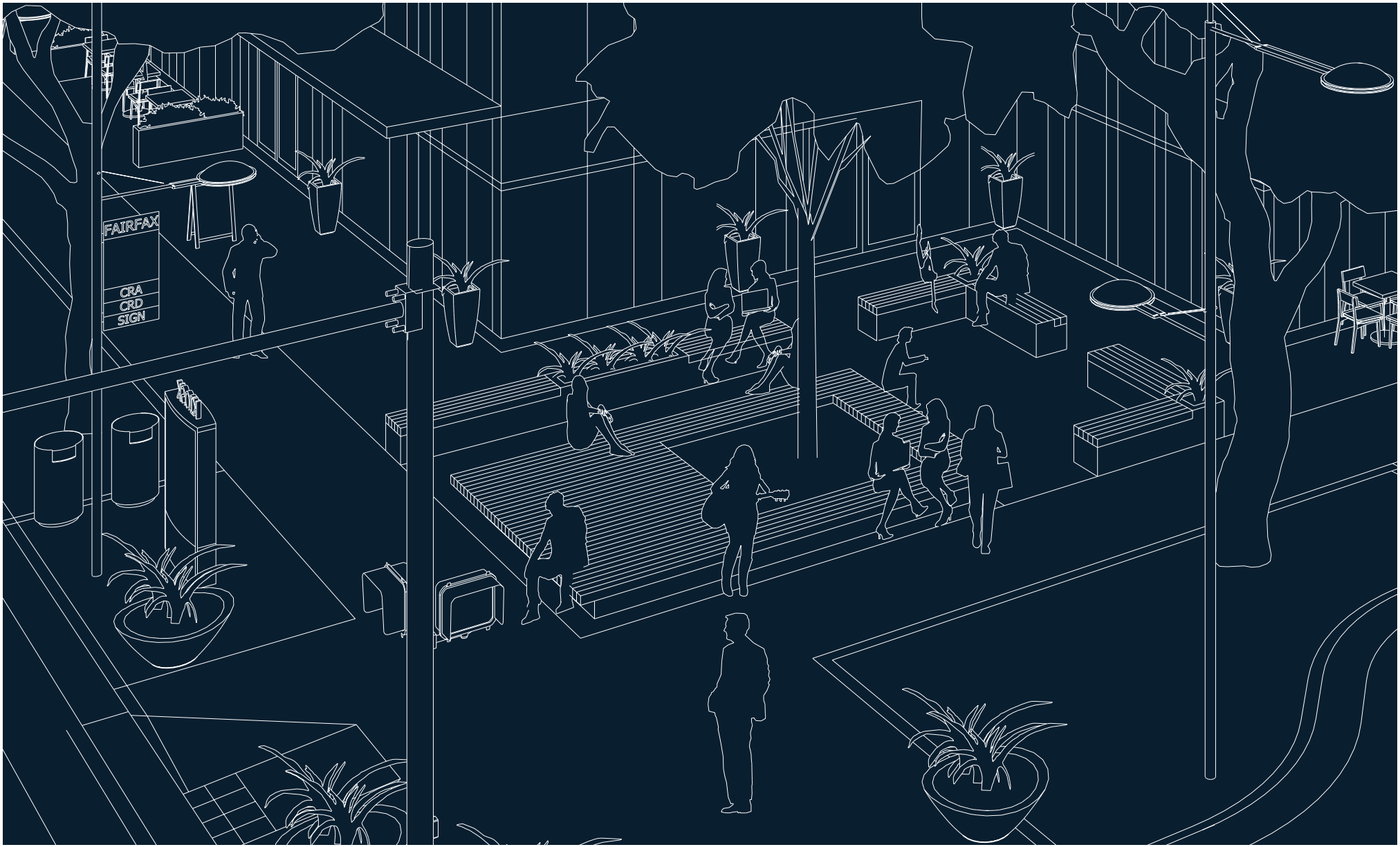

VOLUME I

URBAN DESIGN GUIDELINES

FOR FAIRFAX COUNTY COMMERCIAL REVITALIZATION DISTRICTS AND AREAS

SEPTEMBER 2018

ACKNOWLEDGMENTS

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12055 Government Center Parkway, Suite 1048
Fairfax, VA 22035
www.fcrevit.org

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COUNTY OF FAIRFAX
1742
VIRGINIA

Image Credit: The Lakota Group

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Image Credit: apartments.com

1 INTRODUCTION

INTRODUCTION

The practice of urban design addresses the physical features that define the character of streets, public spaces, neighborhoods and communities. Urban design is used to align the desired scale and character of development with the social, economic and aesthetic values of a community.

Fairfax County is committed to achieving a high standard of urban design and architectural quality in its Commercial Revitalization Districts (CRDs) and Commercial Revitalization Areas (CRAs). CRDs and CRAs may be coincident in geography with the county's "Mixed-use Centers," as designated in the Comprehensive Plan. Mixed-use Centers are the portions of the County in which the Concept for Future Development and other county land use policies generally call for future growth to be concentrated. These include the Tysons Urban Center and the various suburban centers, Community Business Centers (CBCs), and Transit Station Areas (TSAs). Urban Design Guidelines for these areas are a means to provide best practices and detailed design suggestions for new development, redevelopment and capital projects to ensure that they integrate compatibly with their surroundings, function well, are aesthetically pleasing, support community vitality, and improve the overall livability of an area.

Purpose of these Guidelines

The *Urban Design Guidelines for Fairfax County Commercial Revitalization Districts and Areas* (Guidelines) are intended to guide the appearance, arrangement and function of the built environment in the CRDs and CRAs, with a particular emphasis on public spaces and streets. The Guidelines serve as a companion document to the Fairfax County Comprehensive Plan (Plan) by elaborating upon the Plan's more general recommendations related to urban design, public spaces and streetscapes. The Guidelines further articulate the intent, objectives and performance recommendations contained in the Plan by conveying design ideas in greater detail, especially with regard to street and streetscape design, building form and design, and site features, including interim development conditions.

As stated in the County's Strategic Plan for Economic Development, flexibility and agility in zoning and development review is necessary to respond to evolving development trends and technologies. The content in this document are designed to be applied as guidelines rather than as regulatory (mandatory) "one size fits all" requirements. The Guidelines are meant to offer design guidance only and there is flexibility in how or whether a design element or recommendation can be realized.

The Guidelines are intended to:

- provide a common language with which to discuss how to create developments that contribute to an attractive, vibrant and livable area;
- offer clarity on important aspects to consider in the design of developments;
- help facilitate the dialogue that occurs among stakeholders in the development review process;
- provide solutions that balance the desire for a high quality environment with the need for developments to be feasible;
- foster desirable and compatible development that responds to the surrounding context; and,
- encourage the design of communities of the highest quality, where each building and public space contributes positively to the overall character of the area.

1A STRUCTURE OF THESE GUIDELINES

The Urban Design Guidelines for the County's CRDs and CRAs are comprised of two documents:

– **Volume I: Urban Design Guidelines for Fairfax County Commercial Revitalization Districts and Areas** describes urban design principles and best practices that are applicable generally to all CRDs and CRAs.

– **Volume II: District Design Guidelines** contains urban design guidelines for the various CRDs and CRAs that are tailored specifically to the individual area.

Thus, the Guidelines applicable to each CRD or CRA include not only the common design language articulated in Volume I, but also the distinct, district-specific guidelines included in Volume II.

In Volume I, Chapter 1 includes the purpose and use of the document. Chapters 2 through 6 contain urban design principles and strategies addressing specific topics including street and streetscape design (Chapter 2), open space design (Chapter 3), building design (Chapter 4), parking and access (Chapter 5), and additional placemaking elements, such as public signage, public art and water features (Chapter 6). Chapter 7 provides guidance on interim development conditions. An accompanying Appendix contains additional details, a toolbox of sustainable design strategies, and reference materials. Chapters 2 through 6 are organized in the following manner:

– **Intent:** An introduction to each chapter describes the overarching purpose and intent of the chapter.

– **Topical Sections:** Each chapter is divided into sections that address a specific subject matter.

– **Design Principles:** The topical sections include design principles defining the goals and general urban design conditions necessary to achieve desired outcomes.

– **Design Strategies:** Each topical section also provides specific design strategies which, in some instances, include suggested materials and dimensional requirements for implementing the design principles.

Within the topical sections, local and national references are offered for additional information. Additional specifications—a tree plant list and planting details—are included in the Appendix, along with a toolbox of sustainable design strategies. References are hyperlinked within each section. The complete listing of all references and their web addresses is located in the Appendix.

1B USING THESE GUIDELINES

The Guidelines apply to development proposals for all properties located within the boundaries of the CRDs and CRAs. They are intended to be used by citizens, developers, land owners, designers, Fairfax County staff, the Fairfax County Planning Commission, and the Board of Supervisors when either proposing, designing or reviewing development proposals in CRDs and CRAs.

The two volumes of the Guidelines should be used together to inform strategic design decisions in planning for redevelopment, land use, transportation, and infrastructure. There may be instances where guidance provided in Volume II of the Guidelines may elaborate upon or contradict material provided in Volume I. In such instances, the guidance in Volume II supersedes the guidance in Volume I.

The Guidelines are not a substitute for the codes and ordinance provisions associated with the development review process. The Guidelines are meant to offer design guidance only. There is flexibility in how a design element may be realized, provided the design intent can be achieved. As such, the Guidelines are not prescriptive; architectural style, specific street furnishings, plant species, or exact paver types are not dictated. Rather, the Guidelines present a palette of design options that provide flexibility and allow for innovation. Designers and property owners are encouraged to use the Guidelines as a frame of reference when making specific design decisions as long as the selections meet the intent laid out in the Guidelines.

FLEXIBILITY

There will be instances where the urban design and streetscape recommendations outlined in the Plan and these Guidelines cannot be accommodated in the manner envisioned, even with reasonable adjustment and flexibility. Where pre-existing site constraints are present, or where infill or expansion of buildings or other existing features limits the ability of a development to satisfy the urban design recommendations, or when modifications to the streetscape guidance are necessary to conform to applicable County and/or Virginia Department of Transportation (VDOT) requirements and guidelines, variations may be permitted on a case-by-case basis using the following criteria:

- The inability to conform to the recommendations is demonstrated through written and/or graphic evidence; and,
- Deviations are as minimal as possible; and,
- Modifications still meet the intent of the Plan and the Guidelines.

FUTURE MODIFICATIONS

Finally, as CRDs and CRAs, and their surrounding neighborhoods, develop and evolve, the Guidelines may need to be amended to respond to those changing conditions. In addition, new technologies, maintenance challenges, and innovations may provide opportunities for different design strategies, new products, materials, etc., which should be reflected in updated versions of these Guidelines.

Chapel Hill, NC

Boston, MA

Liverpool, England

TOP LEFT
The Guidelines encourage the use of durable, renewable materials in public spaces such as this LEED-ND project
Image Credit: Peyton Chung

TOP RIGHT
Integration of quality public spaces into a development is key to its contribution towards a livable community
Image Credit: Reed Hilderbrand

BOTTOM
The Guidelines provide recommendations to improve the public realm, including streetscape areas such as this example from England
Image Credit: ADP Architecture

1C COORDINATION WITH OUTSIDE AGENCIES

The potential exists for conflicts to occur between utilities and pedestrian features, particularly in the streetscape. To avoid such conflicts, utility easements, utility boxes, and access to equipment require special consideration in the design process. Dominion Energy, Washington Gas, Fairfax Water, communications providers, and other utility companies should be consulted early in the design process. On-going planning and coordination among project designers, the County and the various utility providers is essential to ensure that utilities and utility equipment are located appropriately.

RIGHT
The development process requires early and ongoing coordination with Fairfax County, VDOT, and a range of utility providers, including Fairfax Water, Washington Gas, and Dominion Energy

In addition to Fairfax County, the Virginia Department of Transportation (VDOT) and the various utility companies are involved in decisions affecting the installation of roads, utilities and streetscape features, particularly those in the public right-of-way.

Coordination with VDOT is critical for projects that include the installation of improvements within its right-of-way. VDOT requires a permit for any installation proposed within its right-of-way, including planting beds, paving and street furniture. During project design, all proposed improvements should be reviewed with VDOT staff. VDOT's Northern Virginia Planting Guidelines, Road Design Manual, and Road and Bridge Specifications should be consulted and can be found on VDOT's website.

VDOT classifies most streetscapes within its right-of-way as either standard or non-standard. Standard streetscapes include certain street trees, grass and concrete sidewalks. Non-standard streetscapes are those that deviate from the standard by incorporating additional components or unique materials, such as pavers. VDOT requires that all non-standard streetscapes be maintained by the property owner and, in some instances, a maintenance bond will be required to ensure that these components will be maintained over the long term.

1D KEY VALUES AND PRIORITIES

These Guidelines advance four key values that reflect County priorities: social equity; sustainability; maintenance and durability; and smart city infrastructure. These provide an underlying framework that is reflected in the design principles and strategies articulated in the remainder of this document.

SOCIAL EQUITY

Design decisions affecting the built and natural environment should take into account social equity and environment sustainability. Efforts should include creating green spaces, supporting a high quality of life, and promoting employment opportunities, housing, amenities and services for all people. CRDs, CRAs and other mixed-use activity centers are uniquely positioned to support diverse lifestyles and provide opportunities for growth and mobility because of their higher level of transit accessibility, access to jobs and services, range of housing types and prices, and recreational opportunities.

In 2017, the One Fairfax Policy was adopted jointly by the Board of Supervisors, the School Board, and the Park Authority. This policy established the framework that is used to consider equity in decision-making in both the County government and the school system. These Guidelines incorporate the principles of One Fairfax, particularly as they relate to improvements to multimodal connectivity and parks and open spaces. Development proposals should embrace the One Fairfax policy by contributing to the creation of sustainable and equitable places.

TOP LEFT
Sustainable practices, such as ensuring that new trees are planted with sufficient root space to promote sustained long term growth, are a key aspect of these Guidelines
Image Credit: Silva Cell

BOTTOM LEFT
Stakeholders participating in development of design concepts for the vision for a community
Image Credit: Fairfax County

BOTTOM RIGHT
One Fairfax is a policy established to consider equity as part of the County's decision-making process
Image Credit: Fairfax County

SUSTAINABILITY

Fairfax County is committed to achieving a sustainable community. In 2017, the Board of Supervisors updated its environmental vision document entitled Sustainable Initiatives, which includes, *"an overarching vision to attain a quality environment that provides for a high quality of life and is sustainable for future generations. These aspects of a quality environment are essential for everyone living and working in Fairfax County. No matter what income, age, gender, ethnicity, or address, everyone has a need and right to breathe clean air, to drink clean water, and to live and work in a quality environment."*

New developments should contribute to this County vision. This can take many forms, such as creating a walkable and bikeable environment; supporting transit services; achieving a compact development; increasing green space and tree canopy; integrating energy efficiency measures and energy production; conserving water and other resources; reducing and recycling waste; and, integrating existing architecturally and culturally significant themes and buildings into new development.

There are many resources that elaborate on the County's sustainability goals and that provide specific guidance for achieving the desired outcomes. These include: the Environment Section of the Policy Plan of the Comprehensive Plan, the Heritage Resources Section of the Policy Plan, and the Fairfax County Annual Report of the Environmental Quality Advisory Council, among others.

LEFT
Streetscape with low-maintenance plantings that also function as bioretention facility, capturing runoff from the adjacent non-porous surfaces while reducing urban heat island effect and increasing native pollinators
Image Credit: Yuka Yoneda, Inhabitat

New York, NY

RIGHT
Obtaining LEED certification is one way to demonstrate a project's commitment to sustainability
Image Credit: City of Sandy Springs, GA

Sandy Springs, GA

MAINTENANCE AND DURABILITY

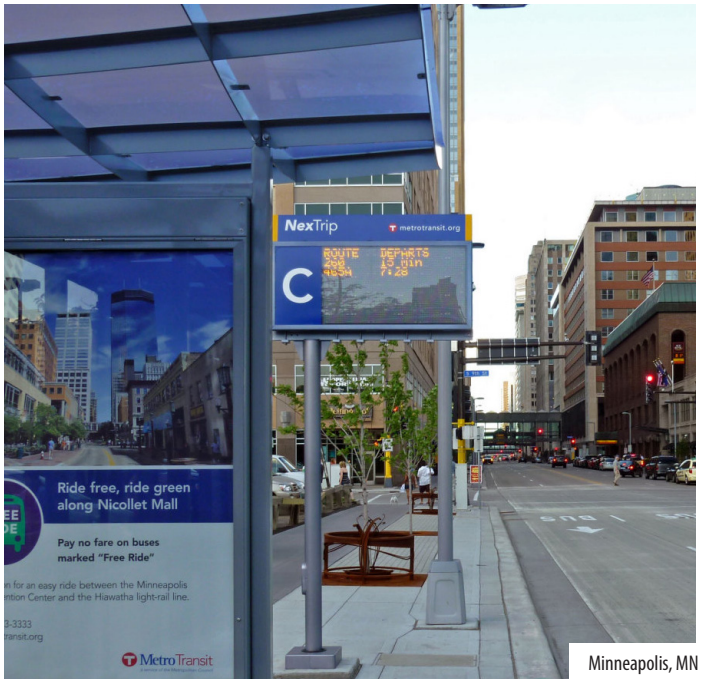
An urban environment that is low-maintenance and consists of durable materials that weather and age well over time is important in achieving a sustainable and adaptable public realm. The use of high quality and wear-resistant materials for streetscape surfaces should be a priority for all projects. Public spaces require adaptable designs that can accommodate changing demands, as the use of these spaces may evolve over time.

The long-term maintenance of sidewalks, trees, landscaping, paving, furnishings, lighting, park facilities, and other components of the public realm is a chief consideration of these Guidelines. Specifications were selected based in part on the anticipated level of durability and maintenance.

SMART CITY

Smart City technologies utilize electronic data collection to supply information which is used to manage assets and resources efficiently. These technologies improve sustainability, encourage economic development, and enhance quality of life factors for people living and working in such areas. Collected data can be used to monitor and manage transportation systems; power and water supply; waste management; law enforcement; and, systems as diverse as schools, hospitals, and other community services. Examples of this technology that relate to these Guidelines include, but are not limited to, the incorporation of broadband services into benches, programmable street lighting, smart trash bins that monitor capacity, and transit facilities that provide real-time information for passengers. Smart City features are rapidly evolving; developments should incorporate these evolving technologies where feasible.

San Francisco, CA



Minneapolis, MN

LEFT
Scored, poured-in-place concrete sidewalks provide a consistent, durable, and low-maintenance surface most suitable for persons with disabilities and strollers
Image Credit: Prado Group

RIGHT
Bus stop with real-time information - an example of smart city technology
Image Credit: NACTO

1E BY-RIGHT AND SMALL-SCALE DEVELOPMENT

By-right development projects are those that can be built without going through the rezoning, special exception, special permit, or variance process including public hearings, because the proposed development conforms to the property's zoning regulations. While it is anticipated that the primary users of these Guidelines will be those who are pursuing zoning applications, applicants seeking to do by-right development projects should also consult these Guidelines and implement their recommendations to the extent feasible. Feasibility is dependent on site-specific factors such as size of the proposed development, the scale of the site, and the proposed uses.

Small-scale and infill development generally refers to single sites that are less than one acre in size and are planned for a single use. These sites may have difficulty achieving some of the recommendations in the Guidelines because they may be unable to provide, for example, structured parking, or be mixed-use, or may have other constraints that limit design opportunities. In these instances, projects should adhere to the Guidelines to the extent feasible *(See Graphic 1: Small Scale Development)*.

All by-right, small-scale, or infill development projects should address the following:

1. Developments should incorporate components of the Comprehensive Plan's ultimate condition wherever feasible and should facilitate, and not preclude, long-term planning objectives such as transportation improvements, utility undergrounding, and future parks, among other public facilities.

2. All projects should provide for multimodal connectivity where feasible to ensure that pedestrian, bicycle and vehicular facilities are consistent and continuous across the site and to between adjacent properties. For example, incorporating a bicycle lane within the right-of-way of a site may be necessary to provide a continuous facility along a corridor.

3. Sidewalks and associated landscaping should be provided, as they are essential to achieving a consistent, safe, and walkable environment for pedestrians, and for placemaking.

4. New buildings should adhere to build-to lines (theoretical lines on the ground, typically located at the edge of the Building Zone, to which building frontages should align), as depicted in the street cross-sections in Volume II: District Design Guidelines.

5. When surface parking is unavoidable, design opportunities should be employed to creatively integrate parking and vehicle circulation into the site so it is less obtrusive to the visual appearance of the area and so that it provides safe and comfortable pedestrian access to the building and along the street frontage. For example, locating the parking on the side or rear of the site and placing the building at the front edge of the Building Zone is essential to transforming revitalization districts and areas to a more urban form.

GRAPHIC 1: SMALL SCALE DEVELOPMENT

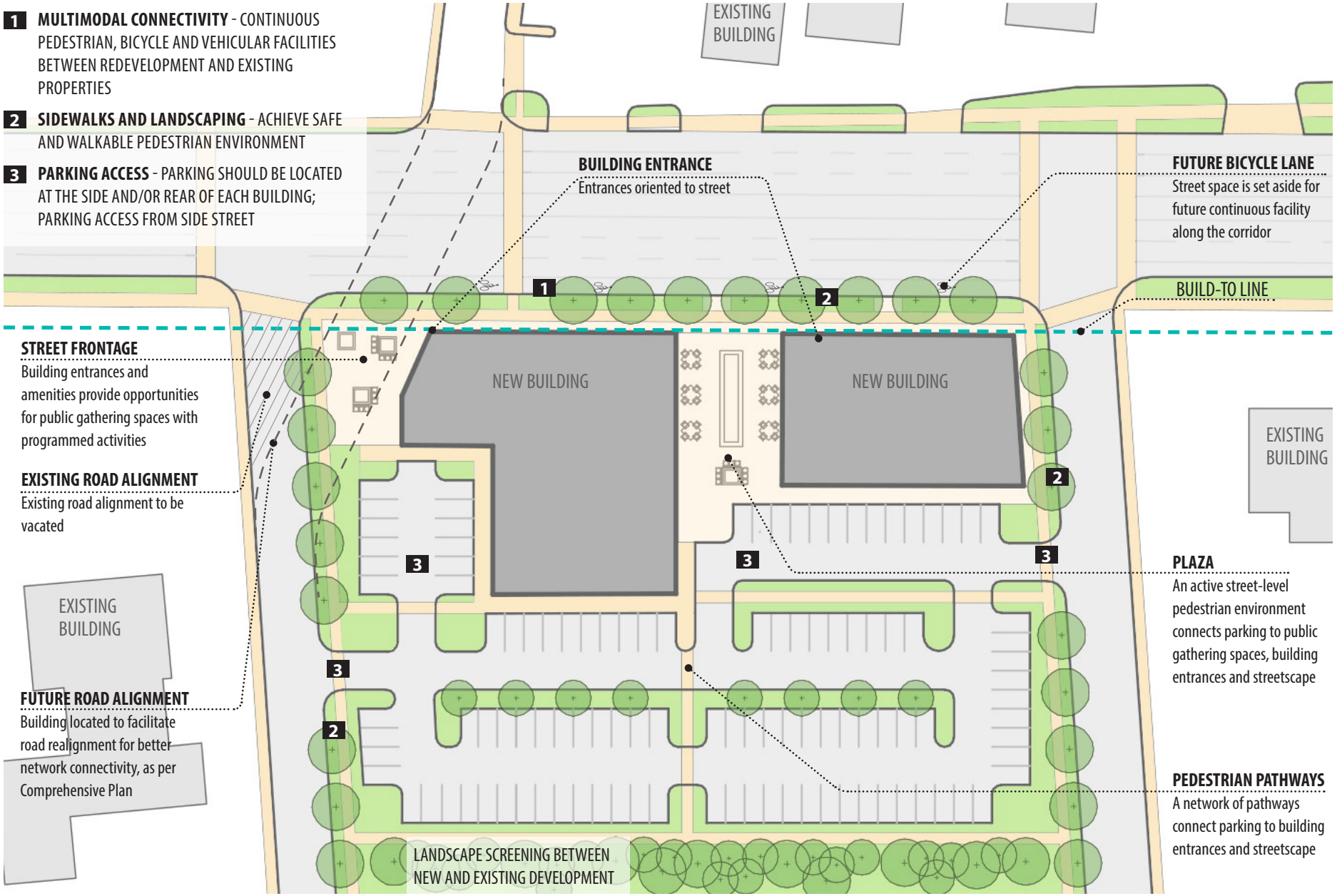


Image Credit: Rhodeside & Harwell

2 STREET & STREETSCAPE DESIGN

INTENT

Streets are a vital component of livable, attractive communities and help to define the character of the CRDs and CRAs. How the streets and their associated components are implemented has an effect on the quality of life of the people who use them and on the economic vitality of their surroundings. Well-designed streets and their adjacent streetscapes can encourage the use of transit and support walking and bicycling, which results in healthier, more sustainable communities. Therefore, residents, employees, and visitors should have access to safe, convenient and attractive streets and streetscapes throughout their community–whether they are walking, driving, bicycling, or taking public transportation.

Streets are defined as the area between the curbs that is dedicated to vehicular and, in certain circumstances, bicycle travel, and may include medians between directional travel lanes. Streetscapes are the areas located between the building facade or build-to line and the curb. These areas are comprised generally of browsing areas (areas adjacent to buildings where activities such as window shopping and outdoor seating can occur), sidewalks, seating, lighting and landscaping, and may also include bicycle facilities. The character of individual streets and streetscapes will vary depending on the guidance in the Comprehensive Plan, as well as the scale and character of the adjacent land uses.

Excessive street widths and large amounts of pavement can detract from a compact pedestrian-oriented environment. A balance must be achieved between accommodating all components of the street and streetscape and minimizing the amount of land required for them to function. This is particularly true with redevelopment, where new buildings are fitted into an existing environment of streets and buildings. If all streetscape elements cannot be incorporated into a proposed project, designers should work with the County to understand street and streetscape priorities for the particular circumstance. In addition to the roadway's function between curbs, adequate sidewalk width and the provision of sufficient planting area for street trees within the Landscape Panel are frequently the priorities for constrained streetscapes in the CRDs and CRAs.

INSPIRATION

Fairfax, VA

Montreal, Canada

Washington DC

Shirlington, VA

Portland, OR

The design of streets and streetscapes incorporates many elements that contribute to a high-quality environment, including pedestrian and bicycle infrastructure, streetscape furnishings, trees, and sustainable design features, as depicted in these images

2A COMPLETE STREETS

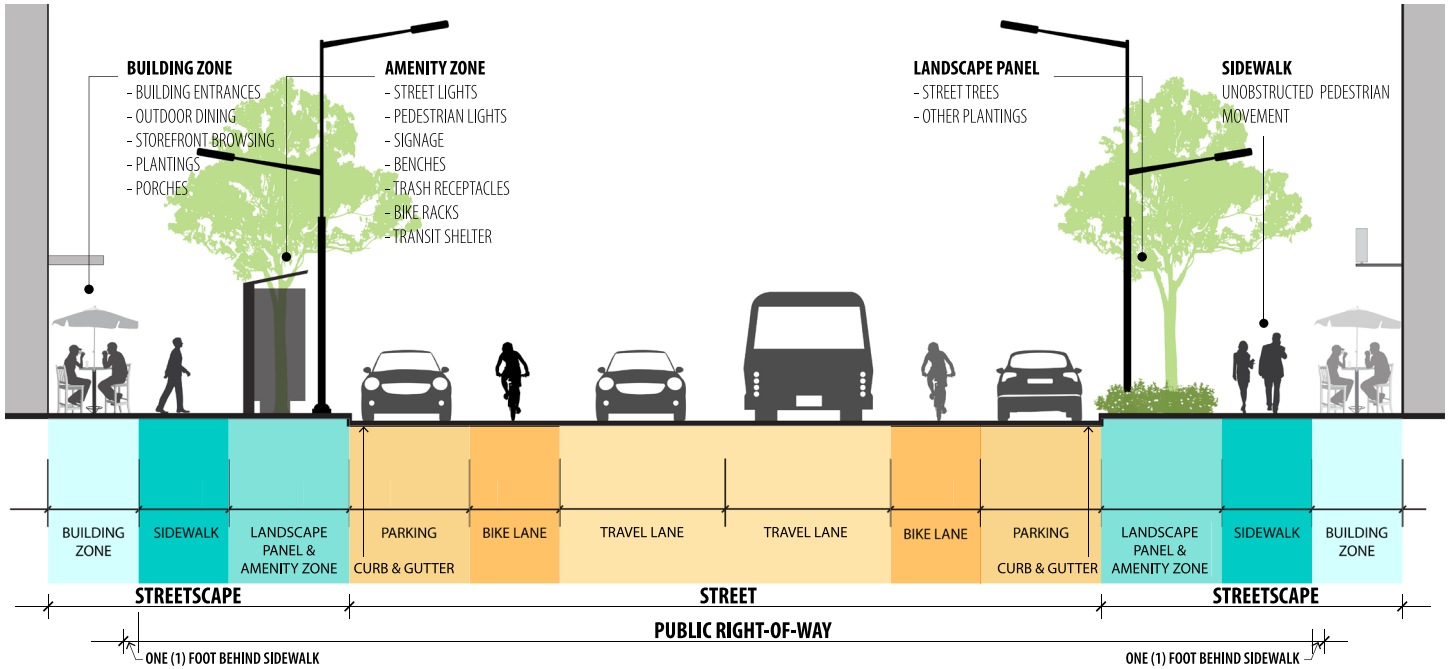
Since 2006, Fairfax County has maintained a policy to incorporate Complete Streets principles into the design of new or improved roadways. A Complete Street approach to street design integrates people and placemaking into the planning of the circulation networks to ensure that streets and their associated bicycle, pedestrian, and transit facilities are safe and comfortable for people of all ages and abilities. Complete Streets balance the needs of different travel modes and support land uses, local economies, and the environment. Complete Streets encompass both the streets and the streetscape in an integrated manner that is intended to place pedestrians, cyclists, and transit riders on equal footing with motor vehicle users. Complete Streets should be designed to respond to the community context and the needs of intended users. Furthermore, the use of innovative designs that address environmental impacts and promote active, healthy communities is encouraged in the design of Complete Streets.

The Volume II: District Design Guidelines for the individual CRD or CRA provides cross-sections for the design of streets and streetscapes in accordance with the Complete Street policy. The cross-sections illustrate the location and dimensions of each component of the street's configuration *(See Graphic 2: Street and Streetscape Components Section that represents a prototypical example of a street cross-section with its various components)*.

Additional resources for street design incorporating a Complete Streets approach include:

- Americans with Disabilities Act Accessibility Guidelines (ADAAG)
- Design and Safety of Pedestrian Facilities: A Recommended Practice of the Institute of Transportation Engineers
- Manual on Uniform Traffic Control Devices (MUTCD)
- National Association of City Transportation Officials (NACTO) Urban Street Design Guide
- VDOT and Department of Rail and Public Transportation's Multimodal System Design Guidelines

GRAPHIC 2: STREET AND STREETSCAPE COMPONENTS



2A.1 STREET AND STREETSCAPE COMPONENTS

STREET COMPONENTS

The following street components are located in the right-of-way:

- **Medians** are the strip of land located between the travel lanes of opposing traffic on a divided street. They can also be used as a buffer between modes (such as to provide a barrier between cyclists and moving vehicles) or to separate local and through traffic. Medians can include plantings and can accommodate transit facilities, pedestrian pathways and refuges, turn lanes, street lighting, and signage. Generally, medians range in width in from 4 to 16 feet, or wider, depending on the street type and desired function. A 1-foot buffer between the travel lane and the curb of the median is generally required.
- **Travel lanes and turn lanes** are lanes for the movement of vehicles. A turn lane may be incorporated within the travel lane or provided as an additional exclusive lane. On streets without dedicated bicycle facilities, vehicles must share the travel lane with cyclists. In CRDs and CRAs, the preferred width of travel lanes and turn lanes is 11 feet wide for most streets.
- **Bicycle facilities** are lanes and trails designed for the movement of cyclists. They can be designed as dedicated facilities for the exclusive use of cyclists or shared with other modes, such as a shared-use trail where pedestrians and cyclists co-mingle. A bicycle facility generally ranges from 5 to 10 feet in width depending on the facility type and roadway conditions.
- **Curb and Gutter** are a 2.5-foot-wide continuous element that separates the street from the adjacent streetscape and acts to control stormwater runoff. If on-street parking is provided, the 2-foot gutter can be included within the width of the parking lane.

STREETSCAPE COMPONENTS

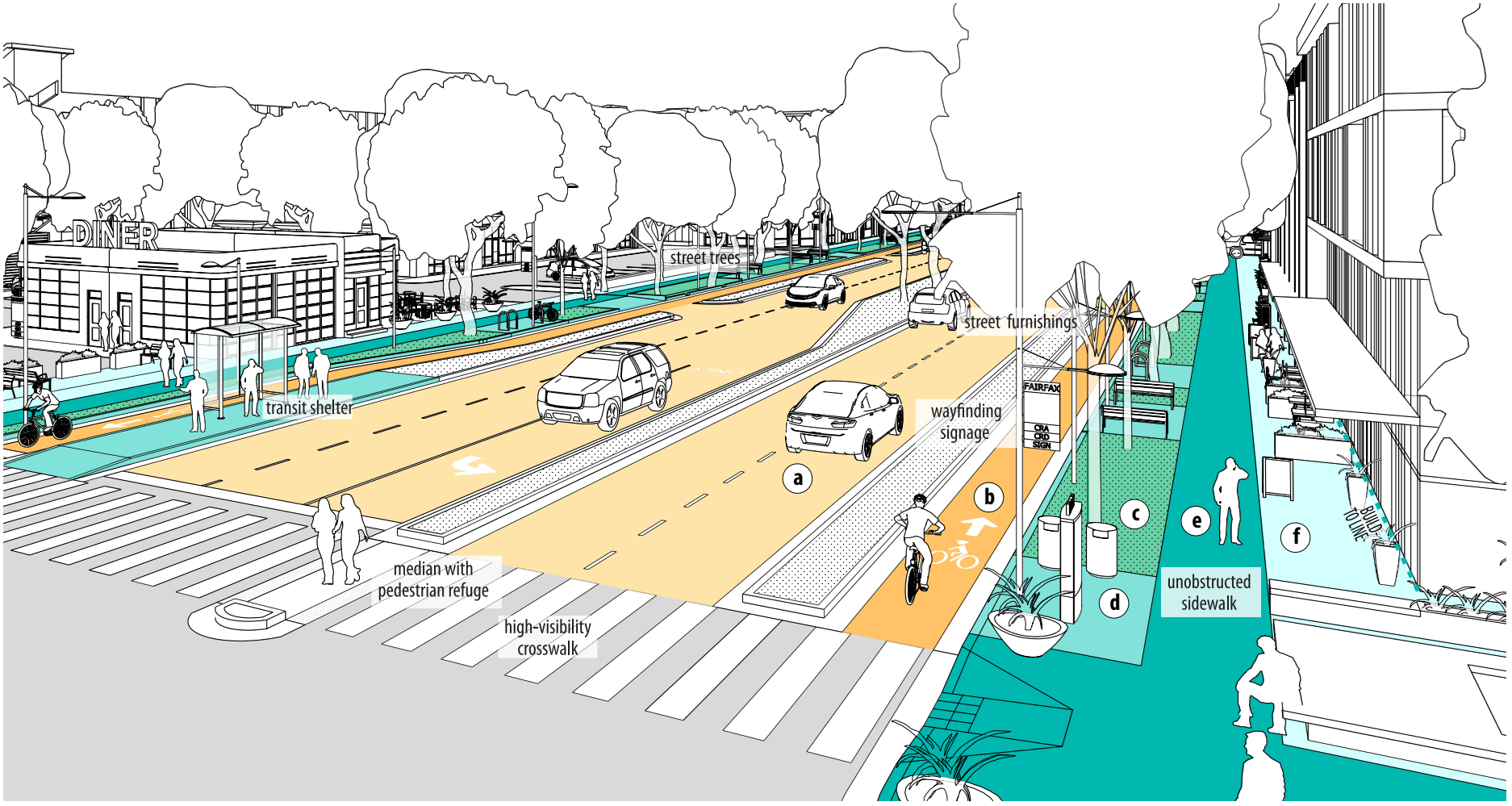
All streetscape types include components that are located within and outside of the right-of-way. The following are typically located within the right-of-way on public streets *(See Graphic 3: Elements of Complete Streets)*:

- **Landscape Panel**: the area adjacent to the street, which includes space for street trees, other plantings, street lights, and signage. In general, Landscape Panels should be 8-feet wide to accommodate street trees, but can be smaller depending on specific conditions.
- **Amenity Zone**: the paved area (constructed of porous or impermeable hardscape materials) located within the Landscape Panel that is designated for pedestrian and bicycle amenities including seating, bicycle racks, bus shelters, and other street furnishings. Amenity Zones are generally the same width as the Landscape Panel and can range in length depending on furnishing requirements.
- **Sidewalk**: the hardscape area reserved exclusively for pedestrian movement that is clear of any obstructions. New sidewalks generally range in width from 5 to 8 feet, but can be much wider, if needed to accommodate pedestrian activities.

The following is located outside of the right-of-way on private property:

- **Building Zone**: the area between the sidewalk and the face of the building that is designated for building-related elements including building entrances, outdoor dining, browsing, plantings, and residential porches or stoops. The width of the Building Zone varies depending on the street type. On all streets, a 1-foot VDOT maintenance easement should be included adjacent to the sidewalk in the Building Zone.

GRAPHIC 3: ELEMENTS OF COMPLETE STREETS



(a) TRAVEL LANE
Reserved for vehicular travel and turning movements

(b) BIKE LANE
Reserved for unobstructed bicycle travel

(c) LANDSCAPE PANEL
Retained for street trees and plantings

(d) AMENITY ZONE
Designated for seating, bike racks and furnishings

(e) SIDEWALK
Reserved exclusively for pedestrian movement without any obstructions

(f) BUILDING ZONE
Designated for building-related elements including outdoor dining, awnings, plantings, porches, etc.

2A.2 MULTIMODAL STREET TYPES

VDOT, in conjunction with the Virginia Department of Rail and Public Transportation (DRPT), has developed Multimodal System Design Guidelines to promote the integration of safe, functional and comfortable facilities for motorists, bicyclists, pedestrians and transit riders in Virginia's more urban areas. These guidelines support the principles of walkability, context-sensitive street design, and transit-oriented development. They include a functional classification system for public streets that is being applied in Fairfax County's activity centers, including its CRDs and CRAs.

The functional classification system in the Multimodal System Design Guidelines contains five multimodal street types, as described in this section. The Volume II: District Design Guidelines for a specific CRD or CRA and its street network map(s) should be consulted to ascertain the corresponding street classification for each roadway within the CRD or CRA.

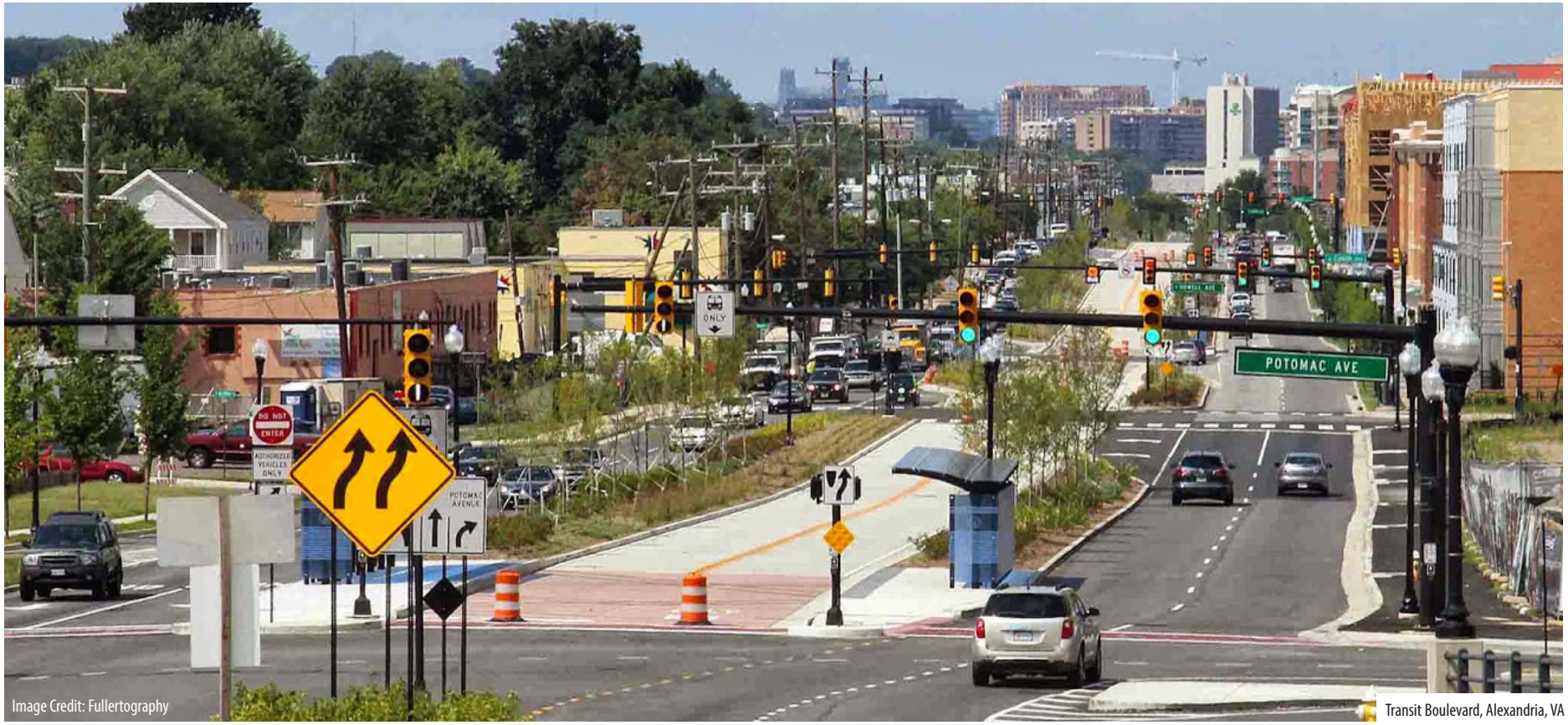


Image Credit: Fullertography

Transit Boulevard, Alexandria, VA

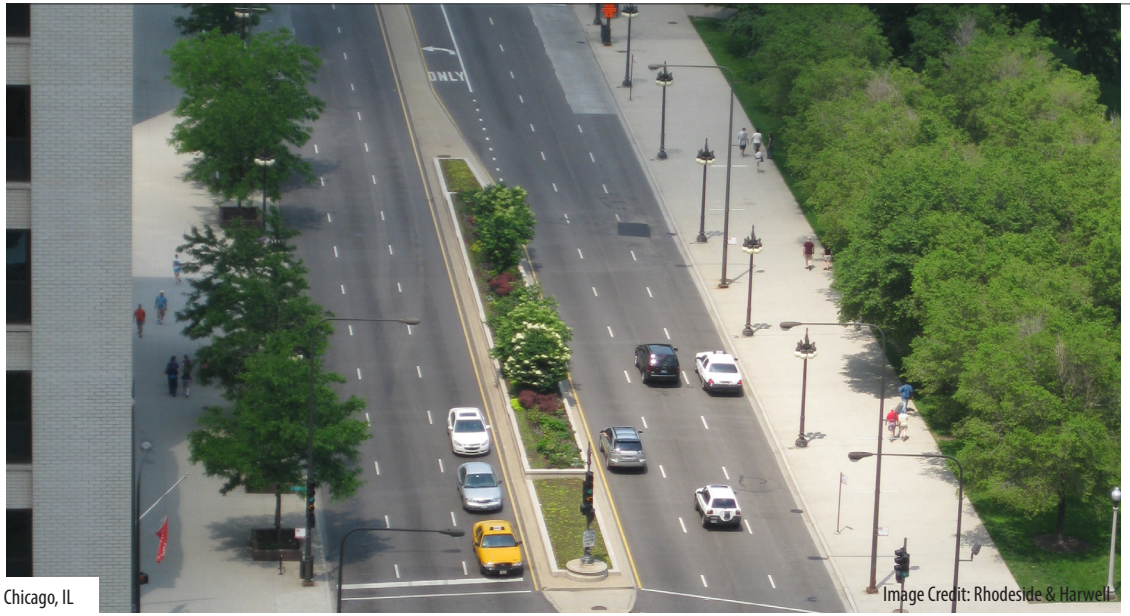
MULTIMODAL STREET TYPES

Fairfax, VA

Image Credit: VDOT

MULTIMODAL THROUGH CORRIDOR:

Multimodal Through Corridors are high-speed roadways that are designed to connect multiple activity centers. They are intended to accommodate through automobile traffic and bus service, and generally have limited intersections with other roads. Multimodal Through Corridors can accommodate high speed commuter transit because they are designed to have few impediments to traffic flow. However, high speeds limit pedestrian and bicycle mobility and, therefore, separated facilities such as multi-use trails and sidewalks should be incorporated into the design of this roadway type. Design speeds for Multimodal Through Corridors range from 35 to 55 mph.



Chicago, IL

Image Credit: Rhodeside & Harwell

BOULEVARD & TRANSIT BOULEVARD:

Boulevards, including Transit Boulevards, are high capacity roadways that accommodate multiple motorized and non-motorized modes of travel. Boulevards allow for higher traffic volumes and greater efficiency of vehicular movements than do Major Avenues, Avenues, and Local Streets. They typically have four to six travel lanes, but may have eight lanes in certain circumstances. Boulevards provide safe and convenient pedestrian and bicycle access to adjacent land uses and feature a median; their streetscapes typically include a Landscaped Panel, street trees, and wider sidewalks. Transit Boulevards are typically found in urban centers that have sufficient density and market demand to support transit and may contain a dedicated right-of-way for transit. Design speeds for Boulevards and Transit Boulevards range from 30 to 35 mph.

MAJOR AVENUE:

Major Avenues serve the highest density of destinations and intensity of activity, while accommodating the greatest mix of travel modes; as such, high levels of pedestrian and street activity are common. Major Avenues are characterized by wide streetscape areas to accommodate both pedestrians and a variety of outdoor activities, including retail and other street activities. Major Avenues are typically comprised of four or fewer travel lanes for motor vehicle trips, and provide facilities for bicycling. They can have high transit ridership for local bus routes and may include space dedicated to on-street parking. Vehicles and buses on Major Avenues travel at slower speeds as a result of frequent vehicular and pedestrian crossings. Design speeds for Major Avenues range from 30 to 35 mph.

Image Credit: Google Earth

Portsmouth, VA

AVENUE:

Avenues are relatively low-speed roadways that facilitate short trips. Avenues provide a balance between access to the adjacent land uses and the movement of vehicular, bicycle and pedestrian travel. While serving fewer destinations than Major Avenues, Avenues are also characterized by frequent pedestrian and bicycle activity and should have wide streetscape areas to accommodate a range of activities. Avenues typically have three (one lane in each direction with a center turn lane) or fewer lanes and do not exceed four lanes. Avenues may have on-street parking and often provide dedicated bicycle facilities. Avenues have a 25-30 mph design speed.

Image Credit: Google Earth

Fairfax, VA

LOCAL STREET:

Local Streets carry the lowest volumes of vehicle trips, have the slowest travel speeds and provide the highest level of access to and from the roadway. They frequently incorporate on-street parking. Bicyclists typically share the road with vehicles because travel speeds are slow and vehicular traffic is less constant; however, separate sidewalks are needed to accommodate pedestrians. Most streets in the planned street grids within the CRDs and CRAs are Local Streets. Single-family residential areas are primarily served by Local Streets. These streets generally connect to Avenues, Major Avenues, or Boulevards and funnel longer trips to these higher-capacity roadway types. Local Streets have a 25 mph design speed.

Image Credit: Re:Streets

Portland, OR

2B STREET NETWORK

The planned street networks in the CRDs and CRAs are designed to support local circulation, while accommodating through traffic. When well-connected, the street network provides alternative options for navigating an area by supporting travel by multiple modes of transportation and by reducing reliance on major roadways for all trips.

The planned street network should be considered early in the initial conceptual design phase of a development proposal. The Comprehensive Plan and the District Design Guidelines for the CRDs and CRAs describe both the existing and planned street network, including street cross-sections, street configurations and required rights-of-way for the various street types within the individual CRDs and CRAs.

The following recommendations are applicable to all street types. They supplement and further detail the street and streetscape guidance contained in the Comprehensive Plan for the individual CRDs and CRAs. It is also necessary to consult the guidance for the specific CRD/CRA in Volume II to determine whether there are specific recommendations for those areas.

RIGHT
An urban grid of streets that provides a well-connected street network with smaller scaled blocks to encourage walking and biking
Image Credit: Fairfax County

DESIGN PRINCIPLES

Establish a safe, multimodal circulation system as the primary organizing feature of a site. As specified in the Comprehensive Plan, the urban design vision for the CRDs and CRAs calls for the creation of a safe, multimodal circulation system consisting of a well-coordinated network of streets, sidewalks and bicycle facilities, with an emphasis on pedestrian, bicycle and transit mobility. The design of a site should fully consider the needs and convenience of the pedestrian through the provision of sidewalks and trails that encourage walking and biking and that reduce dependency on vehicular trips.

Prioritize public streets over private streets. Public streets, as opposed to private streets, are preferred for all new roadways based on maintenance, design, connectivity, law enforcement, and public access considerations. However, there may be instances where private streets are desired to achieve certain placemaking objectives. For example, larger, consolidated developments may choose to create a "festival street" which can be closed to vehicular traffic at select times for events. Private streets may also incorporate special features such as unique wayfinding, landscaping, streetscape components, and/or pavement materials that do not meet VDOT standards.

Create an efficient local street network with pedestrian-scaled blocks. In general, a network of local serving streets that form smaller, walkable development blocks is the most successful approach to improving local circulation and promoting walking. Pedestrian-scaled, well-defined development blocks also support the efficient layout of developments.

DESIGN STRATEGIES

1 MULTIMODAL AND COMPLETE STREETS

A. Proposed developments should incorporate the recommended multimodal street network that provides the necessary transportation infrastructure for all appropriate travel modes.

B. Particular attention should be paid to maximizing the use of non-vehicular travel modes including bicycle and walk-trips.

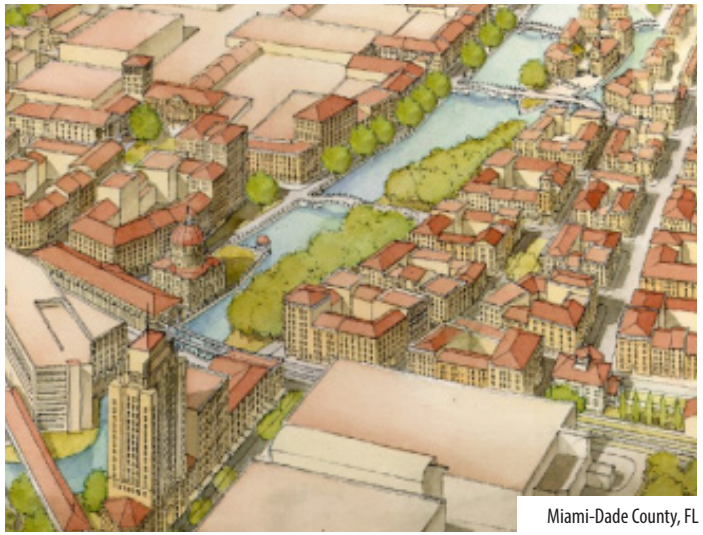
C. Development plans should indicate circulation routes for each transportation mode and should ensure that there are no gaps in the routes.

D. Streets should be designed to minimize and mitigate conflicts between travel modes (pedestrians, bicyclists, motorists and transit users) by, among other things, limiting the number of driveways and access points, determining the most suitable locations for frequent and convenient pedestrian crossings and signals, and ensuring that pedestrians can easily access uses without having to walk unnecessarily across travel ways.

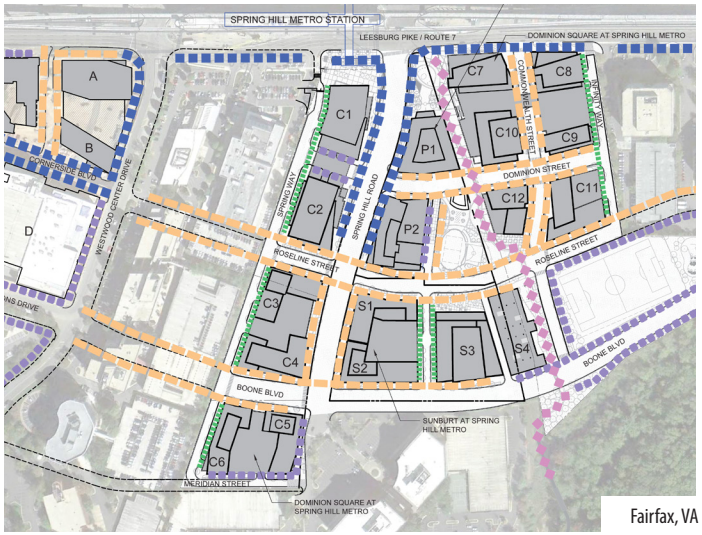
E. On-street parking should be incorporated on all streets where permitted to provide convenient parking for businesses and residents, disperse parking around the CRD or CRA, buffer pedestrians, and in certain instances, buffer cyclists from moving vehicles.

F. Lane widths for vehicle travel should be the minimum permitted to assist in managing roadway speeds, decreasing crossing distances for pedestrians, reducing the extent of impervious pavement, and increasing space for sidewalks and streetscape amenities.

G. Transit shelters should be provided at all transit stops. Transit amenities that benefit pedestrian safety and comfort as well as transit operations should be provided at key locations. *See section 2K ("Transit Shelters") for additional detail regarding the location and design of transit shelters.*



Miami-Dade County, FL



Fairfax, VA

LEFT
Kendall, a community replanned around natural features, existing uses, and a new grid of streets
Image Credit: Dover, Kohl & Partners

RIGHT
Pedestrian plan and street hierarchy organized within new street blocks in Tysons
Image Credit: Land Design

Boulder, CO

TOP
Projects can facilitate pedestrian movement by incorporating mid-block pedestrian pathways
Image Credit: rnldesign.com

DESIGN STRATEGIES (CONTINUED)

H. Pedestrian-scaled lighting and furnishings should be incorporated on all streets for pedestrian safety and comfort. *See section 2F ("Landscape Panel and Amenity Zone") for additional detail regarding pedestrian-scaled lighting and furnishings.*

I. Raised and planted medians are encouraged for stormwater collection, aesthetics and to provide an adequate buffer for waiting pedestrians. Center medians should be visually appealing using trees, plantings, and hardscape materials that are similar to those used in the streetscape, as may be permitted by VDOT.

2 EFFICIENT AND ADAPTABLE BLOCK DESIGN

A. New blocks formed by the street network should facilitate the efficient use of space. These should be regularly shaped, rectangular blocks that maximize the use of developable land, support walking, are adaptable, and are easy to navigate.

B. Blocks should generally be between 300–600 feet in length, while the perimeter of a bock should not exceed 2,000 feet. This block size, accompanied where necessary by mid-block connections (including breaks in buildings and pedestrian passages through buildings), provides the framework for a safe, pedestrian-oriented environment.

3 NEIGHBORHOOD PROTECTION

A. Changes in traffic patterns should not result in fostering cut-through traffic through existing neighborhoods. Mitigation measures should be provided if cut-through traffic is anticipated as a result of new development.

B. Strategies such as the addition of on-street parking, curb bulb-outs, and small traffic rotaries should be considered for existing neighborhood streets to manage the speed of traffic flow.

2C INTERSECTIONS

Intersections are a critical aspect of street design, as they are the point where vehicular, bicycle, and pedestrian movements converge. Most collisions on thoroughfares take place at intersections. In addition, in the CRDs and CRAs, intersections also serve an important placemaking function and may function as gateways, as they are frequently the first thing that people see when they enter a community. Prominent land uses and architecturally-significant buildings can be located to serve as focal points at intersections. As such, it is critical that intersection design serve a variety of purposes, including addressing potential conflicts between travel modes, supporting safety and mobility for all users of street, and contributing to a vibrant and accessible public realm.

Image Credit: NAIOP

Fairfax, VA

2C.1 INTERSECTION DESIGN

Planning for intersections includes not only the immediate intersection, but also the approaches to it, the median (if present), street signage and striping, and the adjacent land uses. Elements that need to be considered in an integrated manner in the design of an intersection include the vehicular capacity of the roadway; the number of travel ways; the level of service; large-vehicle turning requirements; safety; pedestrian and bicycle convenience; accessibility, including applicable ADA regulations; and, the efficiency of transit *(See Graphic 4: Intersection Design)*.

Design features described in this section assume signal-controlled intersections, although many design principles and strategies also apply to signage-controlled intersections and mid-block crossings, where permissible. Final decisions related to intersection design features on public roads are subject to approval by VDOT and FCDOT.

DESIGN PRINCIPLES

Design compact intersections to unify, rather than fragment, the surrounding blocks and minimize crossing distances. The design of intersections is a critical street design element that, to a great degree, determines whether a street ties together a neighborhood or functions as a physical barrier that divides communities. When designed compactly—with smaller corner radii to slow vehicle turning speeds and shorter crossing distances—streets can function as places for people that slow traffic, tie together surrounding blocks, and unify communities.

Ensure that an intersection's configuration and design promotes visibility and predictability, such that pedestrians, bicyclists and motor vehicles can see each other and predict each other's movements through the intersection. Making intersection operations visible and predictable entails minimizing visual obstacles that obscure oncoming traffic or street crossings by pedestrians and bicyclists. It also requires clearly-marked crosswalks and stop lines for vehicles, which in turn helps reduce the speeds of vehicles approaching the intersection.

DESIGN STRATEGIES

1 COMPACT DESIGN

A. Intersections should be designed as compactly as practical to minimize pedestrian crossing distance, crossing time, and exposure to traffic, while still accommodating vehicular movements.

B. Corner curb radii should be as minimal as possible to reduce the speed of turning vehicles and shorten the crossing distance for pedestrians.

C. Curb extensions should be considered for streets with on-street parking, provided that they do not impede adequate sight distance. Curb extensions, also known as bulb-outs, entail extending the curb into the roadway at the crosswalk to shorten the crossing distance, provide additional space for pedestrians, and allow pedestrians to see and be seen by vehicles before entering the crosswalk. Curb extensions can also provide an opportunity to extend the Landscape Panel and include planting and bioretention areas, as well as street furnishings such as seating, bollards, lighting, and wayfinding signage.

2 VISIBILITY

A. The ability of drivers to see pedestrians and cyclists should be addressed by limiting signage and parking near intersections, planting only low vegetation that does not exceed 3-feet in height, installing vehicular stop lines behind crosswalks, using high-visibility crosswalks, and/or installing curb extensions, where applicable.

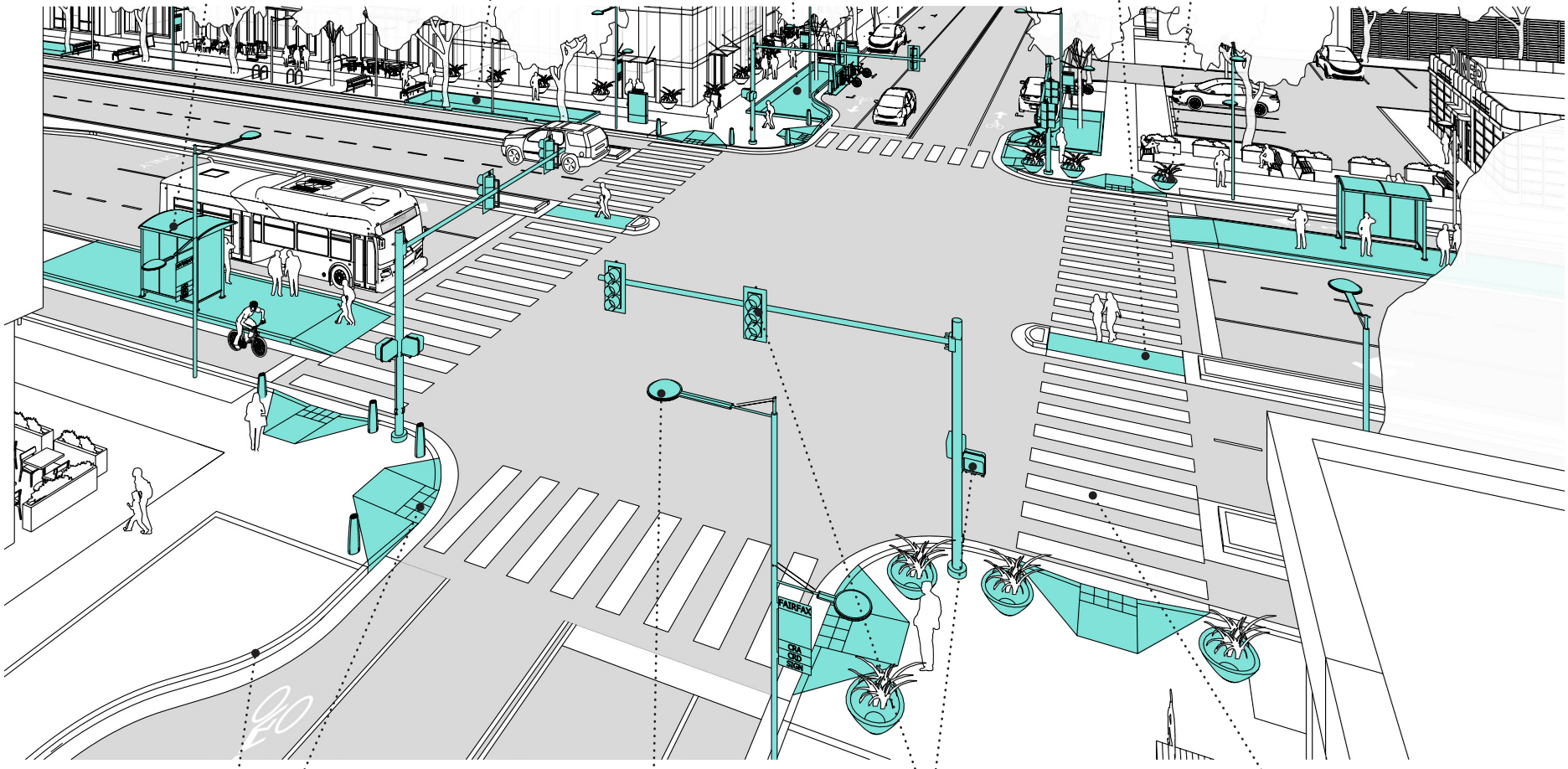
GRAPHIC 4: INTERSECTION DESIGN

TRANSIT SHELTERS
Provide waiting space, shelter, shade, and smart city technology

LANDSCAPE PANEL
Capture and filter stormwater runoff via bioretention planters

PEDESTRIAN REFUGES
Provide a safe place to wait for pedestrians crossing divided roadways

FREE-STANDING PLANTERS / BOLLARDS
Reinforce the physical separation between the pedestrian realm and the street to ensure pedestrian safety



CURB EXTENSIONS
Narrow the roadway at intersections to provide shorter crossing distances and improve visibility for pedestrians

CURB RAMPS
Facilitate access to crosswalks for pedestrians of all ages and abilities; ramps should align with crosswalks; material changes for visually impaired

LIGHTING
Improves visibility of crosswalks and pedestrians to drivers at nighttime or in low light

TRAFFIC & PEDESTRIAN SIGNALS
Control the movement of vehicles and pedestrians; attaching signals to a single pole minimizes visual and physical clutter at street corners

HIGH-VISIBILITY CROSSWALKS
Provide visibility to drivers and clearly indicate pedestrian pathways

2C.2 CROSSWALKS AND PEDESTRIAN SIGNALS

Crosswalk markings are used to define the pedestrian path of travel across a roadway and to alert drivers to locations where pedestrian traffic will occur. Pedestrian and vehicular points of conflict should be managed through appropriate design solutions, and all crosswalks, signals and associated infrastructure should be in compliance with the Manual on Uniform Traffic Control Devices (MUTCD), the Americans with Disabilities Act (ADA) standards, and the VDOT Road Design Manual. Proposals for non-standard intersection designs, should be discussed early with FCDOT in order to determine their feasibility.

Arlington, VA

LEFT
A high-visibility crosswalk is preferred at intersections, where permitted by VDOT
Image Credit: NACTO

DESIGN PRINCIPLES

Install high-visibility crosswalks. High-visibility crosswalks are recommended for all intersections where permitted by VDOT, particularly in commercial areas, at schools, at permitted mid-block crossings, and for crossings on roadways designated as Boulevards, as these are the locations where the greatest safety concerns exist.

Install pedestrian signals wherever warranted on public and private streets. Pedestrian signals should be installed at all intersections on public streets that meet VDOT warrants and on private streets that have either high vehicle traffic, high vehicle speeds, or transit service in order to increase safety and promote a walkable environment.

For midblock crossings, incorporate special safety elements and coordinate with VDOT. Subject to VDOT approval, midblock crosswalks should be considered where there is a specific need based on adjacent uses and where there are no existing or planned crosswalks within 300 to 400 feet of the desired crossing. Adjacent uses that may warrant a midblock crosswalk include: midblock bus stops, parks and plazas, grocery stores, schools, and other public institutions. Overhead signage and signalization of the midblock crosswalk will be determined by VDOT and are subject to MUTCD guidelines. Specific safety elements should be incorporated into midblock crosswalk designs, such as a median refuge (for a road with four or more travel lanes), street lighting, and landscaping to aid in distinguishing the crossing.

DESIGN STRATEGIES

1 CROSSWALKS

A. Crosswalks at roadway intersections should be located to provide the shortest route possible for pedestrians *(See Graphic 5: Crosswalk Configurations)*.

B. Crosswalks, where feasible, should be included on all four legs of an intersection so that walking distances are as short as possible.

C. Pedestrian crossings should be well-coordinated with vehicular traffic to provide for visible and fully accessible convenient pedestrian flow.

D. Streets should include frequent and conveniently-located pedestrian crossings to provide access to local destinations.

E. Any block greater than 600-feet in length should have an internal mid-block pedestrian connection, where feasible. Mid-block connections may include a pedestrian walkway, a service street with a sidewalk, a trail connection, a publicly-accessible walkway through a building, or other publicly-accessible connection.

F. Durable inlay or thermoplastic tape should be used for all crosswalk striping rather than paint. High-visibility markings should be spaced to avoid the wheel path of cars, thereby reducing wear-and-tear on the striping. Special crosswalk treatments or any other variations from this standard crosswalk striping are generally not permitted on public streets.

G. A minimum 4-foot wide pedestrian refuge should be included within medians, especially those where the total crossing distance is over 60 feet from curb to curb.

2 CURB RAMPS AND RAISED INTERSECTIONS

A. Curb ramps should be aligned directly with the crosswalk.

B. Curbless intersection corners (street corners that are sloped to the level of the roadway) and raised intersections (intersections elevated to the level of the sidewalk) are encouraged for local streets that are anticipated to have high volumes of pedestrian traffic, such as retail streets and intersections near parks and plazas, since they encourage motorists to yield and to prioritize pedestrians. These intersection treatments require bollards or other barriers to demarcate pedestrian waiting space to ensure a safe and comfortable area that is separated from vehicular traffic and so that less-abled bodied people can more easily cross the street.

3 PEDESTRIAN SIGNALS

A. Pedestrian signals should be installed at all signalized intersections, if warranted by VDOT.

B. Adequate crossing time should be provided for pedestrians and should be particularly considered on Boulevards.

C. For areas where a high volume of pedestrian traffic is anticipated, and with VDOT/FCDOT's approval, pedestrian signals should incorporate countdown timers.

D. The use of high-quality, single-pole traffic and pedestrian signals should be considered to reduce the number of poles and obstructions in the streetscape and to help achieve placemaking objectives.

E. On wide, multi-lane streets, even those with median refuges, pedestrians and cyclists should be provided sufficient time to cross the entire roadway in one signal cycle. On very wide Boulevards and Multimodal Through Corridors, median refuges should be designed to ensure that pedestrians and cyclists can safely and comfortably wait in the median if they can only cross half the distance of the roadway in one signal cycle. In these instances, the signal should automatically anticipate the need for another cycle so that pedestrians do not have to wait unnecessarily.

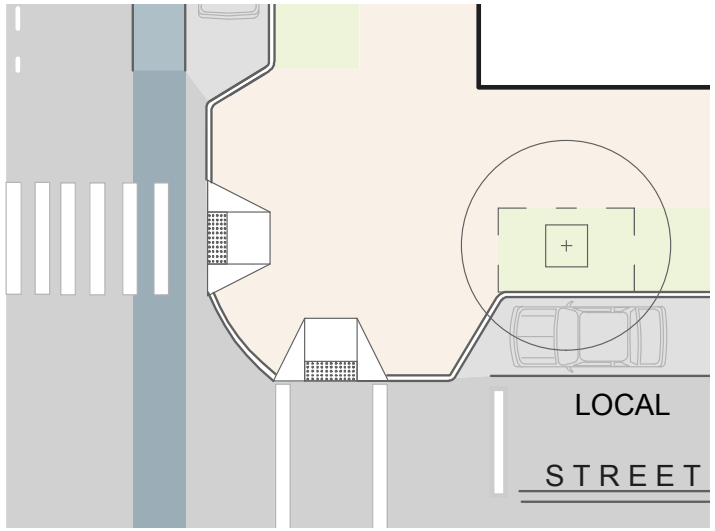
GRAPHIC 5: CROSSWALK CONFIGURATIONS

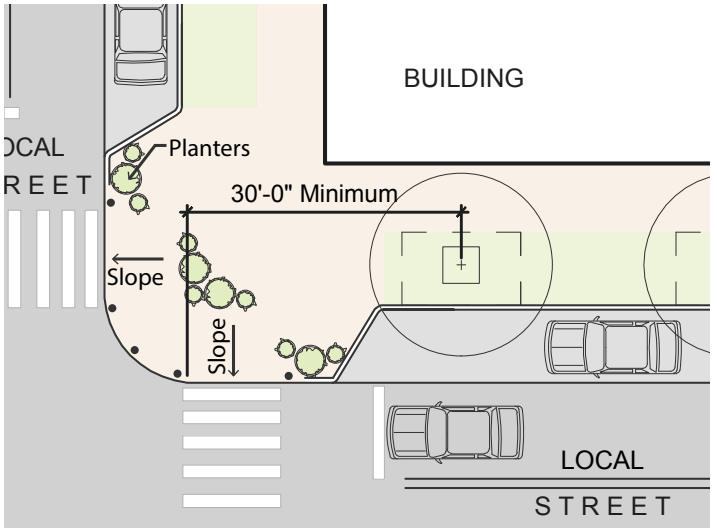
TOP LEFT
Acceptable curb ramp alignment where ramp is directly aligned with the crosswalk

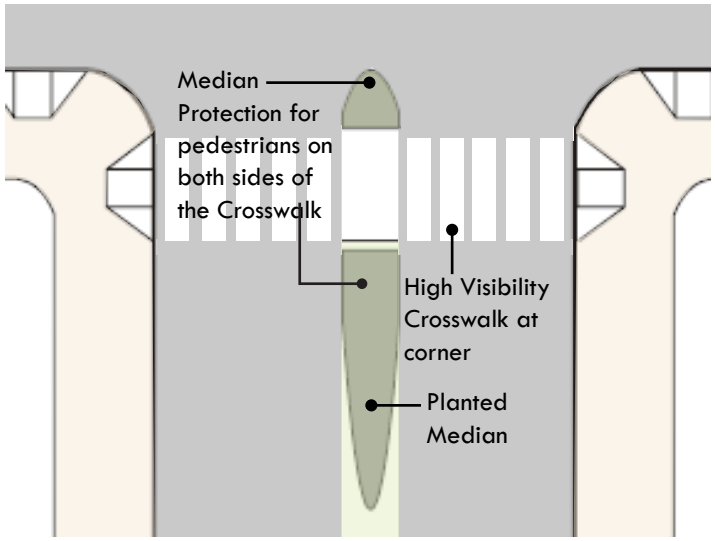
TOP RIGHT
Curbless corner design for intersections with high volumes of pedestrian traffic

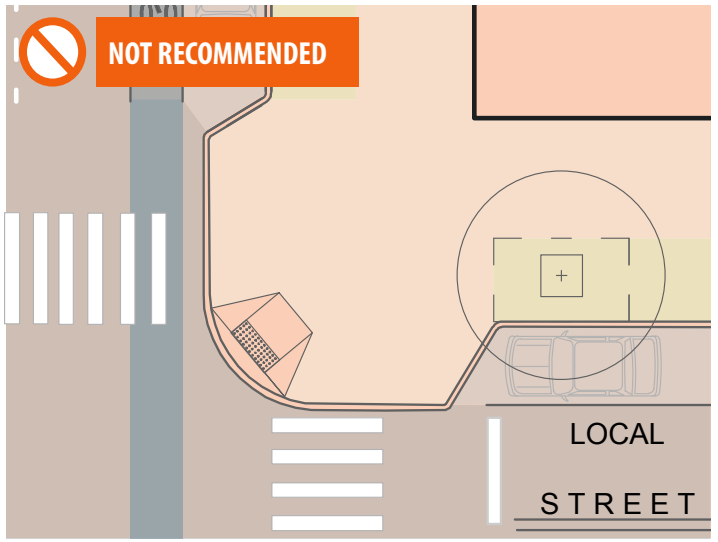
BOTTOM LEFT
Crosswalk through a median provides a pedestrian refuge for long crossings; raised medians on both sides of the crosswalk provide buffer for pedestrians

BOTTOM RIGHT
Unacceptable design where a single curb ramp is not aligned with crosswalks









PEDESTRIAN SIGNALS

Berlin, Germany

Savannah, GA

TOP LEFT
Distinctive pedestrian signals create character and interest
Image Credit: travelgumbo.com

TOP RIGHT
Less visually intrusive, combined traffic-pedestrian signal
Image Credit: Fairfax County

City of Fairfax, VA

Fairfax, VA

BOTTOM LEFT
Combined, single-pole traffic and pedestrian signal with street lighting is well-placed behind the pedestrian waiting area
Image Credit: Fairfax County

BOTTOM RIGHT
Poor access to pedestrian signal button; does not include ADA-compliant sidewalk paving abutting the signal button
Image Credit: Fairfax County

2D BICYCLE FACILITIES

Bicycles will play an increasingly important role in the movement of people (and goods) around and through the CRDs and CRAs, and, as such, are an essential component of a complete multimodal transportation network. In addition to the street cross-sections depicted in the Volume II District Design Guidelines, the following resources should be used to incorporate bicycle facilities into a site's design:

- Fairfax County Comprehensive Plan
- Fairfax County Bicycle Master Plan
- The National Association of City Transportation Officials (NACTO) Urban Bikeways Design Guide
- Federal Highway Administration (FWHA) Separated Bike Lane Planning and Design Guide

BICYCLE FACILITY TYPES

There are many potential configurations for bicycle facilities, depending on the available right-of-way and the needs of cyclists on a particular roadway. Some streets that are low speed and have low traffic volumes can be designed to accommodate cyclists within the vehicle travel lane. On these streets, pavement markings and/or signage may be incorporated to alert drivers that they are expected to share the roadway with cyclists. On other streets with higher speeds and levels of traffic, greater separation between bicycles and motor vehicles is preferable. Common types of dedicated lane bicycle facilities in Fairfax County include:

Montreal, Canada

Image Credit: Nelson\Nygaard

BIKE LANE

Bike lanes are travel lanes for the preferential or exclusive use of bicycles. Bike lanes are recommended along both sides of the roadway on Avenues, Major Avenues, and Boulevards to accommodate bicycle traffic moving in both directions. The standard minimum width of a bike lane is 5-feet or a minimum of 6.5-feet wide for cyclists to pass each other within the lane.

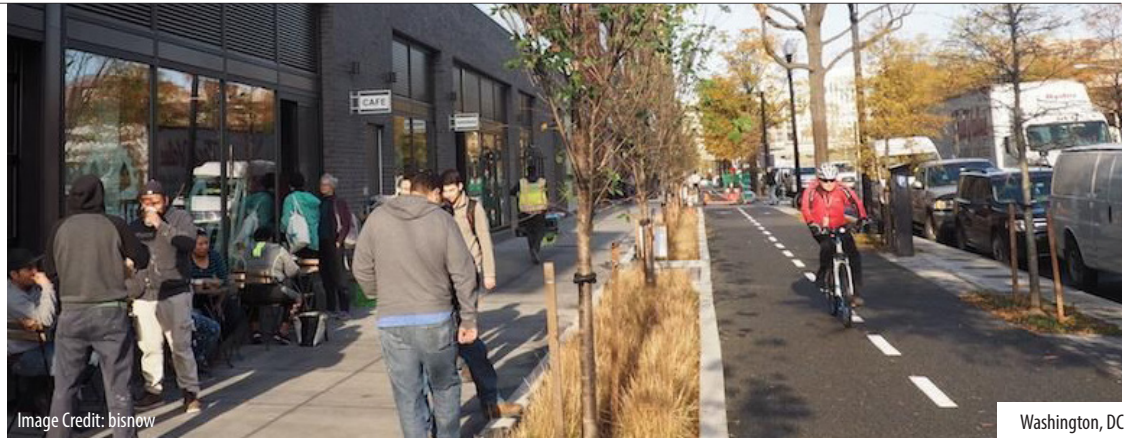
BUFFERED BIKE LANE

Buffered Bike Lanes are bike lanes that include a buffer space between the vehicle lane and the bike lane. Buffered bike lanes should be considered on roadways where there is excess pavement width or where vehicles speeds are 35 mph or greater. The buffer is generally striped using pavement markings.

Davis, CA

CYCLE TRACK

Cycle tracks are buffered bike lanes that are physically separated from both the roadway and the sidewalk. The physical buffer separates cyclists from vehicle traffic using a variety of methods including curbs, on-street parking, raised concrete medians, or landscaping. The buffer may also include flexible posts, bollards, or other vertical lane delineators. A cycle track may be at the roadway level or at the sidewalk level using space adjacent to the roadway. A cycle track can be one-way and located on each side of a roadway or two-way and installed on one side of the roadway. Cycle tracks are typically used on Boulevards with higher vehicle speeds or on high-volume, low-speed streets in commercial areas.



Washington, DC

TRAIL AND SHARED USE PATH

Trails and Shared Use Paths are off-street bicycle and pedestrian facilities that are physically separated from vehicle traffic. Typically, shared-use paths are located in the right-of-way and used by a variety of non-motorized users. They are commonly located alongside high-volume, high-speed roadways such as Multimodal Through Corridors and highways. Trails are usually located in an independent right-of-way or easement, such as a park, greenway, or utility corridor. Shared-use paths and trails require additional design considerations such as signage and/or striping to limit conflicts among different users.

Washington, DC

DESIGN PRINCIPLES

Design for safety, comfort and a range of users. Bicycle facilities must be properly designed and implemented in order to ensure that they are safe, comfortable, useful, and attractive to as broad a segment of the population as possible, across the spectrum of age, ability and cycling experience.

Incorporate a range of bicycle facility types, but prioritize separated facilities where feasible. Several types of bicycle facilities, ranging from on-street bicycle lanes to separated bicycle facilities such as cycle tracks and shared-use paths, are proposed in the CRDs and CRAs based on the specific roadway condition. Separated bicycle facilities are preferred on streets where they are deemed necessary for safety and user comfort.

Indianapolis, IN

TOP
Landscaped bioswale adjacent to the bike lane - creative addition to the infrastructure
Image Credit: Our Greenway

BOTTOM LEFT
Specialized buffered bicycle facility known as "Dutch Intersection" provides an enhanced, safe intersection treatment where a high-volume of cyclists is anticipated
Image Credit: John Greenfield

BOTTOM RIGHT
Buffered bike lane provides protection from vehicular travel lanes
Image Credit: bikearlington.com


Chicago. IL


Arlington, VA

DESIGN STRATEGIES

1 GENERAL NETWORK CONSIDERATIONS

A. A logical, comprehensive bicycle circulation system and associated on-site and off-site bicycle amenities should be incorporated and prioritized at the conceptual design phase for the development.

B. Bicycle facilities should provide continuous bicycle connections that transition between roadways, extend through intersections, and link one facility type to another (i.e. from a cycle track to a bicycle lane).

C. Bicycle facilities should be designed to minimize conflicts between cyclists and pedestrians. Potential conflicts can be minimized by incorporating separated facilities such as cycle tracks on higher speed, high volume roadways or by using features such as safety and awareness signage.

D. Policy Roads are designated in the Fairfax County Bicycle Master Plan as roadways where a bicycle facility is desired but the specific facility type has not been determined. In such instances, FCDOT and VDOT should be consulted to determine the appropriate bicycle facility.

Redwood City, CA

2 FACILITY DESIGN

A. The design of bicycle facilities should consider whether or not bicyclists are intended to pass each other within the lane. Minimum facility width and design considerations are described in section *2D ("Bicycle Facilities")*.

B. Intersections with bicycle facilities should be designed to reduce conflicts with vehicles by heightening the level of visibility, denoting a clear right-of-way, and facilitating eye contact and awareness among competing modes. Bicycle lane markings should be extended through the intersection.

C. When on-street parking and bicycle facilities are planned for a roadway, additional design features should be considered, including determining whether the on-street parking or the bicycle facility should be located adjacent to the vehicle travel lane; and, providing adequate space in a buffer between the parked car and the bicycle lane to prevent a cyclist from being hit by an open car door.

Alexandria, VA

LEFT
Buffered bike lane incorporates a door zone buffer to prevent conflicts between bicyclists and open car doors
Image Credit: bikesiliconvalley.org

RIGHT
Bicycle lane configuration at an intersection where pavement markings help define spaces for pedestrians, vehicles, and cyclists
Image Credit: Rhodeside & Harwell

2E PEDESTRIAN REALM

The pedestrian realm includes the public and private spaces that are designed to be frequented by people. High-quality, convenient and safe pedestrian environments will promote walk-trips, attract people and contribute to the economic success of the CRDs and CRAs. In CRDs and CRAs, the parks, plazas, and sidewalks along streets comprise most of the pedestrian realm. This section sets forth general design principles and strategies for creating a high-quality pedestrian realm; followed by greater detail on many of these approaches *(See Graphic 6: Pedestrian Realm)*.

LEFT
Streetscape emphasizes comfort and safety; curb extension reduces crossing distance; vertical elements between the vehicle lane and the pedestrian realm create a sense of enclosure and physical separation from vehicles
Image Credit: Design Workshop

Denver, CO

RIGHT
Rooftop outdoor space oriented to the street animates the pedestrian realm even though it is not located at the street level
Image Credit: downtowncharlottesville.net

DESIGN PRINCIPLES

Accommodate a high volume of pedestrian activity while serving the social, recreational and environmental needs of each community. Open spaces, land uses, building orientation, building setbacks, and a comprehensive sidewalk system should create an integrated pedestrian network that promotes walking and active living at both the neighborhood and site-specific scales. Streets and open space networks serve as connectors for pedestrians to the various parts of the area and should function as safe, accessible, convenient, direct, and comfortable connections between origin and destination points. Pedestrian accommodations and mobility should be considered when determining the most appropriate facility types and their design.

Take advantage of unique, site-specific opportunities to enhance the pedestrian realm. Whether it is the presence of environmental features, such as an adjacent stream corridor, or a site's role as a gateway to a CRD or CRA, existing conditions on a site can create opportunities for context-sensitive solutions that are tailored to the individual site while enhancing the larger pedestrian realm.

Charlottesville, VA

DESIGN STRATEGIES

1 SAFE AND UNOBSTRUCTED PEDESTRIAN MOVEMENT

A. Sidewalks and trails should create comfortable environments which are of an adequate width to contain, define and concentrate pedestrian activities for a range of users. Facility widths should anticipate pedestrian needs based on adjacent land uses and the projected volume of pedestrian traffic.

B. Public realm environments should be ADA accessible and accommodate users of all ages and abilities:

   i. Sidewalks and trails should be sufficiently wide and unobstructed, utilizing non-slip and even materials to promote access and usage by all users.

   ii. Curbs should be designed to accommodate safe mobility for users of all ages and abilities by incorporating ramps at crossings that are aligned with crosswalks.

   iii. Hardscape materials, landscaping and furnishings should be durable, low-maintenance and easy to repair or replace.

   iv. Maintenances should occur on a regular basis.

C. Pedestrian circulation should occur at the ground level. Above-grade bridges or below-grade tunnels are generally discouraged, except potentially when crossing Multimodal Through Corridors or for major recreational trails.

D. At locations where pedestrians and vehicles co-mingle, such as at intersections, clearly delineated crossings and pedestrian signals should be incorporated. Curb radii and curb extensions at intersections should be considered to slow traffic, shorten crossing distance, and enhance visibility.

2 PEDESTRIAN-ORIENTED SPACES AND AMENITIES

A. The pedestrian realm should incorporate interesting, safe, and properly sized spaces that include gathering areas, trees and landscaping, lighting and street furnishings, and other facilities to accommodate pedestrian-oriented programming.

B. Buildings should be designed to interact positively with the pedestrian realm by including features such as entryways, storefronts, awnings or overhangs, space for outdoor restaurant seating and merchant displays.

C. Retail and other land uses that require and/or are supportive of pedestrian traffic, such as at key intersections or buildings adjacent to plazas, should be served by high-quality public spaces, streetscapes and pedestrian amenities.

D. A mix of sunlit and shaded pathways, sidewalks and seating areas should be provided to address the impacts of weather on the pedestrian environment. Shaded areas should be provided along southern and western oriented building frontages, while sunlit facilities should be emphasized along northern and eastern oriented building frontages.

E. Pedestrian comfort and safety should be prioritized through the creative use of streetscape elements that both serve as amenities for pedestrians and guide pedestrian movement.

   i. Repetitive, evenly spaced streetscape elements should be used, including pedestrian-scaled light fixtures, furnishings, street trees, and a mix of hardscape and landscape areas.

   ii. The repetition and continuity of these streetscape elements can establish the overall feel and comfort level of a sidewalk, and can be used to direct pedestrian movement.

F. Locations for wayfinding signage and furnishings for pedestrians and cyclists should be considered when designing the pedestrian network.

GRAPHIC 6: PEDESTRIAN REALM

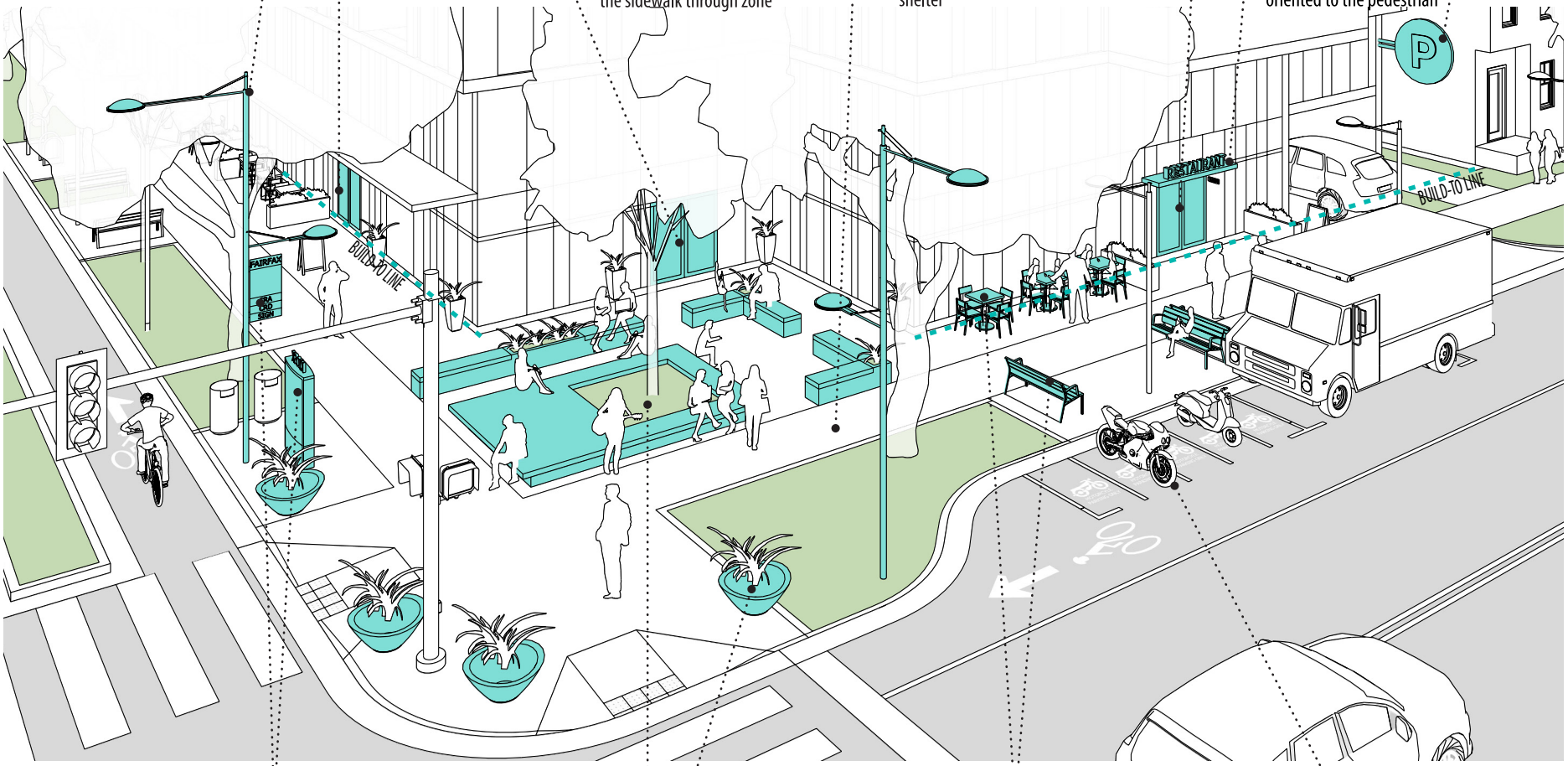
PEDESTRIAN-SCALED LIGHTING
Contributes to pedestrian safety and comfort at night

BUILDING ENTRANCES
Create an active street-level pedestrian environment along key streets and at corners

UNOBSTRUCTED SIDEWALKS
Allows continuous and unimpeded pedestrian movement when utilities and amenities are placed outside of the sidewalk through zone

STOREFRONT DOORS & WINDOWS
Provides facade transparency when facing the street; awnings highlight entrances and storefronts while providing shade and shelter

BUILDING SIGNAGE
Highlights individual businesses and destinations; scaled and oriented to the pedestrian



BRANDING & WAYFINDING
Provides information and area-wide identity through banners, signage, and kiosks

OPEN SPACE
Provides opportunities for public gathering spaces, particularly at gateways or special places, such as street corners; helps create a distinct character for the area and can be activated with programmed activities

TREES, LANDSCAPING & PLANTERS
Add shade and greenery to streetscapes to enhance pedestrian comfort; provide sense of enclosure and safety

FURNISHINGS & AMENITIES
Make the streetscape feel comfortable and welcoming to pedestrians when provided in Amenity Zone and Building Zone

ON-STREET PARKING
Provides convenient parking for area businesses while serving as a buffer between the sidewalk and the street

DESIGN STRATEGIES (CONTINUED)

3 STREET CORNERS

A. Special streetscape design treatments may be incorporated at intersections to highlight the importance of corners in the overall streetscape and to define the pedestrian realm.

   i. Street corners may be expanded with curb extensions, increasing the amount of pedestrian space while reducing the crossing distance between curbs.

   ii. Bollards, trees and/or enhanced landscaping should be located between the corner and the roadway to delineate pedestrian areas and provide safety buffers.

   iii. Special paving treatments may be incorporated to highlight and differentiate prominent street corners. Prominent corners can be designed to orient people and connect physically and visually to other design elements in the public realm. For example, a similar design language of materials and furnishings can be used while also incorporating unique features to distinguish the corner.

   iv. Streetscape design features may be continued around corners and onto connecting cross streets to provide a transition between different streetscape treatments.

   v. Buildings should embrace street corners with design elements such as entrances that open directly onto the street; fenestration to provide facade transparency; and, special paving to highlight building entrances. Where sufficient space exists, outdoor seating areas may be incorporated adjacent to buildings to further enliven street corners. For additional details on building corner treatments, *see section 2H ("Building Zone") and Chapter 4 ("Building Design")*.

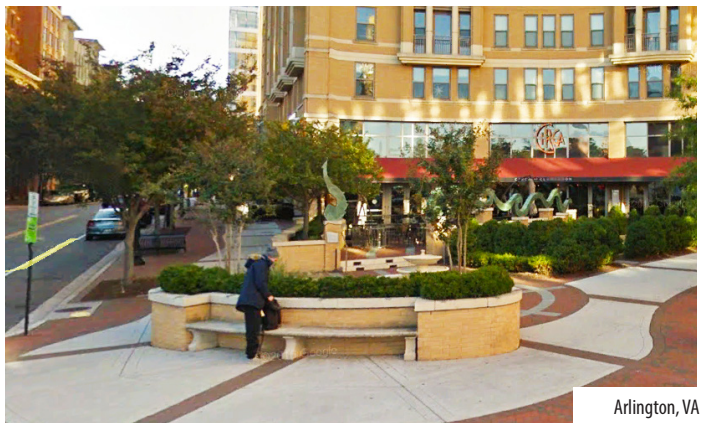
   vi. Where excess space exists outside zones of pedestrian movement, plantings and stormwater management features may be incorporated to provide sustainable management of stormwater runoff, reductions in the amount of impervious surfaces, and aesthetic benefits such as visual variety and the definition of spaces within the streetscape. *See section 2L ("Sustainable Street and Streetscape Design") and Appendix A2 ("Sustainable Design Toolbox") for additional information on incorporating stormwater management features into the streetscape.*

B. The design of corners should facilitate, rather than impede, safe pedestrian crossings and turning movements.

   i. Parking should be prohibited within 10-30 feet of a street corner to ensure that oncoming traffic and pedestrians are visible at intersections.

   ii. Curb ramps, aligned with crosswalks, should be provided, in compliance with ADA guidelines, to facilitate safe and comfortable crossings for pedestrians of all ages and abilities.

   iii. The path of pedestrian travel should be free of utility infrastructure and other potential obstructions, such as bicycle racks, trash receptacles, or other street furnishings.



Arlington, VA

LEFT
Street corner with distinctive paving, art and seating to accentuate the corner's importance and visual prominence
Image Credit: Google

DESIGN STRATEGIES (CONTINUED)

C. Where sufficient space exists, the design of street corners should foster safe, inviting and comfortable environments that encourage a variety of pedestrian activities and gatherings.

   i. In some instances, design features should be incorporated that enable the corner to feel like and function as a small open space—for example, landscaping and special plantings, seating, low walls with integrated seating, pergolas, shading devices, special lighting features, public art, and electronic kiosks displaying CRD/CRA-related information (businesses, transit, etc.).

   ii. In commercial areas, corner treatments should support and complement adjacent businesses (for example, incorporating seating where patrons can consume food and beverages purchased from nearby businesses.

   iii. For related design considerations pertaining to small open spaces, see the discussion of pocket parks and plazas in *Chapter 3 ("Open Space")*.

Alexandria, VA

RIGHT
Outdoor dining, building signage, lighting, and pedestrian amenities contribute to creating inviting street corner
Image Credit: Rhodeside & Harwell

2F LANDSCAPE PANEL AND AMENITY ZONE

The Landscape Panel and Amenity Zone together comprise the space between the curb and the sidewalk. These zones serve as a buffer between the street and the sidewalk, while housing many of the amenities that define a streetscape's character and support its many functions.

The Landscape Panel accommodates the variety of trees and other plantings that line a street and is adjacent to the sidewalk. These planted elements are important to the quality of life in CRDs and CRAs and offer a range of benefits. Plantings in the urban landscape provide cooling, shade, texture, color, and visual interest. Well-landscaped spaces also provide significant benefits to the urban ecology and the environment, including enhanced stormwater remediation, reduced heat island effects, improved air quality, and increased biodiversity. Trees and other plantings in the Landscape Panel also create a sense of enclosure in the pedestrian realm and can calm traffic by appearing to narrow the width of the roadway. Street lights and certain types of signage may also be located within the Landscape Panel.

The Landscape Panel may be largely continuous along some streets; however, particularly along streets in activity centers where pedestrian activity is greatest, the Landscape Panel frequently includes Amenity Zones, the paved areas with a variety of pedestrian and bicycle amenities—including seating, bicycle racks, transit shelters, parking meters, trash receptacles, street lights, signage, and other street furnishings. The Amenity Zone is typically paved and serves a variety of important functions, including providing places to sit, rest, park a bicycle or pay for parking, and wait for transit; it also reinforces the physical and visual separation between the sidewalk and the street. Above all, an effective Amenity Zone should make the streetscape more comfortable and appealing while supporting and enhancing the street's visual character and everyday functions.

The arrangement of the Landscape Panel and the Amenity Zone may vary depending on factors such as the amount of space available, the amount of furnishings required in a particular location, and the overall character of a particular street. Along some blocks, the Landscape Panel may be entirely or mostly continuous; along other streets, particularly streets with significant pedestrian activity, the Landscape Panel may be interspersed with Amenity Zones, with the two zones occupying the same linear space between the curb and sidewalk. In particularly constrained rights-of-way, the Amenity Zone may also be located within the Building Zone as space allows.

The sections of this chapter that follow provide detailed design principles and strategies for the various elements that comprise the Landscape Panel and Amenity Zone.

Washington, DC

LEFT
Streetscape with Landscape Panel and with seating in the Amenity Zone
Image Credit: Rhodeside & Harwell

2F.1 TREES AND LANDSCAPING

Trees in an urban environment are subject to harsh conditions which can affect their health; this includes inadequate soil volume in which to grow, exposure to salt used to treat roads during snow events, pedestrian traffic, and proximity to utility infrastructure. As such, final planting design and tree selection should be done in consultation with the Fairfax County Urban Forestry Management Division. The recommended tree and plant list can be found in the Appendix; the following resources specific to the Virginia climate should also be consulted:

- Fairfax County Public Facilities Manual (PFM), Chapter 12. In the PFM, Fairfax County classifies tree species based on the size of the tree at maturity.
  - **Category I** trees are 50-feet or less in height, with a spread that is half the size or smaller than their height.
  - **Category II** trees are approximately 20-feet in height and width.
  - **Category III** trees are 25 to 50-feet in height, with an equal or larger spread or trees over 50-feet in height with a smaller spread.
  - **Category IV** trees are 50-feet in height or taller, with a spread that is equal to or wider than their height.
- 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

DESIGN PRINCIPLES

Utilize native plant materials and a diversity of species wherever possible. Native species provide multiple benefits including stormwater infiltration and management, improved air quality, reducing the urban heat island effect, erosion control and soil stabilization, noise buffering, climate change resilience, and support for native wildlife, including pollinators. Native species are important because they aid in the restoration of natural ecosystem services and may reduce long-term maintenance.

The use of native species for restoration of the natural ecosystem and plant communities, should be a priority, and designs should be encouraged to include sizable open spaces to support these species in the landscape. However, certain non-native, non-invasive species have shown good adaptability to tough urban conditions and contribute to the landscape. While non-native species provide little support for wildlife and pollinators, there are a number of environmental services that they do provide. For trees, the level of benefit will depend on its vitality, the suitability of its characteristics for the proposed location, and how it interacts with the use of the space around it.

Site and space trees to complement streets, streetscapes and adjacent land uses. Proper siting and spacing between trees are key elements to a successful street tree plan that benefits pedestrians and the environment, and reduces maintenance requirements. Tree planting designs should respect the overall street context and the local environment. Tree spacing should be designed to form a continuous canopy along a street while respecting adjacent land uses by complementing and not interfering with ground floor uses, entryways, restaurant seating, or other activities in the Building Zone. Trees and plantings can also be used to define different zones of the streetscape.

Ensure the long-term survival of trees through proper planting techniques and ongoing care and maintenance. When street trees are planted in a limited space, they have less chance to survive and are more susceptible to damage and disease, which affects their ability to reach their full growth potential. Key factors to maximize long-term tree survival include appropriate tree selection, suitable planting techniques—including the provision of sufficient, unobstructed soils—and immediate and continued aftercare. Pavement may also interfere with root expansion as the trees grow. The problem may begin as a crack in the surface of the pavement, which attracts growing roots and eventually results in the sidewalk section lifting out of the ground. Therefore, care must be taken when integrating pavement within tree planting areas. Appendix A1 provides guidance and details for the planting of street trees to limit these problems.

DESIGN STRATEGIES

1 TREE AND PLANT SELECTION

A. Large canopy (Category III or IV) trees which are 3-inch caliper or larger at the time of planting should be installed wherever possible in order for trees to have an immediate impact on pedestrian comfort and placemaking.

B. Tree and plant species of a similar size, scale, and form should be planted along the length of the roadway for consistency and to maximize visual impact.

C. Use of monocultures throughout a CRD or CRA or along the length of a street should be avoided as this makes an area susceptible to disease and insects. Grass is generally discouraged in the Landscape Panel; native and ornamental grasses are encouraged.

2 STREET TREE SITING AND SPACING

A. Street trees should be planted in the Landscape Panel to provide shade and act as a natural buffer for pedestrians. Planting large canopy (Category III or IV) street trees in the Landscape Panel between the sidewalk and the roadway should be a priority for all developments.

B. Category III or IV trees should be consistently spaced approximately 30-feet on-center. Category I or II trees may be spaced closer together, depending on the species *(See Graphic 7: Tree Locations and Spacing)*.

C. Where space allows, trees are encouraged to also be planted in the Building Zone.

D. Breaks in consistently spaced street trees should occur only to accommodate Amenity Zones, curb cuts, or intersections. Locations may have to be adjusted to provide adequate building access for fire trucks. Trees should not be planted within 30-feet of an intersection or 15-feet of a curb cut.

E. Trees are encouraged to be planted adjacent to trails and bike lanes to provide shade and support year-round use.

Santa Monica, CA

TOP
Continuous Landscape Panel; large canopy trees and understory plantings lining streets provide shade and buffer pedestrians from moving vehicles
Image Credit: scotland.landscapeinstitute.org

DESIGN STRATEGIES (CONTINUED)

3 STREET TREE PLANTING

A. The PFM–required tree well dimensions for Category III and IV street trees should be provided to safeguard tree health and growth potential. A minimum of 130 square feet of open soil area per tree should be provided, and no curb or pavement should be located within 4-feet of the centerline of the tree trunk (for a total minimum planting width of 8-feet).

B. Where PFM guidance is not feasible due to constrained urban environments, site-specific conditions, or where Landscape Panels of less than 8-feet wide exist, the alternative planting design strategies listed below and the diagrams in the Appendix may be considered as an alternative to the recommendations in the PFM, depending on available space, specific streetscape conditions, and desired character. In addition, there is flexibility for innovative planting techniques that can achieve better environments for tree growth and go beyond the alternatives contained in this document. Final determination of appropriate tree planting methods should be done in consultation with the County's Urban Forestry Management Division.

i. Alternative Strategy 1: Minimum Soil Volume:

a. Soil volume should be a minimum of 700-cubic feet per tree for single trees.

b. For two trees planted in a continuous planting area, a total soil volume of at least 1,200-cubic feet should be provided. A contiguous area is defined as any area with a soil depth of 4-feet and where lateral root growth is unrestricted.

c. For three or more trees planted in a contiguous area, the soil volume should be at least 500-cubic feet per tree.

These soil volumes are typically met by providing trees within planting strips. Planting strips are long sections of non-compacted soil without pavement on top. Sidewalks that bisect the strips may be necessary to keep pedestrian traffic off of the open soil around the trees. Planting perennials, ornamental grasses, and shrubs at the base of the tree within the planting strip will help reduce foot traffic and soil compaction, thereby creating a more favorable condition for tree roots.

ii. Alternative Strategy 2: **Structural Cell Supporting Sidewalk:** Structural cells typically consist of a plastic/fiberglass grid of columns and beams that support paving above uncompacted planting soil. If paving is proposed over the tree well, suspending the paving over structural cells should be employed to avoid issues with soil compaction so that roots can spread without interrupting the hardscape. This allows the planting area to be filled with well-aerated, quality topsoil where roots are provided the proper space in which to grow.

iii. Alternative Strategy 3: **Cantilevered Sidewalk:** Sidewalks may also be cantilevered over the tree well as long as there is a minimum of 3-feet of space between the tree trunk and the edge of pavement; and, the tree well has a minimum opening of 6-feet wide.

iv. Alternative Strategy 4: **Reduced Soil Volume/Smaller Tree:** If the soil volumes set forth above cannot be provided, a reduced amount of soil volume may be used in conjunction with a lesser category of street tree. Category I or II street trees may be used in such instances. The recommended tree list in the Appendix provides information on the classification and category of such street trees.

v. Alternative Strategy 5: **Shift Street Trees from the Landscape Panel to the Building Zone:** If significant site constraints exist, the Building Zone may be used

DESIGN STRATEGIES (CONTINUED)

for trees in lieu of locating trees in the Landscape Panel, provided adequate space exists to avoid conflicts with buildings. This alternative may be more appropriate on low traffic Local Roads where trees located between the sidewalk and the roadway may not be needed to buffer pedestrians from moving vehicles. On-street parking also helps to serve as a buffer when trees cannot be planted in the Landscape Panel.

Image Credit: Fairfax County

Alternative Strategy 3

Amenity Zone cantilevered over a tree well

Image Credit: Kim Hartley Hawkins

Alternative Strategy 1

Continuous tree wells provide adequate soil volumes by sharing soil among multiple trees

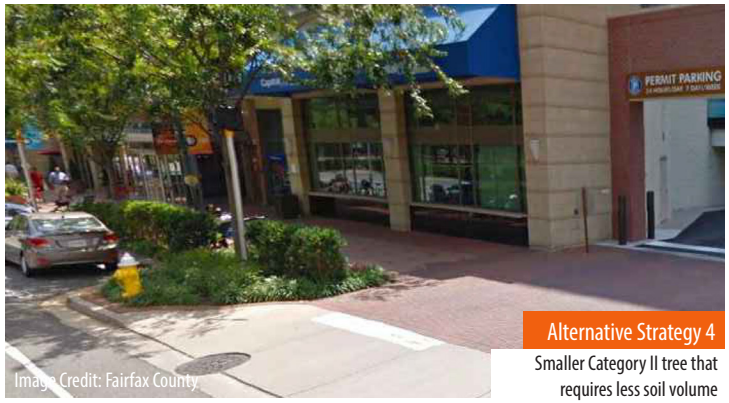


Image Credit: Fairfax County

Alternative Strategy 4

Smaller Category II tree that requires less soil volume

Image Credit: Keep Indianapolis Beautiful

Alternative Strategy 2

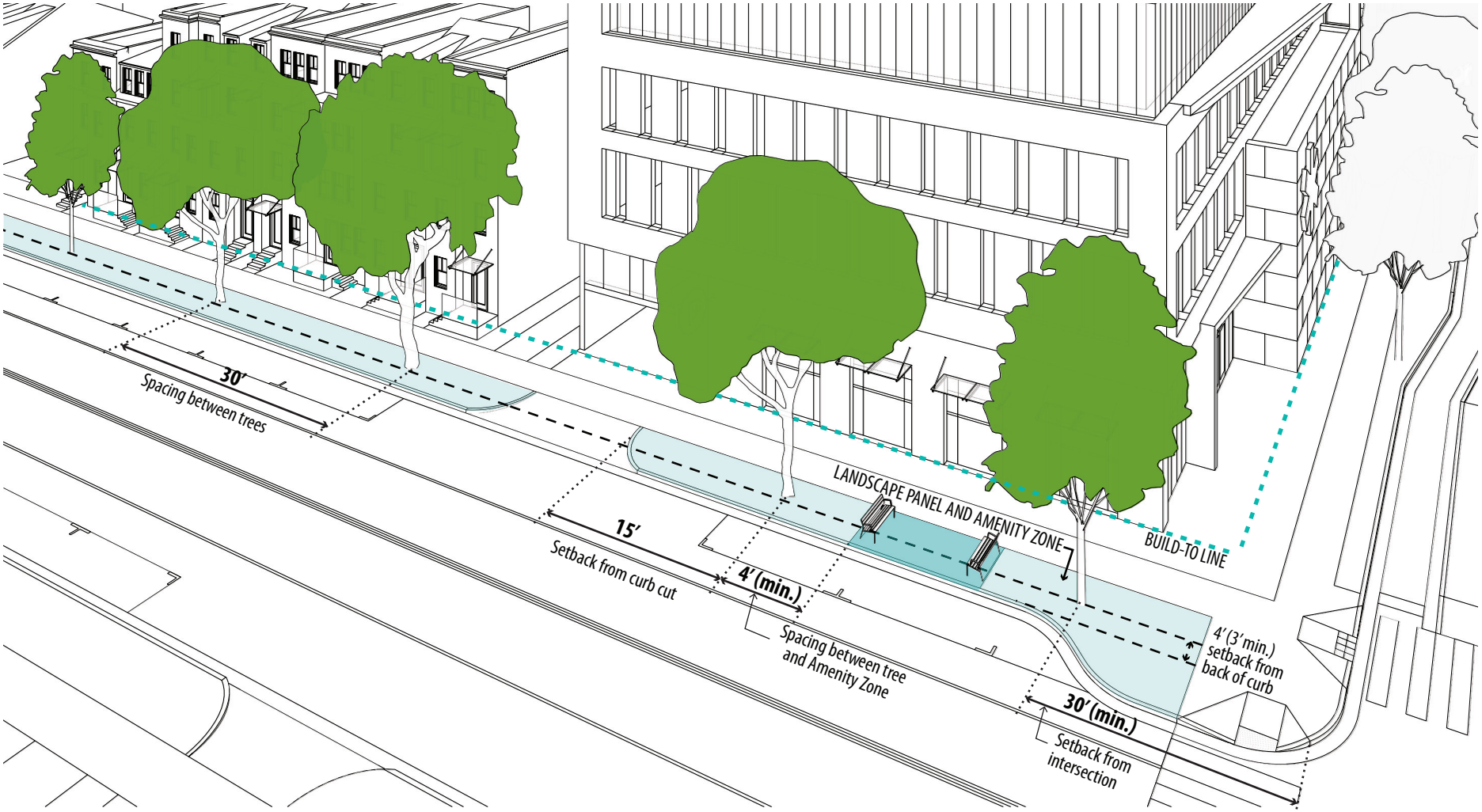
Structured soil system in a tree well

Image Credit: Fairfax County

Alternative Strategy 5

Street trees located in the Building Zone

GRAPHIC 7: TREE LOCATIONS AND SPACING



See tree planting details in Appendix A1 for more information

DESIGN STRATEGIES (CONTINUED)

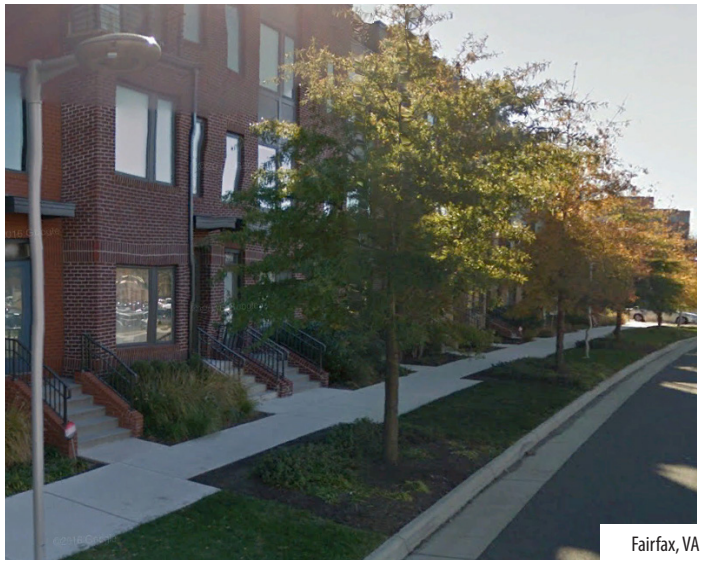
4 PLANTING, CARE AND MAINTENANCE

A. Automatic drip irrigation should be provided whenever possible, particularly when ideal planting conditions cannot be met.

B. Tree planting areas may be constructed with open or covered soil. Covered soil area should utilize methods for structurally supporting pavement over the planting soil as shown in the Covered Tree Well Planting Detail in the Appendix.

C. Tree grates are generally not recommended due to their potential to constrain tree growth; however, if tree grates are necessary, they should be installed so as to provide a clearance of at least 2-feet on all sides of a tree trunk.

D. Under-story landscaping, or small plants under and around street trees, should be incorporated whenever feasible to promote the long-term health of the tree, provide a buffer between pedestrians and vehicles, and enhance the visual character of the street.



Fairfax, VA

TOP
Street trees spaced 30 feet apart; the sidewalk width is reduced to accommodate proper open soil area for trees
Image Credit: Google Earth

Fairfax, VA

BOTTOM
Eight-foot-wide planting area accommodates two trees with understory landscaping
Image Credit: Fairfax County

2F.2 STREET FURNISHINGS

Street furnishings provide important amenities for pedestrians by adding functionality and vitality to the pedestrian environment. They can help to make pedestrians feel welcome and comfortable. These amenities provide a functional service as well as visually enhancing the sense of place.

Street furnishings encompass the following elements among others: benches and seating, bicycle racks, bollards, signs, lights, transit shelters, and trash and recycling receptacles. Performance specifications for each furnishing element is detailed in the Volume II: District Design Guidelines for each CRD or CRA.

DESIGN PRINCIPLES

Prioritize street furnishings in certain pedestrian environments. Furnishings should be emphasized on streets with high levels of pedestrian activity; where pedestrians may linger in the public realm, such as on commercial, mixed-use, or special streets; and, on streets with a recreational component, including linear parks. Other streets should include furnishings at corners and on busier blocks, or where warranted by adjacent land use and pedestrian activity. Street furnishings should also be clustered near transit stops. On residential streets, alleys and curb extensions, less frequent clusters of street furnishings can create attractive and inviting public spaces where neighborhood residents or customers of local businesses can sit and rest, play, eat, or enjoy people watching.

Arrange street furnishings in coordination with street trees and street lighting. Street tree and street lighting placement should define the major rhythm of design elements along the street; site furnishings should be coordinated with the locations of trees and lights.

Kitchener, ON, Canada

RIGHT
Street furnishings such as benches, bollards, signs, etc. add to the vitality and comfort of the pedestrian environment
Image Credit: placestogrow.ca

DESIGN STRATEGIES

1 FURNISHING PLACEMENT

A. Furnishings should be located in the Amenity Zones or in the Building Zone. Furnishings should never be placed within the sidewalk, where they could impede pedestrian flow.

B. On heavily traveled streets, seating clusters generally should be spaced 90-feet apart.

C. On residential streets, seating clusters should be spaced approximately every 150-feet, but there should be a minimum of one seating cluster per block.

D. Placement of site furnishings should consider car overhangs and door swings. When placed near the curb, furnishings should be located at the ends of the on-street parking stalls rather than at the center.

E. Street furnishings may also be placed within curb extensions where sidewalk widths are extended into the parking lane.

2 FURNISHING STYLE AND MATERIALS

A. Furnishings should be considered as part of the overall family of elements within the streetscape so that there is a cohesive appearance to the public realm.

B. Seating and trash and recycling receptacles in the Amenity Zone should generally be permanently fixed to the ground.

C. Street furnishings should strive to use environmentally responsible materials, including materials with recycled content, regionally-harvested materials, or certified wood.

D. Furnishing materials should be durable to withstand long-term exposure to the elements, limit opportunities for graffiti, and be easy to keep clean.

3 ACCESSIBILITY REQUIREMENTS

A. All street furnishings must meet ADA guidelines.

B. Furnishings should not interfere with pedestrian access to the entrance of any building.

C. Wherever possible, street furnishings should be of a contrasting color to the sidewalk to aid pedestrians with visual impairments.

D. A minimum of 8-feet clearance should be provided between street furnishings and adjacent accessible parking and passenger loading zones.

Berwyn, IL

LEFT
A family of street furnishings with a common design language and district branding creates a cohesive appearance along the streetscape
Image Credit: firebellydesign.com

2F.3 STREET LIGHTING

Although its primary purpose is to provide nighttime visibility for security and safety, successful lighting design plays a role in how people use a street or public space. All lighting should be energy efficient; as such, use of LED fixtures is expected. Street lights in the right-of-way can be provided by Dominion Energy using a palette of fixtures that they will own and maintain; however, other fixtures may be installed with private maintenance.

Budapest, Hungary

TOP
Exterior lighting in the Building Zone can create an inviting ambiance when varied in placement and style
Image Credit: Fairfax County

DESIGN PRINCIPLES

Do not over-light or under-light the public realm. In many situations, particularly when people are concerned about security, there is a tendency to over-light a space. However, too much lighting can be just as bad as too little lighting. A good lighting strategy addresses the type, placement, height, color, wattage of lighting, and the effect on how the public realm is perceived and used, while minimizing glare that unnecessarily illuminates the night sky. The amount and color of light emitted from all exterior sources including street lights should be evaluated as part of a comprehensive lighting strategy for both aesthetic and functional reasons and to avoid potentially under-lit or over-lit areas.

Ensure that street lights fit within a larger family of light fixtures and other furnishings within an individual CRD or CRA. Street lights are one component of the overall illumination of an area. Other lighting may include pedestrian lighting, accent lighting, and site and building-mounted lighting. When selecting the lighting for streets and streetscape areas, all fixtures should be considered as part of the overall family of furnishings, so that there is a cohesive appearance to the streetscape.

Fairfax, VA

BOTTOM
Family of pedestrian lighting, landscape lighting, and building lighting creates a safe and vibrant environment without over-lighting the street
Image Credit: mosaicdistrict.com

DESIGN STRATEGIES

1 STREET LIGHT TYPE AND PLACEMENT

A. Street lights should illuminate both the roadway and the streetscape such that all areas within the right-of-way are sufficiently lit but not overly illuminated. Roadway and pedestrian street lighting is encouraged to be co-located on the same pole.

B. Street lights should be sized to the scale of the roadway. Lights, generally 16 to 24 feet high, should be located on Local and Avenue street types; taller lights, generally 24 to 35 feet high, should be located on Major Avenues and Boulevards.

C. Street lighting should be coordinated with building mounted and accent lighting. Building and accent lighting should complement the style of street lights recommended in the Volume II: District Design Guidelines.

2 STREET LIGHT FEATURES

A. Full cutoff fixtures are required by the Zoning Ordinance to reduce light glare from parking garages, parking lots, and buildings onto walkways, streetscapes, and streets. All lighting on both public and private property should use full cutoff fixtures or have a shield that controls the light so that it is focused only on the object that is being illuminated.

B. Fixtures should utilize LED bulbs.

C. Most lighting should use lower color temperature bulbs (3000K or below) for neutral white or warm white color light. The color rendition index (CRI) should be 70 or greater.

D. Smart technologies, such as the ability to dim the lights and self-report outages, is encouraged to be incorporated into street lights.

Bilbao, Spain

LEFT
Street and pedestrian lighting co-located on the same pole
Image Credit: Santa Cole

2G PAVEMENT TREATMENTS

Existing pavement materials vary in the CRDs and CRAs, but primarily consist of a mix of poured concrete, brick, and concrete and stone pavers. New paving in the public realm should be designed and selected based on durability, ease of maintenance, aesthetics, environmental considerations, and the ability to meet accessibility requirements.

Specific paving materials and locations for the individual CRDs and CRAs are provided in the Volume II: District Design Guidelines.

Oklahoma City, OK

LEFT
Paving pattern variations relate to adjacent tree placement
Image Credit: Fairfax County

RIGHT
Complementary paving patterns interchanged with poured concrete to create an interesting hardscape
Image Credit: fotsos.com

DESIGN PRINCIPLES

Select paving materials based on the context and character of the street. Certain materials are better suited for specific zones and street types; as such, designs and material selections should be chosen based on the context in which the paving materials will be located and should reflect the character of the street.

Emphasize durability and maintenance. Durable, low-maintenance and readily available materials should be used for sidewalks in the CRDs and CRAs.

Highlight special features and transitions. Sidewalks may be accented with specialty materials to highlight features. Special paving patterns in the streetscape should be used to delineate the different zones and their related functions. Shifts in patterns should be employed to indicate different uses, highlight entrances, and frame seating areas. Materials can be used to define the edges of spaces and to visually enhance entire spaces, such as plazas. Creativity is encouraged, particularly in the Building Zone, where there is greater flexibility in material choices.

Portland, OR

DESIGN STRATEGIES

1 PAVING MATERIALS

A. Durable paving materials, such as poured-in-place concrete, should be used as the primary paving material in the sidewalks in the CRDs and CRAs, unless otherwise specified in design guidelines for the individual CRD/CRA.

B. Stamped concrete is generally discouraged as a sidewalk and crosswalk material because it is prone to cracking and fading, and may be difficult to repair.

C. The use of permeable paving materials (including soft paving, porous unit pavers with open joints, and permeable concrete) is encouraged in appropriate locations such as the Amenity Zone, in order to allow stormwater runoff to infiltrate through the material into the ground instead of being diverted into the storm drain system. Refer to *section 2L ("Sustainable Street and Streetscape Design") and Appendix A2 ("Sustainable Design Toolbox")* for more information on permeable paving applications and other sustainable design approaches.

D. Sidewalk materials should extend across driveway aprons to maintain a consistent streetscape material for the length of the sidewalk.

E. Where desired by the community, light colored paving is encouraged to be used to reduce urban heat island effects.

2 PAVING DESIGN

A. Paving design should create a dynamic, layered effect through the use of multiple patterns, varying paver sizes and materials, as well as through changes in color and the use of scoring patterns. Paving patterns and materials should provide visual texture and function as a backdrop for the other elements found in the public realm.

B. Paving patterns in the Building Zone can be the same or different from those in the sidewalk and in the Amenity Zone and should be complementary to both the adjacent building and the other streetscape elements.

C. Paving patterns should reflect the adjacent uses and provide visual cues that help define individual streetscape areas or mark transitions between different uses. For example, paving patterns can change in front of building entrances or help frame outdoor seating areas.

San Francisco, CA

LEFT
Durable poured-in-place concrete sidewalk; paving variations between the sidewalk and Amenity Zone help define streetscape areas and provide texture
Image Credit: asla.org

2H BUILDING ZONE

The Building Zone, located between the sidewalk and the face of the building, is the area that transitions between the public sidewalk and the space within buildings. It is a component of the streetscape that is located on private property and is designated for elements including entrances, outdoor dining, browsing, plantings, and residential porches or stoops.

DESIGN PRINCIPLES

Utilize street cross-sections in Volume II to determine dimensions. Each street type has its own defined dimension for the width of the Building Zone. Widths were determined based on the adjacent land uses, the overall size of the street, and the anticipated volume of pedestrian traffic. Ranges are typically provided to accommodate flexibility in the design of a project. Dimensions and unique design features for the Building Zone are specified in the street cross-sections depicted in Volume II: District Design Guidelines for each CRD and CRA.

Emphasize character in Building Zone design features. Creativity is encouraged in the Building Zone, where there is greater flexibility than in the right-of-way to incorporate unique features and material choices, including distinctive paving materials and patterns, movable seating and tables, landscaping, awnings and other shading devices, to name a few. The Building Zone design should coordinate with the sidewalk and the Amenity Zones so that there is harmony within the streetscape.

DESIGN STRATEGIES

1 USES AND FEATURES

A. The Building Zone may be used for outdoor displays, café or restaurant seating, and plantings.

B. Architectural elements such as awnings, canopies, and marquees may also occupy this zone.

C. Where there is insufficient width in the Landscape Panel to accommodate amenities, elements such as benches, trash cans, and bicycle parking may be located in the Building Zone to keep the sidewalk clear.

2 DESIGN CONSIDERATIONS

A. On residential streets, the Building Zone should be wide enough to accommodate porches, stoops, steps, low walls, pedestrian gates, and landscaping to provide an effective transition between the public sidewalk and private residences. These features should not obstruct pedestrian movement along the sidewalk.

B. On commercial streets, particularly streets with ground-floor retail, the Building Zone should be wide enough to allow for café tables and seating, benches, plantings, merchandise displays, door swings, ramps, steps, and other building access elements, among other amenities.

C. Where there is relatively little pedestrian traffic, or where there are continuous building setbacks, the Building Zone may be decreased, as determined on a case-by-case basis.

Northfield, MN

LEFT
Activated Building Zone with sidewalk seating and awnings.
Note: the Landscape Panel does not meet the Fairfax County minimum planting requirements
Image: Locallygrownnorthfield.com

2I WALLS, BOLLARDS AND PLANTERS

Low walls, bollards and planters are hardscape elements that introduce additional visual and functional features into the streetscape and contribute to the pedestrian experience. They create edges, delineate spaces and can buffer views of parking or utilities. They increase safety by incorporating vertical elements into the urban landscape, acting as a buffer between travel modes. Some offer places to sit and encourage people to linger.

Determining which hardscape element should be used is dependent on a number of factors. VDOT limits hardscape features in the right-of-way and should be consulted before proposing a particular element. Low walls should be used to create transitions between grade changes, mark entrances, and serve as raised planters, generally outside of the public right-of-way. Masonry walls that are at a comfortable seat height can serve both as a structural element and a seat wall. With permission from VDOT, bollards, planters, and other barriers may be placed within the right-of-way to function as a buffer between the roadway and the streetscape, providing visual cues to both drivers and pedestrians. Planters may be considered provided that provisions are made for consistent maintenance and replacement of plant materials as needed.

DESIGN PRINCIPLES

Introduce verticality and define spaces. Low walls, raised planters, and bollards introduce verticality to the streetscape and can be used to define spaces in the public realm, provide seating, and establish the street wall edge.

Enhance pedestrian and bicycle safety. When located between the sidewalk and the roadway, raised planters and bollards can serve as vertical barriers to stop off-course vehicles from entering the pedestrian space or as a visual element that increases pedestrian comfort and safety. They can also separate zones of vehicular and pedestrian circulation in locations where the vehicles and pedestrians share space or pass in proximity to one another—for example, at intersections where pedestrians are expected to wait or in other locations adjacent to higher speed roadways.

Provide visual buffers and transitions. Low walls, raised planters, and bollards can also serve as visual buffers to conceal surface parking lots or to shield loading and utility areas. They can also be used to create transitions or mitigate grade changes along the streetscape, building zone, or in public spaces.

Complement the public realm as part of the overall landscape design. Planters introduce landscaping and decorative elements to enhance and soften the appearance of a streetscape. In addition, free-standing planters provide an opportunity to extend the architectural character of a development into the streetscape when they are constructed of similar materials, colors and styles as the building and/or other street furnishings. They can also serve to reduce, or humanize, the scale of large streets or developments by adding pedestrian-scaled elements to the streetscape. Free standing planters can also be used to introduce landscaping in places where in-ground planting is absent or not feasible.

2I.1 LOW WALLS AND RAISED PLANTERS

DESIGN STRATEGIES

1 LOCATION AND DIMENSIONS

A. Low walls and raised planters should be considered around parking lots, along the edge of the Building Zone, and in plazas and pocket parks and other gathering spaces.

B. If walls are to be used for seating purposes, they should be 18 to 24 inches high and a minimum of 18 inches deep.

C. Walls above 5-feet in height should be avoided along street edges and within public spaces.

2 DESIGN ELEMENTS AND MATERIALS

A. Consideration should be given to integrating signage into walls and concrete planters that are located at prominent corners or gateways.

B. The style, material and details of walls and raised planters should complement the architectural character of the adjoining streetscape and building. Concrete, brick or stone is suggested for the face of the wall, with a decorative cap consisting of stone or cast concrete.

C. Innovative design elements such as metal decorative features should be used for aesthetic enhancements and to discourage damage from skateboards, bicycles, or maintenance equipment.

Fairfax, VA

TOP
Street corner defined by low wall that also functions as a planter
Image Credit: Fairfax County

Fairfax, VA

BOTTOM
Low brick wall with a concrete cap functions as visual and physical barrier between surface parking and the sidewalk
Image Credit: Fairfax County

2I.2 BOLLARDS

DESIGN STRATEGIES

A. Bollards can be used to emphasize the separation between pedestrian, vehicular and bicycle traffic. Bollards can be located near the edge of the curb to create increased lane awareness for drivers and to act as a reminder of the location of the edge of the curb for pedestrians, particularly at intersections.

B. In locations where street trees are absent or cannot be planted along a roadway, such as on bridge overpasses or underpasses, placing bollards between the sidewalk and the roadway curb is strongly encouraged as a means of demarcating pedestrian space and protecting pedestrians. If bollards are proposed within the right-of-way, breakaway bollards, or bollards that collapse when struck by a moving vehicle, may be required by VDOT.

C. If a 2-foot pedestrian refuge is designed along the curb and adjacent to on-street parking, bollards should be located behind the refuge area in the Landscape Panel.

D. Bollards should not be placed in open soil tree wells.

Kitchener, ON, Canada

RIGHT
Bollards create safe amenity area by visually and physically separating the pedestrian realm from vehicular travel lanes
Image Credit: completestreetsforcanada

2I.3 PLANTERS

DESIGN STRATEGIES

1 LOCATION AND USES

A. Planters should be placed to highlight entrances or define outdoor areas; for example, a series of planters could be used to separate an outdoor dining area from sidewalk traffic.

B. Planters should not be placed in locations where they block pedestrian circulation or obstruct vehicular sight lines.

2 PLANT MATERIALS

A. Appropriate planting materials for planters include perennials, ornamental grasses, small evergreen trees, and/or small shrubs.

   i. Annuals and other high maintenance landscape materials should be installed only when on-going maintenance is assured.

   ii. Trees and larger shrubs are not appropriate plantings for free-standing planters.

B. Four-season plantings should be considered so that planters have an attractive appearance all year long, particularly during the fall and winter. All plants, except for those that are evergreen plantings, should be removed (or deadheaded) once their season has ended.

C. Irrigation systems for planters should be used where feasible because plant materials installed in free-standing planters tend to dry out more quickly than those installed in the ground.

Redwood City, CA


Fairfax, VA

LEFT
Planters create an enclosure for an outdoor dining area
Image Credit: DeepStream

RIGHT
Row of planters buffer pedestrians and sidewalk diners
Image Credit: Fairfax County

2J UTILITIES

Transformers, meters, telecommunications equipment, and other utilities can negatively impact the pedestrian experience by obstructing pedestrian circulation and adding visually unappealing elements within the streetscape.

Early planning of utility easements during the conceptual design phase of a development is critical to ensure that utilities are appropriately located.

LEFT
Utility vaults hidden by consistent paving material and integrated within the sidewalk
Image Credit: Fairfax County

Vienna, VA

RIGHT
Poor placement of utilities obstructs pedestrian flow and detracts from the visual character of the streetscape
Image Credit: Fairfax County

DESIGN PRINCIPLES

Locate utilities underground to avoid obstructing pedestrian travel and to minimize impacts on the visual character of the streetscape. Utilities can have major impacts on the pedestrian realm. Overhead utilities are unsightly, can obstruct pedestrian movement, and can interfere with the provision of trees in the streetscape. Service lines should be placed underground. Transformers and utility equipment should be located in vaults either under the sidewalk or in the Building Zone.

Minimize conflicts with, or impacts on, street trees. Conflicts between street trees and overhead wires, as well as between street trees and underground facilities, such as trunk and service lines should be minimized. If installed in the wrong locations, underground facilities may preclude planting trees, particularly those with deep roots, or may result in the removal of, or damage to, vegetation during repairs or upgrades to underground facilities.

Fairfax, VA

DESIGN STRATEGIES

1 LOCATION OF UTILITIES

A. A conceptual utility plan should be prepared to designate and organize easements and utility equipment.

B. To the extent feasible, all utility lines should be buried underground and co-located in common trenches.

C. At grade utility equipment and vaults should be located as unobtrusively as possible. They should be located outside of the sidewalk, either within the building or in the Building Zone, so as not to obstruct pedestrian travel. Vaults and electric transformers may be located below the sidewalk; however, locating utility infrastructure under the sidewalk will require a maintenance agreement with VDOT.

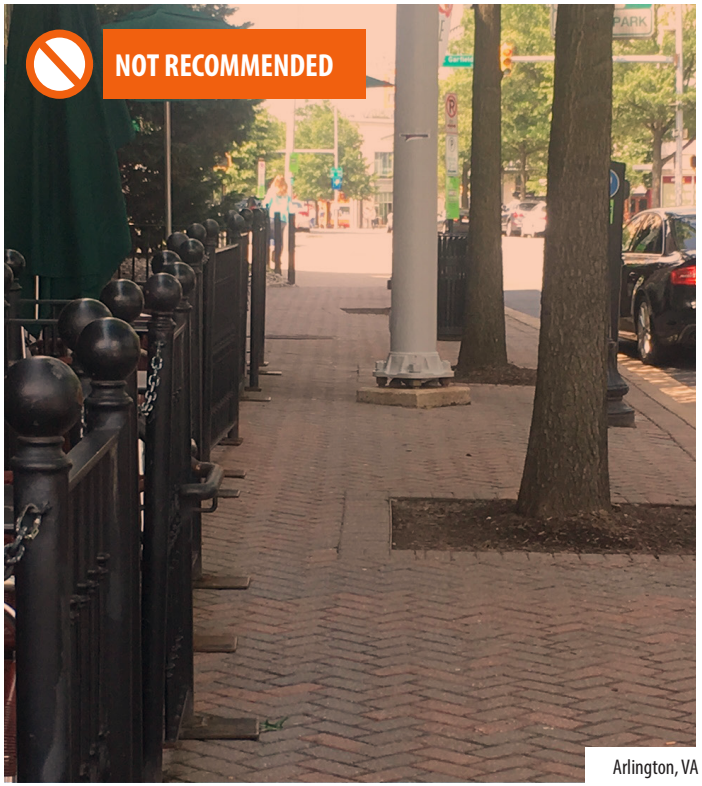
D. In general, no building-serving utility infrastructure should be located within or below the Landscape Panel in order to avoid conflicts with street tree placement and to preserve the health of trees.

E. Street lights should be located within the Landscape Panel and at least 15 feet from the nearest tree. The primary underground electric line for streetlights should be placed outside the Landscape Panel, either under the sidewalk or Building Zone, with only minor lateral lines extending into the Landscape Panel. *[See section 2F ("Landscape Panel and Amenity Zone") for additional guidance on street lighting].*

2 MATERIALS

A. If located adjacent to the sidewalk, vault covers and access points to below-grade equipment should be finished in the same material as the adjacent sidewalk surface and should have ADA accessible surfaces that are attractively incorporated into the streetscape.

B. Equipment that is visible from the street should be screened using walls, landscaping, or other materials.



Arlington, VA

LEFT
Utility pole and trees placed in the middle of the sidewalk obstructs pedestrian flow
Image Credit: Fairfax County

2K TRANSIT SHELTERS

There are a variety of transit shelter types currently in use in the CRDs and CRAs. Some of these shelters are no longer recommended and should be phased out over time to allow for new, more visually appealing shelters that include modern technology and improved features. Ease of maintenance and graffiti-prone designs are chief concerns in the selection of shelter styles.

DESIGN PRINCIPLES

Incorporate FCDOT-approved shelters to achieve area-wide consistency. New shelters should meet specifications set forth by FCDOT, and are subject to review by the state of Virginia and FCDOT. Unless otherwise indicated in the Volumne II: District Design Guidelines for each CRD or CRA, developments should incorporate one of the two state- and FCDOT-approved transit shelter models to ensure that shelter styles are consistent across an area.

Ensure that transit shelters are accessible and served by range of amenities for riders. Paved, accessible pathways between the sidewalk and the transit shelter entrance are an essential design feature for all transit stops. In addition, amenities such as benches, signage, lighting, and real-time technology are critical to ensuring rider comfort, safety, and ease of navigation.

Portland, OR

RIGHT
Accessible transit shelter located in the Amenity Zone; shelter includes rider amenities and displays real-time information
Image Credit: asla.org

DESIGN STRATEGIES

1 LOCATION AND CONTEXT

A. Transit shelters should be located within Amenity Zones. If necessary, due to space constraints, shelters may be located within the Building Zone or may encroach into the sidewalk zone as follows:

   i. If there is insufficient space for the transit shelter in the Amenity Zone, such that it protrudes in to the sidewalk, the shelter may be integrated into the Building Zone provided that there is a clear physical and visual pathway between the transit shelter and the bus entry point. This can be accomplished by installing a free-standing transit shelter in the Building Zone or by integrating the transit shelter into the design of the building itself through the use of building overhangs or recesses. Transit shelters in the Building Zone may require additional pedestrian signage to adequately identify the facility.

   ii. On certain streets where the Amenity Zone is not wide enough to accommodate the transit shelter, the sidewalk may be realigned around the transit shelter structure if the width of the sidewalk is not reduced.

   iii. In certain limited instances, it may be appropriate to narrow the sidewalk adjacent to the transit shelter in order to accommodate it largely within the Amenity Zone, provided that the sidewalk is no less than 5 feet wide.

B. Areas around transit shelters should be well lit to provide greater visibility and safety at night.

C. Sidewalks should connect directly to the transit shelter.

D. Bus stops should be co-located with pedestrian and bicycle amenities such as benches, bicycle parking, shaded areas, wayfinding signage, and trash receptacles. Benches (in addition to the bench located within the transit shelter) should be placed near the transit shelter if the bus stop will have a high volume of transit riders.

2 SHELTER STRUCTURE DESIGN

A. Transit shelters and pads should be designed in accordance with manufacturer's specifications described in the accompanying graphic.

B. Transit shelter structures should incorporate innovative technology to provide up-to-date, real-time rider information and other features to enhance rider experience, whenever possible.

C. Transit shelter structures should incorporate sustainable elements, including solar power or LED lighting, whenever possible.

TRANSIT SHELTER SPECIFICATIONS

Unless otherwise specified in the Volume II: District Design Guidelines for an individual CRD or CRA, the following shelters should be used.

Image Credit: Fairfax County

TRANSIT SHELTER: EURO

- Tolar Manufacturing – Euro Shelter with integrated bench
- Transit shelter dimensions: 6-feet wide by 10-feet long
- There are many available options for mounting, lighting, materials, and other technologies. Developers should work with FCDOT on the specific transit shelter features.

SHELTER PAD

- 6-inch thick, reinforced concrete pad that is a minimum of 15-feet long by 6-feet wide and that is connected directly to the sidewalk for accessibility purposes.
- If the transit shelter is to be located on a street with an 8-feet wide Amenity Zone, the transit shelter pad should be 8-feet in width to provide a contiguous surface from the curb to the sidewalk.

Image Credit: Tolar Manufacturing

TRANSIT SHELTER: NIAGARA

- Tolar Manufacturing – Niagara Shelter with integrated bench
- There are many options for mounting, lighting, materials, and other technologies that are available from the manufacturer. Developers should work with FCDOT on the specific shelter features.

SHELTER PAD

- 6-inch thick, reinforced concrete pad that is a minimum of 18-feet long by 6-feet wide and that is connected directly to the sidewalk for accessibility purposes.
- If the transit shelter is to be located on a street with an 8-feet wide Landscape Panel, the transit shelter pad should be 8-feet in width to provide a contiguous surface from the curb to the sidewalk.

2L SUSTAINABLE STREET AND STREETSCAPE DESIGN

The low impact development (LID) approach to stormwater management, described in greater detail in Appendix A2, offers a variety of opportunities for incorporating small-scale, natural drainage features and methodologies into the streets and streetscapes of CRDs and CRAs. In the context of the public right-of-way, appropriate tools may include planted medians and traffic islands; bioretention planters and cells; structural cell techniques to support pavers and plantings; swales; porous or permeable pavement; impervious surface reductions; and, pavement removal and infill tree planting where excess pavement exists.

While these opportunities will vary depending on the design of each street and the amount of right-of-way available, the integration of LID features into the public right-of-way can help to slow, capture and filter urban stormwater runoff before it reaches the public stormwater system and regional waterways. These measures benefit the County's water resources by reducing water pollution and replenishing local aquifers. At the same time, when applied creatively in tandem with other streetscape elements, LID measures can also enhance the character of the streetscape and pedestrian environment.

VDOT requires most urban roadways to contain a curb and gutter if they will be accepted into the public roadway system; therefore, designs that direct stormwater into vegetated swales or bioretention planters should be coordinated closely with VDOT. For specific guidance related to drainage design for VDOT projects, refer to the VDOT Drainage Manual.

For general guidance regarding sustainable design strategies, refer to Appendix A2 and to the following sources of stormwater management best practices:

- The Sustainable Sites Initiative (SITES)
- Leadership in Energy and Environmental Design (LEED) rating system created by the US Green Building Council

For specific applications to streets and streetscapes, see the Urban Street Stormwater Guide by the National Association of City Transportation Officials.

Portland, OR

LEFT
Sustainable streetscape with bioretention facilities and permeable paving materials in the Amenity Zone
Image Credit: City of Portland, OR

Washington, DC

TOP
LID features help to define the streetscape and enhance the pedestrian experience while providing stormwater management benefits
Image Credit: Rhodeside & Harwell

DESIGN PRINCIPLES

Rethink streets as part of larger urban natural systems. Streets can be more than simply mobility corridors with expanses of pavement; rather, they can also perform important ecological functions. When designed to incorporate nature, streets can help manage the quantity and quality of water entering the underground public stormwater system and waterways, regulate ambient temperatures and air quality, and serve as wildlife corridors and habitats. As the conduits that direct much of our urban runoff into the stormwater system, streets and streetscapes can play a particularly important stormwater management function when designed to incorporate facilities to capture, filter and collect rainwater before it outfalls into the stormwater system.

Limit the amount of paved and impervious surfaces along the public right-of-way. One of the most cost-effective ways to stem the flow of runoff into sewers and waterways is to reduce and/or limit the amount of pavement and impervious surfaces in the public right-of-way. Streets and streetscapes can be designed to incorporate features such as a continuous Landscape Panel, trees planted at regular intervals, planted medians in the center of the roadway, and porous pavements that allow water to drain into the ground. They can also be retrofitted by removing unneeded expanses of impervious surfaces and replacing these areas with natural surfaces and plantings.

Strive for design synergies that benefit the street and the CRD/CRA in multiple ways. Just as streets can serve ecological as well as mobility functions, the stormwater management facilities along streets and streetscapes can also serve multiple functions. When designed thoughtfully and creatively, with attention to appropriate plantings, LID strategies can improve the pedestrian's safety, comfort and overall walking experience by calming traffic, buffering pedestrians from passing cars, and decreasing temperatures or heat island effects along the street. Moreover, LID features can enhance a street's overall visual character and sense of place by contributing color and texture to the streetscape, defining zones within the streetscape, and creating a garden-like character.

DESIGN STRATEGIES

A. Stormwater management methods should be incorporated prominently as design features that provide multiple benefits, including environmental, habitat creation, species diversification, traffic calming, educational, and aesthetic benefits.

B. LID strategies in the public right-of-way should focus on space-efficient facilities that do not impede pedestrian or vehicle travel, and that achieve a reduction in the amount of impervious surfaces. Appropriate locations for bioretention facilities include street medians and traffic islands, within the Landscape Panel, as part of curb extensions at intersections, or within midblock crossings.

   i. Porous materials, such as porous concrete or porous structural pavers, should be used whenever feasible to reduce the amount of impervious surfaces, particularly on sidewalks, parking lanes, within the Amenity Zone, and in the Building Zone.

   ii. Bioretention facilities with native groundcover plantings, shrubs or trees (i.e., bioretention planters or bioretention cells) should be incorporated to filter stormwater as a first layer of treatment. The use of native vegetation within bioretention facilities provides multiple benefits including nutrient cycling, energy transfer, improved water quality, support for wildlife and insects including bees, and enhanced aesthetics.

   iii. Linear swales, wet or dry, may be installed where sufficient space exists.

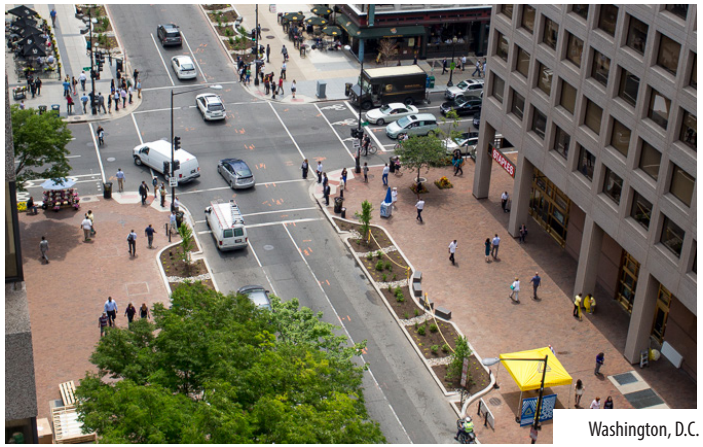
   iv. Removal of paved surfaces and infill tree planting should be considered in areas where the extent of paved areas exceeds that which is necessary for pedestrian movement and furnishings.

   v. Structural cell technology may be incorporated to support the sidewalks while allowing more water and air to reach tree roots in the uncompacted soil below, as *described in section 2.F.1 ("Trees and Landscaping")*.

C. During design and prior to installation, all LID measures in the public right-of-way should be coordinated with local utilities to identify potential conflicts with underground utility infrastructure.

D. Before installation of LID measures, a maintenance plan and agreement should be in place, assigning clear roles and responsibilities for conducting and funding the maintenance of plantings and porous pavement. Regular inspections should be conducted to maintain the function of LID facilities; for example, regular vacuuming is necessary to maintain the permeability of certain porous pavement types.

E. Stormwater management facilities in the public right-of-way should maximize opportunities to educate the public about the benefits of such facilities. Incorporating interpretive displays or other innovative, multimedia information explaining stormwater management functions and the implications for local and regional watersheds can help build support for future LID projects and recruit volunteers to care for plantings—which can be beneficial so long as coordination and oversight is provided.



Washington, D.C.

LEFT
Landscape Panel with rain gardens for capturing stormwater, increasing landscaping, and providing space for outdoor seating
Image Credit: Golden Triangle BID

Image Credit: design-mor

3 OPEN SPACE

INTENT

As the County's CRDs and CRAs continue to grow and evolve, there is an opportunity to support and complement new development with a variety of open spaces that enhance the quality of life for those who live and work in, and visit these areas. These spaces may be publicly-owned spaces or privately-owned spaces available for public use. They may vary in size and character - from larger parks and greens to smaller plazas and pocket parks - and offer a range of experiences, including active and passive recreation, programmed activities and events, playspaces, and areas for quiet respite and conversation.

Regardless of size or type, all open spaces and trails should be welcoming, comfortable and accessible while imparting a distinct sense of place that extends to the larger CRD or CRA. They should foster community connections by bringing people together for gatherings large and small, casual and programmed, while serving as catalysts for economic development. They should preserve and protect natural assets, while adding new greenery to balance and complement new development. Collectively, these open spaces should function as a larger network of parks and open spaces that connect neighborhoods, natural areas and economic centers with linkages to the larger countywide network of open spaces and trails. Trails and open spaces should connect neighborhoods and wildlife habitats by serving as natural corridors for people and animals.

This chapter describes the major typologies of urban open spaces included in the County's Urban Parks Framework and identifies a series of design principles and strategies to ensure that these open spaces maximize their potential benefits to the CRDs and CRAs. These design recommendations build on previous open space planning efforts, and the design of parks and open spaces should be consistent with the recommendations in the following documents:

- The planned open space network as described in each area's Comprehensive Plan.
- The open space network map for the individual CRD and CRA, as contained in the Volume II: District Design Guidelines.

INSPIRATION

San Francisco, CA

Blue Ash, OH

Tampa, FL

Houston, TX

Urban parks designed to be compact, multifunctional, and relate to adjacent uses and context; design elements provide opportunities for a range of active and passive recreation and ensure that these spaces function as community gathering places

3A URBAN PARKS FRAMEWORK

Urban parks are generally the types of parks that will be found in the CRDs and CRAs, as they provide functions, uses, amenities, and visual form that are appropriate in an urban context. Urban parks are important because residents in these areas are likely to have little or no private outdoor space and, therefore, may rely on publicly-accessible open space for socializing, recreation and exercise, and enjoying the outdoors. Similarly, workers and visitors seek attractive, safe and comfortable spaces for leisure and social activities.

The Fairfax County Urban Parks Framework includes several distinct types of parks: Civic Plazas, Recreation-Focused Parks, Linear Parks, Common Greens, and Pocket Parks. These park types, each of which is described briefly below, span a continuum of purposes, uses, sizes, and features that can flexibly accommodate a broad spectrum of needs. Ideally, each CRD and CRA will contain a variety of urban parks in order to serve local leisure pursuits, support revitalization goals, and create or enhance an area's sense of culture, liveliness, and identity. Other methods may be considered to fulfill community park needs, including rooftop parks, recreation facilities provided within commercial buildings, and redevelopment of nearby existing parks with new park facilities. The precise number, size and arrangement of the park types should be determined by evaluating the demand created by the development, as well as by referencing the area's Comprehensive Plan recommendations regarding parks.

For more detailed recommendations pertaining to Urban Parks, please refer to the Fairfax County Urban Parks Framework located in Appendix 2 of the Parks & Recreation Chapter in the Comprehensive Plan, Policy Plan.

Arlington, VA

RIGHT
Plaza with programmed pedestrian activity areas; active ground floor uses, landscaping and pedestrian-scaled lighting lend vibrancy to the space
Image Credit: thelightingpractice.com

New York, NY

TOP
Pocket park with movable seating, shade and a water wall create an active gathering place and community amenity
Image Credit: Theodora Park

Tampa, FL

Sydney, Australia

BOTTOM LEFT
Recreation-focused urban park that includes a trail, splash pad, playground, pavilions, a Common Green and a bandshell for events and music
Image Credit: Plan Hillsborough

BOTTOM RIGHT
Linear park with active recreation amenities including a trail, dining tables, study pods, table tennis, and active water play features
Image Credit: ASPECT Studios

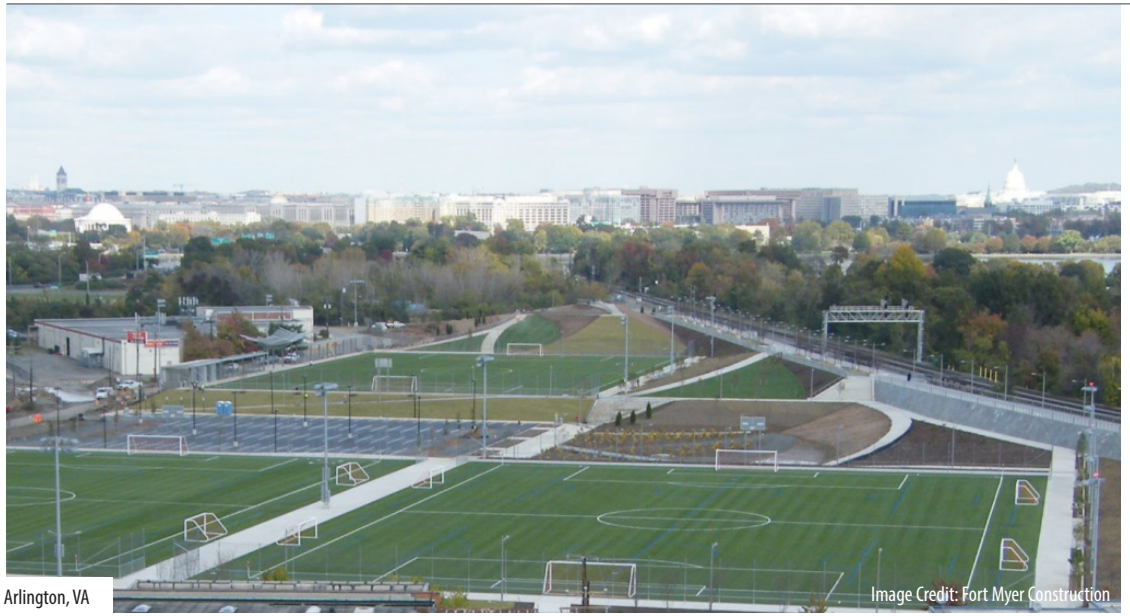
URBAN PARK TYPES

New York, NY

Image Credit: Fairfax County

CIVIC PLAZA:

Civic Plazas include public gathering spaces set aside for social purposes and that are supportive of commercial activities, such as open air markets, summer concerts, festivals, outdoor exercise classes and/or special events. They are often planned at the intersection of important streets, within a town center or at other significant locations, and serve as community focal points. The size of a Civic Plaza will generally depend on the context and planned programming, but should be a minimum of one acre in size.



Arlington, VA

Image Credit: Fort Myer Construction

RECREATION-FOCUSED PARK:

Recreation-Focused Parks include facilities such as athletic fields and multi-use courts, along with associated amenities such as trails, seating, tot lots, shade structures, water features, picnic areas and restrooms. The size of the park should be appropriate to accommodate the proposed recreation facilities, while recognizing space constraints that may exist within the CRDs and CRAs.

One specialized type of Recreation-Focused Park is a dog park. While dog parks fit into this urban park type, they are generally sized similar to a Pocket Park. Dog parks should include the following types of features: special surfacing, ideally grass or synthetic turf grass, fencing that is a 4 to 5-feet high, access vestibules, shade, benches, and a drinking water source.

LINEAR PARK:
Linear Parks are continuous spaces, generally designed for recreational use that may include sidewalks or trails, recreational amenities, public art, wayfinding signage, and environmental amenities. Linear greenways that utilize urban stream valleys for trails and trail connections are a form of Linear Park.


Image Credit: Landezine

Dallas, TX

COMMON GREEN:
Common Greens are flexible open spaces with lawn areas that serve as the recreational and social focus of a neighborhood. These spaces may include amenities such as tot lots, playgrounds, fitness courses, paved trails, and sport courts. While the size of Common Greens depends on each space's context and function, they should generally be a minimum of one acre in size.


Image Credit: Landezine

New York, NY

POCKET PARK:
Usually less than one acre in size, pocket parks are small-scale open spaces incorporated into developments or located on small, underutilized pieces of public or privately-owned land. Typically designed for casual, passive use by people working and living in the immediate area, these spaces may consist of hardscape elements, lawns, or landscaped areas and may incorporate elements such as seating, water features and art.


Image Credit: world-architects

New York, NY

3B OPEN SPACE

DESIGN PRINCIPLES

Contribute to, and integrate with, a network of on-site and off-site open spaces. The planned parks and open spaces in the CRDs and CRAs are the primary components of an open space network intended to provide a variety of amenities to meet the needs of the area-wide population. On-site open spaces should be designed to integrate with other nearby open spaces to form a network of parks and plazas. This network should contain pedestrian-friendly spaces that serve to draw people to these areas.

Create and define a sense of place. Well-designed open spaces help to create and define a sense of place by providing environments that foster social interactions, build connections between neighborhoods, increase civic pride, and support active, healthy lifestyles. Open spaces should be designed to incorporate existing natural features and utilize sustainable design practices.

Program open spaces to support recreation, education and public events. Safe, attractive, and publicly-accessible open spaces should be designed to provide recreational opportunities and support public events. They can incorporate elements that are reflective of the area's history; provide educational information; and, use design features that reinforce the character of the area. Careful attention should be paid to ensure that the design of an open space supports the intended use, whether it be active, recreational, or passive. Programming of spaces is critical to their ability to attract users. Designers, the community, and the county staff should work together to identify potential programming, recreational activities and special events to ensure that facilities are designed appropriately to accommodate these activities.

DESIGN STRATEGIES

1 OPEN SPACE DESIGN

A. Parks and open spaces, among other local serving destinations, should be located within reasonable walking distances of residential areas and other uses.

B. The design of an open space should respond to its context, support and complement adjacent land uses, and incorporate existing natural elements:

   i. Where appropriate and feasible, the design of open spaces should respond to, and support activities related to adjacent land uses (for example, outdoor seating areas for patrons to enjoy food or beverages from adjacent business).

   ii. Existing natural features, such as terrain and topography, mature trees, and other environmental features, should be incorporated into the design of open spaces. Minimize disturbance to existing vegetation, including soils that are in good condition.

C. Plazas, parks and other open spaces should be designed to protect pedestrians from parked and moving vehicles, weather, and adjacent undesirable uses. Features that can be used to visually and physically buffer pedestrians include parking lanes, trees, landscaping, low walls, bollards, and art.

D. Open spaces should contain appropriate levels of seating, lighting, shade, plantings, and other amenities to make the spaces desirable places in which to spend time.

E. The design of open spaces should accommodate a range of experiences and activities within a single open space. For example, an open space design could include distinct spaces or "outdoor rooms" with different characters (i.e., green and secluded, open and visible, spaces for passive use, and spaces designed and programmed for specific activities) as well as flexible spaces that can be adapted for a variety of uses and activities.

DESIGN STRATEGIES (CONTINUED)

F. Publicly-accessible open spaces should be welcoming and accessible to users of all ages and abilities; as such, they should be highly-visible, clearly-signed, well-delineated from private spaces, and easily accessed by those with special mobility needs.

G. Public art should be integrated into all park types, but particularly into high-visibility park spaces such as Civic Plazas, Common Greens, and Linear Parks.

   i. Consideration should be given to incorporating art that serves a dual function, such as "playable art" that serves both an artistic and play function (for example, mosaics incorporated into a water fountain that serve as an interactive play feature for children).

   ii. Additional guidance regarding public art is provided in *Section 6C ("Public Art")*.

H. Low walls and raised planters should be considered in plazas, pocket parks and other gathering spaces.

   i. If walls are to be used for seating purposes, they should be 18 to 24 inches high and a minimum of 18 inches deep.

   ii. Walls above 5-feet in height should be avoided within public spaces and along street edges.

I. Water features should be incorporated as landmarks, focal points, and places to play that enhance the open space. Additional details regarding water features are provided in *Section 6D ("Water Features")*.

J. Public open spaces are encouraged to be integrated into small, othewise unprogrammed spaces. Potential locations include street corners and curb extensions on busy pedestrian streets, alongside sidewalks on streets with a wide Landscape Panel and Amenity Zone, or on undeveloped lots. Midblock passages and the spaces between buildings should be designed as linear open spaces with outdoor seating areas and other amenities surrounding pathways, while providing access to midblock destinations and parking. These spaces should serve the dual function of providing safe and inviting pedestrian connections to the rears of buildings, while also providing outdoor amenities for those who live and work nearby.

K. Trail connections should link open spaces within a CRD or CRA to surrounding neighborhoods and destinations, including other open spaces. Additional trail linkages should provide connections to the larger countywide trail network.

BOTTOM
Water feature creates a playful, welcoming environment for families
Image Credit: parentmap.com

Seattle, WA

DESIGN STRATEGIES (CONTINUED)

2 PROGRAMMING AND AMENITIES

A. As appropriate, both active and passive recreational amenities should be incorporated into the overall design of open spaces. For example, recreational facilities, play structures, public art, and water features can help attract people into the open space and encourage a variety of activities, while amenities such as seating, tables and chairs, shade, trees, grass, and lighting can make visitors feel comfortable and provide opportunities to linger.

B. Open space features should be included that support a range of activities that occur beyond daylight hours and throughout the seasons of the year, especially in areas where an active open space will contribute to the vibrancy and economic health of the area.

   i. Open spaces should include features such as seasonal plantings or displays and/or water features; outdoor heaters; overhead weather protection; movable seating and tables; opportunities for outdoor dining; sufficient pedestrian lighting; trees for shade; co-located trash and recycling receptacles (where pickup and regular maintenance is available); and, Wi-Fi service.

   ii. Parks, plazas, and other open spaces should be well lit. Full cut-off optics should be used to direct lighting downward.

   iii. If events such as festivals or farmer's markets are anticipated, electric service should be provided.

C. The design of open spaces should incorporate opportunities for active play, to make the CRDs and CRAs welcoming and healthy environments for children and families.

   i. A variety of playspaces that challenge and interest a range of ages and abilities should be incorporated into open spaces. Where sufficient space exists and where appropriate, designated playground areas may be established. In smaller spaces, elements such as

LEFT
Open space activated with programming for all ages
Image Credit: Scioto Mile

Columbus, OH

RIGHT
Activated open space with areas for play and relaxation
Image Credit: Bethesda Magazine

Rockville, MD

individual play structures, playable art, or water features can provide compact yet engaging opportunities for play.

ii. Seating and other amenities should be provided within view of playspaces so that parents and caregivers have places to sit and socialize while monitoring playing children.

3 OPEN SPACE PARKING AND ACCESS

A. Adequate parking should be provided to serve those who are not within walking distance of an active recreational park space. Shared parking with adjacent uses is encouraged to minimize the number of parking spaces required.

B. Vehicular access to open spaces should be limited; if necessary for maintenance and emergency purposes, such access should be separated from open space activities to the maximum extent feasible.

i. If emergency access is necessary, breakaway or retractable bollards should be provided in coordination with the Fire Marshal's office.

ii. If dedicated emergency access beyond walkways is needed, soil stabilization methods should be used to provide an adequate sub-base that is covered with turf or permeable pavers.

C. Wherever possible, prioritize the planting of native, pollinator and bird-friendly plants as part of the landscape design in green spaces of all sizes and types.

i. Strive to increase the quality and amount of habitat for pollinator and bird species through plant selection and open space design.

ii. Incorporate native plantings to the maximum extent feasible.

4 MATERIALS AND MAINTENANCE

A. Materials selections should be used to define the edges of spaces and to visually enhance entire spaces, such as plazas.

B. Design decisions, such as the selection of materials, should consider durability and ease of maintenance.

C. Businesses adjacent to open spaces are encouraged to play a role in trash collection, cleaning and litter removal to ensure that spaces are being attended to regularly and remain attractive.

D. Landscaped open spaces requiring irrigation should include an automated irrigation system using collected rainwater and/or recycled gray water to the fullest extent possible.

BOTTOM
Material selection and plaza design visually enhance the pedestrian environment and help delineate spaces and uses
Image Credit:BCT Architects

Arlington, VA

Image Credit: Fairfax County

4 BUILDING DESIGN

INTENT

Well-designed architecture can support a vibrant urban environment and contribute to the creation of a cohesive, distinctive and active public realm. Success in this regard depends largely on the building's relationship to the public realm: how the building engages the street; the design of vertical elements related to a building's massing and style; the building's height and proportions relative to the width of the street, surrounding buildings, and people on the sidewalk; and, the rhythm that a building's features create along a street. Success also depends on a building's use of high-quality and compatible materials both in terms of architectural expression and how the materials complement the character of other buildings and the public realm.

The design of buildings should be considered in the context in which they are located. Some CRDS and CRAs have an established architectural style, while others are characterized by an eclectic mix of traditional and contemporary design styles. Where an urban character has been established, new buildings should strive to complement the existing urban form, relate compatibly to the form and heights of adjacent buildings, and interface seamlessly with the public realm through ground floors that activate the surrounding streets and public spaces. The effects of heights, lighting, and service and loading areas on neighboring properties also should be considered and mitigated, particularly when buildings are located adjacent to residences or other sensitive land uses.

This chapter addresses the physical elements of buildings, including their placement along a street, their form, ground floor design, façade modulation and articulation, materials, and the ways in which utilities, service access, and loading facilities are accommodated as part of building design. General building design guidance, including maximum building heights, is contained in the Comprehensive Plans for each CRD and CRA. The Volume II: District Design Guidelines for the individual CRDs and CRAs provide specific information about the context of these areas, including special considerations regarding form and style, if applicable.

INSPIRATION

Image Credit: PlannerDan

Vancouver, Canada

Image Credit: Architect Hord Coplan Macht

Seven Corners, VA

Image Credit: Architect Hord Coplan Macht

Fairfax, VA

Image Credit: Fairfax County

Savannah, GA

Building form, building placement on the site, and ground floor design are key design features that contribute to an area's sense of place, while supporting a high-quality pedestrian environment

4A BUILDING PLACEMENT

The success of a mixed-use environment relies heavily on the quality of the experience that it creates. Well planned and designed places provide opportunities for positive human interactions. Buildings are instrumental in furthering this goal because they define the boundaries of public spaces; contain the uses that bring vitality to the area; and, determine how those uses interface with the street and public realm.

Critical spatial relationships that influence peoples' experiences of a space include the relationship among the height of the buildings, the width of the streets, and the distance between buildings and the street.

BOTTOM
Buildings sited at the build-to line; entrances front onto the street to create a comfortable, welcoming and pedestrian-oriented street with a sense of enclosure
Image Credit: Avalon Bay

Somerville, MA

DESIGN PRINCIPLES

Locate buildings close to and fronting on the street. The placement of buildings on the site can either promote or discourage walking. When buildings are located directly fronting the street and near pedestrian facilities, they create a lively, inviting and pedestrian-scaled environment where people can feel comfortable walking between local destinations. On the contrary, when buildings are set back from the streets, with parking located between the building and the street, building placement can discourage walking by contributing to an auto-oriented environment that favors vehicular movement and access over a safe and comfortable pedestrian environment. (*See Graphic 8: Building Placement)*.

Establish build-to lines to foster a consistent street wall and comfortable pedestrian environment. Urban design and planning goals in most of the Comprehensive Plans for the CRDs and CRAs call for the establishment of build-to lines that locate buildings close to the sidewalk and the street to form a "street wall". The build-to line is a theoretical line adjacent to the streetscape indicating where the façades of buildings should be located. The build-to line ensures that the ground floors of all buildings on a block are generally aligned with one another. Exceptions to the build-to line may occur where building entrances, plazas, pocket parks, or spaces for public art are located. The build-to line generally applies to the podium (or base) of the building structure and excludes building towers, which may be set back further to allow for light and air to reach the ground. When upper floors are set back from the street, pedestrians generally perceive only the first few floors of the building podium, and not the full height of the building, thus creating a more comfortable experience. Street trees can also provide a similar level of comfort and enclosure when located adjacent to the street or, in locations where buildings are not present, along the inside of the sidewalk.

Building placement and the build-to lines specific to individual CRDs or CRAs are illustrated in the streetscape sections shown in the Volume II: District Design Guidelines for each district.

DESIGN STRATEGIES

1 BUILD-TO LINES

A. The ground floor of buildings should be located along build-to lines, consistent with the guidance contained in the Comprehensive Plan and the Volume II: District Design Guidelines, and should be located such that they frame the street in order to support walkability, street level activity, civic gatherings and retail vibrancy. This build-to line should establish the relationship between the building and the street.

B. The build-to line is generally located at the back of the Building Zone and does not intrude into the streetscape area.

C. Plazas, pocket parks, open spaces and landscape features are allowed to interrupt the build-to line to create special moments and focal points.

D. As a general guideline, at least 75% of a building's frontage should be located at the build-to line.

E. The placement of a building in relationship to the street should be consistent with that of adjacent existing buildings in order to establish a cohesive appearance along the street. When existing buildings are set back further from the street, new buildings may establish a precedent for a new build-to line closer to the street.

F. Additions to existing buildings should be designed so that they increase the presence of the building on the street by either adhering to, or coming closer to, the desired build-to line.

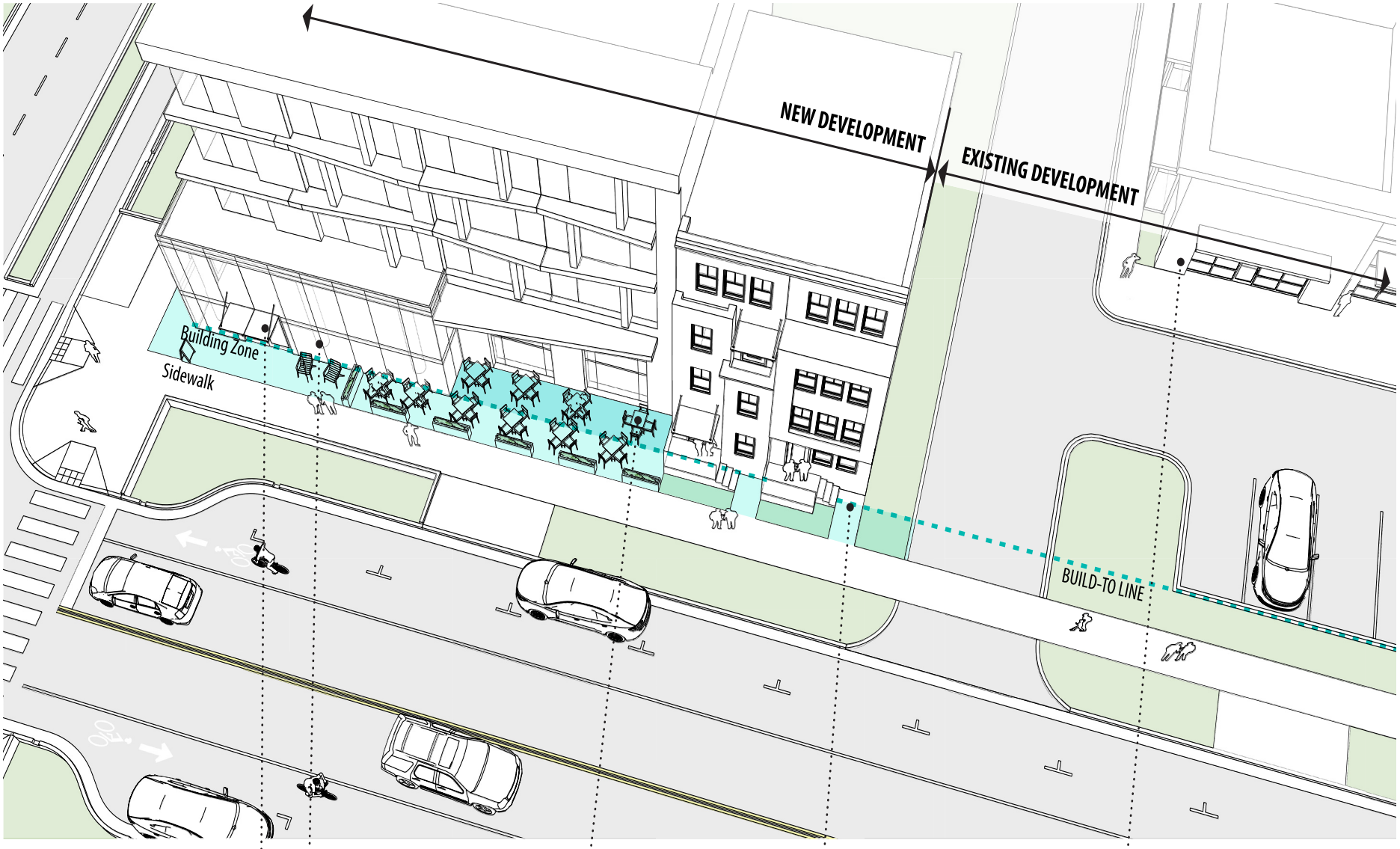
Bainbridge Island, WA

TOP
Ground floor portion building is aligned with the streetscape at the build-to line, while upper floors are set back to create an appropriately scaled structure in relation to the street
Image Credit: Carl Sundstrom, pedbikeimages.com

Washington, DC

BOTTOM
Building orientation that faces the street frontage reinforces an urban form along a busy pedestrian-oriented street
Image Credit: Fairfax County

GRAPHIC 8: BUILDING PLACEMENT



BUILDING PROJECTIONS
Canopies, or other building overhangs, can project into the Building Zone

FENESTRATION
At least 60% of the commercial ground floor facade should be transparent

AMENITY SPACE
Buildings can be set back to accommodate additional amenities or building entrances

BUILD-TO LINE
At least 75% of the commercial building frontage should be located at the build-to line

EXISTING DEVELOPMENT
Existing buildings are often set back from the street; new buildings should adhere to build-to lines as described in the Volume II: District Design Guidelines

4B BUILDING FORM

Building form refers to the height and general shape of a building. It plays an important role in creating a high-quality built environment. A building's form can be used to create focal points at gateways and town centers; it can frame views and define public spaces; and, it can enhance the walkability of an area by the way that it interacts with the pedestrian realm to create visual interest and offer protection from the elements.

BOTTOM
The form of this residential building is stepped down to transition to lower height adjacent uses
Image Credit: Shalom Baranes Architects

Alexandria, VA

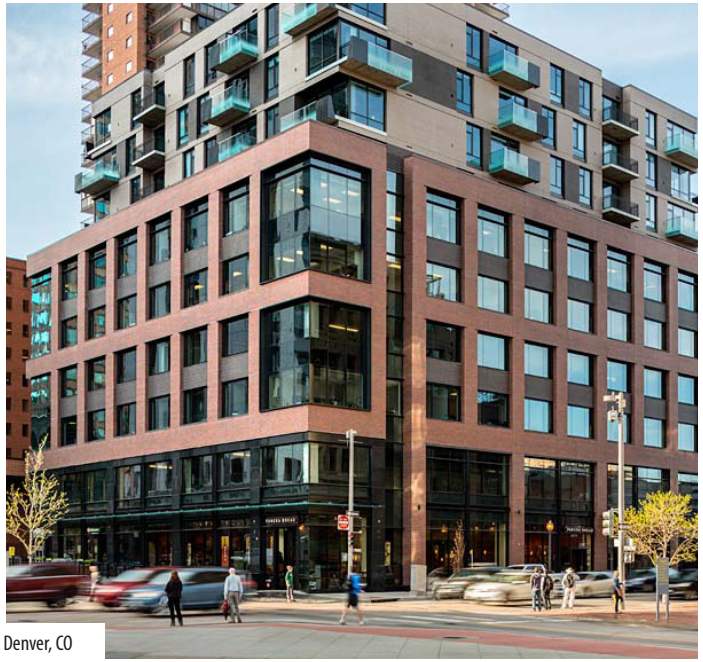
DESIGN PRINCIPLES

Design contextually, with a compatible but unique architectural language. A successful building form should reflect the building's context by relating positively to other buildings, including identified or potential historic buildings and environmental or topographical features in the area. Where there is an opportunity, design cues from surrounding buildings should be incorporated into new developments. This does not mean mimicking the neighboring buildings, but rather developing an architectural language that utilizes elements from the existing context such as adjacent building heights, architectural rhythm, materials, and/or scale to create a design that is compatible but unique.

Ensure that building heights conform with the Comprehensive Plan and transition compatibly to adjacent uses. In the Comprehensive Plan for the CRDs and CRAs, maximum building heights are a factor that is used to achieve an overall urban form and to focus intensity in certain locations, while also limiting impacts on adjacent properties. Maximum building heights are articulated in the Comprehensive Plan using linear feet or the number of allowable stories in areas where flexibility is needed to achieve a specific urban form and density. The tallest buildings are frequently planned closest to the center of the CRD or CRA, located in town centers and/or near transit facilities. Variations in building heights can be used to create a signature building at a key intersection or gateway. Tapering down of building heights is often used to address impacts to neighboring single-family or low-density residential areas.

DESIGN PRINCIPLES (CONTINUED)

Employ creative building massing to foster variations in urban form and minimize impacts on adjacent properties. Maximizing the height permitted for every building may result in an undesirable uniform and static urban form. A creatively massed development incorporates techniques such as building step-backs and variation in building height; it distinguishes a structure's bottom, middle, and roof line, while emphasizing features on the ground floor. In some instances where a large building footprint could dominate an entire block, such as a parking garage or large-format retailer, it may be necessary to incorporate design strategies that minimize the impact of these uses on the public realm. Creative massing and orientation can also reduce impacts such as shadowing while maximizing access to sunlight.



Denver, CO

RIGHT
Building form and use is delineated through variations of materials, building step-backs and building heights
Image Credit: Gensler

DESIGN STRATEGIES

1 BUILDING HEIGHT-TO-STREET WIDTHS RATIOS

A. Building height-to-street width ratios of between 1:3 and 1:2 should be provided to create an appropriate sense of enclosure for the street, while the height-to-width ratio should not exceed 1:4. *(See Graphic 9: Building Height to Street Width Relationship).*

   i. On Local Streets, a 1:1 ratio may be appropriate.

   ii. Street width is calculated from the build-to line on one side of the street to the build-to line on the opposite side of the street.

B. Step-backs in building height and massing on upper floors can be used to create an appropriate proportion of street width to building height, while creating a sense of enclosure where buildings meet streetscapes.

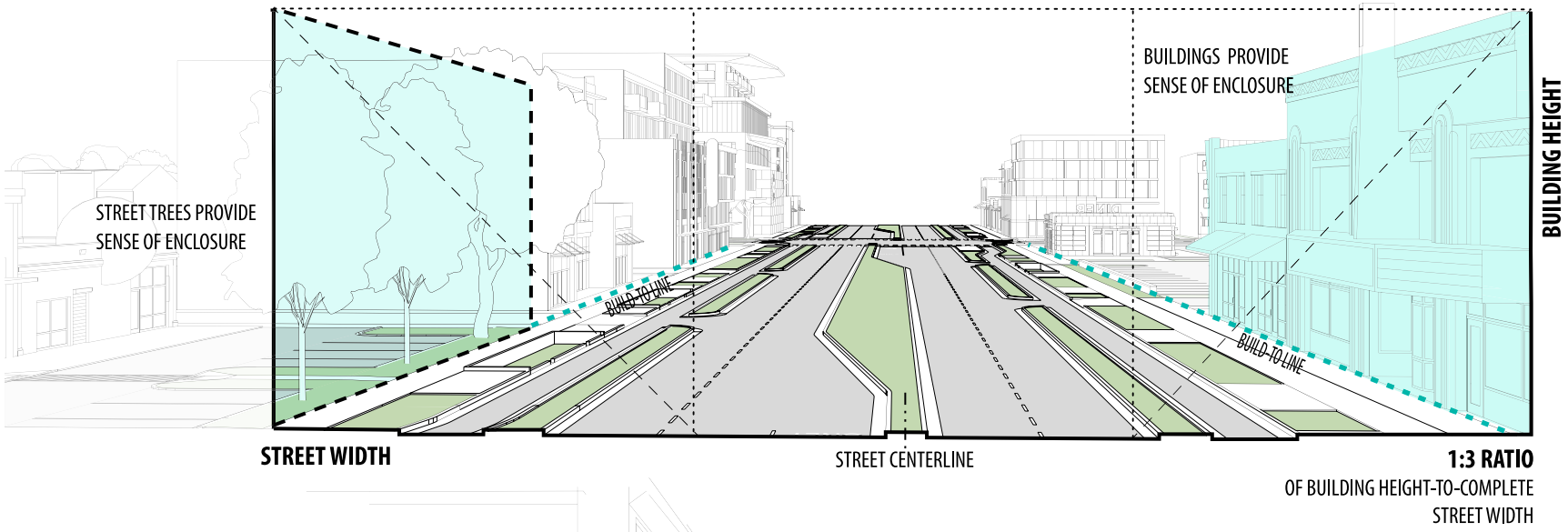
C. Closely spaced street trees may be used to provide a similar sense of definition and enclosure while softening the edges of buildings. Trees can also define and enclose the inside edge of a sidewalk in locations where building frontage does not exist adjacent to the sidewalk.

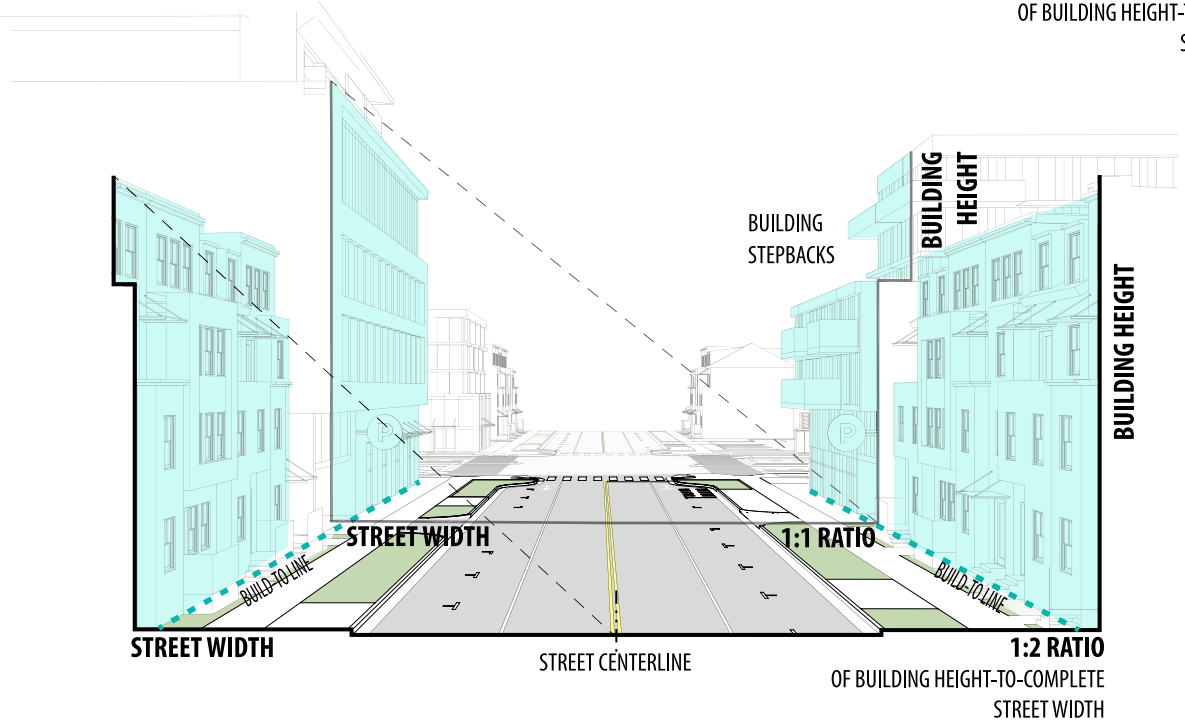
2 BUILDING ORIENTATION AND MASSING

A. Building heights within a single development should be varied to contribute to an interesting skyline while adhering to the maximum heights described in each area's Comprehensive Plan.

B. Above the ground floor, building step-backs or breaks in the building form are encouraged to create effective transitions in heights, highlight open spaces, frame views, and/or to reduce the impact of building height and shadows on the street and open space. Step-backs can vary in depth and location, depending on the size and proportion of the building, but

GRAPHIC 9: BUILDING HEIGHT TO STREET WIDTH RELATIONSHIP





DESIGN STRATEGIES (CONTINUED)

generally they should be a minimum of 10-feet in depth. Uses are encouraged to be placed in the outdoor spaces created by the step-backs to maximize the use of the site and to create a pleasant appearance when viewing these spaces from upper-floors. *(See Graphic 10: Transitions in Building Form)*.

C. The difference between a building's base (also known as the podium) and remainder of the building (the tower) should be emphasized to foster a design that is human-scaled at the ground plane. This can be achieved through changes in material, use of cornice lines, and/or changes in fenestration, where appropriate to the architecture. Effective techniques for each portion of the building include:

   i. Building base – The base and cornice line should relate to adjacent existing buildings in terms of height and should use compatible architectural details, step-backs and/or materials. A distinctive ground floor design should utilize durable materials, prominent building entries, window fenestration, and design details that lend pedestrian scale and visual interest to the building, see *Section 4C ("Ground Floor")* for additional information.

   ii. Middle floors – Distinctive window fenestration and articulation should create a rhythm and pattern that complements adjacent buildings as well as the building's base and roof line.

   iii. Top floor and roof line – A varied roof line should be provided to add visual interest from observable angles and reduce the perceived mass of large scale buildings.

D. Building orientation should minimize the casting of shadows onto adjacent properties and open spaces.

   i. Step-backs in building height and massing on upper floors can be used to reduce the impacts of shadows and increase access to sunlight, a particularly important consideration as it relates to public open spaces.

   ii. A shadow study may be necessary to ensure that adjacent buildings, open spaces and sidewalks will have access to adequate light and air.

E. Large structures such as parking garages and big-box retailers should be integrated into the core of a building mass, wherever feasible. This can be achieved using design strategies such as locating the use on upper floors, lining the use with smaller uses, incorporating publicly-accessible mid-block crossings through the building, and/or providing architectural treatments that reduce the scale of these large uses.

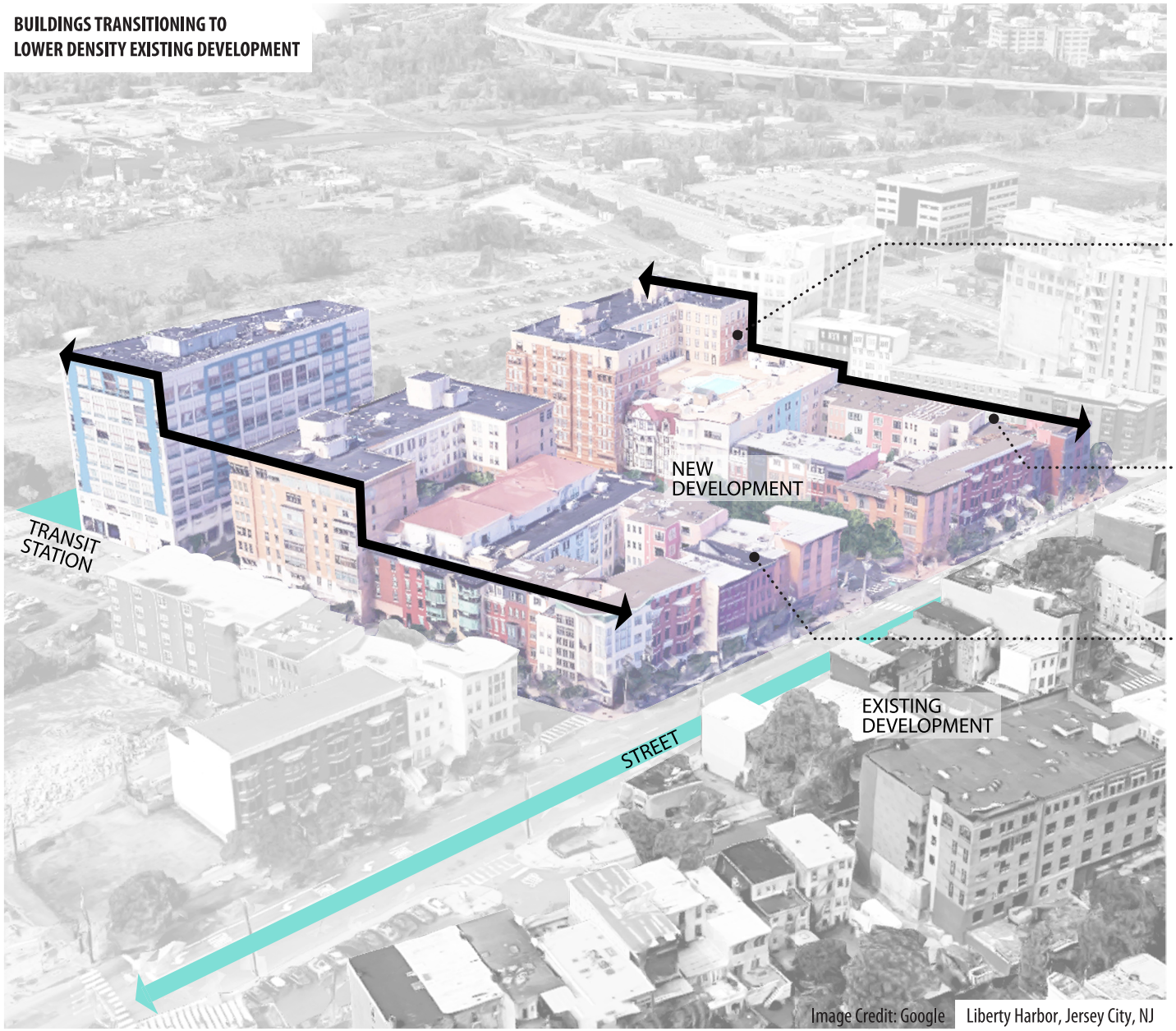
F. The design of corner buildings should incorporate building form variations that highlight the building's prominent and visible location, such as additional building height relative to surrounding buildings, distinctive rooftop and façade elements, and shifts in building geometry.

G. Signature buildings with notable architectural features that stand apart from those of surrounding buildings should be sited in prominent and visible locations, such as at gateways, key intersections, on corner sites, at higher elevations, or at other locations that are highly visible from surrounding areas.

   i. Signature buildings should create a sense of arrival and serve as a visible landmark for the CRD or CRA.

   ii. Signature buildings should be distinguished by their distinctive form—for example, by incorporating additional height relative to surrounding buildings or by having variations in height and building form.

GRAPHIC 10: TRANSITIONS BETWEEN BUILDING FORMS



Liberty Harbor, Jersey City, NJ

BUILDING STEPBACKS
Upper floors of building are stepped back to reduce building height along street edge

BUILDING HEIGHT TRANSITIONS
New development steps down to smaller-scale buildings across from existing development

CONTEXTUAL BUILDING FORM
Building forms and heights match those on the opposite side of the street

4C GROUND FLOOR DESIGN

In a high-quality urban area, the ground floors of buildings work symbiotically with the surrounding streetscape and public spaces to provide an experience that is active, safe, comfortable, and engaging for pedestrians.

The "Ground Floor" is defined as the first level of a structure that is at a similar elevation as the streetscape. The phrase "Activated Ground Floor" refers to the combination of use and design of a ground floor that creates a positive experience for pedestrians or helps to generate pedestrian activity. Having uses such as retail, restaurants, lobbies, entrances to individual residential units, building amenities, public spaces, and certain office uses on the ground floor is the desired way for the ground floors of buildings to relate to the street. Those and other interim or permanent creative uses that help enliven ground floors are strongly encouraged.

BOTTOM
Retail storefront with well-designed glazing and seating in a narrow Building Zone activates the street
Image Credit: Fairfax County

Savannah, GA

DESIGN PRINCIPLES

Incorporate a range of façade and building form treatments to foster a varied and dynamic pedestrian experience. The building's use, whether it be residential or non-residential, dictates many of the design decisions related to the ground floor. For all ground floors, however, the careful articulation of the façade is crucial to establishing a dynamic public realm. Treatments such as changes in materials, building form and step-backs, special corner designs, and façade elements such as transparency, modulation, building entries, and cornice lines provide a varied pedestrian experience. Building entrances for ground floor uses, such as retail spaces and building lobbies, should be oriented to the street or to activity nodes, and not away from the street or internally within the site.

Design non-residential ground floors to be both visually interesting and pedestrian-scaled. The design of all non-residential ground floors should be visually interesting, primarily transparent, and well- but not overly-lit. Since the ground floor space typically has a height of 16 to 20 feet, reducing the impact of that height to a pedestrian scale through the use of windows, architectural details and other visual accents should be considered.

Design residential ground floors for both privacy and "eyes on the street." Elevating the ground floor of residential uses helps to separate the public and private realms. The windows of residential units should be located mostly above the eye level of the pedestrian for privacy purposes. The adjacent Building Zone creates the opportunity for semi-private outdoor spaces that can be personalized and can incorporate elements such as stoops and porches, landscaping, low walls, and overhangs. Ground floor residential uses should have less glazing, which will reduce the likelihood of residential ground floor windows being kept shuttered and will encourage eyes on the street for safety. (*Graphic 11: Ground Floor Strategies for Residential and Non-Residential)* illustrates how to incorporate these principles into the design of new developments.

DESIGN STRATEGIES

1 NON-RESIDENTIAL GROUND FLOORS

A. The floor-to-ceiling height of ground floor uses in non-residential buildings should be tall enough to be flexible to accommodate a variety of uses, including retail. Heights should range from 16 to 20 feet.

B. Non-residential entrances should primarily be oriented towards primary streets designed for pedestrian activity and should be accessed directly from the adjacent public sidewalk or Building Zone.

   i. As a general guide, doors should be provided approximately every 60-feet.

   ii. Except when there is significant existing topographic variations, storefronts should be at the same grade as the sidewalk and Building Zone.

C. When retail or other commercial uses are not supported by the current market, consider alternative uses or designs that create an "Activated Ground Floor" such as highly transparent lobbies and amenity spaces, live-work units, and residences with individual entrances and well-defined Building Zones. Consideration should be given to designing these spaces in a manner that allows for the future conversion to retail use.

D. Door and window openings should be spaced to create a rhythm along street frontages and create building transparency.

   i. In general, glazing and other transparent materials should be used for at least 60 percent of the total ground floor façade to allow for visibility into the building, which in turn creates vitality and interest along the street.

   ii. Clear glass windows located 2 to 10 feet above-grade are suggested to ensure good visibility into the building interior.

   iii. Windows should not be obstructed by window signs, permanent displays or blinds so that pedestrians can see into the building and building occupants can look out.

   iv. False windows, highly reflective glass, opaque glass, and permanent vinyl window clings that obstruct views through windows are discouraged.

   v. Storefronts should be well lit but not so overly bright as to detract from the pedestrian experience.

E. Awnings and canopies should be incorporated into ground floor façades to provide variety and identification for businesses; these features have the advantage of being easy to change over time. Permanent canopies may also be integrated into the building design.

   i. Awnings and canopies should relate to the scale of the building and should not overwhelm the façade.

   ii. Awnings and canopies should be made of a high-quality, easily maintained materials, such as canvas or painted aluminum.

Washington, DC

LEFT
Ground floor engages with the street by being at the outer edge of the Building Zone
Image Credit: Jon Banister, Bisnow

GRAPHIC 11: GROUND FLOOR STRATEGIES FOR RESIDENTIAL AND NON-RESIDENTIAL

RESIDENTIAL

Renton, WA — Image Credit: Seattle.gov

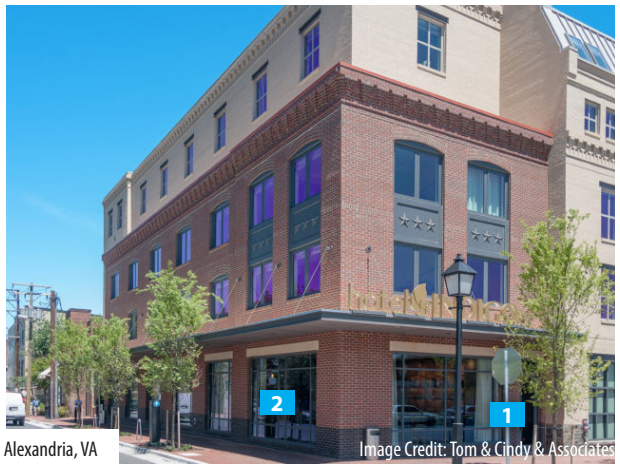
1. Landscaped buffer between sidewalk and building
2. Grade separation of residences from street provides privacy
3. Stoops and overhangs highlight entrances and add rhythm to the streetscape

RETAIL

London, UK — Image Credit: London Lifestyle Apartments

1. Storefronts distinguished from other uses above by façade treatment
2. Storefronts with large, pedestrian-oriented windows provide transparency and activate the street

HOTEL/OFFICE



Alexandria, VA — Image Credit: Tom & Cindy & Associates

1. Signage and ground floor windows highlight hotel entrance, lobby and curbside drop-off area
2. Large windows at ground floor engages the street and adds façade transparency

Fairfax, VA — Image Credit: SK&I Architecture

1. Ground floor windows and entrances add transparency and activate the street
2. Prominent entrance and lobby highlighted by façade treatment and clearly delineated from rest of building
3. Entrance design accentuates the importance and visibility of the street corner

Healdsburg, CA — Image Credit: CSW / ST2

1. Large windows, glazing and open storefront provide transparency and activate the streetscape
2. Pedestrian-scaled signage

Seattle, WA — Image Credit: Pennon Construction

1. Façade treatment, overhang, and lighting highlight and distinguish the entrance
2. Street furnishings and plantings enhance the character of the streetscape

DESIGN STRATEGIES (CONTINUED)

iii. Awnings and canopies should be installed so that the valance is a minimum of 8-feet above the ground in the Building Zone or sidewalk and should not overhang into the Landscape Panel. Placement should avoid conflicts with mature street trees.

2 RESIDENTIAL GROUND FLOORS

A. Residential lobby entrances for multi-family buildings should be highlighted through overhangs, special paving, building-mounted signage, landscaping, and/or lighting. The façades of lobbies should be predominately transparent.

B. Individual residential entrances should be used to create breaks in the building façade and increase pedestrian interest along the street. Frequent entryways into individual units along a building's ground floor activate the street frontage by increasing access points where residents come-and-go, and provide opportunities for socializing.

C. Ground floor residential uses and private, individual entrances are encouraged to be grade-separated from the public sidewalk to highlight the individual units, provide privacy for residences, and reinforce the separation between the public and private realms.

   i. To provide visual privacy, the ideal vertical grade difference between the sidewalk and the main level of the residence is approximately 3-feet. This creates the opportunity for stoops, bays, porches, or entries that establish a distinct transition between the public realm and private units.

   ii. When grade separation cannot be achieved, a hardscaped or landscaped space should be provided between residential use and the public sidewalk.

D. Stairs, porches, or ramps should not impinge upon the sidewalk and should be located entirely within the Building Zone so as to not limit pedestrian movement.

3 CORNER BUILDINGS

A. The ground floors of corner buildings should be designed to anchor and activate street corners.

   i. Building entrances should face and open directly onto the corner.

   ii. The ground floors of buildings should be predominately transparent to strengthen the relationship between the building and adjacent streets.

   iii. Building design should incorporate large windows, canopies, and building signage.

B. Activated ground floors are encouraged to wrap around prominent building corners for added visibility, activate the streetscape on all sides of the building, and provide a visual transition between cross streets.

C. Ground floor retail and restaurant uses are encouraged at street corners, as are outdoor seating areas to support these businesses.

Lincoln Park, IL

LEFT
Corner is highlighted through a distinctive architectural feature; building entrances are located near the corner activate the ground floor
Image Credit: Payton Chung (Flickr)

4D BUILDING MODULATION AND ARTICULATION

Buildings gain their character and distinguish themselves through modulation and articulation. Modulation generally refers to changes in a building's horizontal and vertical planes. Articulation refers to the organization of the building details and materials. Modulation and articulation work together to transform a rectangular mass into a composition that creates complexity and variety, both of which are essential to developing an interesting streetscape for pedestrians and to defining an area's skyline.

Hyattsville, MD

LEFT
Individual residences are distinguished by façade articulation and changes in materials and colors
Image Credit: Fairfax County

RIGHT
Material changes and a cornice line above the first floor distinguish the ground floor from the remainder of the building mass
Image Credit: Fairfax County

DESIGN PRINCIPLES

Utilize modulation and articulation to break up building mass, define architectural character, and animate the streetscape. Horizontal and vertical planes should be used on each building façade to break up the mass of a large structure and to create visual interest. The appropriate scale for this articulation is a function of the size of the building and the adjacent public spaces including sidewalks, landscape zones, and roadways. Similarly, the materials used in façades should contribute to the character of an area, especially for the building's base. Finishes, along with architectural details, can bring a human scale to buildings and add interest to a streetscape when considered in conjunction with the adjacent public realm.

Treat building façades to create a unique building character. In the CRDs and CRAs, building character should be expressed through the proportion, style, and rhythm of building elements. The treatment of façades should reflect the overall architectural style of the project, while also retaining individuality. Details such as transparency, light, color, texture, and the inclusion of art should be used cohesively to create a unique character. *(See Graphic 12: Building Façade Modulation).*

Savannah, GA

DESIGN STRATEGIES

1 FAÇADE MODULATION AND ARTICULATION

A. Façades should include a rich composition of design elements that provide visual interest from different vantage points. A variety of horizontal and vertical planes should be organized to break up a building's mass, create visual interest, and align the scale of the architecture to the pedestrian.

B. Façades should be modulated to express changes in uses or property owners/tenants.

   i. Changes in vertical massing, architectural projections, and recesses may be used to achieve this modulation.

   ii. Modulation should be clearly delineated and balanced with the design of the building.

   iii. For residential uses on the ground floor, exterior modulation should correspond to individual units, where possible.

C. The visual appearance of long building elevations should be enhanced by incorporating variations in the wall plane, and the use of bays and fenestration, as well as through the addition of public art, and/or landscaping. Large blank façades are discouraged, except potentially along service streets or other locations where they cannot be viewed from the public realm.

D. Building materials that help relate to the human scale are encouraged to be incorporated in the design of façades. Consideration should be given to breaking façades up into sections through the use of different materials or architectural treatments. A rhythm on the façade should be developed by applying similar decorative elements at regular intervals.

Washington, DC

TOP
Large format retailer integrated into the core of a building mass
Image Credit: MMA Architects


Washington, DC

BOTTOM
Cantilevered glass façade with some sections that step out and back preserve neighbors' views and minimize the structure's bulk along the streetscape
Image Credit: amrank.info

McLean, VA

TOP
Three dimensional elements and building groupings create interest
Image Credit: Franck & Lohsen Architects

Vancouver, Canada

BOTTOM
Modulated façade establishes vertical proportions that divide the mass of the building into bays; horizontal balconies that reduce the scale of the building's proportions create a well-articulated elevation
Image Credit: Vassilena Sharlandjieva via www.ubyssey.ca

DESIGN STRATEGIES (CONTINUED)

E. Three-dimensional architectural elements such as cornices, moldings and window heads should be incorporated on building façades where architecturally appropriate to create shadows on the façade and provide both variety and scale.

F. All façades of a structure that are visible from the public realm should receive equal attention in order to attain a quality building design.

G. Window groupings are encouraged to be used to create interest. This can be particularly effective when highlighting building entrances. Windows should be chosen based on the proportions and architectural style of the building. For example, windows more vertically proportioned (meaning they are taller than wider) are appropriate for a building that is more of a traditional architectural style, while buildings of a modern architectural design may have horizontal bands of windows across a façade.

H. Arcades, or porches should be incorporated to foster a human-scaled environment at ground level and to create external walkways that provide protection from the elements, particularly in locations where it is anticipated that pedestrians will linger.

I. Corner buildings and signature buildings should incorporate distinctive façade treatments that reflect and accentuate their prominence and visibility while creating a visual landmark for the CRD or CRA. Potential design strategies include chamfered corners; towers and parapets; awnings; verandas; building circulation features; extra façade glazing; and, use of distinctive materials and lighting to differentiate the building façade.

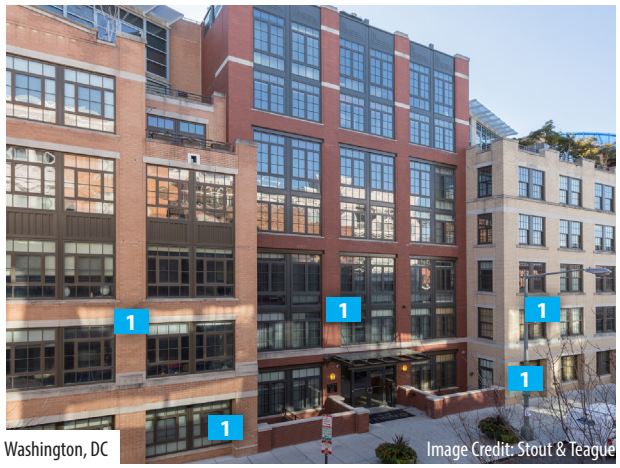
J. Building design should minimize large, uninterrupted surfaces of transparent or reflective glass by creating "visual noise" or noticeable surface areas that birds will not try to fly into or through.

GRAPHIC 12: BUILDING FAÇADE MODULATION

MODULATION AND ARTICULATION OF FAÇADES

Port Moody, BC

1 Variations in façades and materials highlight individual residences and add architectural variety



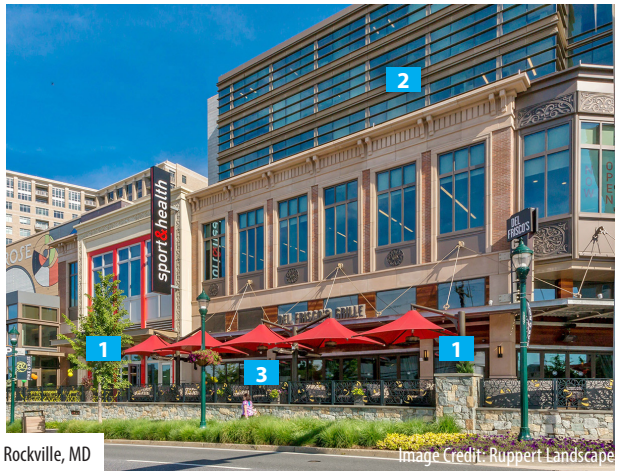
Washington, DC

1 Variations in wall plane and materials break up the building mass, while creating visual interest and rhythm along the streetscape

West Hartford, CT

1 Variations in façade color and texture (balconies, bay windows) break up the mass of larger buildings

2 Retail uses at ground floor distinguished from upper-floor residences by distinctive ground floor design



Rockville, MD

1 Different materials and architectural treatments to create vibrant storefronts and differentiate uses

2 Upper floors stepped back to reduce building scale

3 Outdoor restaurant seating activates the street

Huntersville, NC

1 Porches and balconies create vertical interest and add texture to the building frontage

Arlington, VA

1 Curved face of building and vertical façade variations add rhythm and break up the mass of the building

2 Horizontal elements distinguish office building lobby and entrance from upper-floor office uses

3 Reflective façade adds individuality and visual interest

4E BUILDING SIGNAGE

Building signs are important to CRDs and CRAs because they provide necessary information to passersby and can contribute to the identity and character of the area. Attractive, creative, and appropriately-scaled building signage enhances the appeal of an area. Signage that is conceived in a comprehensive manner, where all types of site signage are designed as part of a family, will prevent sign clutter and provide a cohesive appearance. Signs should be constructed of durable, high-quality materials that withstand long-term exposure to the elements.

In these Guidelines, building signage refers to a number of types of signs including ground-mounted project identity or monument signs; building-mounted project identity and business signs; pedestrian-scaled blade and awning signs; and, window signs, among others. Refer to section 6A *("Signage and Wayfinding in the Public Realm")* for additional guidance on signs. The Zoning Ordinance provides regulations regarding the permitted types, size, and appropriate locations of signs. Most CRDs and CRAs are also located within a Sign Control Overlay Zoning District, which places additional restrictions on the amount and type of allowable signage. Comprehensive Sign Plans (CSP) may be submitted for developments zoned to the Planned Districts to allow for more flexible and creative project-specific signage.

Arlington, VA

RIGHT
Coordinated multi-tenant retail storefronts within a mixed-use building using a range of building-mounted signs
Image Credit: Fairfax County

DESIGN PRINCIPLES

Design building signage to animate the public realm. Building signage can be an important component of a lively and animated public realm by adding color, lighting, and style that creates visual interest. At night, the manner in which signs are illuminated can help a building come alive and can play a role in defining the character of the public realm. However, visual clutter and glare due to excessive or overly lit signage is discouraged.

Consider signage in a comprehensive and cohesive manner, balancing compatibility within the overall context with the provision of a distinctive design. Developments should ensure that the signage reflects the character of each CRD or CRA, while being distinctive as it relates to the specific development. All signage within a development should be considered in a comprehensive and cohesive manner; variations reflecting of the nature of the individual businesses are encouraged to foster a sense of place. Individual signs should share similar design characteristics, including scale, alignment, and/or placement with other signage in the same development, particularly when it comes to building-mounted signs. Building-mounted signage should fit with the architectural style and scale of the building. Signage should use materials and colors that are complementary to the building's finishes, and should be incorporated into the architectural elements of the structure.

Design signage so that it functions on multiple scales while minimizing the use of free-standing signs. Signage should consist of both auto-oriented and pedestrian-scaled signs. The use of free standing signs should be minimized, and any such signs should be considered part of the street furniture and be integrated into those other design elements.

DESIGN STRATEGIES

1 BUILDING SIGNAGE DESIGN AND PLACEMENT

A. All signage should be well-organized, neat, well-maintained, durable, concise, and legible.

B. Signs should be sized so that they are visible to the intended audience, but should not be excessively large.

C. The typeface, characters and graphics of storefront signage should be scaled to pedestrians. Appropriate types of pedestrian signage may include blade signs, awning signage, and sign bands.

D. Pedestrian blade signs projecting from buildings should be mounted a minimum of 8-feet above the sidewalk grade. Blade signs should project no more than 4-feet from the building façade.

E. Building identity signs should be sized and placed so that they are legible by both pedestrians and moving vehicles and are appropriate to the scale of the building.

F. The use of monument signs should be limited, especially where the building can accommodate signage. Pole-mounted signs should not be used.

G. Building-mounted signs should be placed in architecturally defined areas on the façade where they are framed or delineated.

H. Window signage should not unreasonably obstruct views from the street to the interior. Permanent or temporary window signs may be considered for a portion of the glazed area of the storefront as long as transparency is maintained for at least 50% of the window. Window decals may also be used to reduce bird collisions so long as designs do not obstruct views.

I. Building-mounted cabinet signs and display windows may be considered in areas where functional storefronts are not possible or where blank walls exist along pedestrian areas.

J. Sign lighting can include: back-lighted letters/halo lettering, front-lighted channel letters, internally-lighted canopy signage, gooseneck spot lights, and other varieties of exterior illumination.

Falls Church, VA

Fairfax, VA

TOP
Building-mounted project identity sign integrated into the façade creates unique design feature and reduces clutter
Image Credit: Fairfax County

BOTTOM
Multi-tenant signage (building-mounted, canopy, and blade signs) as part of a Comprehensive Sign Plan
Image Credit: Edens

4F BUILDING LIGHTING

The design of light fixtures on private property in the Building Zone and in the locations within the public realm should complement the street lighting, the other site furnishings and the architecture of the adjacent buildings. Lighting should promote a safe environment while enhancing the character and appeal of the public realm.

Article 14 of the Zoning Ordinance contains the County's Lighting Standards for illumination levels for private property. The International Dark Sky Association provides guidance on selecting appropriate, full cut-off fixtures.

The following qualitative design strategies should be used to guide choices for appropriate lighting within the Building Zone. Additional design strategies for street lighting are detailed in *Section 2.F.3 ("Street Lighting")*, while the illumination of building signage is addressed in *Section 4E ("Building Signage")* above.

DESIGN PRINCIPLES

Incorporate lighting from a variety of sources to highlight architectural details and other site features. A good lighting plan includes light from a variety of sources including fixtures that are building-mounted, located within storefront windows, integrated into canopies and signage, and those that emanate from overhead sources such as string lights, and from the ground including landscape lighting, bollards and steps. Accent lighting is encouraged to highlight architectural details and site features such as specimen planting, public art, and/or signage.

Minimize glare. Illumination should be contained within the site and only full cut-off fixtures should be utilized. Full cut-off fixtures provide light only from the bottom of the fixture and ensure that no light emits upward (above 90 degrees). Shields may be used to control and direct light where desired. Small, intense light sources create glare and should be avoided.

LEFT
Illuminated storefront windows and streetscape lighting help create an appropriately scaled pedestrian environment
Image Credit: Jacqueline Renfrow

RIGHT
Building lighting from a number of sources including building-mounted, internal illumination, and bollards
Image Credit: Corey Templeton

Dallas, TX

Portland, ME

DESIGN STRATEGIES

1 LIGHTING FIXTURES AND TECHNOLOGY

A. All fixtures should use LED bulbs or more advanced energy-saving technologies, if available.

B. Full-cut off fixtures are required by the Zoning Ordinance to reduce light glare from parking garages, parking lots, and buildings onto walkways, streetscapes, and streets. Building/wall mounted lighting, canopy lighting, accent lighting and other lighting on private property should use full cut-off fixtures or have a shield that controls the light so that it is focused only on the object that is being illuminated.

C. Most lighting should use lower color temperature bulbs (3000K or below) for neutral white or warm white color light. The color rendition index (CRI) should be 70 or greater.

2 USES OF LIGHTING

A. Lighting should highlight architectural building elements like columns, glass or towers to promote a dramatic and exciting urban environment at night.

B. Lighting should be incorporated into hardscape elements such as steps, railings and pavement to illuminate spaces in the Building Zone.

C. For safety, lighting should not result in shaded or low-visibility areas that may encourage loitering and crime, particularly at the edges of a site.

D. Paths, entries and exits should be lit to facilitate wayfinding. However, lighting should not be so intense that it is unpleasant, causing people to avoid the area.

E. Gateways and prominent corners should be emphasized through special lighting designs. Lighting should particularly highlight gateway signage and public art.

F. Internal and external storefront illumination should be provided to create an inviting pedestrian environment. Visual interest can be enhanced by highlighting architectural features such as overhangs and canopies.

G. Seasonal lighting strategies should be considered to enhance the character of place for prominent buildings such as those in shopping districts and for civic uses.

Madison, WI

BOTTOM
Gateway building highlighted at night by internal illumination
Image Credit: Midwest Living, Meredith Corporation

4G "BACK-OF-THE-HOUSE" FACILITIES AND EQUIPMENT

The "back-of-the-house" facilities and equipment that serve buildings include utilities, maintenance equipment, telecommunications equipment and service areas for loading, trash pickup and recycling. Such facilities and equipment can be disruptive to the function and visual appearance of developments if not designed properly. They should be located in a manner that minimizes their impact on the pedestrian and visual environments, including views from adjacent residences or office buildings, while still enabling easy access by utility and service providers. Refer to *Section 2J ("Utilities")* for additional guidance on utilities in the public right-of-way.

Fairfax, VA

RIGHT
Loading, deliveries, and parking entrances for residents and commercial uses co-located at the rear of the property in an alley
Image Credit: Fairfax County

DESIGN PRINCIPLES

Identify and address conflicts with utility and service requirements early in the design process. It is important to anticipate the locations for utility and service facilities during the conceptual design phase of a development. Understanding utility needs and locational requirements and integrating them appropriately will not only save time during the design and construction process, but will also contribute to a quality development by avoiding the placement of utilities in locations that interfere with aesthetics or conflict with the placement of trees or other site amenities.

Minimize pedestrian and visual impediments. Utility cabinets and vaults should be located within a building structure or within certain streetscape zones in a manner that avoids creating pedestrian impediments and sight distance conflicts; that provides the most attractive streetscape possible; and, that provides easy access for maintenance.

Conceal equipment and services at the rear of a site or within enclosures. All maintenance and building equipment and services areas should be located within the building, to the rear of the site, behind buildings, along a service street, or within a parking garage and shielded from public view. Dumpsters should be housed inside enclosures if not located within the building structure. Consideration should be given to consolidating service areas of multiple developments in the interior of a block through the use of cooperative arrangements among landowners.

DESIGN STRATEGIES

1 LOCATION OF EQUIPMENT AND FACILITIES

A. The back-of-house functions necessary for the building's function should be located along service streets or interior to the site.

   i. Locations of wet utilities (water and sewer pipes) may significantly impact the placement of buildings, the size of the Building Zone, or plantings within the Building Zone, and locations for such utilities should be anticipated in the conceptual design of the site. Trees should be planted a minimum of 5 feet from utility easements containing pipes.

   ii. Dry utilities (electrical and communications lines) should be placed to the rear of the building, under the sidewalk, or in the Building Zone.

B. A conceptual utility plan should be prepared to designate and organize easements and utility equipment.

C. Developments should bury all utility lines underground.

D. Utility lines should be co-located in common trenches to the extent feasible.

E. Dumpsters should be located either within the building or the parking garage, or near loading and service areas.

F. Access to building loading and trash collection should be located on the portion of the site that is least intrusive to adjacent properties, existing and planned park spaces, and other pedestrian areas. These building services should not be located on streets with commercial storefronts or where loading may impede pedestrian movement.

2 AESTHETIC AND NOISE CONSIDERATIONS

A. If located external to structures, utility, maintenance and service facilities should be screened so they are not visible from the street, from adjacent properties, or from open spaces.

   i. Landscaping, screens, fences, walls, or architectural features should be used to conceal ground level equipment.

   ii. Materials compatible with and integral to the building architecture should be used to conceal roof equipment or dumpsters; concrete or brick enclosures are preferred to wood, particularly if they are visible from the street.

   iii. Chain link enclosures are not generally recommended.

B. Antennas and telecommunications equipment should be flush-mounted or hidden behind screen walls, parapets or other building features. Innovative treatments for incorporating equipment as architectural elements within the structure of the roof are encouraged. Consideration should be given to minimizing rooftop equipment to reduce hazards for birds.

C. Noise-generating equipment such as air-conditioning units should be located internal to buildings, on rooftops, or away from neighboring properties. If not possible, noise barriers and other means of reducing impacts should be provided.

D. Loading and vehicle parking entrances should be co-located wherever possible and should be integrated visually into the building to minimize a potential unsightly appearance. Loading and entrance doors should complement the architecture of the building.

4H SUSTAINABLE BUILDING AND SITE DESIGN

Redevelopment provides opportunities to improve the environment and protect existing waterways, restore local streams, and reduce pollutant loads on Fairfax County watersheds. Providing sustainable facilities that enhance the health of the environment is a priority in the CRDs and CRAs. Sustainable features can be introduced at any scale, from the use of recycled or locally sourced materials, to the increase of native biodiversity in the landscape, to the incorporation of stormwater management into a site currently lacking such facilities. Developments should incorporate:

- renewable and recycled resources;
- resource- and energy-efficient designs and materials;
- water conservation and gray water reuse;
- environmentally-friendly construction practices;
- state-of-the-art stormwater management, including Low-Impact Development (LID) techniques and other best management practices; and,
- preserve and/or restore existing, on-site resources.

DESIGN PRINCIPLES

Follow countywide and area-specific guidelines for sustainable design. Green practices should be used to foster sustainable design within many areas of the project, as set forth in the following County guidance:

- Objective 13 of Environmental Element of the Policy Plan component of the Comprehensive Plan
- Specific recommendations for each CRD and CRA within their respective area of the Comprehensive Plans

Additional design strategies and tools for sustainable site and building design, as well as stormwater management best practices, include the following:

- US Green Building Council's Sustainable Sites Initiative (SITES)
- Leadership in Energy and Environmental Design (LEED) rating system created by the US Green Building Council
- Bird Friendly Building Design by the American Bird Conservancy

LEFT
Green roofs provide many benefits including stormwater collection, transpiration, and evaporation, reducing urban heat-island effect, capturing pollutants, and adding natural beauty
Image Credit: CSGlobe

RIGHT
Bird-friendly and environmentally-friendly building design includes the use of laminates on glass portions of the building façade to deter bird collisions
Image Credit: Ball Construction


Paris, France


Ontario, Canada

DESIGN STRATEGIES

A. For specific design guidance related to sustainable site and building design, refer to the above-mentioned County guidance. Additional design strategies related to sustainable stormwater management are provided in *Section 2L ("Sustainable Street and Streetscape Design")* and in *Appendix A2 ("Sustainable Design Toolbox")*.

B. Strategies should be considered to make the building facade and site structures visible as physical barriers to birds. Building elevation features should incorporate visual variations in glass and façade treatments to reduce collisions by helping birds distinguish buildings from the surrounding habitat. Site and building lighting should be shielded to minimize attraction to birds at night. Highly reflective glass, particularly in areas that will reflect sky or vegetation, should be avoided. See LEED P.C. 55 for information on bird-friendly building and site design features.

Santa Monica, CA

TOP
Sustainable design features are incorporated into LEED-certified parking garage. Features include: solar panels on the rooftop, a reclaimed gray water system, recycled construction materials, and educational signage
Image Credit: Archello

Image Credit: Architizer

5 PARKING AND ACCESS

INTENT

The location, form and design of parking facilities, as well as the manner in which buildings are accessed from the street, have important implications for the form, layout and character of blocks and their streetscapes within CRDs and CRAs. When creatively accommodated within a site, parking and access design can enable active, pedestrian-oriented streetscapes and building frontages while still supporting buildings' essential functions and daily operations. If not located appropriately, they can detract from how an area looks and functions.

To fit within an urban context, parking and access design should reinforce, rather than detract from, the pedestrian- and bicycle-friendly character of CRDs and CRAs. In practice, this means limiting the overall amount of parking; locating parking on-street, underground, and/or in structures to the maximum extent feasible; and concealing any off-street parking facilities from the street. It also requires creatively integrating parking structures into building sites to minimize the visual impact of these facilities and maintain an active and appealing pedestrian environment at street level.

Moreover, while development in CRDs and CRAs should enable convenient vehicular access to a site, the impacts of vehicular access on the streetscape should be mitigated by consolidating access points and locating service and loading facilities away from major streets.

INSPIRATION

Image Credit: Rhodeside & Harwell

Chicago, IL

Image Credit: Mutual Materials

Portland, OR

Integrated, well-designed and appropriately-located parking contributes to a high-quality, pedestrian-oriented environment and urban character

Image Credit: Google Earth

Alexandria, VA

Image Credit:

Dagsboro, DE

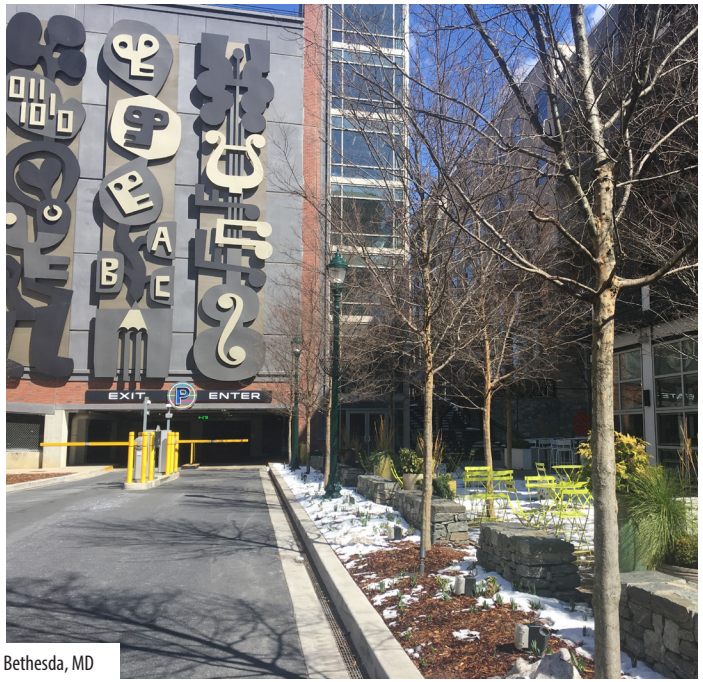
Image Credit: trentrush

San Antonio, TX

5A PARKING STRUCTURES, ON-STREET PARKING AND SURFACE PARKING

Vehicular parking can be accommodated on a site in a variety of ways, ranging from underground parking and above-ground parking structures to on-street parking and surface parking lots. While each type of parking facility has its place, the County discourages surface parking lots in CRDs and CRAs, and encourages underground and structured parking, as well as on-street parking on designated streets, to reinforce the urban character of these districts.

Regardless of the type of parking, the design and location of parking facilities can determine whether or not a CRD or CRA supports the urban design character envisioned in Comprehensive Plans for each area. The following design principles and strategies provide further guidance on the design and location of types of parking facilities to ensure consistency with the County's vision for these areas. *(See Graphic 13: Surface Parking and Graphic 14: Structured Parking)*.



Bethesda, MD

RIGHT
Artistic facade treatment enlivens what would otherwise be a blank wall above the garage entrance
Image Credit: Fairfax County

DESIGN PRINCIPLES

Provide parking underground or in parking structures that are integrated with primary uses, wherever feasible. Ideally, parking should be provided underground. If that is not feasible, parking structures that are integrated into the rest of the building either as a podium or wrapped with other uses are preferred over free standing parking garages, which are highly discouraged. Retail, building lobbies, and other active uses or entrances should be incorporated into the ground floor of parking structures. Where parking structures are not faced with building uses, they should be appropriately screened and treated to enhance their visual appearance. A trash management plan should be developed to reduce litter and dumping within and near parking facilities.

Locate any surface parking to the sides or rear of a building and incorporate appropriate screening, landscaping and stormwater management. Surface parking, except for on-street or limited "teaser" parking, is discouraged. If surface parking is provided, it should be located to the sides or rear of a building, as parking lots in front of buildings detract from the pedestrian environment and decrease the comfort level of pedestrians. Parking lots should not inhibit pedestrian access between streets and buildings. All surface parking areas should use screening and sustainable design techniques to minimize their impact on the pedestrian experience and on the environment. The amount of impervious surface area should be minimized and landscaped areas maximized. Any redevelopment or improvements to existing developments in which surface parking lots will remain should include enhancement of the parking lot's landscaping and stormwater management to reduce stormwater runoff, minimize negative visual impacts, and reduce heat-island effects.

DESIGN PRINCIPLES (CONTINUED)

Incorporate on-street parking for convenience and pedestrian safety. On-street parallel parking, including short-term residential and retail parking, can contribute to the activity on the street. The provision of limited amounts of highly visible, convenient parking is desirable for retail, civic and entertainment uses. On-street parking also increases safety and comfort for pedestrians by acting as a barrier and buffer between moving vehicles and the sidewalk. The presence of on-street parking also encourages drivers to travel at slower speeds, giving pedestrians, cyclists and motorists more time to react to the presence of one another.

Minimize the overall quantity of parking. The need to provide sufficient parking should be balanced against the goals of implementing walkable places and reducing reliance on the automobile. To minimize the impact of parking on the quality of the built environment, strategies that result in the reduction of the total number of parking spaces are encouraged, and parking facilities should be sited to support shared use and efficient access.

Miami, FL

Los Angeles, CA

Hyattsville, MD

TOP
Surface parking lot design incorporates bioswale to collect stormwater runoff
Image Credit: Ciara Gonzalez

BOTTOM LEFT
Parking garage screening using mix of plant materials and architectural elements
Image Credit: Fairfax County

BOTTOM RIGHT
On-street parking offers convenient access to nearby businesses while also functioning as a buffer between moving vehicles and pedestrians
Image Credit: Fairfax County

GRAPHIC 13: SURFACE PARKING

SIDE PARKING

Image Credit: GBD architects

Portland, OR

Image Credit: GBD architects

1. Side parking enables the building to front the street and maintains a pedestrian-oriented streetscape
2. Landscaping near sidewalk screens the parking area from the street and minimizes visual impact
3. Side of building faces pedestrian pathway, which connects parking to the building entrances

REAR PARKING

Image Credit: Google

Newport News, VA

Image Credit : Google

1. Continuous building frontage with majority of parking in rear, enables continuous building frontage along streets
2. Surface parking located at rear of building
3. Access to parking from secondary street

TEASER PARKING

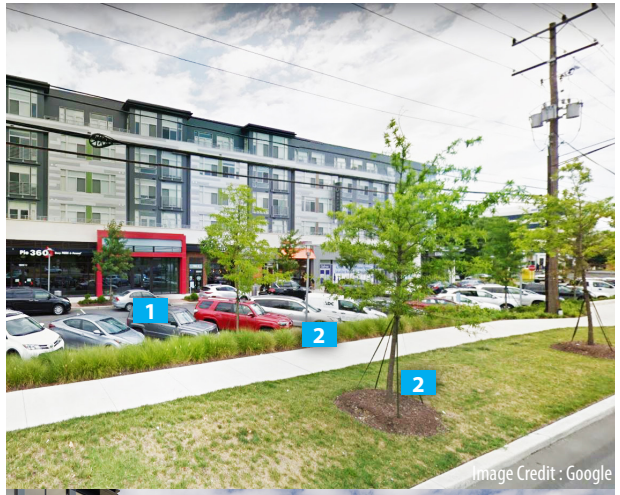


Image Credit : Google

Rockville, MD

Image Credit: Ford Coplan Macht

1. Teaser parking maintains pedestrian-oriented streetscape while providing some visible convenience parking for retail customers
2. Parking screened from street by landscaping (trees and understory planting)
3. Continuous streetscape along entire building frontage and parking access road

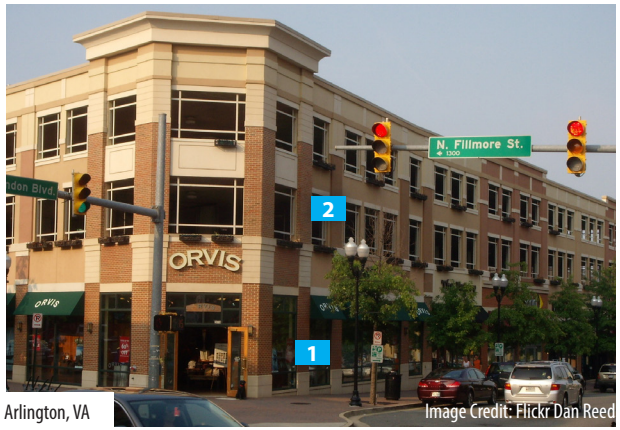
GRAPHIC 14: STRUCTURED PARKING

WRAPPED
Parking structure surrounded by buildings on multiple sides

Plano , TX — Image Credit:Transitoriented.com

1. Parking garage integrated into internal portion of development
2. Service street access to parking
3. Continuous building frontage along streets, due to location of parking in rear

STRUCTURED
Free-standing parking structure, which may include other uses on ground floor



Arlington, VA — Image Credit: Flickr Dan Reed

1. Retail uses on ground floor of parking structure
2. Façade treatment disguises and conceals parking on upper stories

PODIUM
Parking integrated into middle floors of building

Fairfax, VA — Image Credit: blog.wethmangroup.com

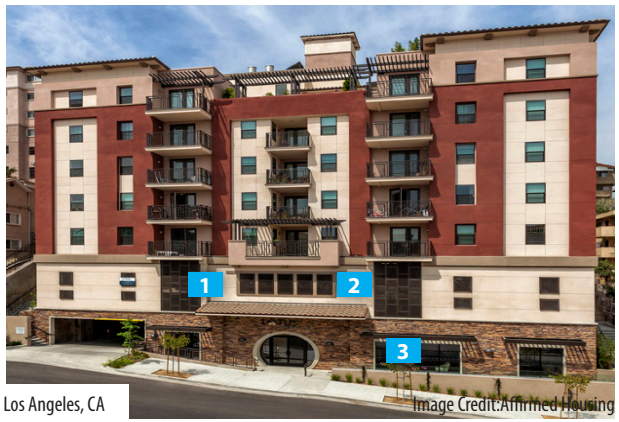
1. Retail uses at ground floor maintain pedestrian-oriented streetscape
2. Podium parking above ground floor, concealed by exterior screening

Boulder, CO — Image Credit: Flickr BeyondDC

1. Parking garage hidden behind retail uses facing the street
2. Entrances to parking from the street

West Chester, PA — Image Credit: TCA

1. Windows facing the street at ground level create pedestrian-oriented streetscape
2. Façade treatment of parking structure conceals parking on the upper floors and reflects architectural style of the surrounding buildings
3. Discreet but visible signage directing vehicles to parking



Los Angeles, CA — Image Credit:Affirmed Housing

1. Podium parking located between ground floor and residences on upper stories
2. Façade treatment conceals parking and blends into architecture of the building
3. Ground floor of building reinforces pedestrian-oriented streetscape

5A.1 PARKING STRUCTURES

DESIGN STRATEGIES

1 PARKING STRUCTURE DESIGN

A. Parking should be provided in underground structures to the extent feasible. If not provided underground, parking structures should be integrated into a building.

B. Stand-alone, above-grade parking structures are strongly discouraged. Where parking structures do exist, they should be wrapped with active uses, particularly in areas where a high volume of pedestrian traffic is anticipated.

C. The architecture of the parking structure should be generally consistent with the architecture of the building with which it is associated. It should also be compatible with adjacent buildings, through the use of similar architectural styles, materials and detailing.

D. Articulation and detailing of exposed facades (public art installations, vertical planting, or other architectural features) should be provided for visual interest, to break up monotonous facades, and to disguise the parking uses within. Facades should be designed to reduce light pollution caused by headlights shining on to adjacent buildings.

Missoula, MT

RIGHT
Parking garage with solar power collection canopies on the roof
Image Credit: City of Missoula

E. Ground plantings and landscaping should be incorporated along exposed exterior faces of parking structures to conceal internal parking facilities and to buffer the parking structure from adjacent land uses.

F. Garage openings should occupy no more than 20 percent of the street frontage; wherever possible, the exposed face of these structures should not be located on streets that have high volumes of pedestrian and vehicular traffic.

G. The ground floors of parking structures should have 16- to 20-foot ceiling heights for safety and to allow for the possibility of civic uses during off-peak times or for future repurposing into uses other than parking. Higher ceiling heights can also allow for trash and recycling collection to take place within the garage. In addition to higher floor to ceiling heights, ramped floor-plates should be minimized to allow garages to be adapted to other uses, where feasible.

H. Green roofs, solar panels, solar panel canopies on rooftops, park space, or recreational amenities should be considered for incorporation into the top deck of a parking structure. Shade structures designed to make open parking decks more attractive and usable should be incorporated where feasible.

2 ACCESSIBILITY AND AMENITIES

A. Access to parking should be clearly signed to facilitate vehicle access and reduce pedestrian and bicycle conflicts.

B. Dedicated parking areas for non-vehicular modes of transportation, including bicycles and motorcycles, should be incorporated into new and existing parking structures.

C. The incorporation of smart technologies such as parked car sensors and dynamic signage should be should be considered.

D. Electric vehicle charging stations and associated parking spaces are encouraged in parking structures to accommodate the growing number of electric vehicles.

5A.2 ON-STREET PARKING

DESIGN STRATEGIES

1 LOCATION AND FEATURES

A. On-street parking should be parallel, not perpendicular or angled to the street.

B. On-street parking should be designed to minimize vehicular conflicts with bicyclists and pedestrians and to maintain sight lines for people walking, biking and driving. Strategies to address these concerns include restricting on-street parking within 10-30 feet of corners and painted or physical buffers between bicycle facilities and parking lanes that provide for the space required to open the doors of parked cars.

C. On-street parking spaces should not exceed a width of 8.5 feet, inclusive of the curb and gutter.

D. The use of permeable paving in parking stalls is encouraged on private streets.

E. On streets with on-street parking, intersections should incorporate curb bulb-outs or landscape islands, wherever possible, to reduce vehicle speeds and minimize the distance for pedestrians to cross the street.

F. A 2-foot paved step-off zone, inclusive of the curb, should be included between the roadway and the Landscape Panel on streets with on-street parking.

G. Designated, on-street moped/motorcycle parking spaces should be incorporated to accommodate these modes of transportation and to minimize inefficient use of vehicular parking spaces.

H. The need for designated, on-street drop-off and pick-up areas for deliveries and for ridesharing companies should be considered as a means of reducing issues such as double-parking, blocking of bicycle lanes, and conflicts with transit. These areas should be clearly marked with signs and conveniently located near major destinations and entrances to buildings.

I. Available parking technology should be utilized to the maximum extent feasible to increase the efficiency and convenience of on-street parking. Strategies include prioritizing the use of mobile parking apps and consolidating pay stations to conserve streetscape space for other furnishings, plantings, and amenities.

Bethesda, MD

Naples, FL

TOP
On-street parking located adjacent to a retail street
Image Credit: Fairfax County

BOTTOM
2-foot refuge strip adjacent to a Landscape Panel prevents people exiting vehicles from walking into landscaped areas
Image Credit: James Dougherty, Towncrafting

5A.3 SURFACE PARKING

Hyattsville, MD

TOP
Surface parking lot effectively concealed by the surrounding townhomes, which face the street
Image Credit: Fairfax County

Alexandria, VA

BOTTOM
Pedestrian path connecting surface parking lot to the building entrance provides safety and comfort
Image Credit: Rhodeside and Harwell

DESIGN STRATEGIES

1 LOCATION AND FEATURES

A. Surface parking, if provided, should be located to the sides or rear of the building and not in front of the building. *(See Graphic 15: Surface Parking Configurations - Rear Parking and Graphic 16: Surface Parking Configurations - Side Parking).*

B. A clearly defined pedestrian pathway should connect the parking lot to the building entrance. This pathway should be well landscaped; lighted; be made of a contiguous, contrasting material such as concrete or pavers; and, be a minimum of 5-feet in width. Pedestrian wayfinding signage should be provided, where appropriate.

C. Landscaping, screens, berms, high-quality fences, and/or low walls should be used to shield parking from sidewalks, streets, and adjacent uses. A row of trees, landscaping, and a low 18 – 36-inch-high continuous row of shrubs should be provided as a buffer between the sidewalk and the parked vehicles.

D. Landscaped islands provided within, or along the periphery of parking lots should have a minimum width of 10 feet to accommodate healthy growth of trees and shrubs. In addition, these islands are encouraged to be used as stormwater capture basins or rain gardens.

E. Convenience "teaser" parking, if provided, should be located to the side rather than the front of the building whenever possible. It should be limited to one row of parking between the street and the building. If located in the front of a building, teaser parking should be oriented to the streetscape side of the parking area. *(See Graphic 17: Surface Parking Configurations - Teaser Parking).*

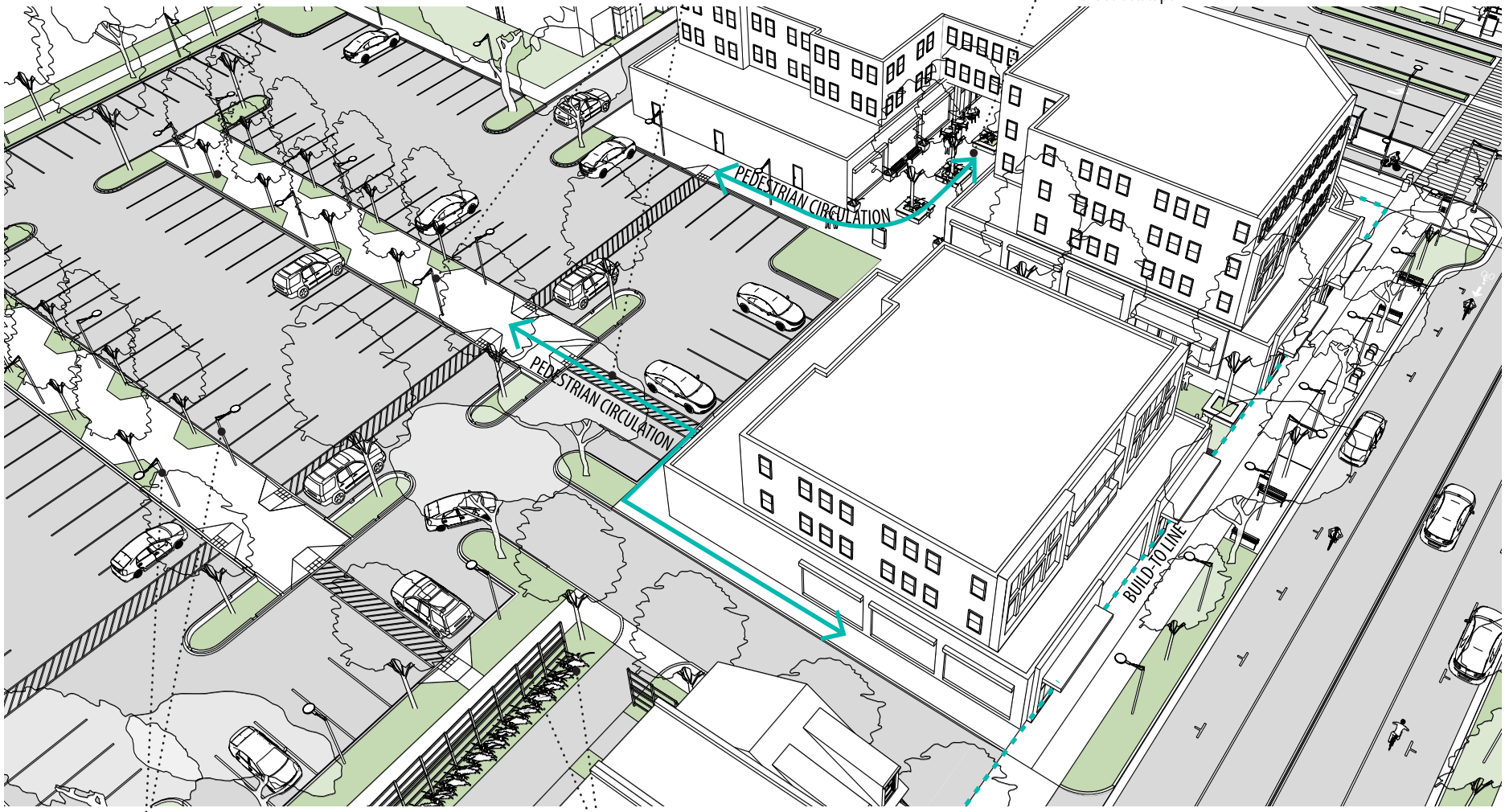
F. Safety and security of less visible parking areas, particularly those located at the rear and sides of a building, should be considered. If not visible from street or public spaces, parking areas should be well lit. Dead-end corridors or areas where people could hide should be avoided.

GRAPHIC 15: SURFACE PARKING CONFIGURATIONS - REAR PARKING

LANDSCAPED ISLANDS
Accommodate shade trees, planting, bioretention, and lighting

PEDESTRIAN PATHWAYS
Emphasize continuous access with contrasting paving applications

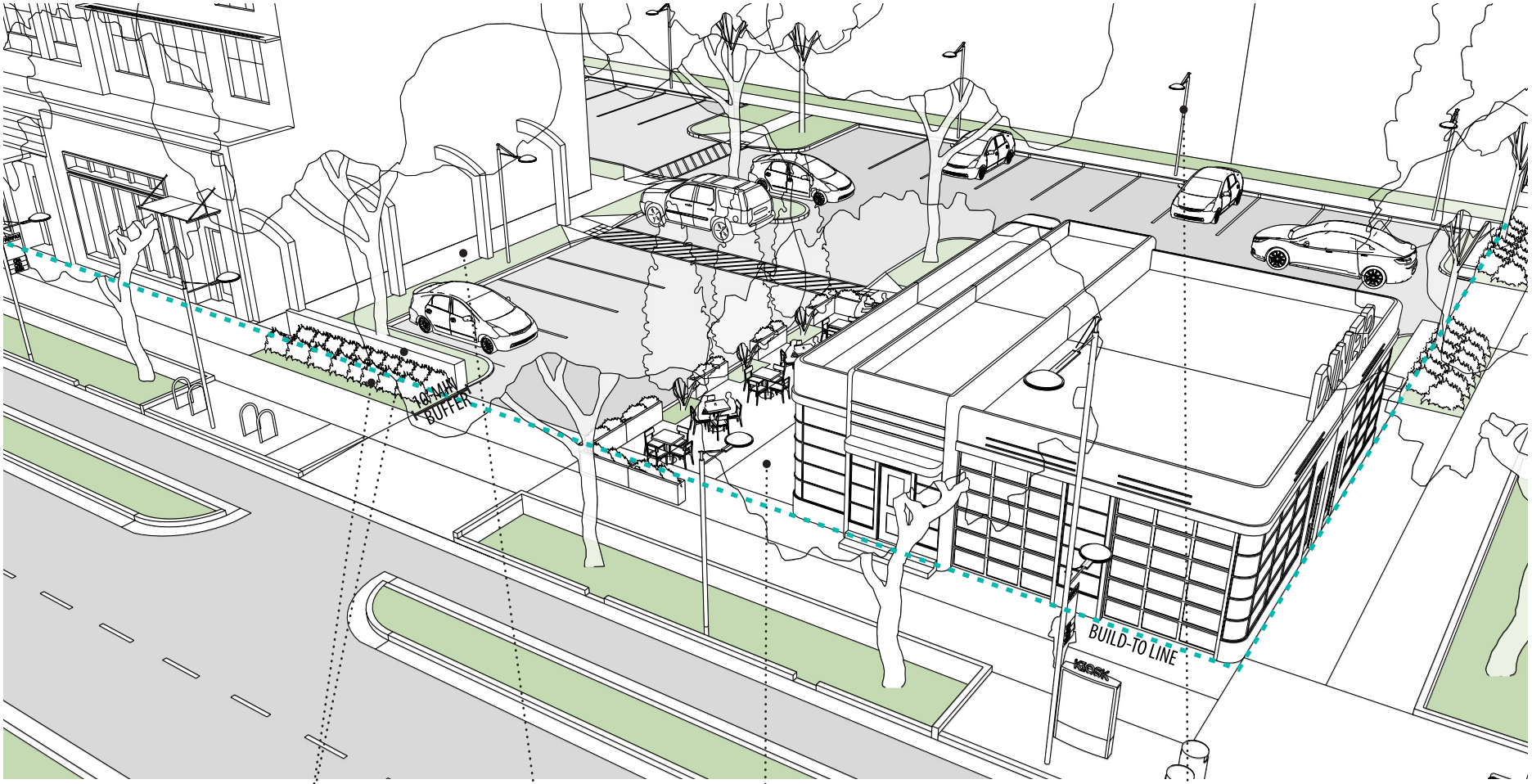
PEDESTRIAN ACCESS
Connects parking at the rear of buildings to building entrances along the streetscape



LIGHTING
Incorporate pedestrian-oriented lighting to foster a sense of safety and security, particularly in low-visibility areas such as parking lots located to the rear and sides of buildings.

BUFFERS
Visually separate parking and buildings with attractive landscaping, low walls and/or fencing

GRAPHIC 16: SURFACE PARKING CONFIGURATIONS - SIDE PARKING

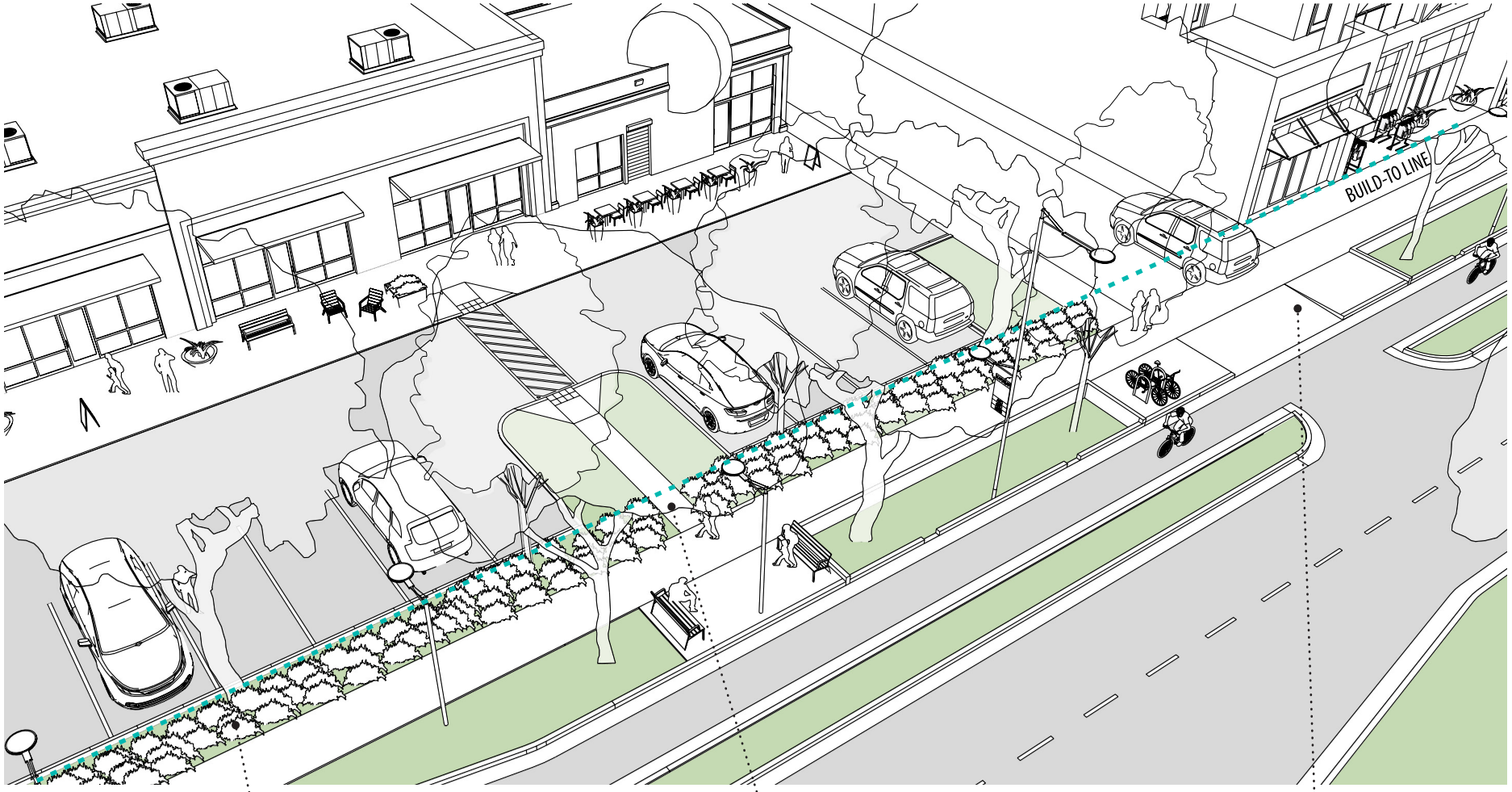


SCREENING
Landscaping and low walls screen parking from the streetscape

PEDESTRIAN PATHWAYS
Connect between parking/amenity and building entrances

LIGHTING
Incorporate pedestrian-oriented lighting to foster a sense of safety and security, particularly in low-visibility areas such as parking lots located to the rear and sides of buildings.

GRAPHIC 17: SURFACE PARKING CONFIGURATIONS - TEASER PARKING



BUFFER
Landscaping and/or low walls between sidewalks and teaser parking

PEDESTRIAN ACCESS
Direct pathway connecting the streetscape/sidewalk through parking lot to building entrances

PARKING ACCESS
Access to front/side teaser parking and additional parking at the rear of buildings

5B BICYCLE PARKING

Bicycle parking is a key component of a bicycle network. The secure, convenient provision of bicycle parking facilitates the use of bicycles as a means of both recreation and transportation. Bicycle parking facilities should be decentralized so that they are available near multiple destinations and accommodate the inherent flexibility of bicycles as a mode of travel.

The Fairfax County Department of Transportation provides guidance on short-term and long-term bicycle parking, including how to site bicycle parking, how to select the type of bike parking, and how to size facilities for a development. Moreover, Table 2B, Bicycle Parking Requirement for Urban Centers and Transit Station Areas in the "Bicycle Parking Guidelines," describes appropriate locations for bicycle parking, desired types of parking facilities and the required quantity of bicycle parking spaces based on building type and square footage. Volume II: District Design Guidelines may provide additional recommendations on the proper location of bicycle racks and rack design features.

Reston, VA

RIGHT
Bicycle parking room internally-housed within parking garage helps promote cycling as a mode of transportation by providing secure and covered space
Image Credit: Fairfax County

DESIGN PRINCIPLES

Emphasize proximity, functionality and quantity as key considerations in the design of bicycle parking. Bicycle racks, bike lockers, and bicycle parking rooms should be situated for convenience and safety for those who use bicycles on both a regular and on an infrequent basis. They should be sited in locations that are easily visible to a passersby, both to encourage use and for security.

Identify bicycle parking locations early in the design process, rather than as an afterthought. Appropriate locations for both long-term and short-term bicycle parking should be identified early in the design process so that they are properly integrated into the design of the site. Bicycle racks should be incorporated into parks, streetscapes, and private spaces such as courtyards, parking garages, and areas adjacent to transit stations. Whenever possible, bicycle parking should be located in buildings, or under covered areas, awnings or overhangs to make bicycle transportation more viable for daily, year-round use.

Select bicycle racks that complement the design and character of streetscapes and open spaces. Aesthetics are an important consideration for bicycle racks that are visible in the public realm. Rack selection should be coordinated with other site furnishings to create a cohesive aesthetic.

DESIGN STRATEGIES

1 BICYCLE RACKS

A. Bike racks should be located in the Amenity Zone, in the Building Zone, or within the ground floor of a building's parking garage, and should not intrude into the sidewalk or other pedestrian activity areas.

B. The preferred bicycle rack type is the inverted "U" rack or variation of the "U" rack. Bike racks should be anchored to the ground at two points (see photo examples).

C. If located outside, bicycle racks should complement the style of other streetscape furnishings to create a cohesive pedestrian environment. Bike racks should be made of metal with a powder-coated finish.

D. Public art or branding may be integrated into bicycle racks along with other functional elements of the streetscape.

Springfield, VA

2 LOCATION OF BICYCLE PARKING

A. Short-term bicycle parking should be visible from and located generally within 50-feet of the building entrance it serves. In larger developments, short-term bicycle parking should be spread throughout the site. Locations should be determined in conjunction with the pedestrian circulation plan for the area or site.

B. Long-term bicycle parking for residents or office workers should be located within 100-300 feet of the building entrance. Bicycles should be protected from the weather and parking provided within a secured space.

C. Both short-term and long-term bicycle parking is encouraged to be located in parking structures, either as part of the original design or as retrofits to existing structures. Even in existing structures without designated bicycle parking areas, there are often "leftover" spaces that can be repurposed as bicycle parking areas.

D. Bike corrals may be appropriate in areas with anticipated high-volumes of bicycle traffic such as near parks, transit stations, or large shopping centers, and should generally accommodate 8-12 bicycles. Bike corrals are typically located on streets adjacent to the curb.

LEFT
Bicycle racks reflect specific branding elements
Image Credit: Rappaport Properties

5C ACCESS

While vehicular access to parking, service and loading facilities is essential to the daily operations of a development, the manner in which vehicles access the site from the street can have significant implications. When access is well-coordinated, consolidated, context-sensitive and located away from busy streets, it can support and preserve the desired urban design character of a block and its streetscapes. When access strategies do not respect the surrounding context—for example, when streets are lined with excessive access points and curb cuts, or when loading and service activities disrupt other street functions or visually detract from the character of a streetscape—access-related impacts can diminish or erode urban design character while increasing opportunities for conflicts between pedestrians and vehicles.

DESIGN PRINCIPLES

Consolidate and limit the overall number of access points into a development. Access points along a street should be located in ways that minimize the extent to which vehicular access disrupts street functions and the continuity of the streetscape. Wherever possible, access points should be consolidated to limit the number of curb cuts and minimize conflicts between pedestrians and vehicles.

Locate access points, loading docks, and other service and loading areas on side streets and service streets. Vehicular access points, as well as the facilities and designated locations for service and loading activities, should be located on Local and service streets to avoid disruptions to the primary street activities and the overall visual continuity of these streets.

LEFT
Multiple parking and loading entrances co-located on an alley street and clearly marked with building mounted signage. The facade of the garages blends into the building architecture using consistent materials with the rest of the building
Image Credit: Fairfax County

RIGHT
Excessive curb cuts along a street creates safety hazards for pedestrians and cyclists
Image Credit: Stephen Lee Davis via t4america.org

Alexandria, VA

Atlanta, GA

DESIGN STRATEGIES

1 CONSOLIDATED ACCESS FROM THE STREET

A. Vehicular access points into a site should be consolidated to simplify traffic patterns and to minimize conflicts among pedestrians, bicyclists, and vehicles.

B. Care should be taken to maintain sidewalk continuity. Vehicular access points on streets intended to experience a high volume of pedestrian traffic should be minimized. Single-use sites should not have more than one or two vehicular access points.

C. Opportunities to consolidate property access points with adjacent parcels should be explored to limit interruptions in the streetscape.

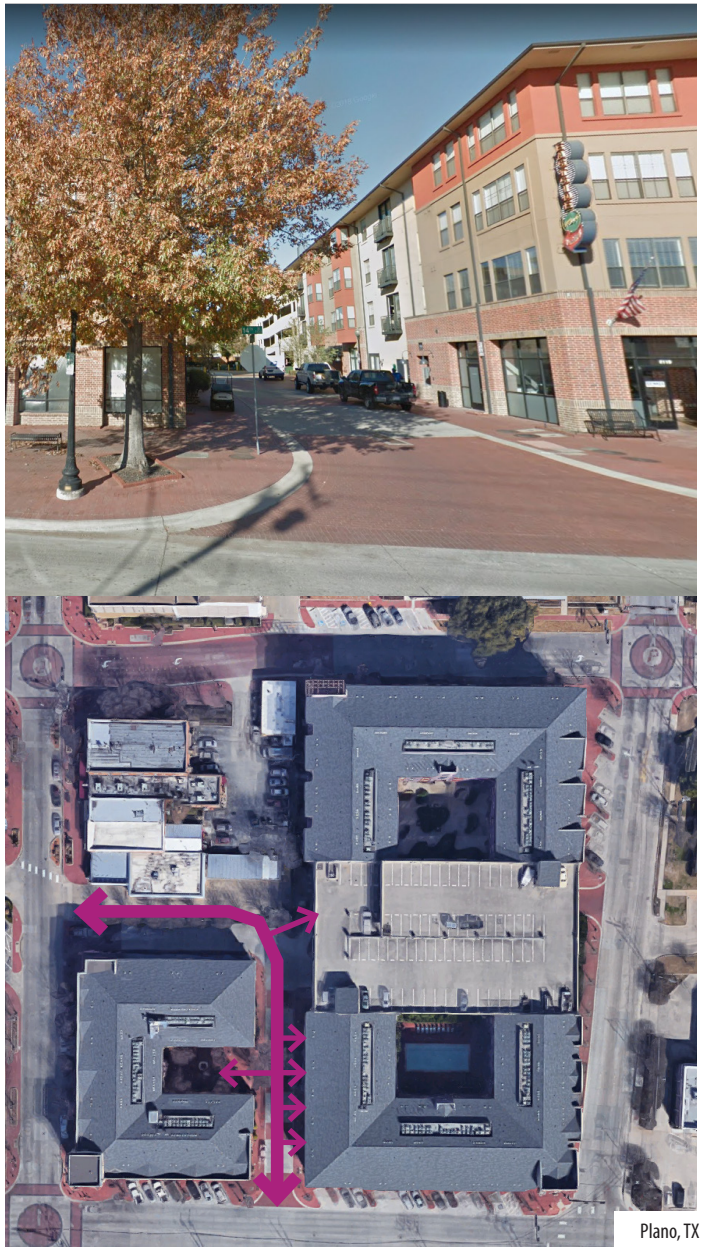
D. Driveway access points between the site and the roadway should be designed to meet minimum requirements for turning movements, safety and visibility while not intruding excessively upon the pedestrian environment. See *Section 2C ("Intersections")* for additional detail regarding intersection design.

E. Access to building sites via midblock service streets is encouraged as a means of minimizing the number of curb cuts along the streetscape and facilitating efficient access for both commercial and residential buildings.

2 SERVICE AND LOADING ACCESS

A. Whenever possible, loading, trash pickup and other services should be co-located along service streets.

B. Access to loading areas should be provided from side streets or service streets at the rear of buildings or in locations that minimize impacts to adjacent properties. Loading spaces should not be sited on Primary Pedestrian Streets and on those with retail storefronts.



LEFT
Consolidating entrances on a shared service street provides access to a public parking garage and private residential units as well as for loading
Image Credit: Google Earth

Image Credit: crja.com

6 ADDITIONAL PLACEMAKING ELEMENTS

INTENT

In addition to the features of the built environment discussed in previous chapters, an additional layer of urban design elements—signage and wayfinding, gateways, public art and water features—can help to further shape the identity and sense of place in CRDs and CRAs and bring these areas to life. These placemaking elements make the built environment more legible and easier to navigate, create landmarks, establish a sense of arrival, provide visual interest and variety, and encourage people to linger in public and private spaces.

While each element described in this chapter serves its own distinct purpose and functions, together they help shape how residents, employees, and visitors experience and respond to urban spaces and entire CRDs and CRAs. The following sections provide design principles and strategies for each of these elements.

INSPIRATION

Image Credit: mmmm...

Baltimore, MD

Image Credit: Fairfax County

Fairfax, VA

Image Credit: www.carmelartsanddesign.com

Carmel, IN

Image Credit: Ashton Design

Baltimore, MD

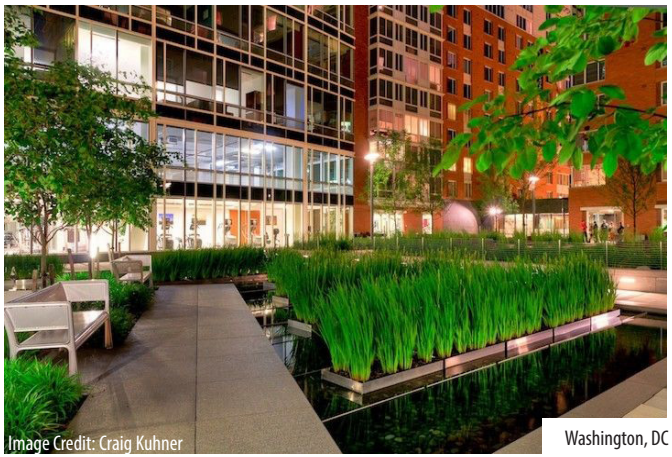


Image Credit: Craig Kuhner

Washington, DC

Elements such as water, art installations, public signage, and gateway features contribute to the pedestrian experience and help build a sense of place in a community

6A SIGNAGE AND WAYFINDING IN THE PUBLIC REALM

Wayfinding includes specialty street signage, maps and other graphics designed to help visitors navigate an individual site or an entire community. Wayfinding informs people about where they are and what is in their surroundings. By strategically locating wayfinding information, people can be guided to key destinations, including landmarks, public facilities, special streets, and parks.

The Fairfax County Zoning Ordinance provides regulations regarding the permitted types, size and location of signs on private property. VDOT regulates signage in the right-of-way. Section 4E ("Building Signage") provides guidance on project idenity and commercial signage.

LEFT
Distinctive street and wayfinding sign with stores listed by location
Image Credit: Fairfax County

RIGHT
Digital signage with smart technologies provides real time, customizable information along with other amenities such as wifi hot spots
Image Credit: Meridian Kiosks

Bethesda, MD

DESIGN PRINCIPLES

Design public signage in a comprehensive, coordinated manner that complements the area's character. While building and storefront signage can convey information about an individual use, signage and wayfinding in the public realm conveys information at a broader level and should be considered as part of a comprehensive area wide information system. In addition, wayfinding and other public signage serve as furnishings in the public realm and their aesthetic should be considered as a component of the site furnishings used to build on the sense of place. Coordinated public signage can help provide a recognizable identity and a unified character for an area. All such signage does not need to be identical but should be designed so that it is complementary to other signage, street furnishings, and the character of the area. Wayfinding signage often includes logos or other unique branding features that further distinguish an area.

Provide clear, consistent information through a variety of media. Effective signage and wayfinding consists of a comprehensive, clear and consistent visual communication system with concise messaging. Wayfinding can be presented in static signs that may include maps and text; it can describe distances in linear feet, miles or in average walking time; and, it can include dynamic options such as interactive, electronic displays that allow users to look up more detailed information.

Kansas City, KS

DESIGN STRATEGIES

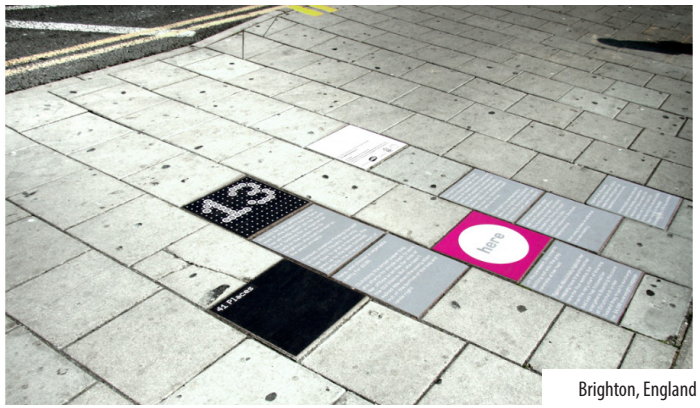
1 PURPOSE AND LOCATION

A. Large, multi-parcel and mixed-use developments should develop a comprehensive system of wayfinding signage for both pedestrians and motorists that complements the individual project and the area as a whole. Wayfinding signs should be coordinated with the development's pedestrian and vehicular circulation plan to ensure that signage is located in the most appropriate locations for pedestrians and motorists.

B. If permitted, streetlight-mounted banners that advertise public events, seasonal or other area attractions are encouraged.

C. Where possible, wayfinding systems should be interactive, and should coordinate with online information to provide up to-date information on travel, events and other relevant information.

D. Gateway, monument, and location marker signs should be positioned in the Building Zone, in the median, or within plazas and open spaces, or should be integrated into the face of a planter or seat walls, or designed as art pieces.



Brighton, England

2 VISUAL CHARACTER AND GRAPHIC DESIGN

A. Wayfinding signs should be well organized, neat, well-maintained, concise, and legible. Signs should be able to withstand weather conditions, and should be constructed from durable materials and replaced as needed to maintain a high quality appearance. Structural components should complement the color and finish of street furnishings.

B. Wayfinding systems that can be utilized by a wide variety of users, including the visually and hearing impaired, and that comply with accessibility requirements are strongly encouraged.

C. Community logos should be incorporated when appropriate to help create an identity for the CRDs and CRAs. Signs in gateway areas, in particular, should include community logos.

D. If appropriate, ornamental plantings should be provided at the base of signs to enhance their overall appearance.

E. Overly lit wayfinding signs that create light pollution or distract drivers should be avoided.

F. Unnecessary signage that results in visual clutter of the public realm should not be included. Signs should not impede pedestrian movement or sight lines of drivers.

G. The size, typeface, graphics, illustrations and orientation of signs should be designed for the intended user based on where the sign will be viewed from – e.g. – by a pedestrian, by a driver, or by a passenger in a moving vehicle. International wayfinding symbols should be incorporated, where possible.

LEFT
Wayfinding that shares local historic stories integrated into the sidewalk
Image Credit: Richard Wolfstrome

6B GATEWAYS

The integration of gateway elements into the built environment can help denote entrance points or major approaches to an area, as well as transitions between neighborhoods and districts, particularly along major roadways. Gateways play a key role in communicating a first impression of an area. They can serve as landmarks to announce to pedestrians, bicyclists, transit riders, and motorists that they have arrived at a particular place or destination while helping to define an area's edges and entryways and can convey a community's identify.

Gateways can be established in the built environment in a variety of ways—through the design and placement of buildings; through the overall visual character of a streetscape; through distinctive landscaping and vegetation; or though signage, art and other visual elements that function as landmarks or express the identity of an area. The following design principles and strategies offer ideas and guidance for designing these elements to establish and reinforce gateways.

Washington, DC

RIGHT
A pedestrian gateway at a transit station with landmark art
Image Credit: washington.uli.org

DESIGN PRINCIPLES

Incorporate signature elements that create a sense of arrival and a memorable visual impression of an area. Gateways should incorporate signature elements that are iconic, memorable, creative, and innovative. Signature elements may include:

- High-quality architecture and building materials, including signature buildings in prominent and visible locations
- Specialty area signage or branding that is consistent with an established logo or brand identity, if applicable
- Streetscapes and prominent street furnishings that reflect the character and prevailing design language of an area
- Distinctive tree and landscaping patterns
- Public art, including commemorative statues or art that highlights the history of the area
- Water features

Establish gateways at prominent locations, utilizing elements that are clearly visible to both vehicles and pedestrians. Gateways are most often located at prominent intersections at the edges of areas and districts to convey transitions in the built environment, establish a sense of arrival, and reinforce an area's distinct identity. As such, they should be legible to drivers of moving vehicles, signaling a transition in character to the CRD or CRA.

DESIGN STRATEGIES

1 LOCATION AND CONTEXT

A. The types and overall scale of gateway features should be appropriate to the gateway's location, context, and function.

B. Gateways should reflect adjacent street types. For example, on Major Avenues, Avenues, and Local Streets, buildings should have prominent architectural features, signage, public art, and high-visibility crosswalks; along Boulevards and Multimodal Through Corridors, gateways should include landmark buildings, prominent signage/branding elements, specialty lighting, and large scale plantings.

C. Streetscape design may establish or reinforce the gateway experience through distinctive paving, furnishings, lighting, trees, and landscaping that collectively express an area's discernable design language and visual character.

D. Highly visible, landmark plazas and other open spaces can function as gateway elements. In certain locations, smaller public spaces and outdoor seating areas on street corners can also serve a gateway function by marking a transition to a more pedestrian-oriented environment.

2 FEATURES AND AMENITIES

A. Mechanisms such as signature buildings, changes or variations in height, distinctive façade treatments or rooftop elements, and the placement of buildings relative to the street should be utilized to create gateways.

B. Public art, boundary markers, area signage, commemorative statues, or other location-specific elements should be incorporated where appropriate to foster a sense of arrival and connote the area's history and context, and to help build community identity.

Vancouver, Canada

TOP
Gateway highlighted by monument sign placed in a landscaped median
Image Credit: University of British Columbia

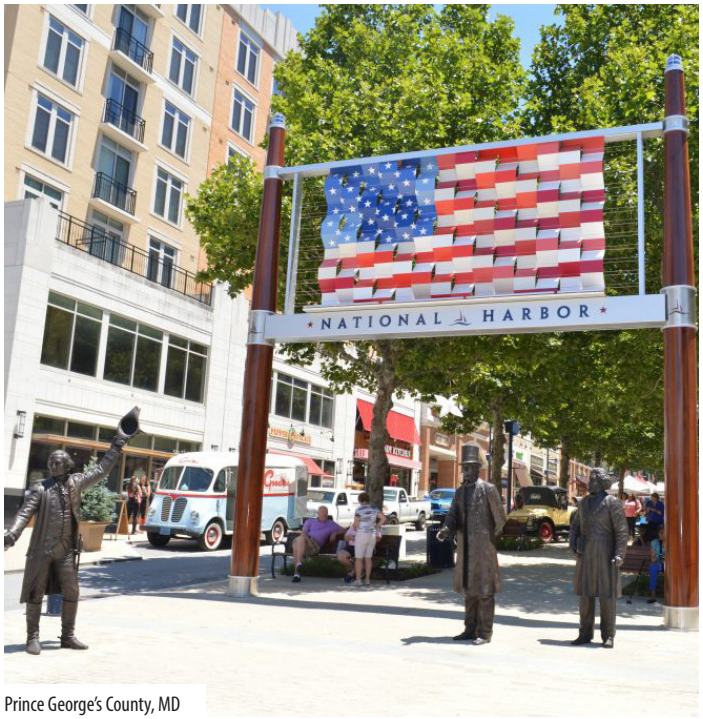
Arlington, VA

BOTTOM
Gateway site highlighted by a signature building at a prominent corner
Image Credit: SmithGroup JJR and Design Illustration Group

6C PUBLIC ART

The integration of public art into everyday life is a key element in building a sense of place in the CRDs and CRAs. Public art can increase vitality, place identity, and pride in the community. Public art may be used to enhance or personalize otherwise impersonal spaces; to catalyze civic dialogue; to offer opportunities for local artists; to increase wayfinding by creating visual landmarks; or, to provide a vehicle for the community to express its identity. In some instances, public art may be facilitated as a joint venture between the public and private sectors.

Arts Fairfax is a resource for the development of public art in the community.



Prince George's County, MD

RIGHT
Life-size bronze statues at the entrance to a median park celebrate historical figures
Image Credit:

DESIGN PRINCIPLES

Public art should be contextual. Public art can be used to honor, celebrate and give visual expression to the local diversity found in the community. Promoting culture and history through public art can be achieved by commemorating local historic events or people, or by recognizing the residents and workforce who live in the area today. Providing opportunities for citizens to participate in the process of planning and selection of public art is highly encouraged.

Public art can serve multiple purposes, from ornamental and functional to playful and interactive. While public art may be ornamental in nature, it can be particularly effective when it also serves other purposes. It may provide an essential function in an artistic manner (for example, art incorporated into stormwater management features), educate the public about the history or ideals embedded in a place, or inspire dialogue and interaction among members of a community. Alternatively, public art may provide a distinct environment where—or upon which—children are encouraged to play. When public art adds meaning to a place, brings people together, and fosters interaction, its impacts can extend far beyond the physical space it occupies.

Public art should reflect, and be informed by, the population it serves. Public art should be designed or selected through inclusive public involvement and education to ensure that it expresses the values of the community in which it is located and instills a sense of pride in place. When art is created with or by members of the community, rather than imposed from the outside, it is more likely to become a meaningful and cherished part of the urban landscape.

DESIGN STRATEGIES

1 PUBLIC PARTICIPATION

A. The local community should be involved in the location, design and selection of artwork so that it reflects community goals and character. Property owners should work with stakeholders when determining the appropriate type of public art to be installed.

B. Public art should enhance the built environment by placing engaging art pieces in locations where they can be enjoyed by residents and visitors.

2 LOCATION AND CONTEXT

A. Opportunities to express local identity through functional and ornamental design elements should be considered. Art that is incorporated into functional elements in the public realm, such as mosaics in an interactive spray park, provide dual benefits to the community and are encouraged wherever feasible.

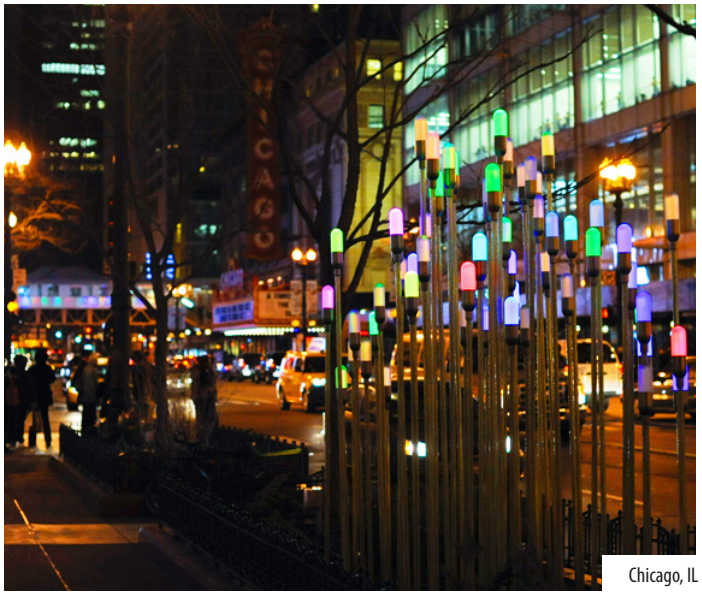
B. If a development is proposed at or near a historic site, projects should address the significance of the location through public art and a narrative describing the site's history.

3 FEATURES

A. Public art should be provided at a variety of scales, to be experienced by both pedestrians and drivers, where possible.

B. Plazas and other public spaces should be designed in a manner that promotes the integration of both temporary and permanent visual and performance art.

C. If public art is to be permanent, maintenance and durability should be considered, particularly if the art will be exposed to the elements.



Chicago, IL

TOP
Light installation integrates programmable LED lights into the streetscape and choreographs lighting sequences with themed music
Image Credit: Chicago Loop Alliance

San Francisco, CA

BOTTOM
Public art mosaic integrated into staircase
Image Credit: incoherentboy.com

6D WATER FEATURES

Water has a magnetic quality that attracts people. The sight and sound of splashing or moving water enhances an urban area. Water features are an important element of the public realm because they provide places to play, attenuate street noise, create a visually appealing environment, and can serve as landmarks and focal points. Water features are often used to distinguish places such as civic centers and cultural institutions.

Water features can be used to highlight environmental features or be incorporated into sustainable design practices. There are many ways to creatively and sustainably integrate water into the urban landscape, including the use of LID techniques such as stormwater collection, storage, and circulation.

LEFT
Fountain adds character, sound, and a sense of history
Image Credit: Trip Expert

RIGHT
An elementary school rain garden integrates water elements, play and stormwater management while encouraging children to interact with nature
Image Credit: Berger Partnership

Cincinnati, OH

DESIGN PRINCIPLES

Consider incorporating water in multiple contexts to enhance large and small public and private spaces. Water features can fit into and enhance a variety of public and private spaces, from small features in the entry plazas and courtyards of private developments to large, interactive centerpieces of public spaces. In all contexts, and regardless of the size of the feature, the design of water elements should leverage water's innate ability to attract people, provide a calming visual setting and background sounds, and inspire play, gathering, socializing, and relaxation.

Design water features to serve multiple functions—ornamental, functional, playful and educational. As with public art, water features can serve a variety of purposes and functions, ranging from ornamental backdrops to water play installations or interpretive features explaining topics such as water resources, water quality and conservation, and stormwater management. Water features can be most compelling when they have purpose and meaning on multiple levels, encourage people to interact with the water and each other, or educate the public about the role of water in our communities and the natural environment. If designed properly, water features can serve environmental functions such as capturing and treating stormwater runoff or providing benefits to wildlife.

Seattle, WA

DESIGN STRATEGIES

1 LOCATION AND CONTEXT

A. Water features should be located on private property, within the Building Zone or in open spaces. They should not be located within the public right-of way.

B. The appearance of water features during winter months or droughts should be considered.

2 FEATURES

A. All water features should be designed to adhere to Fairfax County standards for outfall, drainage, and other requirements.

B. Water features should be used to augment recycling, storage, and recirculation of stormwater and HVAC systems, where feasible.

C. High-quality materials should be used in a manner that complements adjacent architecture and public space design.

D. Water features should be routinely maintained, repaired, and replaced as necessary.

E. Water features that are intended for active play should not have standing water that could pose a safety hazard.

F. Water features are encouraged to incorporate elements such as rocks, areas for animals to rest, and native plantings that make them wildlife-friendly.

Silver Spring, MD

TOP
Interactive fountain with mosaic art integrated into the paving surface
Image Credit: Montgomery County

Arlington, VA

BOTTOM
Water feature in a public plaza
Image Credit: Arlington Public Art

Image Credit: Laura McDermott Bloomberg

7 INTERIM DEVELOPMENT CONDITIONS

INTENT

The vision for the CRDs and CRAs will be implemented over many years. Some sites will develop in the near future, some will be phased, some may be developed with temporary uses, and others may not redevelop at all. Some of this development may align with the allowable build-out and vision of the Comprehensive Plan; other development may be desirable on a shorter-term basis, although it may not conform fully to the vision, and thus can be viewed as temporary development that could be subject to redevelopment in the future. As a result of those or other potential scenarios, interim development conditions will exist on sites until the ultimate project build-out is complete.

Interim development conditions can last from several months to many years. Selecting infrastructure improvements that are appropriate to both the development and the anticipated length of time that the interim condition will remain is important. More permanent infrastructure features are encouraged to support interim development conditions that are anticipated to be in place indefinitely.

When a larger development that will be implemented in phases is proposed, the expectation is that the development plans associated with the rezoning will demonstrate how the phasing will occur over time and how interim development conditions will be addressed. Development projects should consider which amenities and building conditions will exist with each phase, and what commitments to specific elements are anticipated with each phase. These plans and commitments should demonstrate how the phases of development will support the vision for the CRDs and CRAs by maintaining (or adding) pedestrian access and circulation across sites and to transit; by providing for the planned network of streets; by providing parks, streetscapes, and stormwater facilities; and, by addressing interim building and site conditions, such as exposed above grade parking structures and surface parking to remain.

Phasing plans and interim developments should also consider temporary or permanent placemaking efforts and how the site can contribute to the vitality of the CRDs and CRAs through such things as the programing of parks, use of buildings for interim uses, construction of interim structures, and the inclusion of pop-up uses.

Interim development conditions should result in enhanced connectivity and functionality and a positive visual appearance. The items described above are further refined below and are provided to spark creativity on how interim development conditions could be addressed. Innovation in design and approach is highly encouraged.

INSPIRATION

Image Credit: Eric Rasch

Silver Spring, MD

Image Credit: Garden Rant

Silver Spring, MD

Image Credit: Project for Public Spaces

New York City, NY

Sites that are in transition provide opportunities for creative interim projects that improve the circulation, the visual appearance of an area, and the pedestrian experience while laying the groundwork for permanent changes

Image Credit: Archello

Fosnavåg, Norway

Image Credit: David Madison Photography

Reston, VA

7A INTERIM STREETS AND STREETSCAPES

The first phase of development, whether a temporary development or a portion of the ultimate build-out, will establish the framework for how the rest of the development will function, as well as how adjacent developments will interface with the development. This framework needs to be generally consistent with the street network contained in the Comprehensive Plan.

DESIGN STRATEGIES

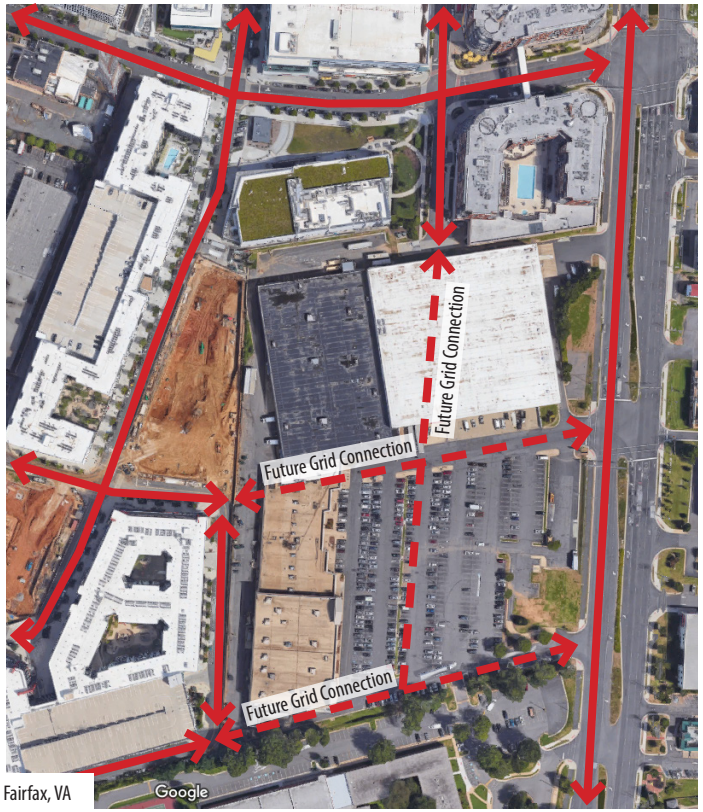
A. Provide a street, pedestrian and bicycle network that will not only serve the initial development but will also become a part of the overall network as the project is built-out through later phases of development.

B. Incorporate interim multimodal connections to public facilities, parks, retail, and transit.

C. Provide streetscape improvements that conform to the recommendations in the Volume II: District Design Guidelines and that result in continuity of the streetscape design.

   i. Consider implementing the ultimate streetscape associated with later phases of development in earlier phases to facilitate the pedestrian experience and the visual appearance of the development.

LEFT
Existing network of streets, shown in solid lines, to be enhanced by future planned street grid, shown in dashed lines
Image Credit: Google Maps



Fairfax, VA

RIGHT
Street redesign to incorporate an interim bicycle facility and midblock pedestrian crossing
Image Credit: Westside Today

Los Angeles, CA

DESIGN STRATEGIES (CONTINUED)

ii. In instances where the ultimate streetscape cannot be provided with the interim development, provide the streetscape to the extent feasible and design interim streetscapes in a way that allows them to be expanded or easily reconfigured upon completion of future phases of development. This may include widening sidewalks for a final streetscape or integrating a pathway into a future public open space.

D. Provide temporary landscape improvements to enhance the aesthetics and functionality of streetscape spaces that are programmed to be developed later.

E. Consider installing street trees early in development phases to provide shade for pedestrians. Early installation also gives trees a head-start for reaching their expected canopy size and provides the opportunity to transplant such trees to permanent locations in future phases.

F. Consider installing a temporary street, intersection, or bike lane design using paint, bollards, and/or landscaping in locations where the permanent facility cannot be constructed or where testing of certain roadway configurations or design solutions needs to occur.

Fairfax, VA

TOP
Planned roadway network, shown in red, will be implemented in phases to create a grid of streets. An interim pedestrian connection, shown in blue, provides access from the Metrorail Station to the residential community
Image Credit: Google Maps

Austin, TX

BOTTOM
Interim curb extension with a bike share station designed to increase the pedestrian waiting areas at the corner and reduce roadway crossing distance until the curb is permanently relocated
Image Credit: NACTO

7B INTERIM PEDESTRIAN CONNECTIVITY

To create the pedestrian-oriented environments envisioned in the Comprehensive Plan for the CRDs and CRAs, it is essential that pedestrian connectivity be prioritized with any interim development.

Vienna, VA

TOP
Interim pedestrian connection between a transit station and residential community; public art, pedestrian lighting and furnishings are provided
Image Credit: Fairfax County

DESIGN STRATEGIES

A. Provide interim pedestrian connections, and street crossings to pedestrian-oriented facilities, including parks, retail corridors, work places, etc., as warranted.

B. In phased developments, incorporate temporary or permanent pedestrian access throughout all stages of development, even if such connections occur prior to construction of the final street networks and/or future building phases.

C. Design interim connections to be expanded, enhanced, or reconfigured upon completion of future phases of development. This may include widening sidewalks for a final streetscape or integrating a pathway into a future public open space.

D. Give consideration to the coordination and maintenance of pedestrian access across multiple projects if adjacent sites will be under construction simultaneously.

Mumbai, India

BOTTOM
Short-term intersection improvements designed to improve pedestrian safety and encourage pedestrian activity through paint and intersection reconfiguration
Image Credit: NACTO

7C INTERIM SITE, BUILDING AND PARKING DESIGN

As development will be constructed over time, many developments will function in an interim condition within a larger context that will be completed by future related or non-related developments. As such, buildings must be sited and designed to respond not only to the current conditions, but also to the future streets and streetscapes that are envisioned in the Comprehensive Plan. It is expected that the building and site design objectives detailed in Chapters 4 and 5 of this document will apply to interim conditions; however, temporary or less costly materials and construction methods may be considered for interim conditions. Architectural screening, painted murals, and mesh fabric treatment are examples of ways in which this can be achieved.

BOTTOM
Interim pedestrian connection through a surface parking lot that restores the original street grid while the site awaits redevelopment
Image Credit: Rhodeside & Harwell

Washington, DC

DESIGN STRATEGIES

A. Locate buildings for the ultimate street network by siting them to conform with the planned urban form.

B. For façades that are to remain visible, provide articulation to each building face, utilize architectural treatments to ensure compatible transitions to adjacent structures, and incorporate appropriately scaled entrances.

C. Consider artwork or other facade applications as interim conditions for blank facades or on partially constructed buildings.

D. Mitigate uses such as drive-throughs or other auto-oriented uses that detract from the pedestrian experience by locating drive-throughs at the rear of the site, combining vehicular circulation and access points where feasible, and by providing enhanced streetscapes, additional trees and landscaping, and low walls to screen less desirable portions of the development.

E. Improve the aesthetic appearance of existing surface parking lots that may remain to serve interim developments by adding landscaping within and around the lots. In addition, pedestrian connectivity should be provided to transit and other surrounding uses in a manner that considers the physical and visual experience for pedestrians. Clearly delineated pedestrian walkways through surface parking lots should incorporate striping and/or distinct pavement treatments, along with landscaping and pedestrian-scaled lighting to buffer people from moving and parked vehicles. Allowing existing parking lots to remain without the integration of landscape and pedestrian enhancements is highly undesirable.

F. Design the stormwater system to manage interim conditions and consider how each facility will function as part of an integrated system at ultimate build-out.

7D CONSTRUCTION SITES

Construction sites will be another component of the landscape that, although less permanent than other interim conditions, will affect the appearance and quality of the pedestrian realm and livability of the area. The use of creative screening, scaffolding and other techniques will minimize the visual impact of this disturbance. While construction conditions are inevitable, they should not detract from the livability of the area.

Quebec City, Canada

TOP
Artwork covered shipping container provides a temporary pedestrian connection on a busy street
Image Credit: Fairfax County

Omaha, NE

BOTTOM
Art on construction fencing around a building that is being repurposed
Image Credit: US Air Force photo by Josh Plueger

DESIGN STRATEGIES

A. Ensure that contiguous, safe pedestrian paths are provided at all times during construction, particularly along heavily traveled pedestrian routes. Coordination with adjacent properties, including those under construction, should occur to ensure seamless pedestrian paths are provided. Routes should be as direct as possible, although it is understood that the paths may need to be widened or re-routed during the construction process

B. Consider cladding construction fences with public art pieces, photographs or other aesthetic elements.

C. Ensure that construction sites are appropriately lighted; incorporate temporary lighting elements that illuminate the pedestrian way.

D. Ensure that temporary construction elements do not block site lines for vehicles at intersections or create low-visibility locations that may be unsafe for pedestrians.

E. Coordinate with the relevant County agencies to appropriately locate temporary construction yards and related activities so that their impacts on surrounding residents and businesses, as well as with the street network, can be minimized.

7E INTERIM PARK DESIGN

Parks may evolve over time as developments are phased and as collective efforts to create the park network are implemented. Some parks may be built on rooftops of buildings or top decks of parking structures, thus their construction may be phased with the construction of the associated structure. Ideally, public parks and amenity spaces will be provided with each phase of development; however, temporary parks may help to meet a development's need for open space until the final parks within the development can be constructed. Interim parks should include fundamental elements from the County's Urban Parks Framework.

Reston, VA

Norfolk, VA

DESIGN STRATEGIES

A. Include both planted and hardscape features where appropriate.

B. Incorporate low-cost, temporary planting strategies such as annuals and shrub plantings to create visual interest.

C. Consider economical structures in lieu of trees to provide shade and shelter where interim park conditions are expected to remain for less than five years. Alternatively, plant and maintain trees in a manner that they may be relocated to final locations in a final park design.

D. Incorporate economical, but high-quality amenities such as benches, trash receptacles, lighting, and play equipment that offer places to rest, play and socialize. These elements may be re-used for completion of the final park design.

E. Provide for both active and passive recreation opportunities. Recreation opportunities may be provided through temporary facilities and furnishings (such as interim playspaces or equipment, moveable tables and chairs, temporary athletic fields or green spaces) or by programming spaces with a variety of activities (such as food trucks, live performances, fitness classes, or similar events).

F. To manage expectations, provide signage that explains the temporary nature of the public park.

Tysons, VA

TOP
Temporary park with creative, low-cost outdoor dining and seating options
Image Credit: David Madison Photography

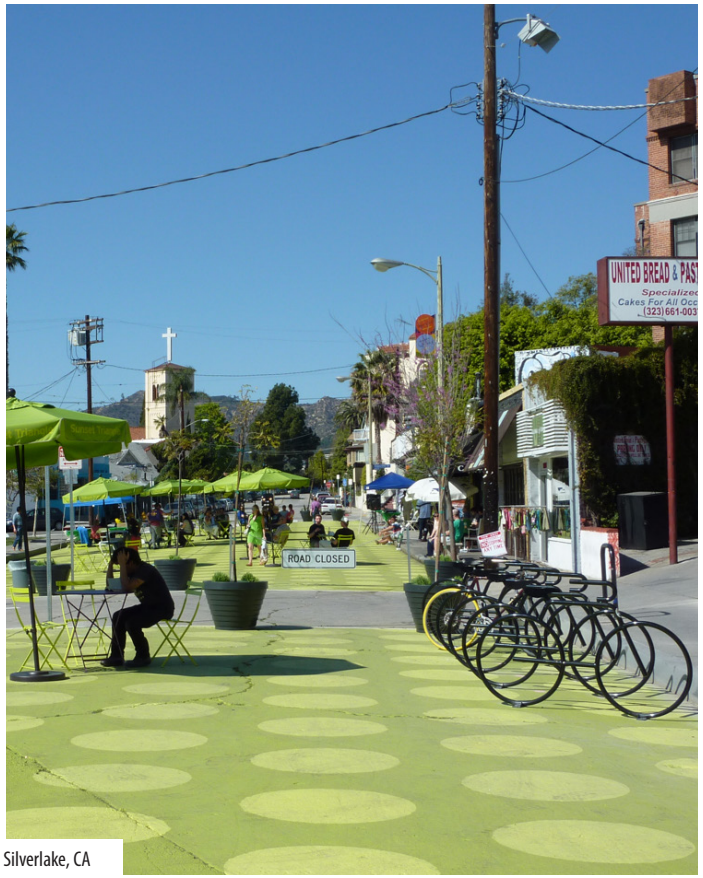
BOTTOM LEFT
An interim, urban recreation park as proxy for future development. Utilizes reclaimed materials in innovative ways such as shipping containers as vertical gardens, public art, a life-size chess game, and an area dedicated to performance art
Image Credit: Work Program Architects

BOTTOM RIGHT
Temporary park with a painted ground surface and movable planters; food trucks activate the space during lunch hours
Image Credit: Arts Council of Fairfax

7F INTERIM PLACE-MAKING

Interim development creates an opportunity to provide placemaking on sites. Interim parks, the reuse of existing buildings, and interim structures can help to build and brand CRDs and CRAs as destinations and can serve the needs of the community until the ultimate build-out occurs.

Appropriate site selection for interim placemaking locations is important. Sites should be of a manageable scale and located in a place that can be activated easily by users.



Silverlake, CA

LEFT
Underutilized block transformed from roadway into a safe, pleasant, and vibrant public space
Image Credit: Anna Peccianti

RIGHT
An interim public space with play features
Image Credit: KaBOOM!

DESIGN STRATEGIES

A. Consider the interim use of existing buildings or new interim structures on site for pop-up or short term retail or entertainment space.

B. Design surface parking lots to be flexible so they can accommodate a variety of programs or uses; provide landscaping, shade structures, and/or movable furniture to allow them to be used as parks, farmers' markets, festivals, or gathering spaces.

C. Consider temporary art installations at key locations to help enliven the space and create visual interest.

D. Designate space for food trucks as an additional element that adds vitality and draws people to a site.

E. Consider collecting usage data on the temporary improvement to inform the final design if an interim project may lead to permanent construction.

Charlotte, NC

Tampa, FL

TOP
Parklet with musical instruments, planters and temporary art creates an interim gathering place
Image Credit: Urban Conga

Dale City, VA

BOTTOM LEFT
Parking lot designed for multiple, temporary uses such as a farmer's market
Image Credit: Farmer's Market Online

San Francisco, CA

BOTTOM RIGHT
Temporary outdoor food hall surrounded by new development; food venues create activity and promote increased use of outdoor spaces of the site
Image Credit: Envelope A+D

A APPENDIX

A1
TREE PLANTING DETAILS, SUGGESTED TREE AND PLANT LIST, AND ALTERNATIVE TREE PLANTING DETAILS

Fairfax, VA

Washington, DC

TOP
Continuous Landscape Panels provide sufficient soil volumes for healthy tree growth
Image Credit: Fairfax County

BOTTOM
Sidewalks cantilevered over tree well provides uncompacted soil for tree roots to grow under hardscaping
Image Credit: Fairfax County

The Public Facilities Manual (PFM) provides tree planting design recommendations and a list of approved tree species for planting in public spaces.

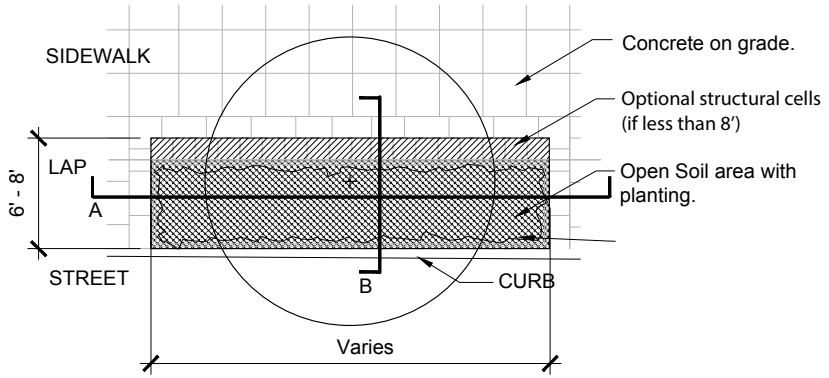
In the CRDs and CRAs, a unique palette of trees and other landscaping has been selected as an alternative to the guidance in the PFM. Tree and plant species were selected based on hardiness, low maintenance, drought tolerance, texture, and form to provide a diverse and resilient landscape palette that is sustainable in an urban environment. The list is not exhaustive; other tree types may be specified as long as the types align with the criteria as outlined in these Guidelines. The list indicate appropriate planting locations and their anticipated size at maturity for each tree and plant species.

The PFM has specific requirements for tree wells for Category III and IV street trees. However, this guidance may not always be feasible to implement in urban environments. In such instances, the following tree planting details may be substituted for those in the PFM, depending on available space, specific streetscape conditions, and desired character, if warranted by the site-specific conditions. Final determination of appropriate tree planting methods should be done in consultation with the County's Urban Forestry Management Division. The following graphics illustrate different methods for planting trees depending on site conditions.

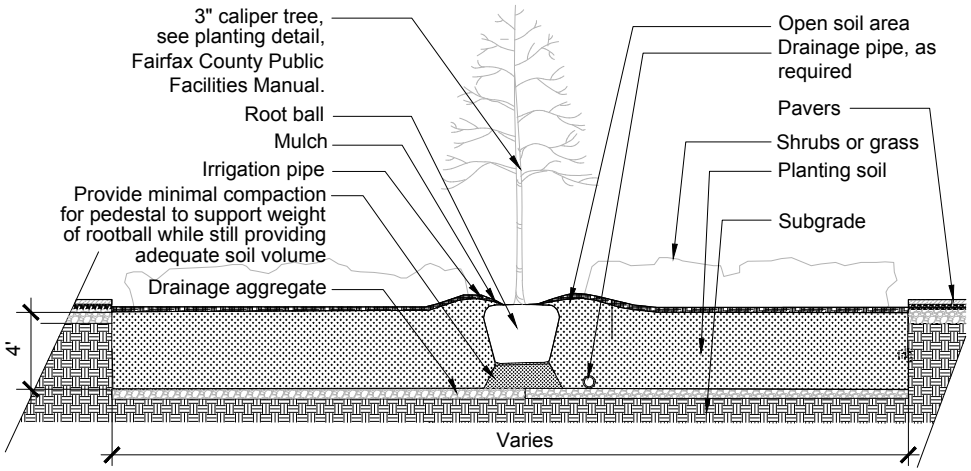
- *Graphic 18: Open Soil Tree Well Planting Detail*
- *Graphic 19: Covered Tree Well Planting Detail*
- *Graphic 20: Connected Tree Well Planting Detail with an Amenity Zone*
- *Graphic 21: Connected Tree Well Planting Detail without an Amenity Zone*
- *Graphic 22: Alternative Design Strategy 2: Structural Cell Supporting Sidewalk*
- *Graphic 23: Alternative Design Strategy 3: Cantilevered Sidewalk*

GRAPHIC 18: OPEN SOIL TREE WELL PLANTING DETAIL

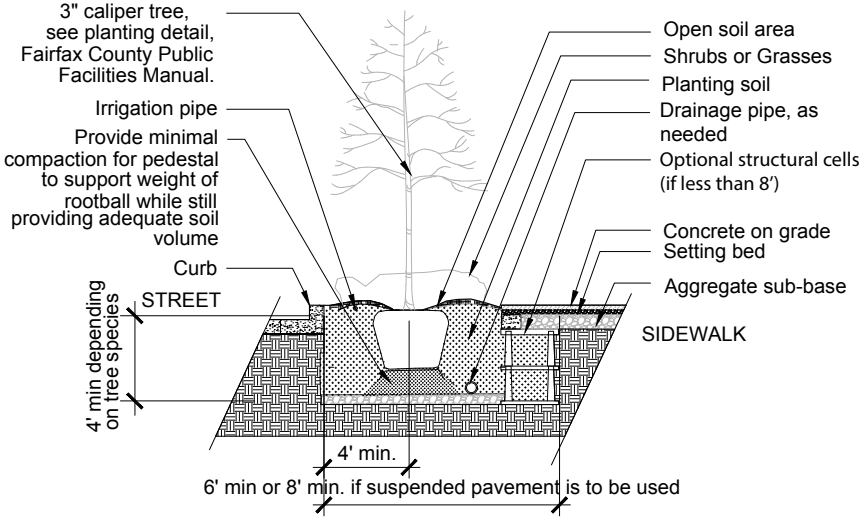
A1.1 TREE PLANTING DETAILS



Plan

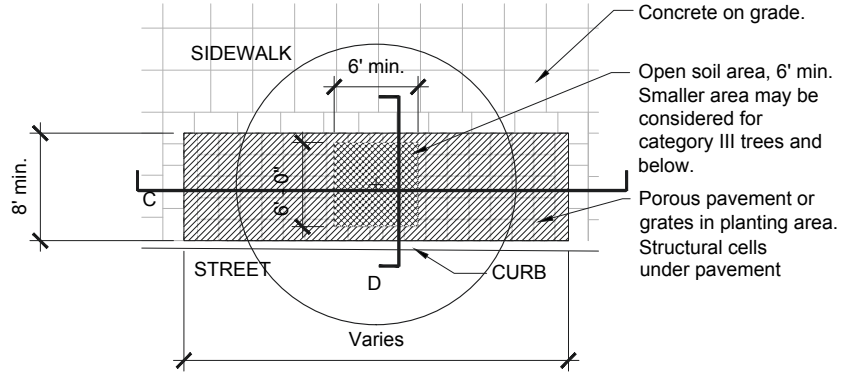


Section A

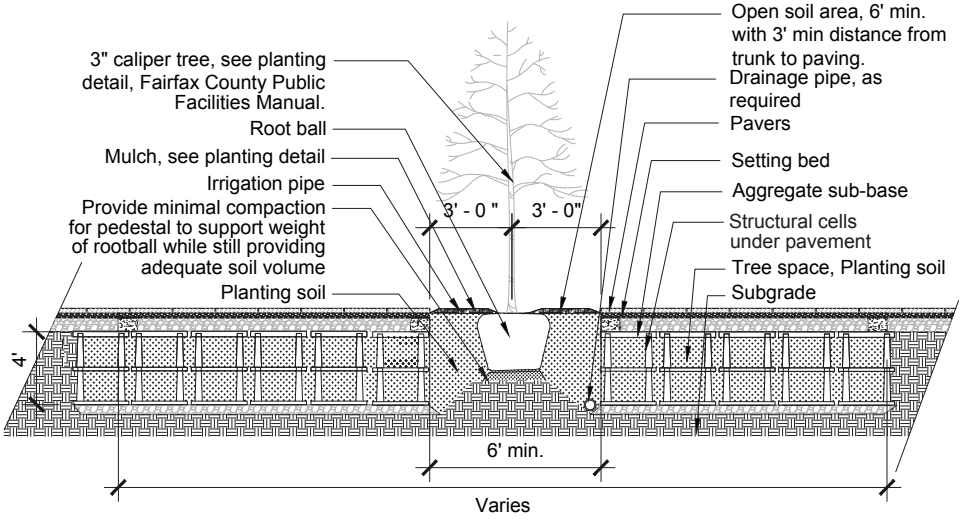


Section B

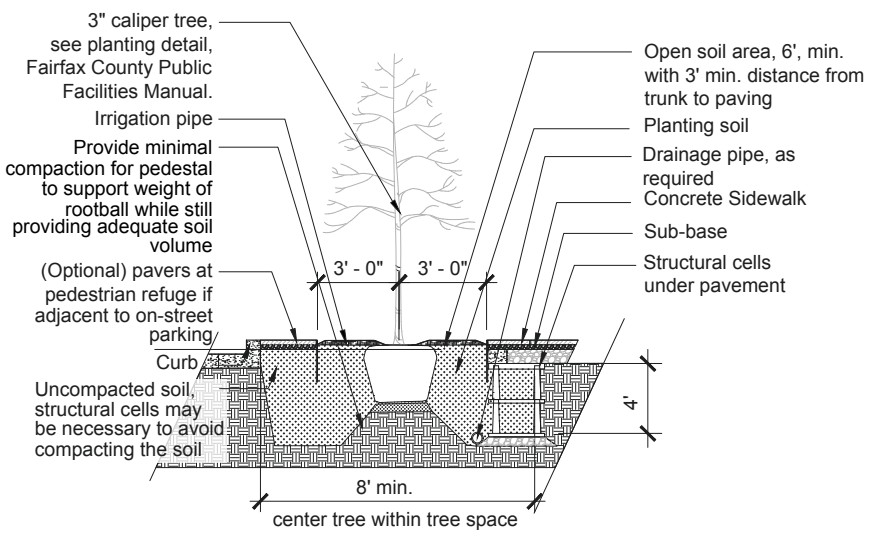
GRAPHIC 19: COVERED TREE WELL PLANTING DETAIL



Plan

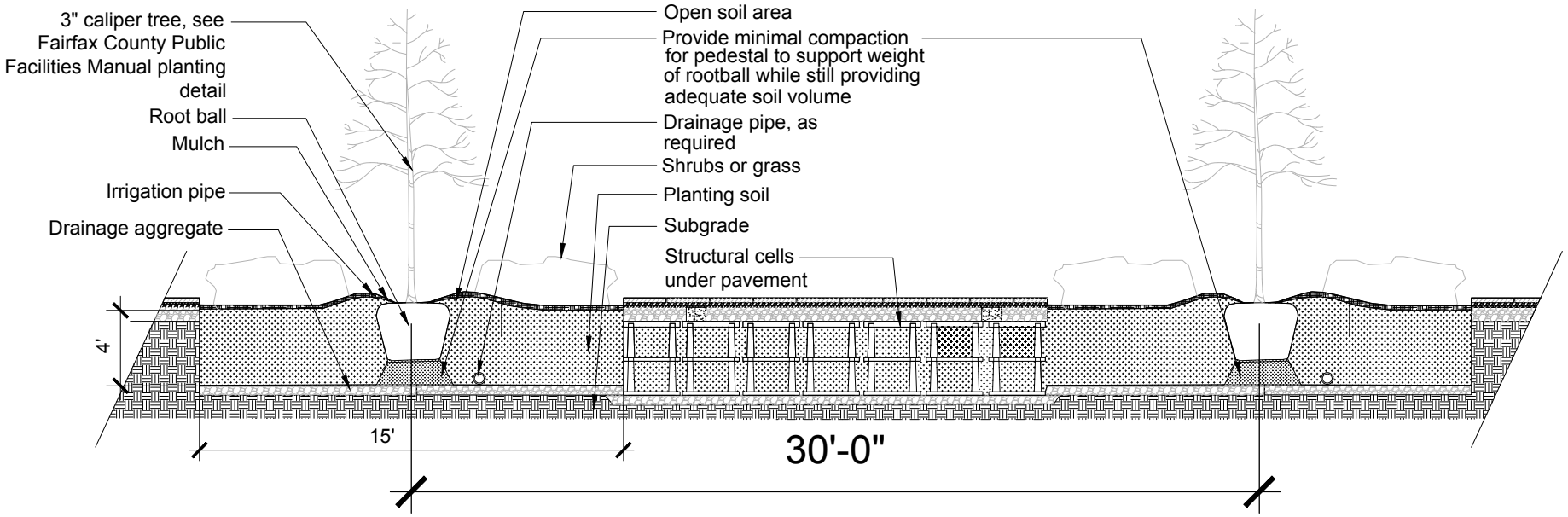


Section C

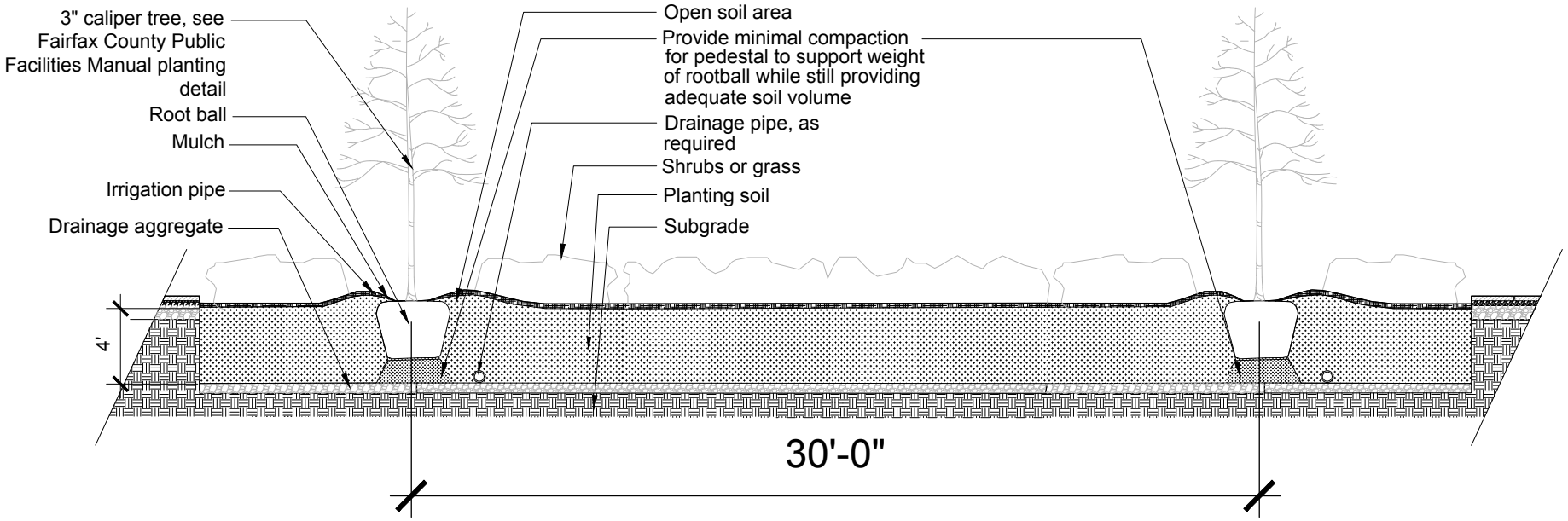


Section D

GRAPHIC 20: CONNECTED TREE WELL PLANTING DETAIL WITH AN AMENITY ZONE



GRAPHIC 21: CONNECTED TREE WELL PLANTING DETAIL WITHOUT AN AMENITY ZONE



A1.2 TREE AND PLANT LIST

CATEGORY I, II, III, AND IV TREES

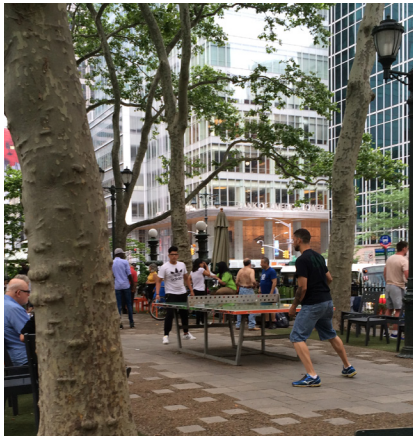
COMMON NAME	SCIENTIFIC NAME	NATIVE	PLAZA	STREET	PARK	LID	AVG. HGT/ SPREAD
Category IV							
London Plane Tree	Platanus acerifolia 'Bloodgood'			X		X	60'-100'/80'
Sycamore	Platanus occidentalis	X			X	X	75'-100'/75'-100'
Swamp White Oak	Quercus bicolor	X	X	X	X	X	50'-60'/50'-60'
Willow Oak	Quercus phellos	X		X	X		40'-60'/30'-40'
Northern Red Oak	Quercus rubra	X	X	X	X		75'/50'-60'
Valley Forge Elm	Ulmus americana 'Valley Forge'		X	X			50'-70'/40'-50'
Category III							
River Birch	Betula nigra	X	X		X	X	25'/15'
Hackberry	Celtis occidentalis	X		X		X	40'-60'/40'-60'
Thornless Honeylocust	Gleditsia triancanthos inermis	X	X	X		X	30'-70'/30'-70'
Black Gum	Nyssa sylvatica	X	X	X		X	30'-50'/20'-30'
Bald Cypress	Taxodium distichum	X		X	X	X	50'-100'/20'-35'
Silver Linden	Tilia tomentosa		X	X	X		50'-70'/30'-50'
Category II							
European Hornbeam	Carpinus betulus		X	X	X		30'-40'/20'-30'
American Hornbeam	Carpinus caroliniana	X		X		X	35'-50'/20'
Persian Parrotia	Parrotia persica		X	X	X	X	30'-40'/15'-30'
Eastern Hophornbeam	Ostrya virginana	X		X	X		25'-50'/20'35'
Category I							
Columnar Red Maple	Acer rubrum 'Columnaris'			X			60'/15'
Columnar European Hornbeam	Carpinus betulus 'Columnaris'			X			30'-50'/20'-30'
Princeton Sentry Gingko	Ginkgo biloba 'Princeton Sentry'		X	X			65'/25'

Valley Forge Elm

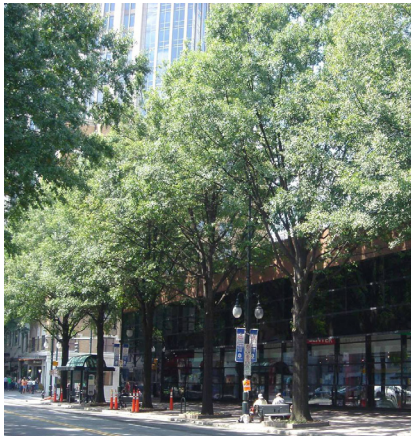
Silver Linden

Northern Red Oak

Columnar European Hornbeam



London Plane Tree



Willow Oak

Swamp White Oak

River Birch

CATEGORY II AND III FLOWERING TREES

COMMON NAME	SCIENTIFIC NAME	NATIVE	PLAZA	STREET	PARK	LID	AVG. HGT/SPREAD
Category III							
Yellowwood	Cladrastris kentukea		X		X		30'-50'/40'-55'
Category II							
Serviceberry	Amelanchier arborea	X	X	X		X	15'-30'/20'
Serviceberry	Amelanchier canadensis	X		X	X	X	20'/15'
Eastern Redbud	Cercis canadensis	X	X	X			20'-30'/25'-35'
Flowering Dogwood	Cornus florida 'Appalachian Spring' or 'Cherokee Princess'	X	X		X		15'-30'/15'-30'
Carolina Silverbell	Halesia carolina	X	X		X		30'-40'/25'-35'
Sweetbay Magnolia	Magnolia virginiana	X	X	X	X	X	10'-35'/10'-35'
Sourwood	Oxydendrum arboreum	X	X		X	X	20'-50'/10'-25'
Sassafras	Sassafras albidum	X			X	X	20'-30'/10'-20'
Japanese Snowbell	Styrax japonicus		X	X	X		20'-30'/20'-30'
Persimmon	Diospyros virginiana	X			X	X	20'-30'/10'-30'

Flowering Dogwood

Carolina Silverbell

Serviceberry

Japanese Snowbell Flowers

Eastern Redbud

Sourwood

Yellowwood

SHRUBS

COMMON NAME	SCIENTIFIC NAME	NATIVE	PLAZA	STREET	PARK	LID	AVG. HGT/SPREAD
Red Chokeberry/Choke Cherry	Aronia arbutifolia	X	X	X	X	X	2'/4'
False Indigo-bush	Amorpha fruticosa	X	X		X	X	10'/10'
American Beautyberry	Callicarpa americana	X	X		X	X	3'/3'
Sweet Pepperbush	Clethra alnifolia	X	X		X	X	10'/10'
Midwinter Fire Red Twig Dogwood	Cornus sanguinea 'Midwinter Fire'			X	X	X	5'-6'/5'-6'
Red Twig Dogwood	Cornus sericea	X	X		X	X	3'-6'/10'-15'
Witch Hazel	Hamamelis virginiana	X			X	X	15'-20'/15'-20'
Oak Leaf Hydrangea	Hydrangea quercifolia			X	X		5'-6'/5'-6'
Inkberry Holly	Ilex glabra	X	X		X	X	3'-5'/3'-5'
Common Winterberry	Ilex verticillata	X	X	X	X	X	3'-12'/3'-12'
Virginia Sweetspire	Itea virginica	X	X	X	X	X	3'-6'/3'-6'
Northern Bayberry	Myrica pennsylvanica	X	X	X	X	X	5'-6'/5'-6'
Common Ninebark	Physocarpus opalifolius	X	X		X		5'-8'/4'-6'
Winged Sumac	Rhus coppalinum	X			X	X	7'-15'/5'-12'
Densiformis Spreading Yew	Taxus x media 'Densiformis'		X	X	X		4'/8'
Possumhaw Viburnum	Viburnum nudum	X	X	X	X	X	5'-12'/5'-12'
Blackhaw Viburnum	Viburnum prunifolium	X	X	X	X	X	12'-15'/6'-12'

Virginia Sweetspire

American Beautyberry

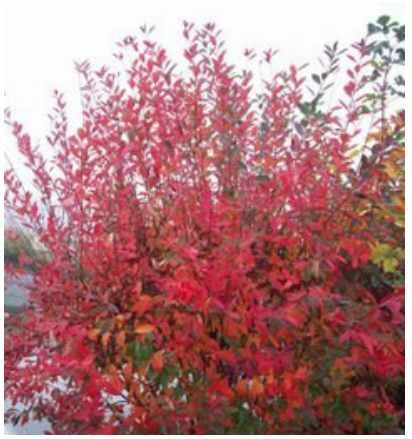
Densiformis Spreading Yew

Oak Leaf Hydrangea

Common Ninebark

Common Winterberry

Midwinter Fire Red Twig Dogwood



Red Chokeberry

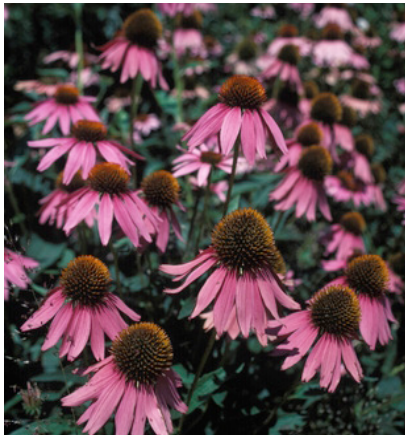
ORNAMENTAL GRASSES, PERENNIALS, AND GROUND COVERS

COMMON NAME	SCIENTIFIC NAME	NATIVE	PLAZA	STREET	PARK	LID	AVG. HGT/SPREAD
Blue Star	Amsonia tabernaemontana	X		X	X		18″/18″
Big Bluestem	Andropogon gerardii	X	X	X	X		5′-7′/2′-3′
Swamp Milkweed	Asclepias incarnata	X			X	X	1′-3′/2′-3′
Butterflyweed/Milkweed	Asclepias tuberosa	X		X	X	X	30″/24″
Wild Blue Indigo	Baptisia australis	X	X	X	X	X	3′-5′
Creek Sedge	Carex amphibola	X	X	X	X	X	12″/18″
Pennsylvania Sedge	Carex pennsylvanica	X			X	X	12″/18″
Tussock Sedge	Carex stricta	X			X	X	18″/12″
River Oats	Chasmanthium latifolium	X	X	X	X	X	30″/48″
Turtlehead	Chelone glabra	X		X	X	X	18″/12″
Tickseed	Coreopsis verticillata 'Moonbeam'	X		X	X		18″/18″
Purple Coneflower	Echinachea purpurea			X	X		24″/12″
Purple Lovegrass	Eragrostis spectabilis	X	X	X	X	X	1′/2′
White Wood Aster	Eurybia divaricata	X	X	X	X		12″-30″/18″-30″
Bloody Cranesbill	Geranium sanguineum			X	X		9″-18″/12″-18″
Alumroot	Heuchera americana	X	X		X		12″/18″
Virgina Ginger	Hexastylis virginica	X			X	X	6″-12″
Iris	Iris veriscolor			X	X	X	24″/12″
Blazingstar	Liatris spicata	X	X		X	X	24″/12″
Allegheny spurge	Pachysandra procumbens	X			X	X	12″/24″
Golden Ragwort	Packera aurea	X	X		X	X	12″/24″
Switchgrass	Panicum virgatum		X	X	X	X	36″/36″-72″
Creeping Phlox	Phlox stolonifera	X	X		X	X	6″-18″
Orange Coneflower	Rudbeckia fulgida var. fugida	X	X	X	X	X	24″/24″
May Night Meadow Sage	Salvia nemorosa 'May Night'			X	X		18″/18″
Little Bluestem	Schizachyrium scoparium	X	X	X	X	X	30″/24″
Woolgrass	Scirpus cyperinus	X	X	X	X	X	4′/2′
Autumn Joy Sedum	Sedum 'Autumn Joy'			X	X		18″/18″-24″
Goldenrod	Solidago spp.	X	X	X	X		2′-6′/3′-4′
Indian Grass	Sorghastrum nutans	X	X	X	X		36″-60″/12″-24″
New England Aster	Symphyotrichum novae-angliae	X	X	X	X		36″-72″/24″-36″

Turtlehead

Blue Star

Tussock Sedge



Purple Coneflower

Indian Grass

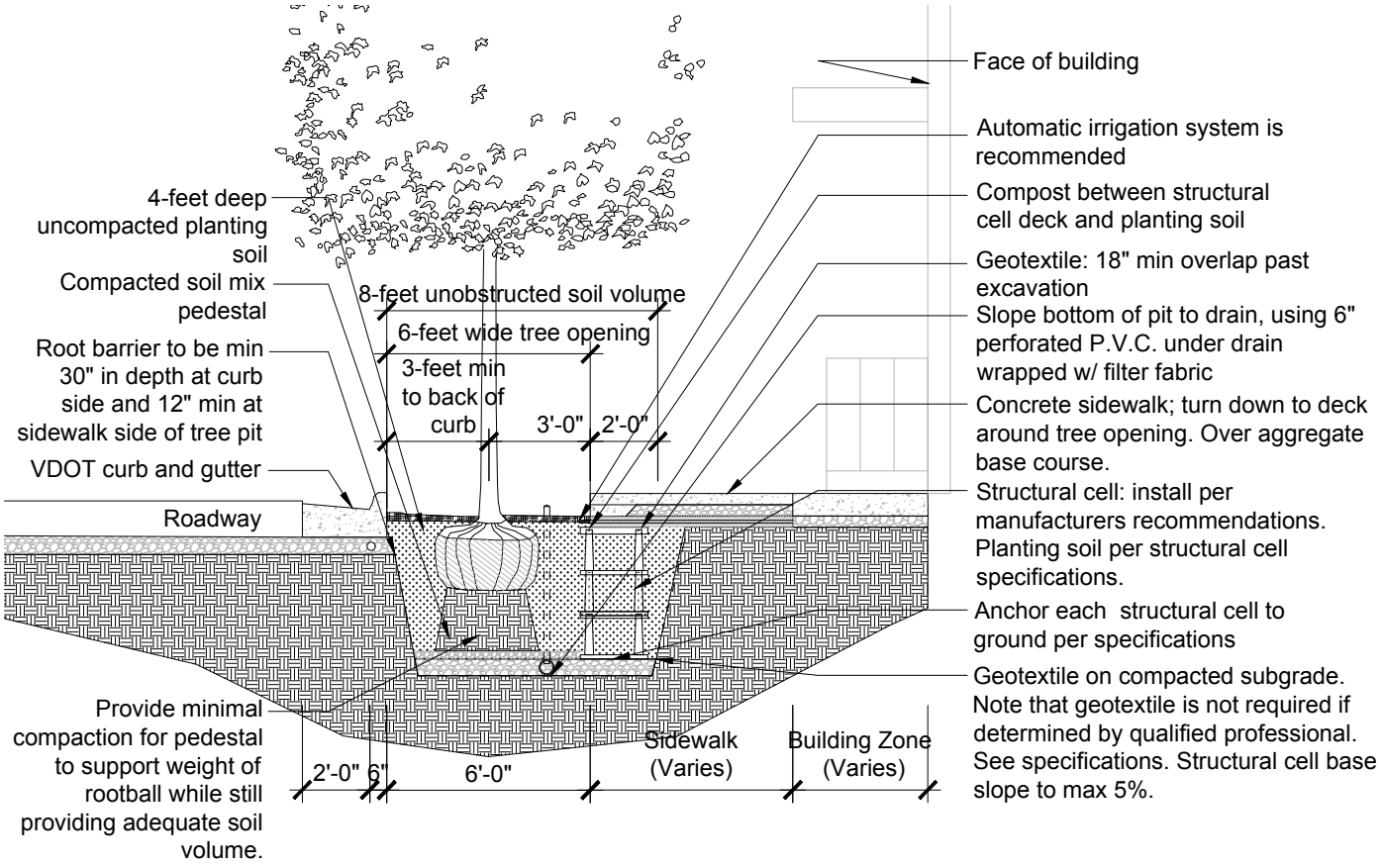
Butterflyweed

Autumn Joy Sedum

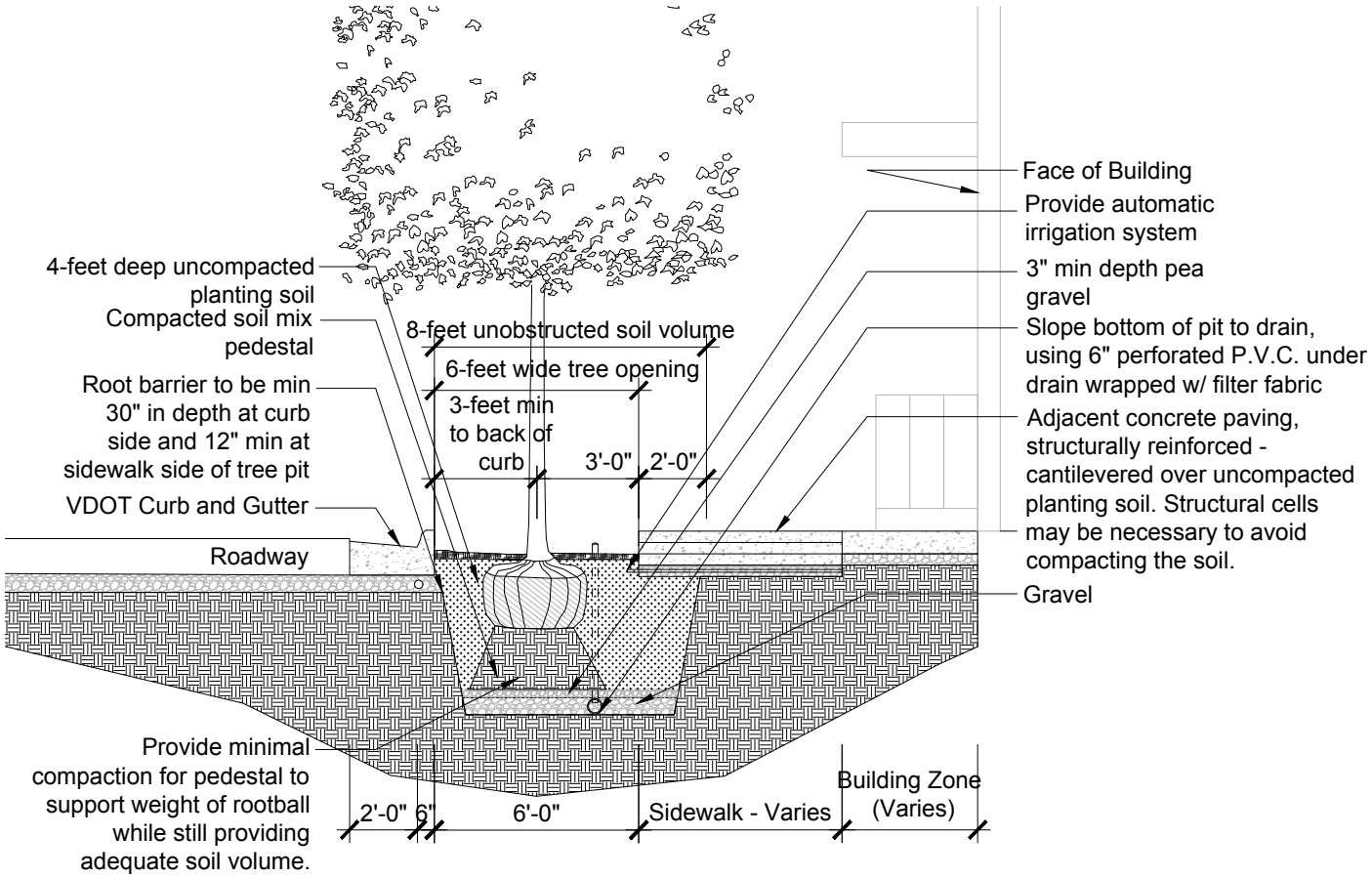
Switchgrass

A1.3 ALTERNATIVE TREE PLANTING DETAILS

GRAPHIC 22: ALTERNATIVE DESIGN STRATEGY 2: STRUCTURAL CELL SUPPORTING SIDEWALK



GRAPHIC 23: ALTERNATIVE DESIGN STRATEGY 3: CANTILEVERED SIDEWALK



A2 SUSTAINABLE DESIGN TOOLBOX

Modern development strategies no longer view stormwater management as stormwater disposal. Modeled after natural systems, Low Impact Development techniques (LIDs) are a preferred stormwater management approach. LIDs aim to mimic a site's predevelopment hydrology by using design techniques that infiltrate, filter, store, evaporate, and detain runoff close to its source. Instead of conveying and treating stormwater in large, land intensive facilities, LIDs address stormwater through smaller, more cost-effective landscape features known as Integrated Management Practices (IMPs). LID techniques can reduce runoff volumes entering local streams and may be easier to incorporate into developed areas than more traditional detention and retention ponds. Many components of the urban environment have the potential to integrate LID features. This includes not only open space, but also rooftops, streetscapes, parking lots, sidewalks, and medians.

Stormwater strategies should be developed at the project's conceptual design stage so that features can be integrated into the site to benefit the overall project. A three-tiered strategy should be employed for stormwater management. The first tier should focus on creating an efficient site design, minimizing the extent of impervious surface, and maximizing native vegetation to reduce stormwater runoff. Site features such as building structures, utility corridors, and parking should be sited to reduce the amount of impervious surface. The second tier should employ LIDs, and, finally, the third tier should address any remaining stormwater needs through more conventional retention and detention methods.

Individual LID tools that are most applicable to CRDs and CRAs are summarized in the following toolbox:

LEFT
10-foot wide vegetated bioswale within the streetscape uses low maintenance plantings and grasses to absorb rainwater
Image Credit: Fairfax County

RIGHT
Innovative green roof serves as a building amenity and screens roof equipment
Image Credit: GreenRoofGardener

BIO-RENTENTION FACILITY:
an excavated, shallow surface depression planted with specially selected native vegetation to treat and capture runoff. Bioretention facilities temporarily capture stormwater to be absorbed by plants and infiltrated into the groundwater. These facilities may include smaller facilities such as bioretnention planters or cells incorporated into a streetscape or within street medians and islands, or larger facilities such as rain gardens, where additional space is available on a site or in a streetscape. In addition to their stormwater management functions, bioretention facilities can be designed to serve as aesthetic features to enhance the site or streetscape.

Applications: Bioretention facilities should be located in well-drained soils and can be located adjacent to sidewalks, walkways and driveways within the Landscape Panel, in the Building Zone, in parking lots, or within other public spaces. Native vegetation that thrives in wet conditions should be planted to enhance the water absorption capabilities of the rain garden. Educational signage and other interpretive elements may be included to illustrate how bioretention facilities can reduce stormwater runoff and benefit the larger watershed.

Image Credit: Golden Triangle BID

Washington, DC

Environmental Protection Agency

Portland, OR

REFORESTATION:
refers to the replanting of a portion of the site with trees that will eventually create a significant canopy. Natural forests have multiple layers of canopy from low level ground cover to shrubs to large shade trees.

Applications: Reforestation can occur in both natural areas and developed areas, including riparian corridors, common greens and other park spaces. Reforestation and planting of trees near picnic areas, pavilions, spectator areas, playgrounds, benches, trails, and other built features will enhance the environment, provide shade, and create a sense of place.


Image Credit: ASLA

GREEN ROOF:
a roof of a building or structure (such as a parking deck) that is covered with non-invasive vegetation and a growing medium, planted over a waterproofing membrane. Green roofs absorb rainwater and prevent a portion of that water from running off roof surfaces and onto the ground. Green roofs provide additional environmental benefits, including insulation of the underlying building, wildlife and pollinator habitat, and lowering ambient air temperature. They can also provide an outdoor fresh-air experience, which may be beneficial in an urban environment.

Applications: Green roofs can be put on many types of buildings; however, they are relatively expensive due to structural requirements (related to the load placed on buildings), waterproofing, soil substrate, and plantings. Wood frame buildings pose additional challenges for installing green roofs due to the potential for water intrusion and additional loads on a wooden structure. Green roofs should be considered for sites where they provide multiple benefits, such as providing outdoor common space and increasing energy efficiency while also off-setting stormwater demands.


Image Credit: Fairfax County

VEGETATED SWALE:
a broad, shallow channel that is densely planted with a variety of trees, shrubs, and/or grasses. Vegetative swales may be utilized in lieu of pipes to convey stormwater naturally and are beneficial in accommodating infiltration, reducing runoff volume, incorporating native vegetation, and filtering pollutants.

Applications: Vegetated swales are an economical alternative to piping and may be constructed in the Landscape Panel, Building Zone, parking lot, plaza or park and, if designed in an aesthetically pleasing way, can be an open space amenity.

NATURALIZED INFILTRATION BASIN:
an earthen structure constructed either by impoundment of a natural depression or by excavation that provides temporary storage and infiltration of stormwater runoff.

Applications: Existing and new stormwater management basins can be naturalized with native plantings to aid infiltration and to provide wildlife habitat. Basins can be planted with native wildflowers and seasonal grasses that are both attractive and help restore ecosystem services.


Image Credit: Fairfax County

PERVIOUS PAVEMENT:
a permeable pavement underlain by a uniformly-graded stone bed which provides temporary storage for stormwater runoff and promotes infiltration. The pavement surface may consist of porous concrete or porous structural pavers. The use of pervious pavement manages stormwater beneath the surface, minimizes disruption of additional areas for the management of stormwater and reduces the costs associated with construction of a stand-alone stormwater management facility.

Applications: Pervious pavement can be used in parking areas, in plazas, or for recreational courts, trails and certain walkways, as well as within the Amenity Zones of streetscapes. Use of pervious pavement may not be practical in flood-prone areas where the water table is elevated, where sediment and leaf litter will quickly fill the porous voids, or where there are steep grade changes. For large parking lots, a mix of surface types that include turf parking with a gravel base, aggregate paving for traffic aisles, and pervious paving for parking stalls should be considered.


Image Credit: Fairfax County

A3 REFERENCE MATERIALS

FAIRFAX COUNTY REFERENCE MATERIALS

Arts Fairfax
https://artsfairfax.org/

Fairfax County Bicycle Master Plan
https://www.fairfaxcounty.gov/transportation/bike/master-plan

FCDOT Bicycle Parking Guidelines: Bicycle Parking Requirement for Urban Centers and Transit Station Areas
www.fairfaxcounty.gov/transportation/sites/transportation/files/assets/documents/pdf/bikeprogram/fcdot_bicycle_parking_guidelines_final2.pdf

Fairfax County's Comprehensive Plan
https://www.fairfaxcounty.gov/planning-zoning/fairfax-county-comprehensive-plan

Fairfax County's Comprehensive Plan - Policy Plan
https://www.fairfaxcounty.gov/planning-zoning/comprehensive-plan/policy-plan

Fairfax County Environmental Quailty Advisory Council
https://www.fairfaxcounty.gov/planning-zoning/environmental-quality-advisory-council

Fairfax County Office of Community Revitalization
www.fcrevit.org/

Fairfax County's Policy Plan Environment Element, Objective 13
https://www.fairfaxcounty.gov/planning-zoning/sites/planning-zoning/files/assets/compplan/policy/environment.pdf

Fairfax County Public Facilities Manual (PFM)
www.fairfaxcounty.gov/landdevelopment/public-facilities-manual

Fairfax County Sustainability Initiatives:
https://www.fairfaxcounty.gov/environment/sustainability-initiatives

Fairfax County Urban Parks Framework, Appendix 2 in the Comprehensive Plan, Policy Plan
https://www.fairfaxcounty.gov/planning-zoning/sites/planning-zoning/files/assets/compplan/policy/parksrec.pdf

Fairfax County's Zoning Ordinance
https://www.fairfaxcounty.gov/planning-zoning/zoning-ordinance

Fairfax County's Zoning Ordinance, Article 12 Signs
https://www.fairfaxcounty.gov/planning-zoning/sites/planning-zoning/files/assets/documents/zoning/zoning%20ordinance/art12.pdf

Fairfax County's Zoning Ordinance Article, 14 Part 9, Outdoor Lighting Standards
https://www.fairfaxcounty.gov/planning-zoning/sites/planning-zoning/files/assets/documents/zoning/zoning%20ordinance/art14.pdf

One Fairfax Policy
https://www.fairfaxcounty.gov/topics/one-fairfax

ADDITIONAL REFERENCE MATERIALS

American Bird Conservancy Bird Friendly Building Design
https://abcbirds.org/wp-content/uploads/2015/04/Bird-friendly_Building_Guide_WEB.pdf

Federal Highway Administration (FWHA) Separated Bike Lane Planning and Design Guide
https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/separated_bikelane_pdg/page00.cfm

International Dark-Sky Association
www.darksky.org/

National Association of City Transportation Officials (NATCO) Urban Bike Design Guidelines
https://nacto.org/publication/urban-bikeway-design-guide/

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

Project for Public Spaces
https://www.pps.org/

US Green Building Council's Leadership in Energy and Environmental Design (LEED)
https://new.usgbc.org/leed

US Green Building Council's Sustainable Sites Initiative (SITES)
www.sustainablesites.org/

National Street Design Reference Materials

American Association of State Highway and Transportation Officials (AASHTO) "Policy on Geometric Design of Highways and Streets"
https://www.transportation.org/

Americans with Disabilities Act Accessibility Guidelines (ADAAG)
http://www.access-board.gov/guidelines-and-standards/buildings-and-sites/about-the-ada-standards/background/adaag

Design and Safety of Pedestrian Facilities: A Recommended Practice of the Institute of Transportation Engineers (ITE)
https://safety.fhwa.dot.gov/ped_bike/docs/designsafety.pdf

Manual on Uniform Traffic Control Devices (MUTCD)
https://mutcd.fhwa.dot.gov/

National Association of City Transportation Officials (NACTO) Urban Street Design Guide
https://nacto.org/publication/urban-street-design-guide/

Virginia Street Design Reference Materials

Virginia Department of Transportation's Drainage Manual
http://www.virginiadot.org/business/locdes/hydra-drainage-manual.asp

Virginia Department of Transportation's Road and Bridge Specifications
www.virginiadot.org/business/const/spec-default.asp

Virginia Department of Transportation's Road Design Manual
www.virginiadot.org/business/locdes/rdmanual-index.asp

Virginia Department of Transportation and Department of Rail and Public Transportation's Multimodal System Design Guidelines
http://www.drpt.virginia.gov/planning/multimodal-guidelines/

Virginia Trees and Plants Reference Materials

Earth Sanga
http://www.earthsangha.org/

Plant NOVA Natives
http://www.plantnovanatives.org/

Virginia Department of Transportation's Northern Virginia Planting Guidelines
www.virginiadot.org/about/NOVA_Planting_Guidelines.asp

US Fish and Wildlife Service - Native Plants for Wildlife Habitat and Conservation Landscaping - Chesapeake Bay Watershed
https://www.fws.gov/Chesapeakebay/pdf/NativePlantsforWildlifeHabitatandConservationLandscaping.pdf

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Office of Community Revitalization
12055 Government Center Parkway, Suite 1048
Fairfax, Virginia 22035
www.fcrevit.org