p> <ul style="list-style-type: none"> <li>• Round</li> </ul> <p><b>LOCATION:</b></p> <ul style="list-style-type: none"> <li>• Within Landscape Panel/Amenity Zone, approximately 18-inches behind the curb.</li> <li>• Spacing: As determined by site/lighting plan</li> </ul> <p><b>VENDOR:</b></p> <ul style="list-style-type: none"> <li>• Dominion Energy is the approved vendor/manufacturer for VDOT maintained roads</li> </ul>	<p><b>SAMPLE OPTION:</b></p> <ul style="list-style-type: none"> <li>• Dominion: Cutoff Round Lantern with Smooth Round Tapered Black Composite Pole</li> </ul> 

**TABLE 2: SUGGESTED SPECIFICATIONS FOR FURNISHINGS**

TYPE	SOUTH AREA (HYBLA VALLEY-GUM SPRINGS, SOUTH COUNTY, WOODLAWN)	
<p><b>Benches (Fixed Seating)</b></p>	<p><b>MATERIAL:</b></p> <ul style="list-style-type: none"> <li>• Metal (powder coated), wood, synthetic wood</li> </ul> <p><b>COLOR:</b></p> <ul style="list-style-type: none"> <li>• Black, hardwood color</li> </ul> <p><b>FORM:</b></p> <ul style="list-style-type: none"> <li>• Curvilinear with horizontal slats, ornamental accents</li> </ul> <p><b>LENGTH:</b></p> <ul style="list-style-type: none"> <li>• 48", 72", 75", 96" or 98"</li> </ul> <p><b>LOCATION:</b></p> <ul style="list-style-type: none"> <li>• Within the Amenity Zone and in clusters as specified in Section 3A.3</li> </ul>	<p><b>SAMPLE OPTIONS:</b></p> <ul style="list-style-type: none"> <li>• (LEFT &amp; MIDDLE) Victor Stanley: FMBF-324 &amp; FB-324   (RIGHT) Forms &amp; Surfaces: Trio</li> </ul> 
<p><b>Trash Receptacles (including Recycling Receptacles)</b></p>	<p><b>MATERIAL:</b></p> <ul style="list-style-type: none"> <li>• Metal (powder coated)</li> </ul> <p><b>COLOR:</b></p> <ul style="list-style-type: none"> <li>• Black/grey</li> </ul> <p><b>FORM:</b></p> <ul style="list-style-type: none"> <li>• Cylindrical with vertical slats and lid</li> </ul> <p><b>CAPACITY:</b></p> <ul style="list-style-type: none"> <li>• 24 to 36 gallons</li> </ul> <p><b>LOCATION:</b></p> <ul style="list-style-type: none"> <li>• Within the Amenity Zone and in clusters as specified in Section 3A.3</li> <li>• Recycling receptacles should be co-located with trash receptacles.</li> </ul>	<p><b>SAMPLE OPTIONS:</b></p> <ul style="list-style-type: none"> <li>• (LEFT) Forms and Surfaces: Urban renaissance   (MIDDLE) Landscape Forms: Poe   (RIGHT) Victor Stanley: SD-242</li> </ul> 
<p><b>Bike Racks</b></p>	<p><b>MATERIAL:</b></p> <ul style="list-style-type: none"> <li>• Metal (powder coated)</li> </ul> <p><b>COLOR:</b></p> <ul style="list-style-type: none"> <li>• Black</li> </ul> <p><b>FORM:</b></p> <ul style="list-style-type: none"> <li>• Hoop rack with ground-mounted anchor points</li> </ul> <p><b>SPACING:</b></p> <ul style="list-style-type: none"> <li>• 36" (minimum); also, see <a href="#">Fairfax County Bicycle Parking Guidelines</a> for additional spacing standards</li> </ul> <p><b>LOCATION:</b></p> <ul style="list-style-type: none"> <li>• Within the Amenity Zone without encroaching on sidewalk areas; at major street intersections</li> </ul>	<p><b>SAMPLE OPTIONS:</b></p> <ul style="list-style-type: none"> <li>• (LEFT) Victor Stanley: BRWS-101   (RIGHT) Landscape Forms: Ring</li> </ul> 

**TABLE 2: SUGGESTED SPECIFICATIONS FOR FURNISHINGS**

TYPE	SOUTH AREA (HYBLA VALLEY-GUM SPRINGS, SOUTH COUNTY, WOODLAWN)	
<p><b>Planters</b></p>	<p><b>MATERIAL:</b></p> <ul style="list-style-type: none"> <li>• Concrete, Wood, Terracotta (earthen)</li> </ul> <p><b>COLOR:</b></p> <ul style="list-style-type: none"> <li>• Natural Grey (concrete, can be tinted), wood/ terracotta colors</li> </ul> <p><b>FORM:</b></p> <ul style="list-style-type: none"> <li>• Cylindrical with horizontal ribbing</li> </ul> <p><b>LOCATION:</b></p> <ul style="list-style-type: none"> <li>• Within Amenity and Building Zones without encroaching on sidewalk areas</li> </ul>	<p><b>SAMPLE OPTIONS:</b></p> <ul style="list-style-type: none"> <li>• (LEFT) Tournesol: Centurion   (RIGHT) Landscape Forms: Masaru Series</li> </ul> 
<p><b>Bollards</b></p>	<p><b>MATERIAL:</b></p> <ul style="list-style-type: none"> <li>• Metal (powder coated), cast iron</li> </ul> <p><b>COLOR:</b></p> <ul style="list-style-type: none"> <li>• Black</li> </ul> <p><b>FORM:</b></p> <ul style="list-style-type: none"> <li>• Fluted stem, no chain link attachment, finial cap, fits over 4" steel pipe</li> </ul> <p><b>LOCATION:</b></p> <ul style="list-style-type: none"> <li>• At certain intersections with high volumes of pedestrian traffic (located outside the clear zone) and/or within the Amenity Zone along roadways to guide pedestrian and automobile movement to designated areas</li> </ul>	<p><b>SAMPLE OPTION:</b></p> <ul style="list-style-type: none"> <li>• (LEFT) Neenah/Reliance Foundry (R-7530-AL)</li> </ul> 
<p><b>Pedestrian-Scale Street Lighting</b></p>	<p><b>MATERIAL:</b></p> <ul style="list-style-type: none"> <li>• Metal</li> </ul> <p><b>COLOR:</b></p> <ul style="list-style-type: none"> <li>• Grey with LED light fixtures</li> </ul> <p><b>FORM:</b></p> <ul style="list-style-type: none"> <li>• Round</li> </ul> <p><b>LOCATION:</b></p> <ul style="list-style-type: none"> <li>• Within Landscape Panel/Amenity Zone, approximately 18-inches behind the curb.</li> <li>• Spacing: As determined by site/lighting plan</li> </ul> <p><b>VENDOR:</b></p> <ul style="list-style-type: none"> <li>• Dominion Energy is the approved vendor/ manufacturer for VDOT maintained roads</li> </ul>	<p><b>SAMPLE OPTION:</b></p> <ul style="list-style-type: none"> <li>• Dominion: Cutoff Round Lantern with Smooth Round Tapered Black Composite Pole</li> </ul> 

## 3A.4 TREES

In urban areas, trees provide numerous urban design, environmental, and public health benefits - from defining visual character, offering shade for pedestrians, and buffering sidewalks from traffic, to supporting ecological systems, creating habitats, and mitigating impacts of climate change. In the Richmond Highway area, trees serve as unifying elements that beautify streetscapes and help create a high-quality environment. They highlight and accentuate key places and “moments,” and mark where one streetscape character transitions to another. Along the Richmond Highway Transit Boulevard, trees also help define the distinct character of each CBC, as illustrated in *Graphic 11* and described in the design principles and strategies that follow. In public spaces such as neighborhood parks, Transit Plazas, and Livability Spines, the selection and placement of trees can reinforce the organization and character of these spaces by defining the areas where different activities occur.

The guidance for tree planting along streetscapes pertains to two separate streetscape zones.

- The *Landscape Panel* is an area within the public right-of-way reserved for street trees and understory planting. It serves as a green buffer separating the roadway drive lanes from more pedestrian- and bicycle-oriented areas outside the curb.
- The *Planting Zone* is a streetscape area that occurs only in private space along the Richmond Highway Transit Boulevard. Located between the sidewalk and the Building Zone, this zone is reserved for trees and other landscaping, and may also include bioretention facilities and seating. The width of the Planting Zone varies along the length of the Transit Boulevard, with the widest portions located in the SNAs.

The guidance in this chapter supplements the *Volume I* guidance for trees and other plantings (see Section 2F.1 and Appendix A1), which includes a palette of trees and other plant materials for urban areas.

## DESIGN PRINCIPLES

**Tree planting should emphasize a diversity of native species and maximize tree canopy coverage to create green corridors.** While the use of non-native, non-invasive species may be considered in urban situations per County policy, a wide variety of native species is preferred. This is based on current science documenting the ecological benefits of native plants and the re-establishment of native plant communities. In general, per the *Volume I* guidelines, an assortment of species is preferred to reduce the health risks associated with monoculture environments. Collectively, a mix of native tree species should create strong, continuous green corridors along the Landscape Panel and Planting Zone that provide a range of ecosystem benefits and habitats for wildlife. In all locations, tree canopy coverage should be maximized to the greatest extent possible.

**To distinguish each CBC, distinct pairs of tree species with similar or complementary characteristics should be planted within the Richmond Highway Landscape Panel along the entire length of each CBC.** These pairs of species should help establish a unique sense of place and identity within each CBC. These trees will serve as visual cues that help orient pedestrians and motorists while highlighting the progression between distinct areas along the Richmond Highway Transit Boulevard. Incorporation of limited numbers of ornamental trees in select locations as visual accents is also encouraged as a means of further distinguishing each CBC. Potential locations for ornamental trees are the Richmond Highway Transit Boulevard’s median in the vicinity of BRT stations and the Building Zone.

**Trees should be consistently and regularly spaced along the Richmond Highway Transit Boulevard and CBC streetscapes in both the Landscape Panel and Planting Zone, while more informal or irregular tree arrangements are desirable in SNA Planting Zones as well as in neighborhood parks and plazas.** In general, the Richmond Highway Transit Boulevard (within CBCs), Gateway Streetscapes, and Neighborhood Streetscapes should all be characterized by uniform tree spacing and

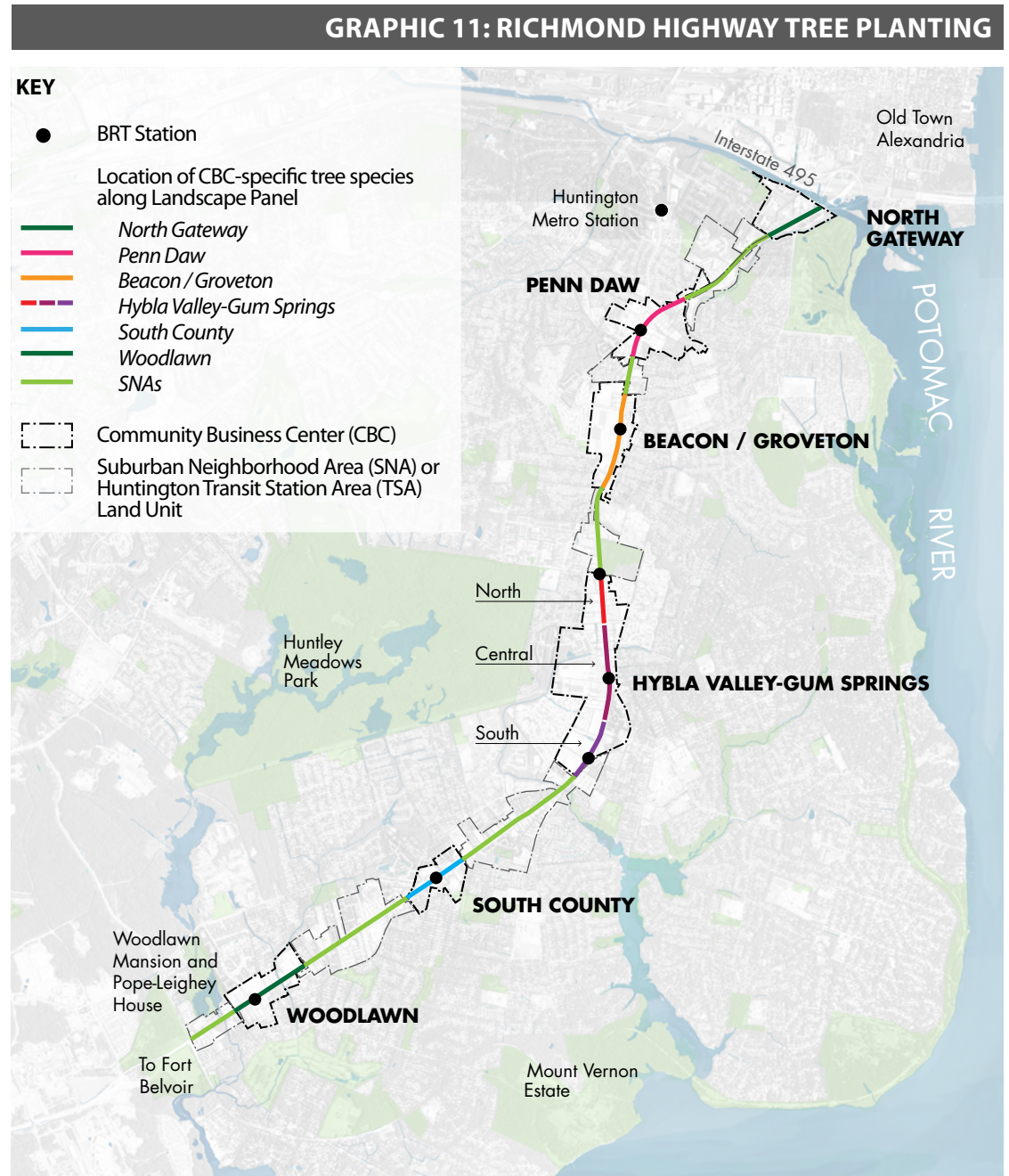
## DESIGN PRINCIPLES (CONTINUED)

alignment. This will create a unified streetscape character with a consistent canopy, a sense of enclosure, and a memorable visual character along Richmond Highway. To distinguish SNAs from CBCs, a dense mix of informally-placed trees should be located within the Planing Zones to accentuate their greener character. Ecological Spines, Livability Spines, and other neighborhood parks and plazas may incorporate informal groupings of trees to help define internal spaces and increase programming opportunities.

**Select streetscapes should be distinguished by tree types and patterns that visually stand apart from trees along the Richmond Highway Transit Boulevard.** Trees within Gateway Streetscapes should be a mix of Oak species to have a similar experience and highlight the connection from BRT stations into each CBC. The Legacy Corridor streetscape in the Hybla Valley-Gum Springs CBC should be distinguished by its own mix and rhythm of distinctively-shaped trees.

**REFERENCES FOR TREES**

-  [Volume I Urban Design Guidelines for CRDs and CRAs \(Section 2F.1 and Appendix A1\)](#)
- [Fairfax County Public Facilities Manual \(section 7-0305.2, Chapter 12 and Chapter 122\)](#)
- [Fairfax County Zoning Ordinance \(Article 2-505\)](#)
- [US Fish and Wildlife Service - Native Plants for Wildlife Habitat and Conservation Landscaping - Chesapeake Bay Watershed](#)
- [Plant NOVA Natives](#)
- [Virginia Department of Transportation's Northern Virginia Planting Guidelines](#)
- [Trees in the City of Falls Church, Virginia](#)
- [Native Plants for Northern Virginia](#)
- [Virginia Department of Conservation and Recreation, Chesapeake Bay Local Assistance, Riparian Buffers Modification & Mitigation Guidance Manual](#)





## DESIGN STRATEGIES

### 1 AREA-WIDE PLANTING STRATEGIES

- A. Tree planting should follow the *Volume I* guidelines for soil volume and continuous soil panels to promote proper plant growth and ensure the long-term success of trees (see *Volume I*, Appendix A1).
- B. Trees should be used to meet as much of the 10-year tree canopy requirement as possible. See Chapter 122 of Tree Conservation Ordinance and Chapter 12 of the Public Facilities Manual.
- C. Trees should be planted in a row with approximately 30-foot spacing, unless otherwise specified.
- D. Per VDOT requirements, trees should have a vertical clearance to minimize conflicts between tree branches and trucks, buses, and bicyclists traveling in the right-of-way. The vertical dimensions of trees will vary for each species, and is dependent upon the physical characteristics (e.g., the branching structure and size of trees at installation) of each tree species.
- E. If green stormwater infrastructure (GSI) is included in the Landscape Panel, it should be planted with wet-tolerant native plants. Additional flexibility from the recommended lists may be needed when selecting trees species in order to meet GSI design requirements. See *Table 4* and *Volume I* (Appendix A1) for wet tolerant tree recommendations.
- F. Trees should be located outside the line of sight, per Article 2-505 of the Zoning Ordinance and section 7-0305.2 of the Public Facilities Manual.
- G. Tree species will be subject to approval by the County's Urban Forest Management Division during the site plan review process.

### 2 RICHMOND HIGHWAY TRANSIT BOULEVARD: WITHIN CBCs

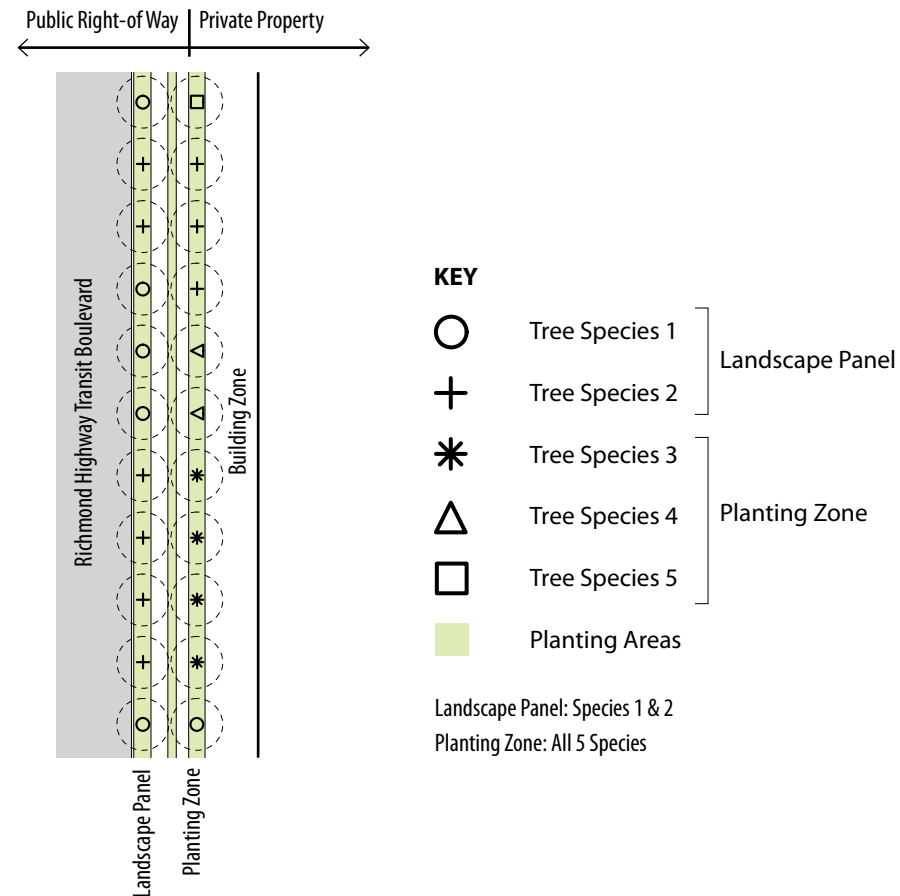
- A. **CBC Landscape Panel:** Should be planted with two tree species for the entire length of the CBC (see *Graphic 12*). Given the length of the Hybla Valley-Gum Springs CBC, a distinct pair of species should be planted in the blocks surrounding each of the three BRT stations in the CBC. Tree planting should adhere to the following:
  - i. The following tree species were chosen for their ability to withstand the environmental challenges of Richmond Highway and for the height of their canopies (in order to minimize conflicts between tree branches and trucks, buses, and bicyclists traveling the right-of-way). The recommended species include large, urban shade trees as well as wet-tolerant species for areas adjacent to waterways or with a high water table (e.g., North Gateway, Hybla Valley-Gum Springs, and Woodlawn)
  - ii. Suggested species for each CBC are listed in *Table 4* and include the following:
    - a. North Gateway: Bald Cypress and Swamp White Oak
    - b. Penn Daw: Butternut Hickory and Chestnut Oak
    - c. Beacon/Groveton: White Oak and Shagbark Hickory
    - d. Hybla Valley-Gum Springs (North): White Oak and Hackberry
    - e. Hybla Valley-Gum Springs (Central): Black Gum and Southern Red Oak
    - f. Hybla Valley-Gum Springs (South): Swamp Chestnut Oak and Sweetgum
    - g. South County: Northern Red Oak and Kentucky Coffee Tree
    - h. Woodlawn: Bald Cypress and Swamp White Oak.

**DESIGN STRATEGIES (CONTINUED)**

- iii. All species should be large, deciduous shade trees (Category III or IV) to match the scale of the Richmond Highway Transit Boulevard and its streetscape.
  - iv. If another tree has similar characteristics and is compatible with the environmental conditions of the CBC, it may be substituted for a tree listed in A.ii using the Urban Forest Division list included in the PFM.
  - v. The pattern of tree planting should be mixed and arranged such that no more than five trees of the same species are planted consecutively in alignment (see example planting pattern in *Graphic 12*).
- B. CBC Planting Zone:** Should be planted with a row of trees comprising a diverse mix of tree species. Tree planting in the Planting Zone should adhere to the following guidance:
- i. At least five tree species should be selected from the list of tree species provided in the *Volume I* urban design guidelines within the Category III and Category IV deciduous tree table.
  - ii. Trees selected for the Planting Zone should not match those selected for the Landscape Panel to ensure adequate species diversity.
  - iii. The planting pattern should largely mirror that of the Landscape Panel; however, some flexibility should be allowed in consideration of adjacent building design.

For additional details and for cross-sections depicting the Landscape Panel and Planting Zone, see Chapter 5 (Sections 5A and 5B).

**GRAPHIC 12: TREE PLANTING PATTERN FOR THE RICHMOND HIGHWAY TRANSIT BOULEVARD LANDSCAPE PANEL AND PLANTING ZONE**



## DESIGN STRATEGIES (CONTINUED)

### 3 RICHMOND HIGHWAY TRANSIT BOULEVARD: WITHIN SNAs

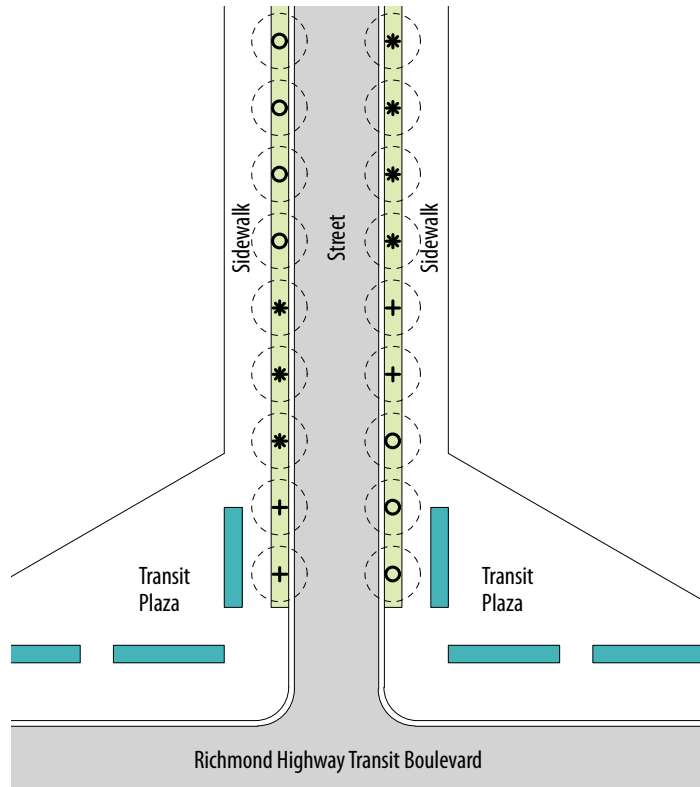
- A. SNA Landscape Panel:** Should be planted with trees comprising a mix of species for the entire length of the SNA. Tree planting in the Landscape Panel should adhere to the following guidance:
- i. Tree species should consist of three to five species selected from the *Volume 1* urban design guidelines within the Category III and IV deciduous tree tables.
  - ii. The pattern of tree planting should be mixed and arranged such that no more than five trees of the same species are planted consecutively.
- B. SNA Planting Zone:** Should comprise a diverse mix of tree species in an organic, naturalistic arrangement to maximize opportunities afforded by this extra-wide space. Tree planting in the Planting Zone should adhere to the following guidance:
- i. Trees should comprise a mix of deciduous and evergreen species (the mix should consist of 75% native deciduous species and 25% native evergreen species).
  - ii. Tree species should be selected from tree lists published by the County's Urban Forest Management Division, available in the PFM.
  - iii. Trees should be planted with irregular spacing in a natural/organic arrangement. While the spacing may be irregular, the tree density should achieve as close to 100% tree canopy as possible.

*See Chapter 5 for additional details and for cross-sections depicting the Landscape Panel and Planting Zone (Sections 5A and 5C).*

### 4 GATEWAY STREETSCAPES

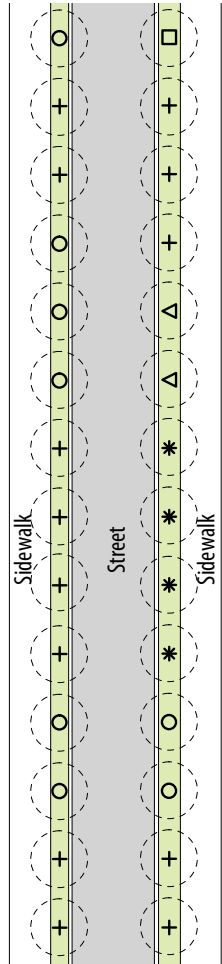
- A. Gateway streetscapes, which are relatively short street segments, should be lined with trees of a similar character to form a symbolic entryway and transition from Richmond Highway into the CBCs and residential neighborhoods (see *Graphic 13*).
- i. Gateway Streetscapes should feature a mix of three Oak species to create a memorable, welcoming street with a distinctive tree canopy (see *Table 4*).
  - ii. The pattern of the planting should be mixed and arranged such that no more than five trees of the same species are planted consecutively.
  - iii. Tree species should be planted in different patterns on both sides of the street so that similar species do not mirror each other.

### GRAPHIC 13: TREE PLANTING PATTERN FOR THE GATEWAY STREETSCAPES



- KEY**
- Tree Species 1
  - ⊕ Tree Species 2
  - \* Tree Species 3
  - Landscape Panel
  - Planting within Transit Plaza

**GRAPHIC 14: TREE PLANTING PATTERN FOR THE NEIGHBORHOOD STREETSAPES**

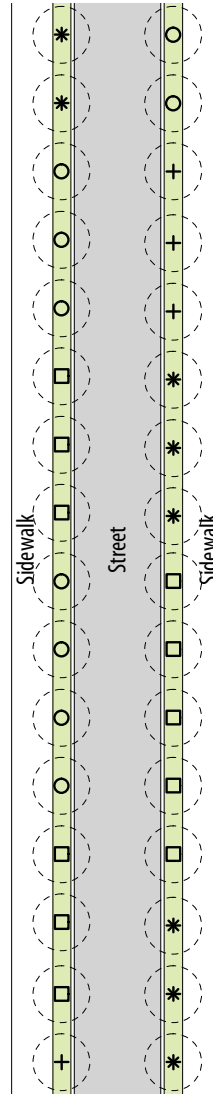


**KEY**

- Tree Species 1
- ⊕ Tree Species 2
- \* Tree Species 3
- Tree Species 4
- △ Tree Species 5
- Landscape Panel

DRAFT

**GRAPHIC 15: TREE PLANTING PATTERN FOR THE LEGACY CORRIDOR**



**DESIGN STRATEGIES (CONTINUED)**

**5 NEIGHBORHOOD STREETSAPES**

- A. Neighborhood Streetscapes should be lined with a mix of native shade tree species planted in the Landscape Panel (see *Graphic 14*).
- B. For each block, three to five species should be selected from the list of medium- to large-sized (Category III or IV) trees in *Volume I* (Appendix A1).
- C. No more than five trees of the same species should be planted in a row.

**6 LEGACY CORRIDOR**

- A. The Legacy Corridor (located in Hybla Valley-Gum Springs) should be planted with a mix of native, distinctively-shaped trees to spatially differentiate this corridor from other streets, and to highlight the distinctive heritage resources along this street (see *Graphic 15*).
- B. No more than five trees of the same species should be planted in a row.

## DESIGN STRATEGIES (CONTINUED)

### 7 LIVABILITY SPINES

- A. Along the Landscape Panel of Livability Spines, trees should follow the guidance for Neighborhood Streetscapes.
- B. Linear park portions of Livability Spines should be planted with a wide range of small- to medium-sized, native, deciduous and evergreen trees, along with some flowering trees.
  - i. Planting should strive for a roughly 75% deciduous-25% evergreen mix. Trees should be selected from the list of tree species published by the County's Urban Forest Management Division available in the PFM.
  - ii. These trees should be arranged primarily in informal groupings to create a series of outdoor "rooms," and to maximize shade and ecological benefits.

### 8 ECOLOGICAL SPINES

- A. Trees in the Landscape Panel along the roadway of Ecological Spines Type 1 and Type 2 should follow the planting guidance for Neighborhood Streetscapes.
- B. Linear park portions of Ecological Spines should be planted with native trees that are tolerant of wet conditions, when they are adjacent to daylight streams, stream banks, or stormwater management pond banks. See wet tolerant trees in *Table 4* for options as well as the list of recommended plants for riparian buffers included in Appendix A of the Chesapeake Bay Local Council's [Riparian Buffers Modification & Mitigation Guidance Manual](#).
- C. Trees should be planted in groupings and in an organic, naturalistic layout to promote resilient landscape design.

### 9 NEIGHBORHOOD PARKS AND TRANSIT PLAZAS

- A. In designed landscapes such as Neighborhood Parks and Transit Plazas, native trees should be planted either in informal or formal patterns. The types and arrangements of trees will be determined based on the design evolution of those spaces and adjacent development. Category III and IV tree species should be used. For tree types, refer to the list in *Volume I* (Appendix A1) and the list published by the County's Urban Forest Management Division, available in the PFM.

### 10 ORNAMENTAL TREES

- A. Native ornamental (flowering) trees should be planted in select locations, as follows:
  - i. As accents in the Richmond Highway Transit Boulevard Planting Zone within CBCs (where there is adequate space to accommodate them in addition to the recommended trees, or where there is insufficient space to plant the recommended tree), and as understory plantings in the SNA Planting Zone.
  - ii. In the Richmond Highway Transit Boulevard median, planted in quantity and in groupings for a pronounced visual impact.
  - iii. In the Transit Plazas adjacent to BRT stations.
  - iv. In neighborhood parks and Livability Spines.
  - v. Within Ecological Spines and stormwater management areas as understory plantings. Common Paw Paw is suggested only for Ecological Spines.
  - vi. Although not native species, Yoshino Cherry and other non-native cherry varieties may be planted in limited quantity as accents where extra space exists. These trees are particularly appropriate in the Woodlawn CBC, in the Richmond Highway median and adjacent to BRT stations, in order to extend the regional tradition of planting this iconic spring flowering tree.

TABLE 4: TREE PALETTE BY STREETSCAPE TYPE

STREET TYPE	COMMON NAME	SCIENTIFIC NAME	CATEGORY*	NATIVE	WET TOLERANT
<b>Richmond Highway CBC Streetscape: North Gateway</b>	Bald Cypress	Taxodium distichum	III	Y	Y
	Swamp White Oak	Quercus bicolor	IV	Y	Y
<b>Richmond Highway CBC Streetscape: Penn Daw</b>	Black Walnut	Juglans nigra	IV	Y	N
	Chesnut Oak	Quercus montana	IV	Y	N
<b>Richmond Highway CBC Streetscape: Beacon / Groveton</b>	Shagbark Hickory	Carya ovata	IV	Y	N
	White Oak	Quercus alba	IV	Y	N
<b>Richmond Highway CBC Streetscape: Hybla Valley-Gum Springs</b>					
<b>North</b>	Hackberry	Celtis occidentalis	III	Y	Y
	White Oak	Quercus alba	IV	Y	N
<b>Central</b>	Black Gum	Nyssa sylvatica	III	Y	Y
	Southern Red Oak	Quercus falcata	IV	Y	N
<b>South</b>	Sweetgum	Liquidambar styraciflua	III	Y	Y
	Swamp Chestnut Oak	Quercus michauxii	IV	Y	Y
<b>Richmond Highway CBC Streetscape: South County</b>	Scarlet Oak	Quercus coccinea	IV	Y	N
	Kentucky Coffee Tree	Gymnocladus dioicus	III	Y	Y
<b>Richmond Highway CBC Streetscape: Woodlawn</b>	Bald Cypress	Taxodium distichum	III	Y	Y
	Swamp White Oak	Quercus bicolor	IV	Y	Y
<b>Gateway Streetscape</b>	Darlington Oak	Quercus hemisphaerica	IV	Y	N
	Willow Oak	Quercus phellos	IV	Y	N
	Northern Red Oak	Quercus rubra	IV	Y	N

NOTE: TREE PALETTES NOT FINALIZED AS OF 11/2019. UNDER REVIEW WITH COUNTY AND STATE AGENCIES AND OTHER STAKEHOLDERS.

\* Tree category as defined in the Fairfax County Public Facilities Manual (PFM)

TABLE 4: TREE PALETTE BY STREETScape TYPE

STREET TYPE	COMMON NAME	SCIENTIFIC NAME	CATEGORY*	NATIVE	WET TOLERANT
<b>Legacy Corridor Streetscape</b>	American Hornbeam	<i>Carpinus caroliniana</i>	II	Y	Y
	Eastern Red Cedar	<i>Juniperus virginiana</i>	I	Y	N
	American Hophornbeam	<i>Ostrya virginiana</i>	IV	Y	N
	Bald Cypress	<i>Taxodium distichum</i>	III	Y	Y
<b>Ornamental Trees</b>	Downy Serviceberry	<i>Amelanchier arborea</i>	II	Y	Y
	Shadblow Serviceberry	<i>Amelanchier canadensis</i>	II	Y	Y
	Common Paw Paw	<i>Asimina triloba</i>	II	Y	Y
	Virginia Fringetree	<i>Chionanthus virginicus</i>	II	Y	Y
	Flowering Dogwood	<i>Cornus florida</i>	II	Y	N
	Common Persimmon	<i>Diospyros virginiana</i>	II	Y	Y
	Sweetbay Magnolia	<i>Magnolia virginiana</i>	II	Y	Y
	Black Cherry	<i>Prunus serotina</i>	III	Y	Y
	Yoshino Cherry	<i>Prunus × yedoensis</i>	III	N	N
<b>Evergreen Trees</b>	American Holly	<i>Ilex opaca</i>	II	Y	Y
	Eastern Red Cedar	<i>Juniperus virginiana</i>	I	Y	N
	Sweetbay Magnolia	<i>Magnolia virginiana</i>	II	Y	Y
	Eastern White Pine	<i>Pinus strobus</i>	IV	Y	N
	Virginia Pine	<i>Pinus virginiana</i>	IV	Y	N

NOTE: TREE PALETTES NOT FINALIZED AS OF 11/2019. UNDER REVIEW WITH COUNTY AND STATE AGENCIES AND OTHER STAKEHOLDERS.

\* Tree category as defined in the Fairfax County Public Facilities Manual (PFM)



IMAGES OF TREES



Amelanchier arborea (Downy Serviceberry)



Amelanchier canadensis (Shadblow serviceberry)



Asimina triloba (Common Paw Paw)



Carpinus caroliniana (American Hornbeam)



Carya ovata (Shagbark Hickory)



Celtis occidentalis (Hackberry)



Chionanthus virginicus (Virginia Fringetree)



Cornus florida (Flowering Dogwood)

IMAGES OF TREES



Diospyros virginicus (Common Persimmon)



Gymnocladus dioicus (Kentucky Coffee Tree)



Ilex opaca (American Holly)



Juglans nigra (Black Walnut)



Juniperus virginiana (Eastern Red Cedar)



Liquidambar styraciflua (Sweetgum)



Magnolia virginiana (Sweetbay Magnolia)



Nyssa sylvatica (Black Gum)

IMAGES OF TREES



*Ostrya virginiana* (American Hophornbeam)



*Pinus strobus* (Eastern White Pine)



*Pinus virginiana* (Virginia Pine)



*Prunus serotina* (Black Cherry)



*Prunus x yedoensis* (Yoshino Cherry)



*Quercus alba* (White Oak)



*Quercus bicolor* (Swamp White Oak)



*Quercus coccinea* (Scarlet Oak)

IMAGES OF TREES



Quercus falcata (Southern Red Oak)



Quercus hemisphaerica (Darlington Oak)



Quercus michauxii (Swamp Chesnut Oak)



Quercus Montana (Chesnut Oak)



Quercus phello (Willow Oak)



Quercus rubra (Northern Red Oak)



Taxodium distichum (Bald Cypress)

## 3A.5 WAYFINDING AND INTERPRETIVE SIGNAGE

Interpretive signage and wayfinding (which includes signs, maps, on-ground markings, or other features designed to orient people) are important not only for their functions but also for their role in creating the identity and character of an area. Along with buildings, landscaping, and other physical characteristics, signage and wayfinding play a central role in creating the character of a place, tying together an area, and informing people's daily experiences.

Signage should be coordinated with applicable County standards. Article 12 of the Fairfax County Zoning Ordinance regulates the permitted types, size and location of signs on private property. VDOT regulates signage in the public right-of-way. Most of the signs addressed in this section should be located outside the right-of-way. For guidance on project identity and commercial signage, refer to Section 4E in the *Volume 1* guidelines.

The Overlay and CRD Regulations in Article 7 of the Zoning Ordinance regulate the size of wayfinding signage in these areas.



### RIGHT

An example of interpretive signage  
Image Credit: Ontario Growth  
Secretariat, Ministry of Municipal  
Affairs

Hamilton, Canada

## DESIGN PRINCIPLES

**New wayfinding and interpretive signage should coordinate with and build upon existing gateway and wayfinding signs located along the Richmond Highway Transit Boulevard.**

**Wayfinding in the Richmond Highway area should utilize a consistent family of graphics and materials.** Consistency in design and placement is fundamental to effective wayfinding signs, providing predictability for users and establishing a consistent brand identity. The family of graphics and materials should include variations to distinguish geographical areas - such as CBCs and the larger North and South Areas that encompass them - while still adhering to a common, identifiable design and graphic style. Similarly, different sign types (e.g., directional, orientation, and gateway/identity) may vary in size and shape to serve their intended functions and locations while sharing a consistent design motif and graphic style. Further, while the design of wayfinding should be tailored to each geographic area and sign function, it should be utilized and located in a consistent manner throughout the entire Richmond Highway area.

**Interpretive signage should serve as a means of educating the public about the history and ecology of the area and surrounding communities.** The Legacy Corridor, Woodlawn Cultural Corridor, Livability Spines, and Ecological Spines are signature elements of the Richmond Highway area. Each element should be acknowledged and celebrated through the design and information shared on signage and wayfinding.

**The BRT system should serve as a primary reference point for wayfinding.** All wayfinding should begin at the BRT system and note the location of BRT stations. Signage at BRT stations, transit plazas, and primary intersections should incorporate wayfinding elements.



### REFERENCES FOR WAYFINDING AND INTERPRETIVE SIGNAGE

[Volume I Urban Design Guidelines for CRDs and CRAs \(Sections 4E, 6A, 6B\)](#)

Fairfax County Zoning Ordinance: Overlay and Commercial Revitalization District Regulations ([Article 7-500](#)), Signs ([Article 12-200](#))

[Toronto 360 Wayfinding Products](#)

## DESIGN STRATEGIES

### 1 FAMILY OF SIGNAGE

- A. A consistent family of signage in the Richmond Highway area should be created that incorporates, builds upon, and coordinates with existing wayfinding signage along Richmond Highway. While existing wayfinding signage (see images below) is located primarily within the Richmond Highway Transit Boulevard right-of-way, these guidelines for new signage apply primarily to signage located outside of the right-of-way. The family of signage should include the following organizing elements:
- i. **Area-wide:** Utilize and build on elements of existing wayfinding signage along the Richmond Highway Transit Boulevard.
  - ii. **North and South Areas:** Select distinct color palettes as follows:
    - a. **North Area (Contemporary):** Vibrant colors consistent with the area's streetscape furnishings and building design.
    - b. **South Area (Traditional):** Warm and earthen colors consistent with the area's streetscape furnishings and building design.
  - iii. **CBC-Specific:** Select signage for each CBC that is differentiated by distinct identity elements specific to each CBC, such as logos, typefaces, and related branding elements.
- B. The family of signage should be coordinated with other Richmond Highway branding, including existing wayfinding, BRT-related signage, and POPS signage guidance, to ensure a cohesive visual identity. While designs do not need to match, the types, locations, and functions of signage should all work together in a coordinated manner.

### 2 PURPOSE, TYPES, AND LOCATION

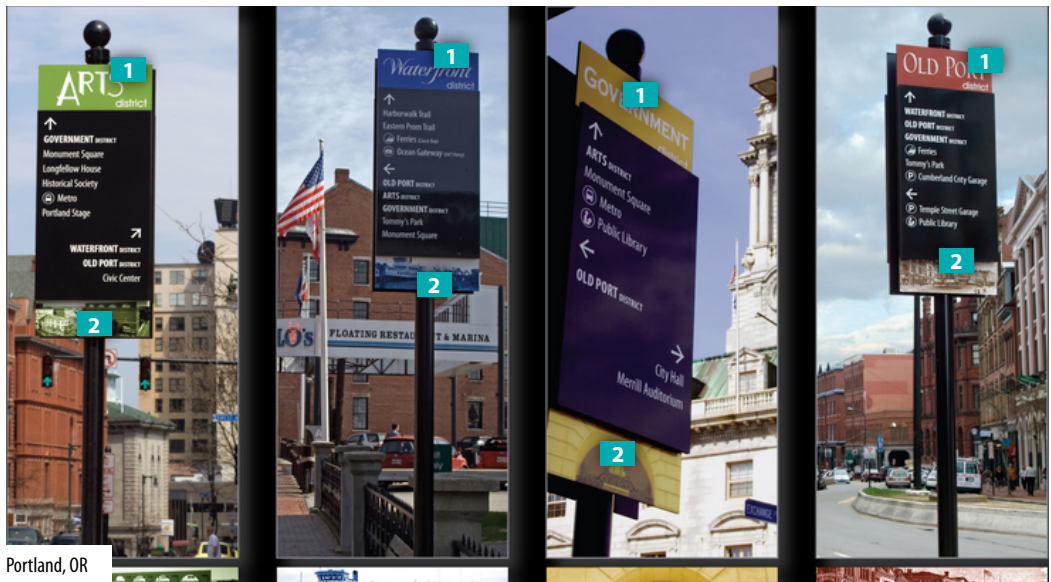
- A. Purpose: The three primary purposes of signage along the Richmond Highway Transit Boulevard and related CBCs should be:
- Wayfinding
  - Interpretation
  - Gateway/Identity
- B. The type, location, and design of signage should vary based on the location and purpose of each sign.
- i. *Entrance Feature Signage:* Should be used at either end of the Richmond Highway Transit Boulevard in Fairfax County and the boundaries of each CBC to convey a sense of arrival and impart a memorable visual impression of Richmond Highway area, at both the human (pedestrian) and vehicular scales. Signs should be visible to vehicular traffic as well as pedestrians, bicyclists and those using other alternative modes of transportation. Gateway elements should also include and/or be integrated with public art features.



Fairfax County, VA

**LEFT**  
 Richmond Highway's existing gateway and wayfinding signage  
 Image Credits: Rhoadside & Harwell

FAMILIES OF SIGNAGE: EXAMPLES



Portland, OR

- 1 Color is applied as a distinct identity element for each subdistrict (or CBC)
- 2 Different sub-districts (or CBCs) are unified with a consistent signage design and layout
- 3 Different signage types and applications are recognizable as a family through consistent branding

TOP

A family of traditional signage with consistent overall design vocabulary for different sub-districts and area-specific identity elements, such as colors, logo, etc.  
Image Credit: Coroflot.com



Minneapolis, MN

BOTTOM

A family of contemporary signage for a single subdistrict with a consistent identity and varying applications, such as, paving-embedded, ground-mounted, interpretive panels, etc.  
Image Credit: Pentagram

## DESIGN STRATEGIES (CONTINUED)

- ii. *Ground-mounted Signs:* Ground-mounted signs can include wayfinding and other information. These signs should be at the human scale (targeting people walking, riding bicycles, and riding micromobility). Ground-mounted signage should not exceed 8-feet in height, measured from ground level. Signage may include:
  - a. *Information/Directional Signs:* These should be located within the Amenity Zone or at intersections, and should not encroach onto sidewalk areas. They should provide information about the location of BRT stations, area amenities, including (but not limited to) a context map (with possible orientation for users, such as “You Are Here”), as well as listings of parks, businesses, services, and upcoming events.
  - b. *Interpretive Panels:* Should be used to provide context related to special features and areas, such as Livability Spines, Ecological Spines, stormwater management areas, the Legacy Corridor, Woodlawn Cultural Corridor, and other public spaces, in order to communicate such things as the history, functions, flora, and fauna of these areas. Use of interpretive panels should be focused on areas close to the Richmond Highway Transit Boulevard or along the Legacy and Cultural Corridors.
- iii. *Banners Mounted on Street Light Poles:* If permitted, street light banners should provide vehicle-focused information, with large lettering for easy reading. This type of signage should include Richmond Highway-related branding as well as icons specific to each area. Pole-mounted signage should not exceed 16-feet in height, measured from ground level to the top of the banner.
- iv. *Paving-embedded Elements:* Context-sensitive decals on the ground plane can serve as both wayfinding and interpretive devices for pedestrians.
  - a. Should provide information about area amenities, including (but not limited to) a context map (with

possible orientation for users, such as “You Are Here”), as well as listings of parks, businesses,

### C. *BRT-Related Signage:*

- i. Area names provided on signage within CBCs should correspond to the nearest BRT station, when possible, to create a connection between the BRT system/station plazas and each CBC.
- ii. BRT wayfinding signage should include information such as distances and directions to area hubs/attractions (e.g., “You’re 500-feet away from Hybla Valley BRT Station”).

### D. *Special, place-based signage should be adopted for areas such as Livability Spines, Ecological Spines, the Legacy Corridor, and the Cultural Corridor, as follows:*

- i. Signage should be located along walkways, near seating clusters, and near any programmed activity areas.
- ii. *Along Livability Spines:*
  - a. Creativity is encouraged regarding the location, design, and topic of signage, as long as it fits within the broader family of signage for the Richmond Highway area. For example, signage may incorporate creative use of color, digital and interactive features, or identity elements that complement the design and uses of the Livability Spine.



Sydney, Australia



Sydney, Australia

#### LEFT & RIGHT

Ground- and pole-mounted wayfinding signage showing directions to a nearby transit station  
Image Credit: Minale Tattersfield, City of Sydney



## DESIGN STRATEGIES (CONTINUED)

- b. Interpretive signage should relate to notable features and destinations within the CBC, including but not limited to heritage and ecological resources.
- iii. Along Ecological Spines and near stormwater management features in Livability Spines:
  - a. Signage should include interpretive elements that explain, celebrate, and make visible the ecological functions and seasonal variations occurring within the linear park corridors, including the value of stormwater as a resource and how it is being managed.
- iv. Along the Legacy Corridor (Hybla Valley-Gum Springs) and the Cultural Corridor (Woodlawn):
  - a. *Purpose:* The topic of interpretation should vary by zone (and related feature); however, all signage should have a common and distinctive visual character to distinguish the Legacy Corridor and Cultural Corridor from other areas. See Section 6D for descriptions of the Legacy Corridor zones and Section 6E for further description of the Cultural Corridor.
  - b. *Type:* Signage should include interpretive panels that explain the importance and history of the Richmond Highway area, while paving-embedded elements can be used to mark important paths and places.
  - c. *Location:* Legacy Corridor signage should be located either within the Amenity Zone or along the back edge of the sidewalk, at intervals of one signage panel (or cluster of panels) per block. Cultural Corridor signage should be located at regular intervals along trails, at special locations with heritage and cultural interest, or at key trail intersections.

## 3 DESIGN AND GRAPHIC STYLE

- A. Imagery/icons
  - i. Signage should reflect significant characteristics of the CBCs along the Richmond Highway Transit Boulevard, including any community-specific branding elements.
  - ii. Icons (such as those meant to represent the BRT system, shopping areas, environmental features, etc.) should be simple and easy to interpret in any language.
- B. The size, typeface, graphics, illustrations, and orientation of signs should be designed for the intended user based on where and by whom a sign will be viewed (e.g., by a pedestrian, by a driver, or by a passenger in a moving vehicle).
- C. Technology such as “smart” signage and digital displays should be incorporated in the public realm to provide current information regarding businesses, transit, parking, etc.
- D. The design of signage should reflect current research and best practices pertaining to bird-friendly design. Color and material selection should prioritize colors and materials that do not have an adverse impact on birds. To the extent possible, signage should be designed to welcome perching birds. Reflective materials should be avoided.
- E. Sign content including lettering and maps should be designed with a range of users in mind and include features such as contrasting sign content and clear lettering.
  - i. Maps and content that are intended to be viewed in close range should be located between 35 and 55 inches above ground level.
  - ii. Color Selection for signage should include current research that recommends avoiding certain colors that may have an adverse impact on birds.

# 3B LINEAR PARKS

Linear parks are typically long, narrow open spaces that follow the alignments of corridors such as waterways, roadways, and trails. In the Richmond Highway area, two predominant types of linear parks serve as organizing elements and significant open spaces within multiple CBCs.

- **Livability Spines** are special street types that include Linear Parks.
- **Ecological Spines** are linear parks and riparian corridors that may include roadways.

The linear parks also function as green corridors, providing critical ecological and public health functions that include stormwater absorption and filtration, tree canopy expansion, and wildlife

habitat creation while also serving as opportunities to re-establish native plant communities and educate the public about ecological processes.

This section provides design guidance for each type of linear park. When design principles and strategies refer to the linear park portions of Livability Spines and Ecological Spines, this area is generally assumed to encompass the green and open areas located between adjacent sidewalks, buildings, property lines, and other constructed edges. For the purpose of calculating contributions toward open space requirements, any walkways or pathways integrated into these green and open areas are also considered to be part of the linear park.



Sydney, Australia

**LEFT**  
A linear park that abuts a roadway  
and an adjacent development  
Image Credits: Wesley Nel

# 3B.1 LIVABILITY SPINES

Livability Spines are roadways that include linear green spaces and plazas along both sides of the roadway and along multiple street blocks. As a key component and organizing feature of the Richmond Highway area, Livability Spines enhance multimodal mobility by integrating pedestrian and bicycle facilities, and may provide connections from the CBCs to the BRT stations. As linear parks with outdoor activities and active uses adjacent to the ground floors of buildings, Livability Spines can function as “main streets” and community gathering places for the CBCs.



#### REFERENCES FOR LIVABILITY SPINES

[Volume I Urban Design Guidelines for CRDs and CRAs \(Chapter 3\)](#)  
Urban Parks Framework in the Comprehensive Plan – Policy Plan

## DESIGN PRINCIPLES

**Livability Spines should serve as important open space and ecological connections.** They should link individual open spaces to active CBC land uses and, in some instances, to BRT stations, while also functioning as green corridors through the provision of a range of ecological functions.

**Livability Spines should be flexible spaces that accommodate a spectrum of active and passive uses to foster street life.** Livability Spines should function as public, democratic spaces that accommodate diverse users. Each Livability Spine should be designed with a broad spectrum of spaces and uses, including spaces for both active, programmed activities and passive recreation and respite. Livability Spines should also include adaptable spaces that are able to accommodate a range of temporary uses when opportunities arise.



#### RIGHT

A rendering of the Livability Spine in Penn Daw CBC showing an interconnected multi-use walkway, linear park space, and active Building Zone

## DESIGN PRINCIPLES (CONTINUED)

**Uses and programming within Livability Spines should complement and respond to adjacent land uses.** With some exceptions, as noted in the following design strategies, portions of the Livability Spine adjacent to commercial or retail uses or other higher-density land uses should emphasize active programming, while portions adjacent to lower-density residential neighborhoods should emphasize passive uses.

**Livability Spines should be created by aggregating park space contributions by individual property owners to create vibrant linear parks adjacent to the roadway.** In lieu of each new development providing its own small park space, the developers of projects abutting a Livability Spine should coordinate in the design and implementation of that linear park space. The result will be a set of larger common public spaces, coordinated across developments, that have impact far greater than the sum of its individual parts.

## DESIGN STRATEGIES

### 1 ACTIVE AND PASSIVE USES

- A. As shown in *Graphics 16-18*, the selection and location of activities within the Livability Spines should reflect a mix of active and passive uses that generally correspond with adjacent land uses, building densities, and ground floor designs.
  - i. The most active Livability Spine uses should generally be located in areas that are (a) closest to the Richmond Highway Transit Boulevard and BRT stations, and (b) adjacent to commercial, retail and medium- to high-density multifamily uses and other highly-active public areas.
  - ii. The majority of passive uses should generally be concentrated on blocks adjacent to lower-density residential neighborhoods or in locations where topography may impact the feasibility of active uses.
  - iii. Exceptions to the guidance above may occur in instances where Livability Spine uses and adjacent land uses are complementary in nature. For example, a Livability Spine may incorporate passive green space, such as an open lawn or garden area, that complements adjacent higher-density restaurant and retail uses (e.g., consuming a carry-out meal or coffee, while seated on a lawn or bench). Similarly, an active use such as a small playspace may be appropriately located next to a lower-density residential neighborhood as long as sufficient noise buffers are provided between playspaces and individual homes.
  - iv. Even the most active portions of Livability Spines should incorporate spaces devoted to passive recreation to enable a diverse range of experiences, including places for rest, relaxation, and informal gatherings.

## DESIGN STRATEGIES (CONTINUED)

- B. Livability Spines should include flexible spaces that can accommodate temporary activities.
  - i. Where possible, spaces for passive recreation, such as open lawn areas, should be designed to accommodate a variety of active, programmed uses when the need or opportunity arises.
  - ii. Temporary roadway closures adjacent to the Livability Spine should be considered for special events.

### 2 TRANSITIONS AND INTEGRATION OF SITE ELEMENTS

- A. Adjacent to the roadway, there should be generous landscaping and street furnishings to create a comfortable and attractive pedestrian environment.
- B. A multi-use walkway should accommodate both pedestrian and bicycle travel. The alignment and design of the walkway

should be flexible and should be creatively integrated into the linear park, such that it is a distinctive facility that connects to adjacent uses and other paths.

- C. The multi-use walkway, linear park, and Building Zone should work together to create a unified environment in which activities within the three zones can intermingle and people can easily move readily among the zones as desired. The multi-use walkway should incorporate multiple connections between the Building Zone area and the sidewalk in each block, as follows:
  - i. Depending on the size of the block, two to four connections between the Building Zone and the Amenity Zone, through the multi-use walkway, are recommended along each block.

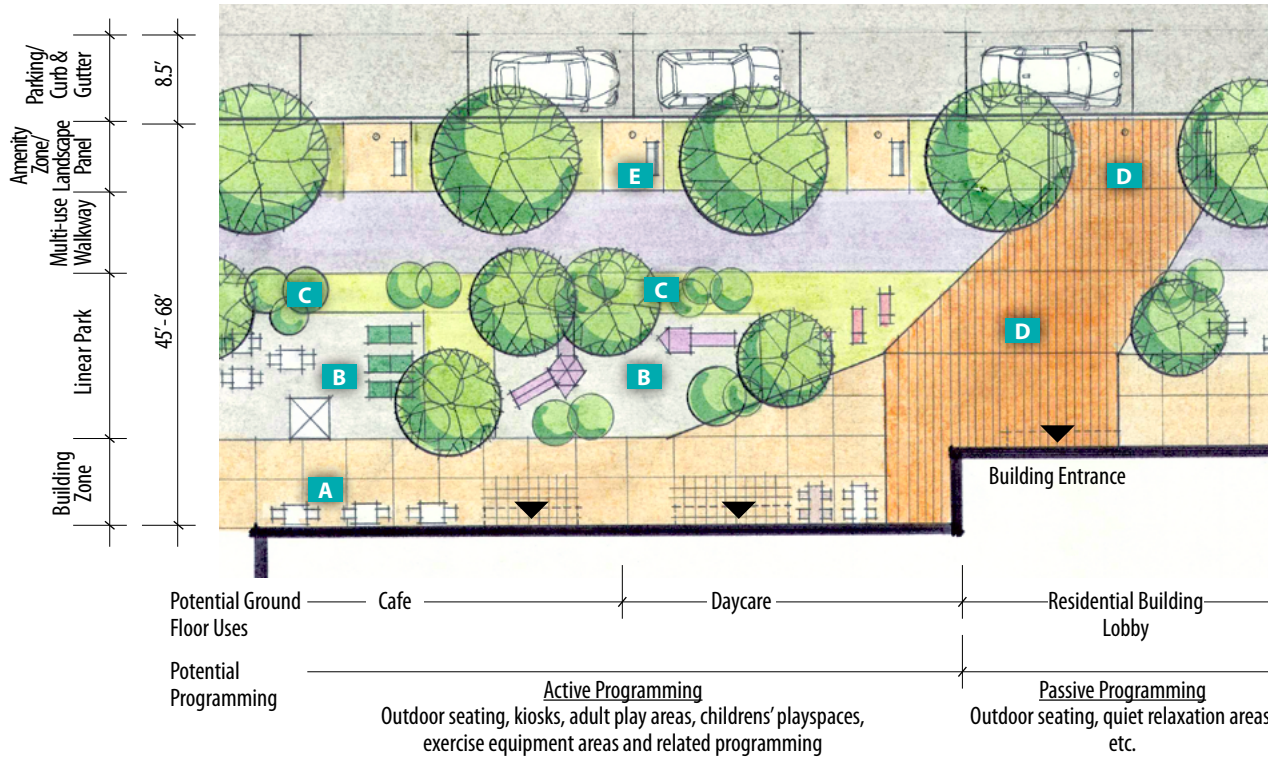


#### RIGHT

Adult play programming along a linear open space with outdoor “rooms” for different activities, similar to the Livability Spine  
 Image Credit: Florian Groehn, Simon Whitbread

Sydney, Australia

**GRAPHIC 16: LIVABILITY SPINE PROGRAMMING ADJACENCY AND CONTEXT**

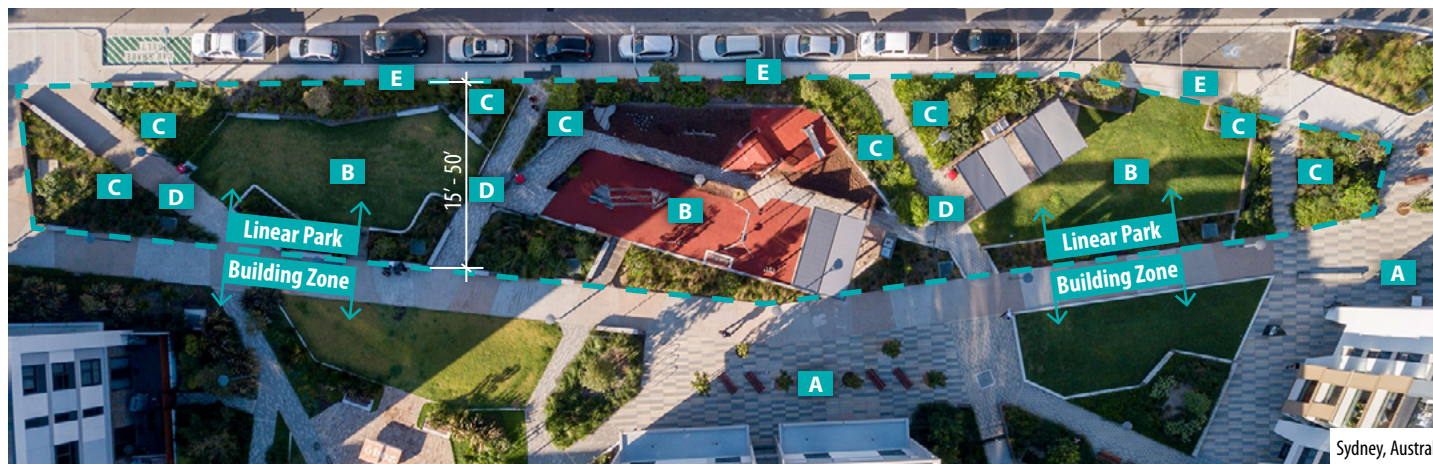


**KEY**

- A** Outdoor dining / seating / planters / etc. along a building façade
- B** Programming clusters (“rooms”)
- C** Appropriate landscape buffers (trees, low understory planting, etc.) and architectural screens between each “room”, adjoining walkways, and Building Zone areas
- D** Paths that connect Building Zones, linear parks, walkways and Landscape Panel / Amenity Zone using special paving treatments
- E** Hardscape areas/Amenity Zones provide pedestrian connections between on-street parking and walkways / linear parks / Building Zones

**NOTE:**

Key applies to the graphic and image on this page



**LEFT**

Example of a linear park with Livability Spine features. These include outdoor dining along the building façade, programming clusters, and connections between Building Zones, linear parks, and parked vehicles  
Image Credit: Wesley Nel

## DESIGN STRATEGIES (CONTINUED)

- D. Understory plantings, such as hedges or shrubs, should be utilized to define and buffer distinct spaces, or “rooms,” within the linear park portions of the Livability Spine. (see *Graphic 16*).
- E. Fencing should be utilized only when necessary to separate children’s playspaces or spaces for off-leashed pets from other uses, such as multi-use walkways.
  - i. Fencing should be no more than 4-feet high.
  - ii. Fencing materials that provide transparency, such as steel or powder-coated aluminum, are encouraged.
- F. Stormwater management facilities, including green stormwater infrastructure strategies, should be integrated into the Livability Spines. In addition to capturing and treating stormwater, these features can serve as distinctive landscape elements that lend character to the Livability Spine. See Section 3B.3 of this chapter for additional guidelines pertaining to stormwater management and 3A.4 for tree planting in these facilities.

### 3 PAVING MATERIALS

- A. Poured-in-place concrete should serve as the primary paving material for multi-use walkways within Livability Spines.
- B. Within the Amenity Zone, special precast concrete pavers, consistent with those suggested for Amenity Zones along other streetscape types, should be the primary paving materials used.
- C. Special paving and patterns should be incorporated to highlight locations where transitions from the Building Zone to the Amenity Zone occur. At connection points between the Building Zone and the Amenity Zone, creativity in paving materials and design is encouraged to highlight these connections for pedestrians and bicyclists. Paving materials

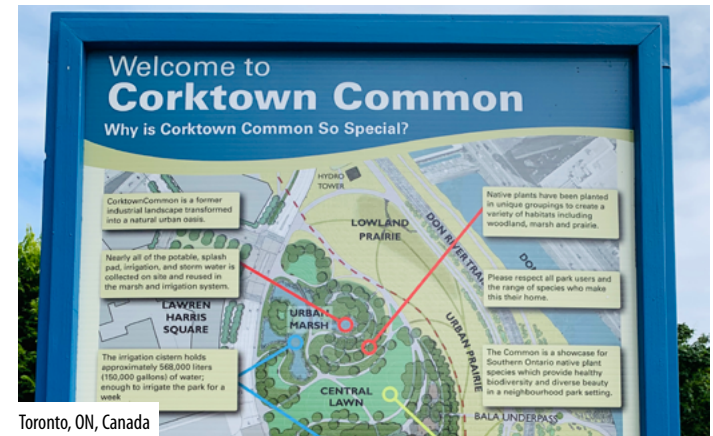
are not limited to those suggested for streetscapes and plazas and may include other materials and colors compatible with the overall paving palette for the area, as described in section 3A.1.

### 4 CONTINUITY BETWEEN BLOCKS

- A. Each Livability Spine should incorporate common, identifiable, and recurring visual elements that make it read as a whole, even when uses and programming vary from segment to segment. Potential visual elements could include a family of signage and/or distinctive paving treatments, such as branded markings or coloring.
- B. Along the length of the Livability Spine, transitions between blocks and across streets should be highlighted by visual elements such as signage that signal the continuation of the Livability Spine while alerting motorists to crossing pedestrians and bicyclists.
- C. At street intersections, curb ramps should be designed for both bicycles and pedestrians and that there should be a 3-foot lateral clear zone.

#### RIGHT

An example of interpretive signage within a park  
Image Credit: Fairfax County





Washington, DC

**TOP**  
An example of connections between the Sidewalk and the Building Zone within a linear park; stormwater management facilities are integrated into other landscape elements to provide environmental benefits  
Image Credit: Rhodeside & Harwell



Northampton, MA

**BOTTOM**  
A passive trail connecting adjoining sidewalk spaces flanked with seating and plantings: an example of passive outdoor activities that could occur along the Livability Spine that also provide habitats  
Image Credit: Ty Cole Studio, Stimson



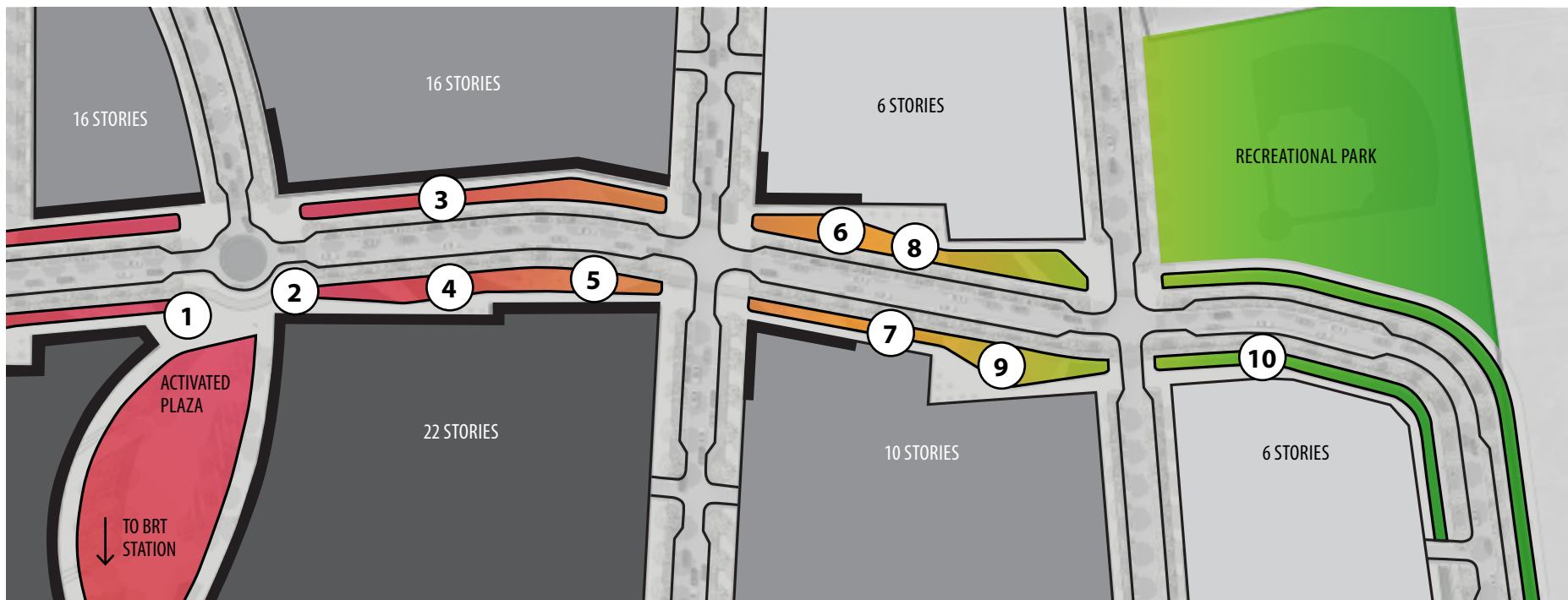
### GRAPHIC 17: LIVABILITY SPINE PROGRAMMING CONTEXT ACROSS MULTIPLE BLOCKS (PROTOTYPE)

ACTIVE GROUND FLOOR USE

HIGH RISE BUILDING      LOW RISE BUILDING

ACTIVE PROGRAMMING      PASSIVE PROGRAMMING

PROGRAMMING SHOULD BE COORDINATED WITH THE SPECTRUM OF USES ILLUSTRATED ON THE NEXT PAGE.

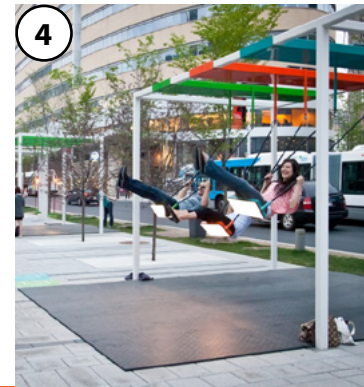
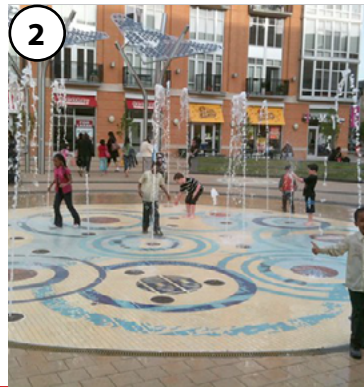


MORE ACTIVE PROGRAMMING IS LOCATED NEAR RETAIL/COMMERCIAL USES, HIGHER-DENSITY DEVELOPMENT, HIGHLY- ACTIVE ADJACENT PUBLIC SPACES, AND BRT STATIONS

MORE PASSIVE PROGRAMMING IS LOCATED NEAR LOWER-DENSITY DEVELOPMENT, PASSIVE ADJACENT PUBLIC SPACES, AND EXISTING SINGLE FAMILY RESIDENTIAL NEIGHBORHOODS

GRAPHIC 18: PROGRAMMING EXAMPLES

ACTIVE PROGRAMMING



MORE ACTIVE

LESS ACTIVE

MARKETS, FOOD TRUCKS, FESTIVALS

Permanent hardscape or structures that accommodate recurring markets or festivals  
Image Credit: Stephen Elliot

Water features and fixed or movable games that invite interaction, play, and gathering  
Image Credit: Elisa Murray

ACTIVE PLAY

Permanent climbing walls or rope courses for safe play of all age groups  
Image Credit: Gehl

Swings, seesaws or movable objects whose movements activate sounds and lights. May accommodate small-scale performances  
Image Credit: Olivier Blouin, Arlington Now

INFORMAL PLAY

Permanent or temporary large-scale board games that do not require specialized play equipment  
Image Credit: Gehl

PASSIVE PROGRAMMING



LESS PASSIVE

MORE PASSIVE

OUTDOOR FITNESS

Permanently placed fitness equipment stations that allow for self-guided fitness routines  
Image Credit: PUPN Magazine

MOVEABLE SEATING AREAS

Hardscape areas with movable chairs, tables and plantings to allow for informal lingering  
Image Credit: Copley Wolff

LAWNS FOR OCCASIONAL EVENTS

Flexible lawns that can accommodate occasional special events, but primarily host solitary activities or small, organic gatherings  
Image Credit: Gehl

GARDENS, TREE ALLÉES, NATURALISTIC PLANTINGS WITH SEATING

Soft and hardscaped areas that invite respite and contemplation  
Image Credit: Ty Cole Studio, Scape

Heavily-planted areas with seating. Plantings might include dense tree canopies or special habitats for fauna and pollinators  
Image Credit: Ty Cole Studio, Stimson

## LIST OF POTENTIAL ACTIVE AND PASSIVE PROGRAMMING ACTIVITIES/FEATURES

Following is a list of potential active and passive programming activities/features for public spaces, including Livability Spines, Ecological Spines, neighborhood parks and plazas, and related open space areas. While not an exhaustive list, these programming activities/features are intended to be used as suggestions and inspiration for public space design. The applicability of specific programming within a particular public space should be carefully considered based on factors such as location and surrounding land uses, available area, adjacency to ground floor uses, etc.

### ACTIVE USES AND EVENTS:

- Markets (e.g., farmers, specialty market, etc.)
- Performances (e.g., music, dance, theater, etc.)
- Stage/Amphitheater
- Carousel
- Skating rink
- Water park
- Splash pad
- Bike safety course/traffic garden
- Obstacle course
- Beer/wine tastings
- Food festivals/Food trucks
- Ethnic festivals/Cultural fairs
- Carnival with rides
- Petting zoo
- Winter tree lighting ceremony
- Pumpkin patch
- Coffee shop
- Fitness classes (e.g., yoga, bootcamp, aerobics, martial arts)
- Track & field day
- Multi-Sport court
- ...and more.

### ACTIVE-LITE / SOCIAL RECREATION USES AND EVENTS:

- Outdoor movie nights
- Watching major sporting events like World Cup
- Educational classes or clubs (e.g., scouts, environment, science, hobbies, arts and crafts, etc.)
- Large-scale chess and/or checkers games
- Table or life-size games like Kerplunk, Jenga, Connect4
- Equipment/games like jump ropes, frisbees, soccer balls, wiffleball, hula-hoop
- Lawn/ground games like four square, bocce ball, cornhole, hop-scotch, Twister
- Chalk art
- Playgrounds (climbable facilities, swing, slide, see-saw, sand pit, bouncy animal, monkey bars, etc.)
- Dog park
- Fitness stations
- Outdoor gym
- Swings
- Children's maze
- Sound sculptures
- Interactive art
- Interpretive programming
- Climbing structure/wall/trees/rocks
- Rope skills/tightrope
- Ping pong
- Public piano
- One-person stage/puppet theatre/magician/poetry reading
- Giant LEGOS
- Tai Chi
- Meditation
- Citizen science
- Volunteer landscape maintenance
- ...and more.

**PASSIVE USES:**

- Trails/walking paths
- Green spaces
- Seating areas
- Bike share station
- Kayak/Canoe launch
- Hammock
- Public Art
- Gathering spaces
- Gardening spaces/Community garden
- Creek/River walks
- Geocaching
- Butterfly garden
- Native-species garden
- Nature paths / nature walks
- Recreational trail
- Heritage trail / history trail
- Bike-repair
- Fountain
- Educational signage
- Lounge / Adirondack chairs
- Birdwatching
- Wildlife viewing
- ...and more.

**IMPLEMENTATION STRATEGIES**

The implementation of Livability Spines will involve coordination among the Departments of Planning and Development, Public Works and Environmental Services, and the Fairfax County Park Authority. Specific considerations during the implementation process include the following:

- A. Prior to submitting a plan that includes a potential Livability Spine alignment, a property owner should **coordinate with County staff** on an appropriate plan for Livability Spine design and development, including more specific strategies for site programming based on factors such as available space, adjacent land uses, and coordination with other programming existing and planned for the Livability Spine.
- B. **Each developer should implement the portion of the Livability Spine** that aligns with a development's property lines. The first developer to construct a portion of the Livability Spine should set the tone for future additions to it. Subsequent developments should coordinate with other developers and with the County to ensure that factors such as space needs and programming are well-coordinated, cohesive, and not duplicative.
- C. The Livability Spine can be used to meet **Urban Park Space Requirements**. If park space credit is pursued, these facilities should be privately maintained. See the Urban Street Network Design section of the Comprehensive Plan for details regarding the Livability Spine (Avenue).

## 3B.2 ECOLOGICAL SPINES

Ecological Spines are linear parks and enhanced riparian corridors for select locations in the Richmond Highway area where there are surface or buried streams. Formed by “daylighting” covered streams or by enhancing existing streams and riparian buffer areas, Ecological Spines can serve a range of ecological, recreational, and educational purposes while connecting people with nature. Ecological Spines function as critical green corridors that augment downstream health and offer the potential for habitat creation through the modeling of natural systems and the integration of native plants. They may include local streets and/or stormwater management facilities. As passive linear parks with recreational amenities along stream valleys, Ecological Spines function as primary components and organizing elements of the open space and street networks.



**RIGHT**  
A restored and “daylit” stream  
running through a new  
development project  
Image Credit: Headwaters at  
Tryon Creek

Portland, OR

### DEFINITIONS

**Active Channel:** The stream area occupied by typical flood events (i.e., comparable to the two-year recurring flood). The active channel generally coincides with the ordinary high-water mark. (Source: Washington DNR)

**Bankfull:** A flow event that fills the stream cross-section, just before it overtops the banks. (Source: Virginia Department of Conservation and Recreation)

**Bankfull Bench:** A flat or shallowly sloped area above bankfull

### REFERENCES FOR ECOLOGICAL SPINES

**RPA designation:** [Chesapeake Bay Preservation Act \(§62.1-44.15:72.F\)](#); [Fairfax County Stormwater Management \(SWM\) Ordinance \(Section 118-1-5 & 118-1-6\)](#), [Fairfax County Public Facilities Manual \(PFM\)](#)

**SWM Quality and Quantity Standards:** [Fairfax County SWM Ordinance \(Chapter 124\)](#), [CBPO \(Chapter 118\)](#) and floodplain requirement ([Part 2-900 of County Zoning Ordinance](#))

**Riparian Buffers Modification & Mitigation Guidance Manual:** Virginia Department of Conservation and Recreation (Chesapeake Bay Local Assistance) [[https://townhall.virginia.gov/L/GetFile.cfm?File=GuidanceDocs%5C440%5CGDoc\\_DEQ\\_5415\\_v1.pdf](https://townhall.virginia.gov/L/GetFile.cfm?File=GuidanceDocs%5C440%5CGDoc_DEQ_5415_v1.pdf)]

**Natural Channel Design:** USEPA Review Checklist [<https://www.fws.gov/chesapeakebay/StreamReports/NCD%20Review%20Checklist/Natural%20Channel%20Design%20Checklist%20Doc%20V2%20Final%2011-4-11.pdf>]

**Policy Plan:** Environmental Section, Objective 9, Policy a

**Water Quality Stewardship Guide:** [<https://www.fairfaxcounty.gov/soil-water-conservation/water-quality-stewardship-guide>]

**Virginia Stream Restoration and Stabilization BMP Guide:** [<https://www.deq.virginia.gov/Portals/0/DEQ/Water/Publications/BMPGuide.pdf>]

**Federal Stream Corridor Restoration Handbook:** [<https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/water/manage/restoration/?cid=stelprdb1043244>]

**Resiliency Design:** Design and Planning for Flood Resiliency Guidelines for NYC Parks [<https://www.nycgovparks.org/planning-and-building/planning/resiliency-plans/flood-resiliency>]

**Tyson's Comprehensive Plan Stormwater Flowchart :** [<https://www.fairfaxcounty.gov/tysons/stormwater-management>]

**Richmond Highway Comprehensive Plan reference to public health**

that dissipates energy during flows above bankfull. (Source: US Army Corps of Engineers)

**Constrained Section:** A section of an Ecological Spine that has limited space due to conditions such as the presence of structures or other development. These sections may have constructed, rather than natural banks.

**Constrained Waterway:** A portion of the Ecological Spine where the width of the waterway is limited by adjacent structures and development, and where the floodplain is typically contained within its constrained portions.

**Daylighted Stream:** A stream that had been previously diverted into an underground drainage system, has been redirected into an aboveground channel using natural channel design concepts (as defined in § 62.1-44.15:51), and would meet the criteria for being designated as a Resource Protection Area. (Source: Commonwealth of Virginia, Chesapeake Bay Preservation Act)

**Resource Protection Area (RPA):** A component of the Chesapeake Bay Preservation Area comprised of lands adjacent to water bodies with perennial flow that have an intrinsic water quality value due to the ecological and biological processes they perform or are sensitive to impacts which may result in significant degradation of the quality of state waters. In their natural condition, these lands provide for the removal, reduction, or assimilation of sediments, nutrients, and potentially harmful or toxic substances from runoff entering the Bay and its tributaries, and minimize the adverse effects of human activities on state waters and aquatic resources. (Source: Chapter 118, Fairfax County Code of Ordinances - Chesapeake Bay Preservation Ordinance)

**Riparian Area:** A vegetated or partially vegetated area adjacent to rivers and streams including but not limited to river and stream beds and banks. Riparian areas are the “ribbons of vegetative green” adjacent to and including rivers and streams. Riparian areas

are often flooded or subject to high ground water. (Source: Jon Kusler, Association of State Wetland Managers)

**Riparian Corridor (Urban):** A management prescription area designed to include much of the riparian area. Within the urban riparian corridor, management practices are employed to maintain riparian functions and values, when possible. This can include corridors along defined perennial and intermittent stream channels that show signs of scour, and around wetlands and springs. (Source: USDA)

**Stream Bank:** The sides of a stream channel between which water flow is confined. (Source: Wikipedia)

**Stream Enhancement:** An intervention that improves the value of particular aspects of a stream and related land resources. (adapted from Craig Fischenich, USACE)

**Stream Restoration:** An intervention that returns a stream ecosystem to a close approximation of its condition prior to disturbance. (adapted from Craig Fischenich, USACE)

**Unconstrained Section:** A section of an Ecological Spine that allows for natural banks and typically has Riparian Area outside the bankfull elevation. It typically has floodplain and Riparian Area outside the channel.

**Unconstrained Waterway:** A place where the width of the waterway is not limited by adjacent structures or development, has a floodplain, and can accommodate more recreational uses.

**Waterway:** A broad term used to encompass many types of perennial and intermittent bodies of water.

## DESIGN PRINCIPLES

**Ecological Spines should function as resilient and ecologically sound riparian corridors.** These corridors should support natural hydrological processes, such as infiltration and evapotranspiration, and withstand expected stormwater flows under normal conditions as well as more extreme weather patterns. Native plantings should be integrated into the corridor to create and support habitat for a variety of plants and wildlife.

**Ecological Spines should serve as open space amenities that enhance community character, identity, and mobility.** Through high-quality design, materials, and plantings, Ecological Spines should create experientially rich landscapes that provide places for respite, gathering, passive recreation, and access to nature. These areas should enhance community aesthetics; serve as visual focal points within the community; provide scenic pedestrian and bicycle connections; and allow for low-volume vehicular access in certain locations.

**Ecological Spines should foster strong connections between people and nature by providing immersive natural experiences and learning opportunities.** Ecological Spines should be designed to facilitate physical and visual access to waterways so that users can appreciate and interact with natural features. As living demonstrations of ecological processes, they should celebrate, interpret, and increase the public's understanding of ecology, hydrology, cultural resources/heritage, and their community's natural resources.

## DESIGN STRATEGIES

### 1 FLOOD RESILIENT DESIGN

- A. Ecological Spines should be designed for resilience, incorporating diverse plantings that are able to respond to environmental stressors and recover after significant disruptions such as major storm events.
- B. Buildings proposed near restored waterways should not be constructed within areas that are subject to flooding by 100-year storm events (e.g., within the floodplain). Floodproofing of buildings and structures should be considered when they are located in proximity of floodplain.
- C. Except for necessary crossings, roadways should be located outside the floodplain wherever possible.
- D. As the County adapts to climate changes, modifications, policies and designs, such as the design storm, may be necessary to adjust to new county planning requirements.

### 2 RIPARIAN ENHANCEMENT AND RESTORATION

- A. Urban riparian corridors and buffers should be reconstructed as needed to manage and convey the quantity, and improve the quality, of stormwater entering the waterways.
- B. Historical and archaeological analyses of a waterway's evolution over time should inform the design of Ecological Spines by providing an understanding of historical flow patterns, waterway alignments, and meanders.
- C. Ecological Spines can be augmented to treat on-site runoff using constructed wetlands or other stormwater management features within the corridor. (See the Ecological Spine Type 2 cross-section in *Graphic 20*)
- D. The slopes along waterways may be stabilized using both

natural and built elements. Such techniques may include natural channel design, planting native vegetation, or by using concrete steps that retain soil and also provide access to water while withstanding stream bank erosion resulting from flooding and fast-moving water.

- E. During implementation of Ecological Spines, measures to stabilize stream banks should be employed using natural cover (such as coir matting, soil lifts, and clay plugs), when possible. Application of materials such as mulches, which are susceptible to being washed away during storm events, are discouraged.

### 3 ENVIRONMENTAL HEALTH AND HABITAT CREATION

- A. As green corridors, Ecological Spines should provide for the habitat needs of local flora and fauna by:
  - i. Creating a continuous, well-connected system of riparian corridors;
  - ii. Using native plant species to stabilize the area and enable local fauna to access shelter, water, and food sources year-round; and
  - iii. Ensuring natural bottoms to support the passage of anadromous (migratory) fish.
  - iv. Employing restoration strategies and incorporating native plant and seed mixes that take into account the ability of desirable plants to spread and reseed, while minimizing the ability of invasive plants to overpopulate an area.

### 4 LINEAR PARK CHARACTER AND AMENITIES

- A. Linear parks should integrate a variety of amenities to enhance visitor comfort, including seating and gathering spaces, bike racks, and signage.
- B. Where appropriate and where space allows, Ecological Spines should accommodate a range of activities and experiences, including programmed activity spaces, water access points, viewing platforms, interpretive elements, public art installations, play spaces, fitness facilities, and performance areas while maintaining and protecting existing natural resources.

### 5 EDUCATION AND CONNECTION TO NATURE

- A. The design of stream channels should enable easy access to the water's edge to allow for maintenance and provide opportunities for visitors to interact with the water (see Section 3B.3 on stormwater management).
- B. Ecological Spines should foster tactile and immersive experiences that encourage connection with nature and interaction with water. Elements such as stepping stones, viewing platforms, and bridges should draw park users into these places.



## DESIGN STRATEGIES (CONTINUED)

- C. Ecological Spines should be designed to educate and enlighten park users and instill an appreciation for nature. Through elements such as signage and art, they should incorporate interpretive elements that explain, celebrate, and make visible the ecological functions, cultural resources, and seasonal variations occurring within the corridors.
- D. In combination with interpretive elements, the design of Ecological Spines should visibly demonstrate natural processes at work, including the value of rainwater as a resource and how it is being managed. Ecological Spine design should reveal, rather than conceal, restoration techniques (e.g., naturalized stormwater outlets and on-site stormwater systems), while accompanying interpretive elements should highlight and explain the natural processes occurring.

## TYPES OF ECOLOGICAL SPINES

This section describes the different types of Ecological Spines, highlights locations where the spine types may be applied, and provides sample cross-sections of different Ecological Spine applications.

There are four distinct types of Ecological Spines designed to fit a range of site-specific conditions and constraints. Some types of Ecological Spines have local streets with buildings along one or both sides, while others feature an adjacent linear park with a shared-use path.

Ecological Spines may be characterized as constrained or unconstrained, depending on the amount of space available for development, stream banks, and amenities. Unconstrained Ecological Spines typically include naturalized banks, while constrained Ecological Spines generally require constructed banks.

Implementing Ecological Spines requires balancing the desired ecological functions of waterways with the constraints of the Richmond Highway area's urban environment.

The four Ecological Spine types and cross-sections (See *Graphics 19-22*) present conceptual design recommendations, and may be subject to modifications based on more detailed environmental analysis during the development process.

- **Ecological Spine Type 1:** Type 1 demonstrates a condition where the waterway has a local street on one side. Its components should be sized according to the following dimensions:
  - Waterway = 44-feet to 64-feet wide
  - Right-of-way = 61-feet wide (includes 6-feet wide Sidewalk)
  - Total = 111-feet to 131-feet wide (not including the Building Zone)

## TYPES OF ECOLOGICAL SPINES (CONTINUED)

- **Ecological Spine Type 2:** Type 2 combines the waterway with a local street and has a shared-use path in a linear park on the other side. There are opportunities for pedestrian connections from the Ecological Spines to existing residential neighborhoods. Its components should be sized according to the following dimensions:
  - Waterway = 50-feet to 70-feet wide
  - Shared Use Path (along Waterway) = 10-feet wide
  - Right-of-way = 54-feet wide (includes 6-feet wide Sidewalk)
  - Total = 114-feet - 134-feet wide (not including the Building Zone)
  
- **Ecological Spine Type 3:** Type 3 combines a waterway with a linear park and shared use path on one side and a walkway on the other side. There is no adjacent roadway in Type 3 Ecological Spines. There are opportunities for pedestrian connections from the Ecological Spines to existing residential neighborhoods. Its components should be sized according to the following dimensions:
  - Waterway = 30-feet to 40-feet wide
  - Walkway (along Waterway) = 10-feet wide
  - Path (along Waterway) = 6-feet wide
  - Right-of-way = N/A
  - Total = 54-feet to 64-feet wide (not including the Building Zone)
  
- **Ecological Spine Type 4:** Type 4 combines a linear park and bioswale/waterway with pedestrian and bicycle facilities along one side of the waterway. A roadway along this type of Ecological Spines is not included. Its components should be sized according to the following dimensions:
  - Waterway = 30-feet to 40-feet wide
  - Walkway (along Waterway) = 10-feet wide and is intended for use by both pedestrians and bicyclists
  - Right-of-way = N/A
  - Total = 40-feet to 50-feet wide

*Table 5* shows recommended Ecological Spine locations along existing surface and channeled streams, as well as along estimated piped waterway alignments identified using Fairfax County GIS data. However, Ecological Spine applications are not limited to the demarcated locations or to stream daylighting or bank restoration projects. Typical cross-sections for the four types of Ecological Spines are illustrated in *Graphics 19-22*.



### ECOLOGICAL SPINE DIMENSIONS

For more detailed dimensions of the Ecological Spines, see the Urban Street Network Design and CBC sections of the Comprehensive Plan.

**TABLE 5: ECOLOGICAL SPINE LOCATION EXAMPLES**

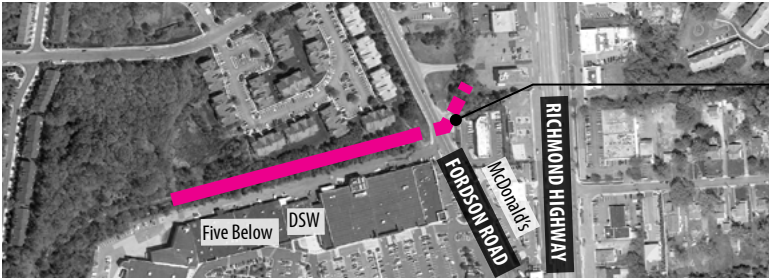
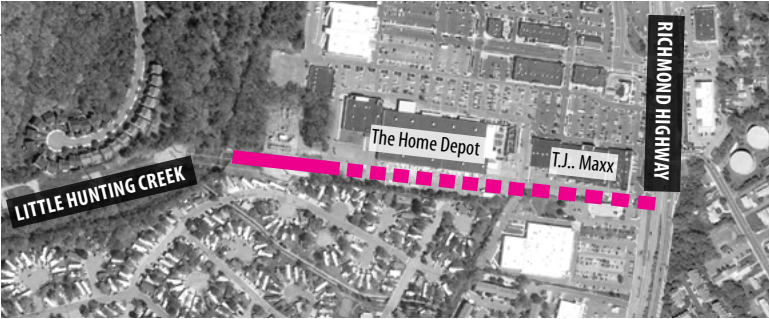
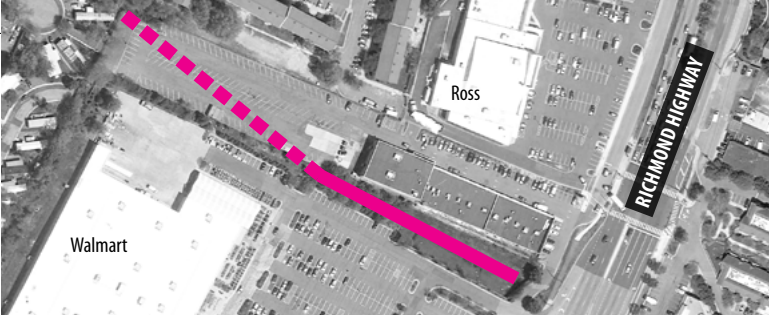





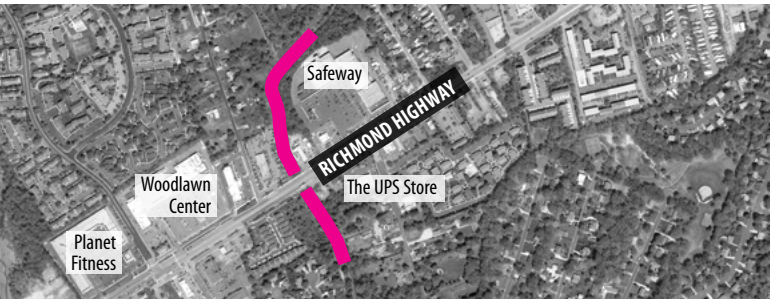
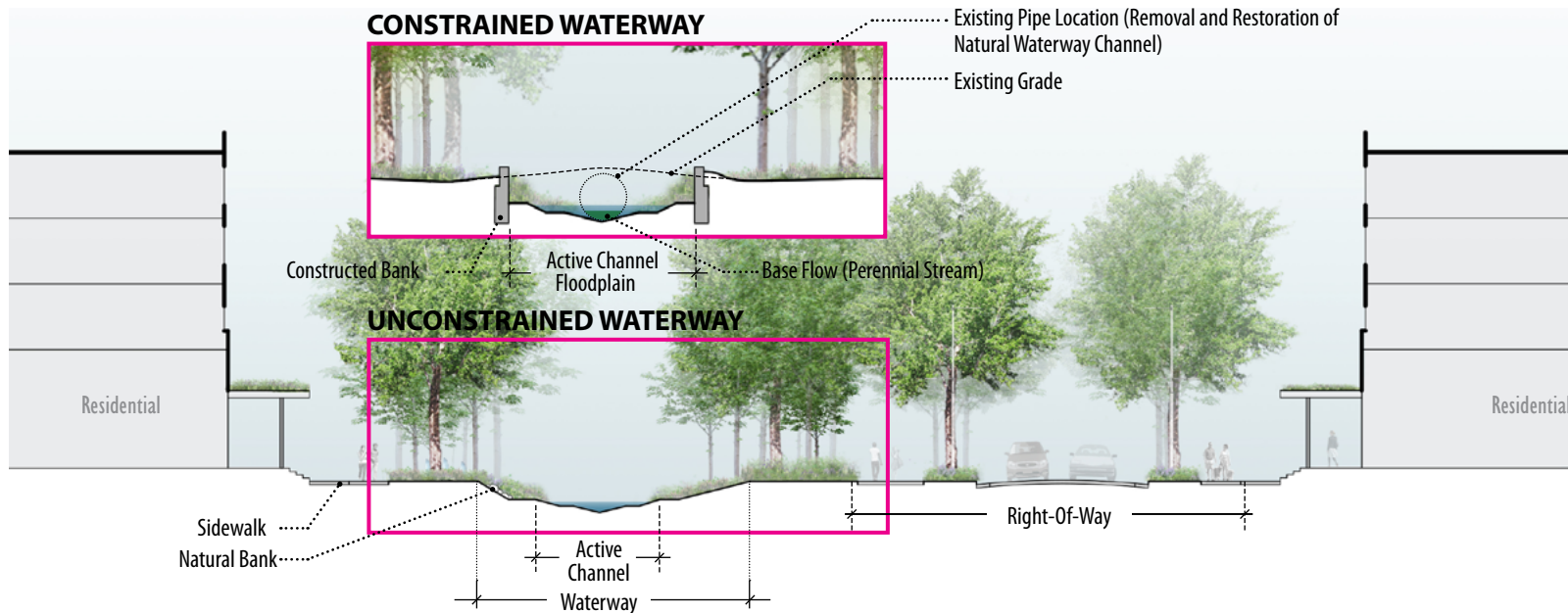
TYPE	EXAMPLE LOCATIONS & RECOMMENDED APPROACH	
<p><b>TYPES 1 &amp; 2</b></p>	<p><b>A. HYBLA VALLEY-GUM SPRINGS</b> Shopping Center off of Fordson Road</p> <ul style="list-style-type: none"> <li>Daylighting of partially buried tributary of Little Hunting Creek</li> <li>Restoration of existing surface portion of the stream</li> <li>Within existing Resource Protection Area</li> </ul>	 <p>This section connects to "D" (see next page)</p>
<p><b>KEY</b></p> <ul style="list-style-type: none"> <li>Existing Piped Streams</li> <li>Existing Surface Streams</li> </ul>	<p><b>B. HYBLA VALLEY-GUM SPRINGS</b> Home Depot Parking Lot to Richmond Highway</p> <ul style="list-style-type: none"> <li>Daylighting of partially buried tributary of Little Hunting Creek</li> <li>Restoration of existing surface portion of the stream</li> <li>Minimal to no existing Resource Protection Area</li> </ul>	
<p>Note: Many locations are a combination of piped and surface streams</p>	<p><b>C. HYBLA VALLEY-GUM SPRINGS</b> Walmart parking lot to Richmond Highway</p> <ul style="list-style-type: none"> <li>Daylighting of partially buried tributary of Little Hunting Creek</li> <li>Restoration of existing surface portion of the stream</li> <li>Minimal to no existing Resource Protection Area</li> </ul>	

TABLE 5: ECOLOGICAL SPINE LOCATION EXAMPLES

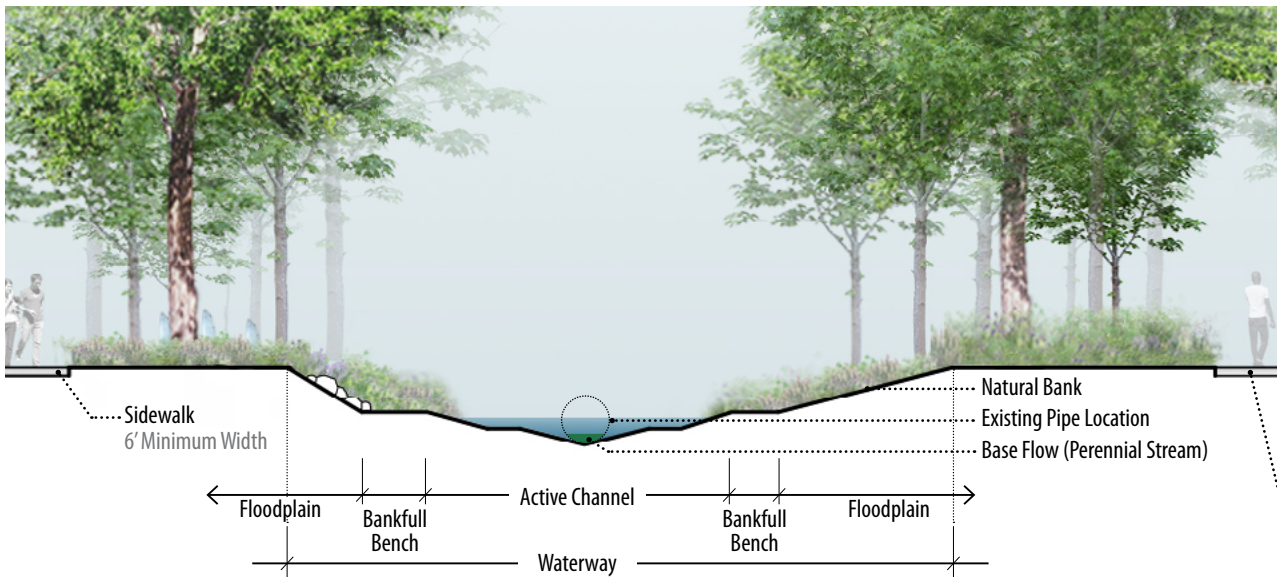
TYPE	EXAMPLE LOCATIONS & RECOMMENDED APPROACH	
<p><b>TYPE 3</b></p>	<p><b>D. HYBLA VALLEY-GUM SPRINGS</b>                      Corner of Fordson Road and Richmond Highway connecting Beechcraft Drive and Arlington Drive</p> <ul style="list-style-type: none"> <li>Restoration of existing surface portion of the stream</li> </ul>	 <p>This section connects to "A" (see previous page)</p>
	<p><b>E. HYBLA VALLEY-GUM SPRINGS</b>                      Left Image: Sherwood Hall Lane to Richmond Highway                      Right Image: Vernon Square Drive to Richmond Highway</p> <ul style="list-style-type: none"> <li>Daylighting of buried tributary of Little Hunting Creek</li> <li>Minimal to no existing Resource Protection Area</li> </ul>	
<p><b>TYPE 4</b></p>	<p><b>F. NORTH GATEWAY</b>                      Along Cameron Run</p> <ul style="list-style-type: none"> <li>Enhancement of Cameron Run shoreline</li> <li>Significant floodplain and Resource Protection Area in the vicinity of Cameron Run</li> </ul>	
<p><b>KEY</b></p> <ul style="list-style-type: none"> <li> Existing Piped Streams</li> <li> Existing Surface Streams</li> </ul> <p>Note: Many locations are a combination of piped and surface streams</p>	<p><b>G. WOODLAWN</b>                      Crossing Richmond Highway in residential area near Woodlawn Court and Lukens Lane</p> <ul style="list-style-type: none"> <li>Tributary of the North Fork of Dogue Creek</li> <li>Restoration of existing surface portion of the stream</li> <li>Significant floodplain and Resource Protection Area in the vicinity of North Fork of Dogue Creek</li> </ul>	

**GRAPHIC 19: TYPE 1 ECOLOGICAL SPINE - TYPICAL WATERWAY CROSS-SECTION DIAGRAM**



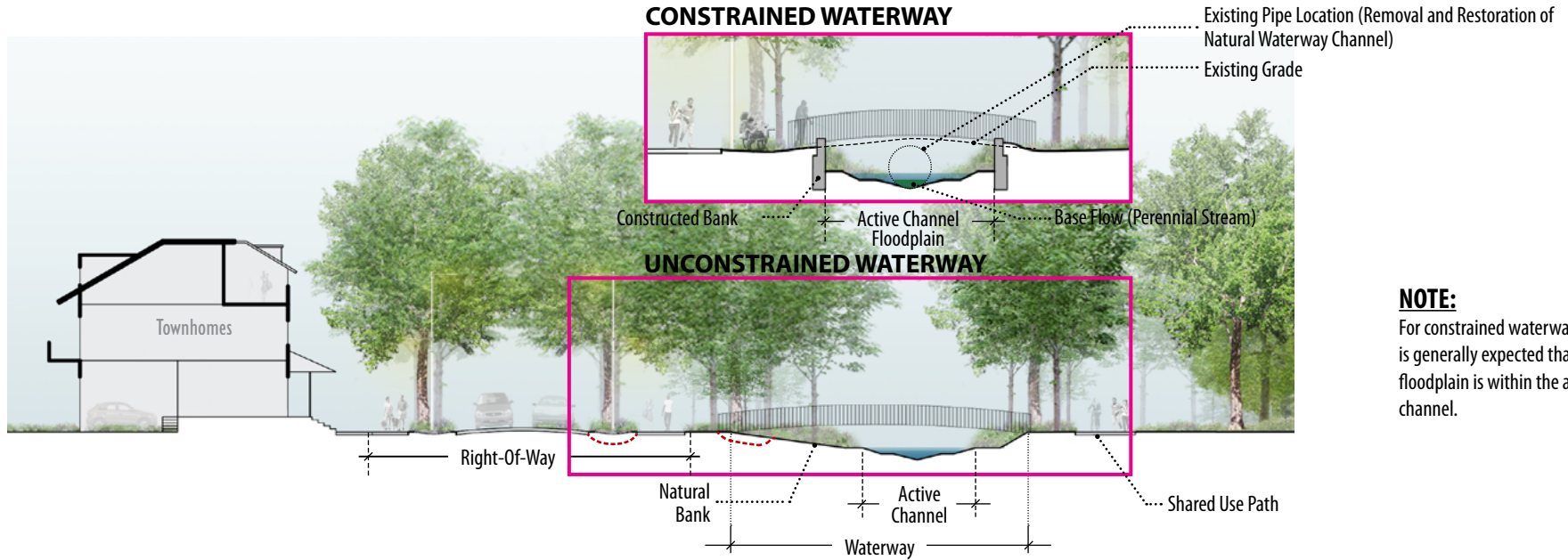
**NOTE:**  
For constrained waterways, it is generally expected that the floodplain is within the active channel.

**PREFERRED OPTION (UNCONSTRAINED WATERWAY)**



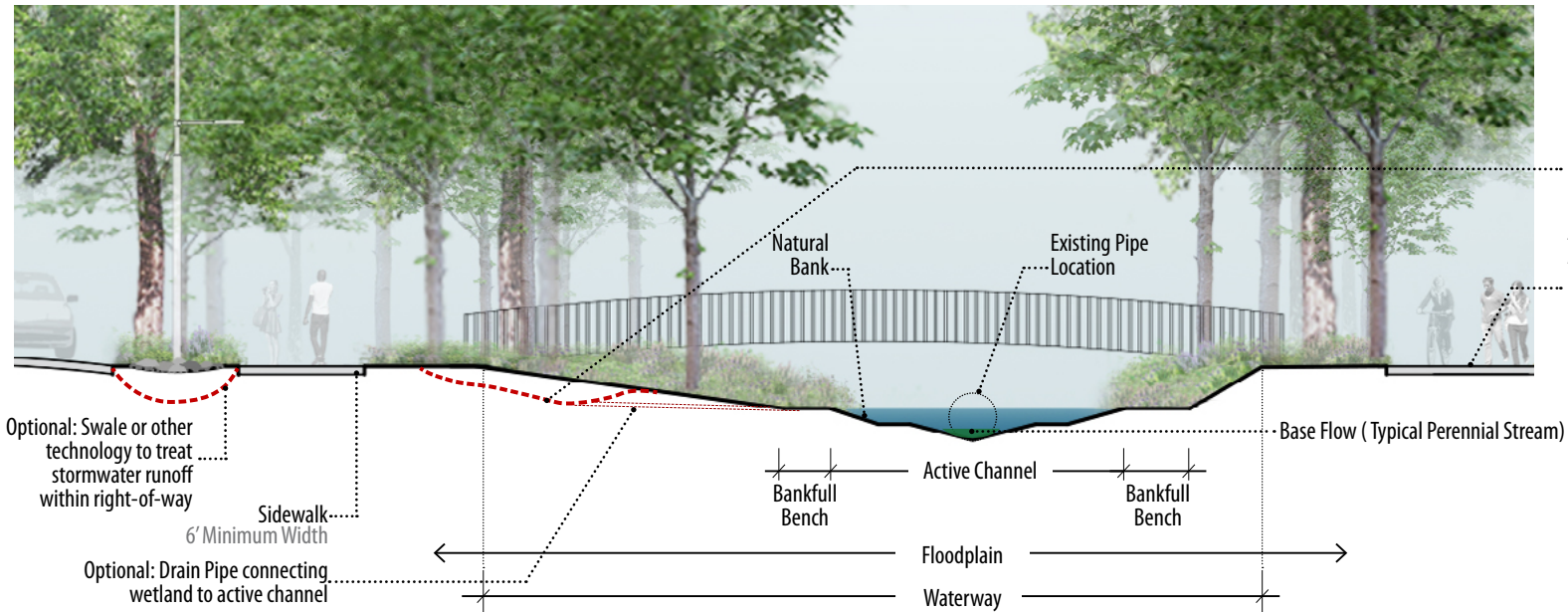
**NOTE:**  
These cross-sections are intended as examples of potential waterway design options under certain urban conditions. The actual design of the waterway will depend on many factors, including: the drainage area, the volume and velocity of flow, pollution contribution, proximity to outfalls, the condition of the surrounding environment, the size of existing pipes, etc. Further feasibility studies should be performed to determine accurate cross-sections with appropriate dimensions.  
Trees should be located outside the active channel and bankfull bench. The illustrations show mature tree canopy.  
In the Types 1 and 2 cross-section (this page and the next) examples, a 6'-diameter existing stormwater pipe is shown. The existing pipe is recommended for removal to restore the active channel.  
A constructed bank could be used on one or both sides if a natural bank is not feasible.

GRAPHIC 20: TYPE 2 ECOLOGICAL SPINE - TYPICAL WATERWAY CROSS-SECTION DIAGRAM



**NOTE:**  
For constrained waterways, it is generally expected that the floodplain is within the active channel.

**PREFERRED OPTION (UNCONSTRAINED WATERWAY)**

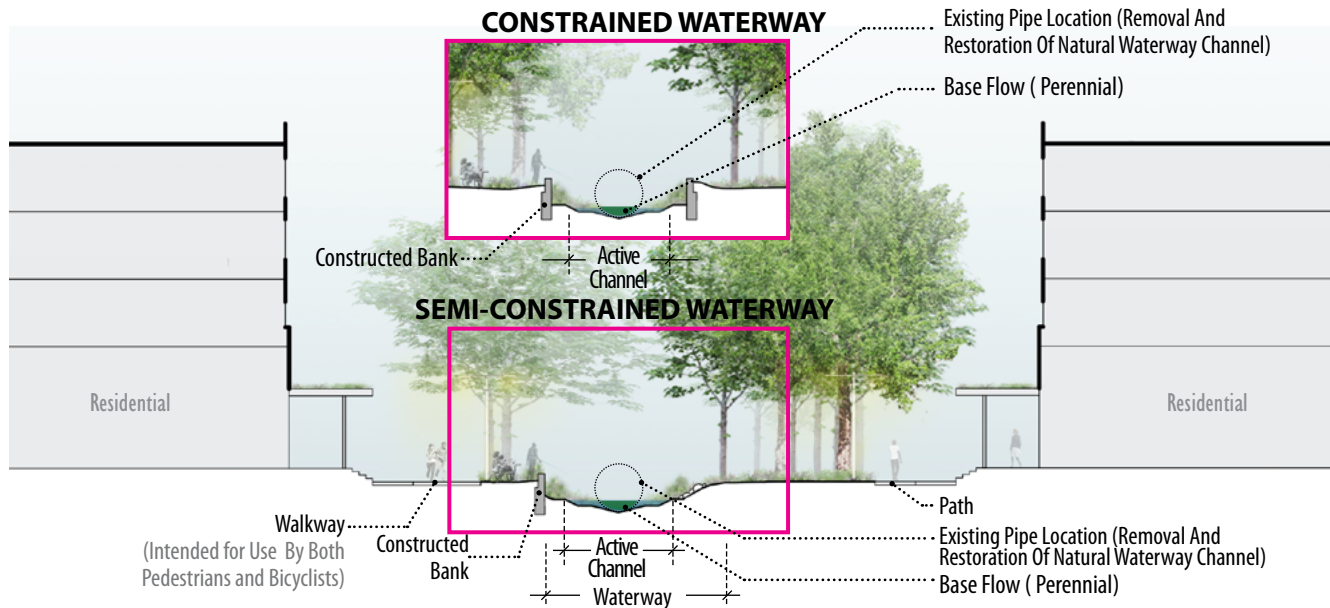


**NOTE:**  
Refer to Note on Graphic 19

Optional: Wetland, swale or other technology to capture on-site stormwater runoff (if development needs on-site stormwater management - refer to section 3B.3 : Stormwater Management)

Shared Use Path  
10' Minimum Width

GRAPHIC 21: TYPE 3 ECOLOGICAL SPINE - TYPICAL WATERWAY CROSS-SECTION DIAGRAM

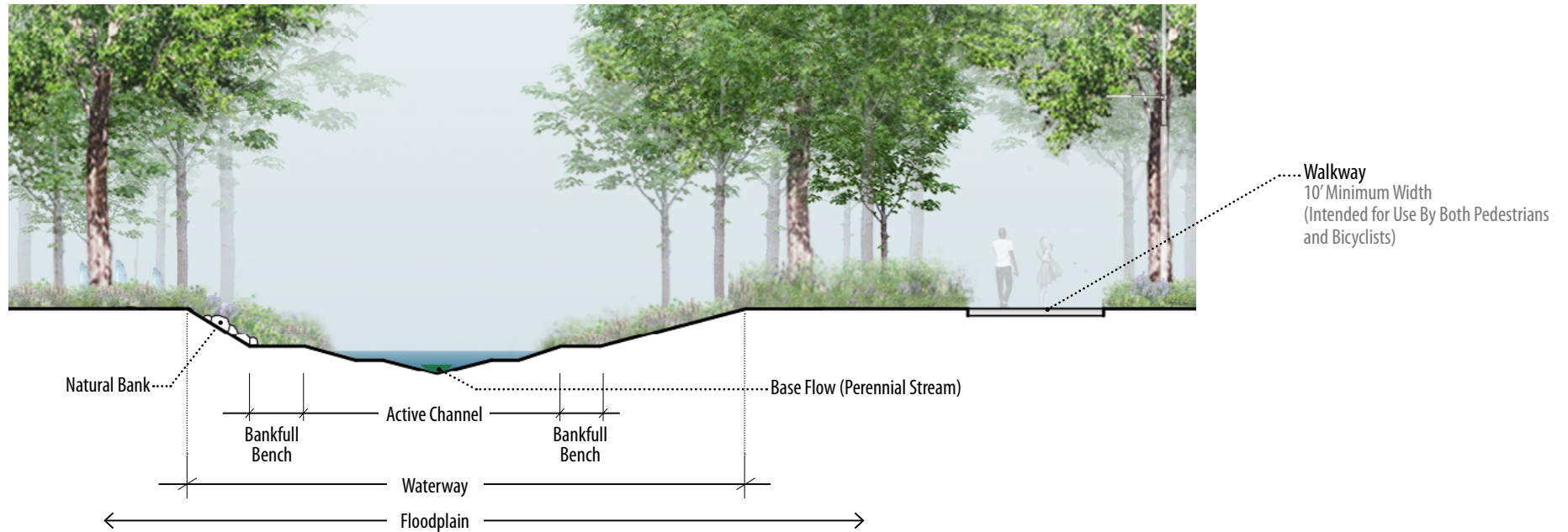


**NOTE:**

These cross-sections are intended as examples of potential waterway design options under certain urban conditions. The actual design of the waterway will depend on many factors, including: the drainage area, the volume and velocity of flow, pollution contribution, proximity to outfalls, the condition of the surrounding environment, the size of existing pipes, etc. Further feasibility studies should be performed to determine accurate cross-sections with appropriate dimensions. In the Type 3 cross-section example, a 6'-diameter existing pipe is shown. The existing pipe is recommended for removal to restore the natural waterway channel. Trees should be located outside the active channel and bankfull bench. The illustrations show mature tree canopy. A constructed bank could be used on one or both sides if a natural bank is not feasible. For constrained waterways, it is generally expected that the floodplain is within the active channel.

## GRAPHIC 22: TYPE 4 ECOLOGICAL SPINE - TYPICAL WATERWAY CROSS-SECTION DIAGRAM

### UNCONSTRAINED WATERWAY



#### **NOTE:**

These cross-sections are intended as examples of potential waterway design options under certain urban conditions. The actual design of the waterway will depend on many factors, including: the drainage area, the volume and velocity of flow, pollution contribution, proximity to outfalls, the condition of the surrounding environment, the size of existing pipes, etc. Further feasibility studies should be performed to determine accurate cross-sections with appropriate dimensions.

Trees should be located outside the active channel and bankfull bench. The illustrations show mature tree canopy.

Type 4 can include an optional wetland between development and waterway to capture and treat on-site stormwater runoff (also, see Graphic 23).



## DESIGN FEATURES

### I POTENTIAL AMENITIES ALONG LINEAR PARK SPACES

#### A. AMENITIES ALONG CONSTRAINED PARK SPACES

Due to the limited space available, programming along constrained park spaces is likely to be passive in nature and include elements such as:

- i. Walkways and shared use paths that connect the surrounding pedestrian network and sidewalks
- ii. Seating and gathering spaces
- iii. Pedestrian bridges to connect both sides of the waterway
- iv. Interpretive signage to highlight local history and ecology
- v. Small public art installations
- vi. Stepping stones or places where people can interact with the water
- vii. Overlooks for viewing wildlife.

#### TOP

An asphalt trail with a pedestrian bridge crossing over an ecologically sensitive waterway  
Image Credit: Go Montgomery



Montgomery County, MD

#### BOTTOM LEFT

An interpretive wayfinding cluster with seating along trail  
Image Credit: Winkelmeier



Berlin, Germany

#### BOTTOM RIGHT

A nature-themed art installation along a waterway  
Image Credit: Tampa Valley Community Foundation



Steamboat Springs, CO

## DESIGN FEATURES (CONTINUED)

### B. AMENITIES ALONG UNCONSTRAINED PARK SPACES

Amenities along unconstrained Ecological Spines can be more flexible, with opportunities for appropriate active uses, such as the following:

- i. Playspaces and structures
- ii. Climbing structures
- iii. Fitness stations and equipment along trails
- iv. Small-scale sports facilities, such as bocce ball courts
- v. Larger public art installations
- vi. Performance areas or pavilions

### C. AMENITIES WITHIN RESOURCE PROTECTION AREAS (RPA)

Passive recreation within RPAs may be permitted under the Chesapeake Bay Preservation Ordinance. Passive recreation refers to casual and non-competitive recreational activities such as picnicking, bird watching, kite flying, bicycling, and walking. To support such activities, site amenities can be incorporated and include elements such as picnic tables, photo stands, open play areas where substantial clearing is not required, rest rooms, tot lots, boardwalks, paved paths, pathways, benches, and pedestrian bridges. Applicable sections of the Chesapeake Bay Preservation Ordinance include sections 118-5-3 (Additional Exemptions) and Section 118-1-6 (Definitions).



Essex County, NJ

#### TOP

A trail that incorporates multi-generational play and fitness activities

Image Credit: Rhodeside & Harwell



Bee Cave, TX

#### BOTTOM RIGHT

Expansive playspaces along a trail  
Image Credit: Wild Kitchen + Bar

## DESIGN FEATURES (CONTINUED)

### 2 MATERIALS AND SPECIAL DESIGN FEATURES

#### A. WALKWAYS/SIDEWALKS/SHARED-USE PATHS

- i. Walkways, sidewalks, and shared use paths should be included in all Ecological Spines.
- ii. Concrete, wood, composite wood or flexible porous pavements (e.g. Flexi-Pave®) are recommended materials. Asphalt may also be an acceptable material, but less desirable.
- iii. Use of compacted soil, mulch, gravel, or any other easily eroded material should be avoided on walkways and shared use paths.

#### B. LIGHTING

- i. Pedestrian-scale pole-mounted or bollard light fixtures should be provided.
- ii. Lighting should be appropriate so as to not disturb wildlife while recognizing the need for safety

#### C. SEATING AREAS

- i. Furnishings should correspond to North and South Area CBC furnishing palettes listed in Section 3A.3, as applicable.
- ii. Seating areas should be clustered and placed strategically at increments of at least two seating areas every 300-feet.
- iii. Seating should be clearly lit and located along paved areas connected to Ecological Spine walkways, sidewalks, and shared use paths.
- iv. Unless privately maintained, trash bins should not be provided. Signage should be posted to explain that visitors should leave no trash and need to carry out what is brought into the park.
- v. Any furnishings located along Ecological Spines should be securely anchored and water-tolerant to withstand flooding and wet conditions.

#### TOP IMAGE

A wooden path and boardwalk along a restored waterway  
Image Credit: Boffa Miskell

#### MIDDLE IMAGE

Wayfinding along an asphalt nature path  
Image Credit: DeKalb County

#### BOTTOM IMAGE

A stream path with lighting and seating clusters  
Image Credit: Hitchcock Design Group



Auckland, New Zealand



DeKalb County, GA



Champaign, IL

## DESIGN FEATURES (CONTINUED)

### D. PLAYSPACES AND EXERCISE AREAS

- i. Playspaces or exercise equipment should be designed in small clusters and placed within the linear parks.
- ii. Playspaces should be designed for a wide range of users and age groups. Playspaces can be combined with adult exercise areas to accommodate multi-generational activities.
- iii. Each playspace or exercise area should include more than one piece of equipment.

### E. PERFORMANCE AREAS AND PAVILIONS

- i. Performance areas placed in Ecological Spines should be designed to accommodate and withstand flooding.
- ii. Performance areas should be located in or near prominent, high-activity land uses.
- iii. No more than two performance areas should be located in each CBC.
- iv. Performance areas should be equipped with exterior-grade, water-resistant electrical connections.
- v. Pavilions should be designed with structural and roof components with slim profiles to minimize visual obstructions to the natural landscape.

### F. TREES AND LANDSCAPING

- i. Trees, shrubs, and understory plantings should be densely planted to create a layering effect that supports ecological characteristics, species diversity, prevents stream bank compaction, and improves the aesthetic quality of the riparian corridor.
- ii. Tree species within Ecological Spines should include those species listed in Table 4 as well as the list of recommended plants for riparian buffers included in Appendix A of the Chesapeake Bay Local Council's [Riparian Buffers Modification & Mitigation Guidance Manual](#).



Charlotte, NC



Malmo, Sweden



Toronto, Canada

#### TOP

A playspace designed for all age groups.  
Image Credit: North Carolina Parks and Recreation

#### MIDDLE

A small pavilion located along a waterway  
Image Credit: Ellen Manskaya

#### BOTTOM

Small performance area with seating embedded into the landscape  
Image Credit: Rhodeside & Harwell

## DESIGN FEATURES (CONTINUED)

### A. PEDESTRIAN BRIDGES

- i. Pedestrian bridges crossing Ecological Spine waterways should be designed to minimize environmental disturbances.
- ii. Bridges should look “lightweight,” with a slim profile and visually-unobtrusive piers.
- iii. Bridges should be designed to accommodate flooding or occasional strong stream currents.
- iv. Bridges may be incorporated into boardwalks or include boardwalk-like designs with wooden planks.
- v. A bridge whose walkway is elevated 3-feet or more above grade should include hand rails for safety.
- vi. New pedestrian bridges should be placed at intervals of approximately every three blocks along the Ecological Spine.

### B. WATER ACCESS

- i. Opportunities to access the water’s edge should be provided in residential areas or high-activity areas where feasible.
- ii. Access points should be creatively designed with elements that blend into the natural character of the riparian corridor.
- iii. Steps leading to water should be constructed of concrete or gabions. Wood steps are not recommended due to maintenance requirements. The width of steps should be limited in order to minimize the visual contrast with natural features along the waterway.

*For additional ideas regarding potential amenities and passive recreation opportunities, refer to the list of programming ideas at the end of Section 3B.1.*

#### TOP IMAGE

Pedestrian bridges with handrails crossing over a small waterway  
Image Credit: Bruel Delmar

#### MIDDLE IMAGE

Pedestrian bridges over a small waterway with slim profile and no handrails  
Image Credit: Site Phocus

#### BOTTOM IMAGE

A crossing within a restored stream, providing access to the water  
Image Credit: Bruel Delmar



Lille, France



Portland, OR



Nantes, France

## IMPLEMENTATION STRATEGIES

The Comprehensive Plan envisions that Ecological Spines will be implemented incrementally over time, with each new development creating specific portions linked to its linear facility.

The implementation of Ecological Spines should involve coordination with the Department of Planning and Development, the Department of Public Works and Environmental Services, and the Fairfax County Park Authority. The design and implementation of Ecological Spines should be determined by factors such as the extent of available land adjacent to the waterway, the presence of floodplain and Resource Protection Areas (RPAs), drainage area, volume and velocity of flow, pollution contribution, proximity to outfalls, condition of the surrounding environment, size of existing pipe, etc.

Some considerations include the following:

- A. A water quality impact assessment may be required to ensure that proposed development on properties adjacent to the daylighted stream does not contribute to the degradation of the stream.
- B. The potential exists for the creation of new RPAs when daylighting formally buried streams. Designating new RPAs will be done in accordance with the Chesapeake Bay Ordinance. The ordinance provides a mechanism for municipalities to determine whether to create new RPA, and options should be discussed with staff during the design process.
- C. Many properties adjacent to the Ecological Spine locations shown in Table 5 will generally qualify as Redevelopment Areas under the Chesapeake Bay Preservation Ordinance (CBPO). In these areas, an RPA exception may not be required for development within the RPA, as long as there is no increase in impervious surface and there is no additional encroachment of development into the RPA.
- D. The Comprehensive Plan encourages the creation of Ecological Spines. A development may provide an Ecological Spine as an alternative to satisfying the stormwater management performance targets that are listed in the Comprehensive Plan.
- E. The linear park portions of Ecological Spines may qualify as park space under County criteria, even if these areas fall within the floodplain; however, the extent to which these areas qualify will be determined on a case-by-case basis in consultation with County staff.
- F. Opportunities for partnerships with Fairfax County to realize Ecological Spines should be explored to help ameliorate various economic and technical challenges. Partnerships may be particularly important when the creation of an Ecological Spine may result in downstream impacts that require mitigation.
- G. Through-drainage systems, such as open channels and streams that are within the waterway portion of the Ecological Spine, are generally maintained by the Maintenance and Stormwater Management Division of the Department of Public Works and Environmental Services. A storm drainage easement, stormwater management easement, or floodplain easement will be required for portions of Ecological Spines that are maintained by Fairfax County. A property owner should work with Land Development Services to determine maintenance responsibly and the extent to which easements should be drawn. Wider easements may be required for proper maintenance of the waterway.

## 3B.3 STORMWATER MANAGEMENT

Developments must meet quality and quantity requirements per the County's Stormwater Management Ordinance (Chapter 124). In addition, the Comprehensive Plan recommends that, within Richmond Highway area, additional stormwater management strategies be used to minimize the amount of impervious cover and further reduce stormwater runoff. Stormwater management is needed to counteract issues related to increasing imperviousness through the use of green stormwater infrastructure (GSI) principles.

The Comprehensive Plan envisions stormwater management strategies that are integrated into the design of individual developments or phases of development. For projects that result in a development intensity of 1.0 Floor Area Ratio (or equivalent residential density) or greater and/or those that result in a 20 percent or more increase in impervious cover on the site, the Plan offers three potential approaches within the Richmond Highway area:

1. Developers may select from the recommendations contained in the Comprehensive Plan, along with performance targets;
2. Developers may use the most current LEED stormwater credit; or
3. Developers may use alternative proposals to optimize site-specific stormwater management and/or stream protection/restoration (e.g., Ecological Spines) that incorporates the latest innovative technologies and applications.

These efforts should emphasize the application of GSI techniques for addressing both quality and quantity such as:

- Bioretention/biofiltration facilities along streetscape areas, within parking areas, and/or along paths connecting sidewalks to rear parking areas
- Vegetated swales
- Vegetated green roofs and terraces on the upper floors of buildings or on commercial canopies (e.g., service stations)
- Tree box filters or structural cell systems that are designed to

manage stormwater.

In addition to achieving their intended stormwater management function, strategies should also maximize opportunities to create community amenities, educate the public about stormwater processes, and contribute to the overall sense of place. Stormwater management approaches should also complement and support the network of Ecological Spines described in the previous section.

### DESIGN PRINCIPLES

**Developments should follow the Stormwater Management guidance provided in the Comprehensive Plan using creative, urban approaches.** Integrating stormwater management into parks, streetscapes or as part of Ecological Spine systems is a means to provide high-quality infrastructure that serves multiple purposes.

**Stormwater management approaches should provide placemaking and quality-of-life benefits in addition to stormwater management functions.** When creatively integrated into streetscapes, parks, Ecological Spines, Livability Spines, other public spaces, and new development, stormwater management facilities can enhance one's experience of the built environment by functioning as community amenities and adding visual interest.

**Stormwater management facilities provide an opportunity to educate the public about hydrology, ecology, and the health of our region's waterways.** By demonstrating, revealing, and highlighting these processes and incorporating interpretive elements, stormwater management facilities can help explain and illustrate processes such as capturing, treating, and infiltrating runoff; habitat creation; and water reuse.

## DESIGN STRATEGIES

### 1 FUNCTIONAL AND LOCATIONAL CRITERIA

- A. Stormwater management facilities should capture and treat stormwater runoff from development sites before the runoff enters the hydrological system. (See *Graphic 23* for an illustration of a prototypical scenario in which stormwater is captured and treated on-site before it enters the hydrological system.)
- B. Building roofs and upper-floor building terraces should be utilized for green roofs and related plantings and soil that capture and infiltrate stormwater.
- C. Ability to add appropriate urban stormwater monitoring systems should be explored. Such monitoring systems can be in the form of structures that can be retrofitted within buildings or stormwater management systems.
- D. Opportunities should be explored for functional synergies, such as reusing stormwater runoff for irrigation or integrating stormwater management and grey water systems strategies.

*Note: Stormwater management facilities are not the same as Ecological Spines, and are not included in the definition of Ecological Spines. Ecological Spines should include daylighted streams or enhanced or restored existing streams.*

### 2 APPEARANCE AND SITE INTEGRATION OF AT GRADE FACILITIES

- A. Stormwater management facilities should be creatively integrated into the design of public spaces, including neighborhood parks, such that they serve as amenities and attractions that increase the appeal of the space.



#### TOP

Example of on-site stormwater management utilizing courtyard and rooftop spaces  
Image Credit: multifamilyexecutive.com

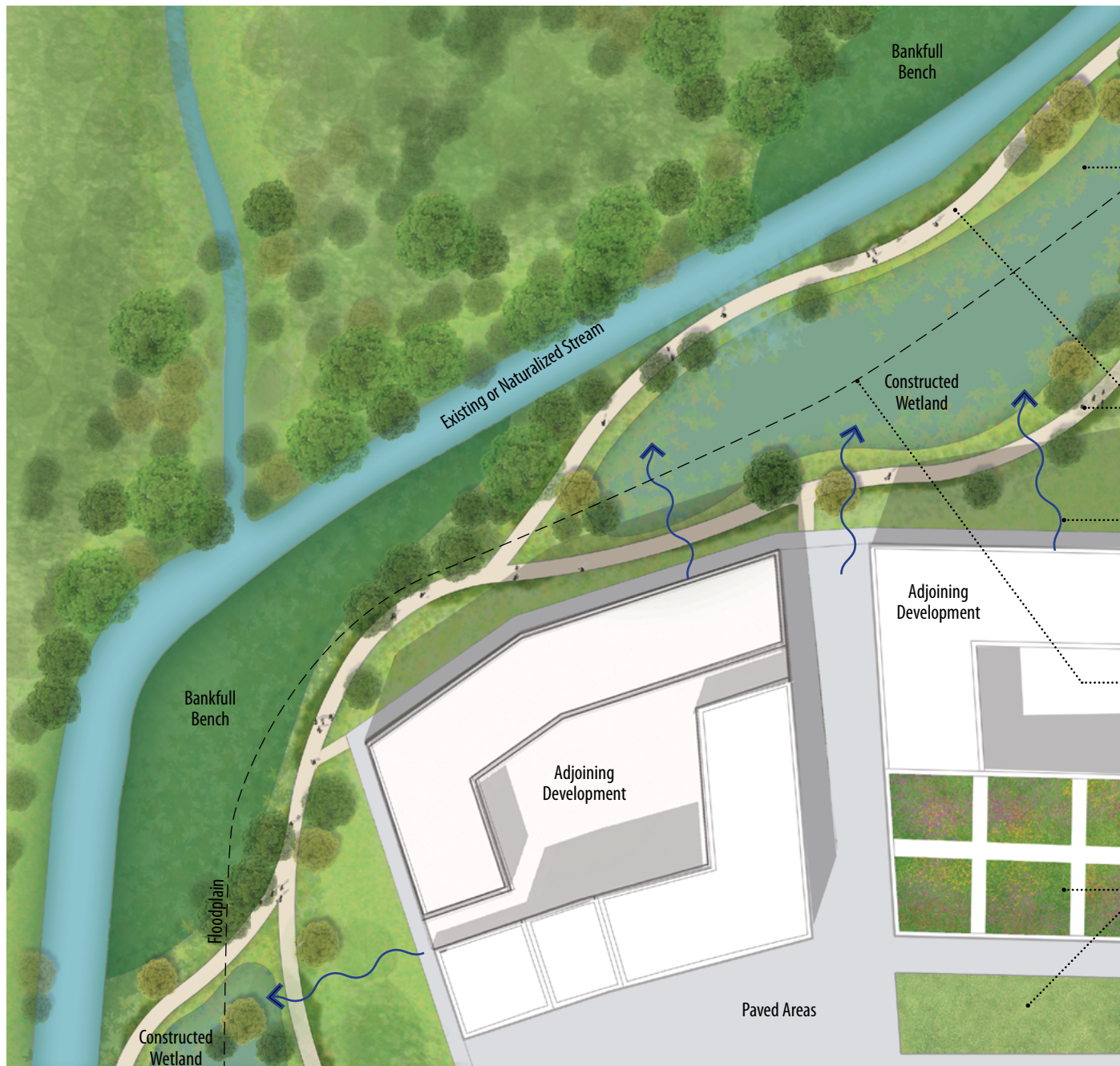


#### BOTTOM

Bioretention facilities and furnishings integrated within streetscapes help to create an enhanced pedestrian environment  
Image Credit: Rhodeside & Harwell



### GRAPHIC 23: ILLUSTRATIVE ON-SITE STORMWATER TREATMENT



Wetland basins that can capture and treat on-site stormwater. Water quality is improved, and quantity and velocity are reduced, before stormwater enters naturalized or restored streams (Ecological Spines). Refer to *Graphic 20*, which shows the cross-sections of Ecological Spines and adjacent wetlands

10'-wide walkways provide access to the natural areas along wetlands and natural stream channels from adjoining development sites

On-site stormwater from development sites

Floodplain and RPA: flexibility may be offered to incorporate portions of constructed wetlands to retain and treat water from small storms within existing floodplain

Green stormwater infrastructure techniques integrated into building terraces, roofs, and exterior paved areas (such as roads, parking areas, etc.) help to treat stormwater on-site as close to source, as possible

## DESIGN STRATEGIES (CONTINUED)

- B. Surface stormwater management facilities should be accessible and usable as open space to the maximum extent feasible.
  - i. Surface stormwater management facilities should incorporate pedestrian and bicycle paths and walkways that connect the stormwater management facilities to surrounding communities. Pedestrian and bicycle connections may include such facilities such as asphalt or concrete paths/walkways, boardwalks along or through a stormwater management facility, or other accessible connections.
  - ii. Perimeter fencing of any surface stormwater management facilities should be avoided unless required for safety.
- C. Stormwater management facilities should be designed as attractive features that include native pollinator meadows. These offer the opportunity to further enhance native planting opportunities, provide wildlife habitat, and promote improved public health benefits.

### 3 GREEN STORMWATER INFRASTRUCTURE (GSI) IN STREETSAPES AND LIVABILITY SPINES

- A. Streetscape design (including sidewalks and public spaces and plazas along the streetscape) should incorporate multi-functional and space-efficient GSI techniques so that Richmond Highway and CBC street networks can serve as functional components of the County's urban ecosystems. Potential strategies are described in Section 2L and Appendix A2 of the *Volume I* guidelines.
- B. GSI in streetscape areas should enhance the visual appeal and comfort of streetscapes, making them desirable places to walk, rest, and linger. Wherever possible, stormwater management strategies should incorporate the planting of trees and other plantings in order to increase pedestrian comfort and expand the tree canopy. Stormwater management facilities in streetscapes should incorporate recreational and artistic elements, particularly in prominent and/or highly-traveled locations.
- C. While GSI can be located within the Landscape Panels, the preferred location is in the Planting or Building Zones. This is to ensure that Category IV deciduous trees can grow along the street and GSI can be located within supplemental landscape areas. Streetscape GSI that are incorporated into the Landscape Panels may require short fencing,
- D. In the Livability Spines, features such as bioswales should be incorporated where feasible, in lieu of traditional buried pipes, to capture stormwater runoff from adjacent development sites and create a visual and/or recreational amenity.

### DESIGN STRATEGIES (CONTINUED)

#### 4 EDUCATION AND INTERPRETATION OF AT-GRADE STORMWATER MANAGEMENT FACILITIES

- A. Stormwater management facilities can be used to educate the public about hydrological and ecological processes, and the health of regional watersheds. Stormwater management facilities should be designed to increase the public’s awareness and understanding of the Richmond Highway area’s natural resources and its place within the region’s ecological systems.

**LEFT**

Boardwalk above stormwater basin helps to provide access from adjoining development to natural areas  
Image Credit: Rhodeside & Harwell



Howard County, MD

**RIGHT**

Integration of bioretention facilities within public space design provides stormwater management functions and visual appeal  
Image Credit: Nitsch Engineering



Washington, DC

## DESIGN STRATEGIES (CONTINUED)

- B. Where possible, stormwater management facilities should be easy for the public to access and view, in order to maximize opportunities to observe and learn from stormwater management facilities. Stormwater management design should highlight the importance of rainwater, techniques for managing water quality and quantity, and how stormwater management facilities can create habitat.
- C. Interpretive displays and signage should be incorporated into stormwater management facilities where possible to explain stormwater management functions and the significance of these facilities for local communities and the greater region.



Falls Church, VA



San Antonio, TX



### REFERENCES FOR STORMWATER MANAGEMENT

**Urban Design Guidelines, Vol I: Chapters 2L, 4H, Appendix A2** [<https://www.fcrevite.org/volume-i-urban-design-guidelines>]

**VDOT Drainage Manual** [<http://www.virginiadot.org/business/locdes/hydra-drainage-manual.asp>]

**Richmond Highway Comprehensive Plan: Environment Section**

**Policy Plan: Objective 13 of Environmental Element**

**Sustainable Sites Initiative (SITES)** [<http://www.sustainablesites.org/>]

**Leadership in Energy and Environmental Design (LEED) rating system** (US Green Building Council)

**Urban Street Stormwater Guide** (National Association of City Transportation Officials) [<https://nacto.org/publication/urban-street-stormwater-guide/>]

**Fairfax County Stormwater Management Ordinance** [<https://www.fairfaxcounty.gov/landdevelopment/stormwater-management-ordinance>]

### TOP & BOTTOM

Interpretive elements tell the story of site-wide rainwater capture system, green stormwater infrastructure, and reduced site disturbance thereby explaining the valuable benefits to ecosystems

Image Credits:

Top Image - Rhodeside & Harwell

Bottom Image - Casey Dunn