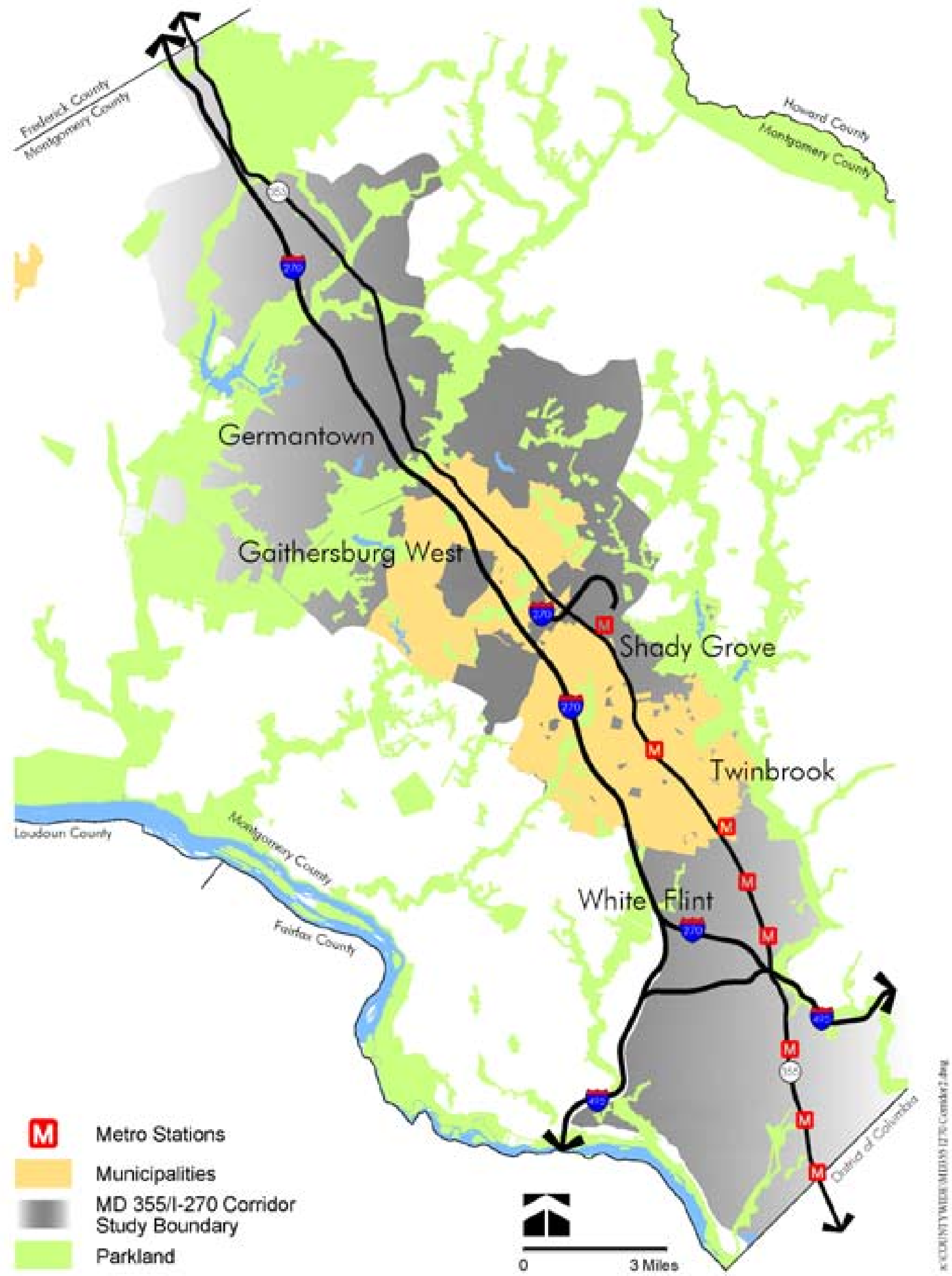
June 2010

Great Seneca
Science Corridor

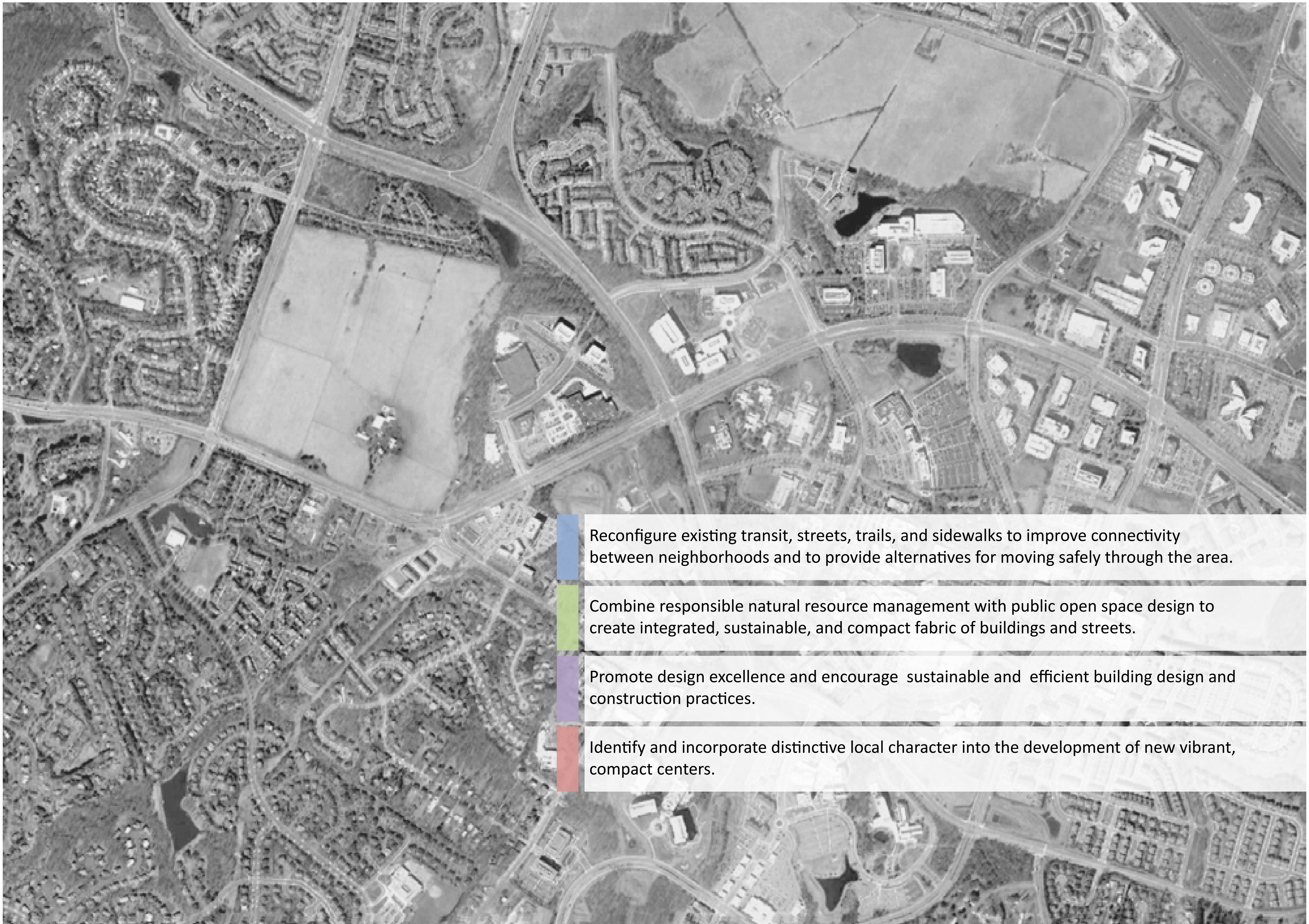
Urban Design Guidelines

Context

Montgomery County's General Plan envisioned urban centers along the I-270 corridor as places where compact, transit serviceable growth and employment opportunities could be concentrated. The County's Planning Department periodically undertakes sector planning efforts focusing on these areas, to serve as area-specific refinements to the vision outlined in the General Plan. The Urban Design Guidelines are companions to each sector plan, and provide greater detail for context-sensitive development to assist in the implementation of the Plan's vision.



Contents



Reconfigure existing transit, streets, trails, and sidewalks to improve connectivity between neighborhoods and to provide alternatives for moving safely through the area.

Combine responsible natural resource management with public open space design to create integrated, sustainable, and compact fabric of buildings and streets.

Promote design excellence and encourage sustainable and efficient building design and construction practices.

Identify and incorporate distinctive local character into the development of new vibrant, compact centers.

How to Use the Guidelines

The Urban Design Guidelines help implement the recommendations in approved and adopted master plans or sector plans. They provide information on how Plan recommendations and Zoning Code requirements can be met; the area or district context for individual sites; and ideas about best practices in building and site design.

The planning process is structured in a hierarchy of decisions.

- Master and sector plan recommendations provide the vision for a specific area.
- The Zoning Ordinance and other codes establish standards and regulations for development.
- Design Guidelines provide inspiration and suggestions to fulfill the plan's vision, and serve as a problem-solving tool.

The guidelines are developed through work with property owners, residents, institutions, interest groups, and Executive agencies. They are approved by the Planning Board for use by Planning Staff in developing and evaluating proposed building projects and other applications. They will be revised and updated as necessary.

With the exception of street standards and other specific recommendations included in the Plan, the Guidelines are not regulations that mandate specific forms and locations for buildings and open space. They illustrate how Plan recommendations and principles might be met, and encourage applicants to propose designs that create an attractive and successful public realm.

The examples and case studies are intended to frame discussions regarding building design in a flexible way, without prescribing specific standards.

Principles

Connectivity

Environment

Design

Diversity

Vision

Great Seneca Science Corridor Master Plan

"The Master Plan establishes a blueprint for the Life Sciences Center (LSC) that includes an expanded, first class medical center, research facilities, academic institutions, and an array of services and amenities for residents, workers, and visitors. It will have an open space system that incorporates the area's natural environmental features into a larger network, connecting destinations by paths and trails, and providing opportunities for a range of outdoor experiences.

The Life Sciences Center will be served by a fully integrated transit system that links mid-County activity centers via the Corridor Cities Transitway (CCT). Access to high quality transit is increasingly important to businesses trying to attract knowledge-based, creative class workers. The LSC will continue to be a specialized employment center, but it will be connected by transit with nearby residential communities at the Shady Grove Metro Station, the King Farm, the Crown Farm, Kentlands, and the Watkins Mill Town Center."

Lightrail Station
Strasbourg, France

Today, the buildings and spaces in Great Seneca Science Corridor Master Plan area are complementary in use and function, but unsustainable as self-sufficient entities. They function like typical research parks, with wide roadways and setback buildings forming visually separated spaces and physical barriers that prevent a cohesive and accessible built environment.

A successful corridor would maintain the identity and function of individual areas by creating a framework for expansion and growth to bring places closer to each other. The result should be a continuous built environment that meets the needs of a larger community and the science community, while providing specialized sites for research and medical functions, as well as places for living and recreation.

In the Life Sciences Center, the creation of a successful corridor should also spur the development of a sustainable community, one that evolves with a holistic perspective of its impact on the environment, the economy, and well being of its residents.

Sustainable communities can use strategic building orientation and site design to incorporate natural resources and create a variety of open spaces and community amenities. By protecting and augmenting existing resources on site, sustainable communities enhance local ecosystems through the planting of native landscaping, preservation of open space and wildlife habitat, and restoration of natural water cycles.

This is particularly true of science and research facilities where evolving fields must respond to constant change. They must simultaneously allow for concentrated individual work while also actively promoting interdisciplinary communication. Flexibility and expandability are extremely important to ensure continued growth.

The Guidelines do not issue specific design directives but highlight techniques and approaches that can help create five distinct neighborhoods that coalesce into a single corridor that will evolve as a premier environment for medical, science, and technology research and applications.

British Columbia Cancer Research Center
Henriquz Partners Architects
Vancouver, BC

Washington Mutual Center
Phillips Farevaag Smallenberg
Seattle, WA

Design Objectives

Connectivity

Establish comprehensive transit, pedestrian, bicycle and road networks that connect to retail, life sciences employment, academic facilities, and local and regional parks by:

- improving pedestrian safety at major intersections and strengthening connections between the districts in the Life Sciences Center
- creating an engaging pedestrian environment along streets with building facades and spaces that define and activate the public realm
- providing on-street parking wherever possible
- connecting people to the regional Metrorail system via the CCT.

Design

Create a sustainable community focused on cutting-edge medical, science, and technology research and applications by:

- supporting the construction of flexible and multi-purpose buildings that allow changes in use
- encouraging aggressive use of building systems and technologies to decrease energy use, and reduce carbon emissions
- encouraging design excellence through use of innovative building materials, facade articulation, street-oriented buildings, and sustainable building practices.

Environment

Reduce impact on the natural environment by:

- creating walkable environments that reduce our reliance on automobiles
- using innovative stormwater management techniques to meet Environmental Site Design (ESD) guidelines for urban areas
- promoting energy conservation and generation as a primary building and public space design feature
- encouraging building massing that sustains air flow and access to natural light
- integrating active and passive sustainable features and technologies into building and open space design.

Diversity

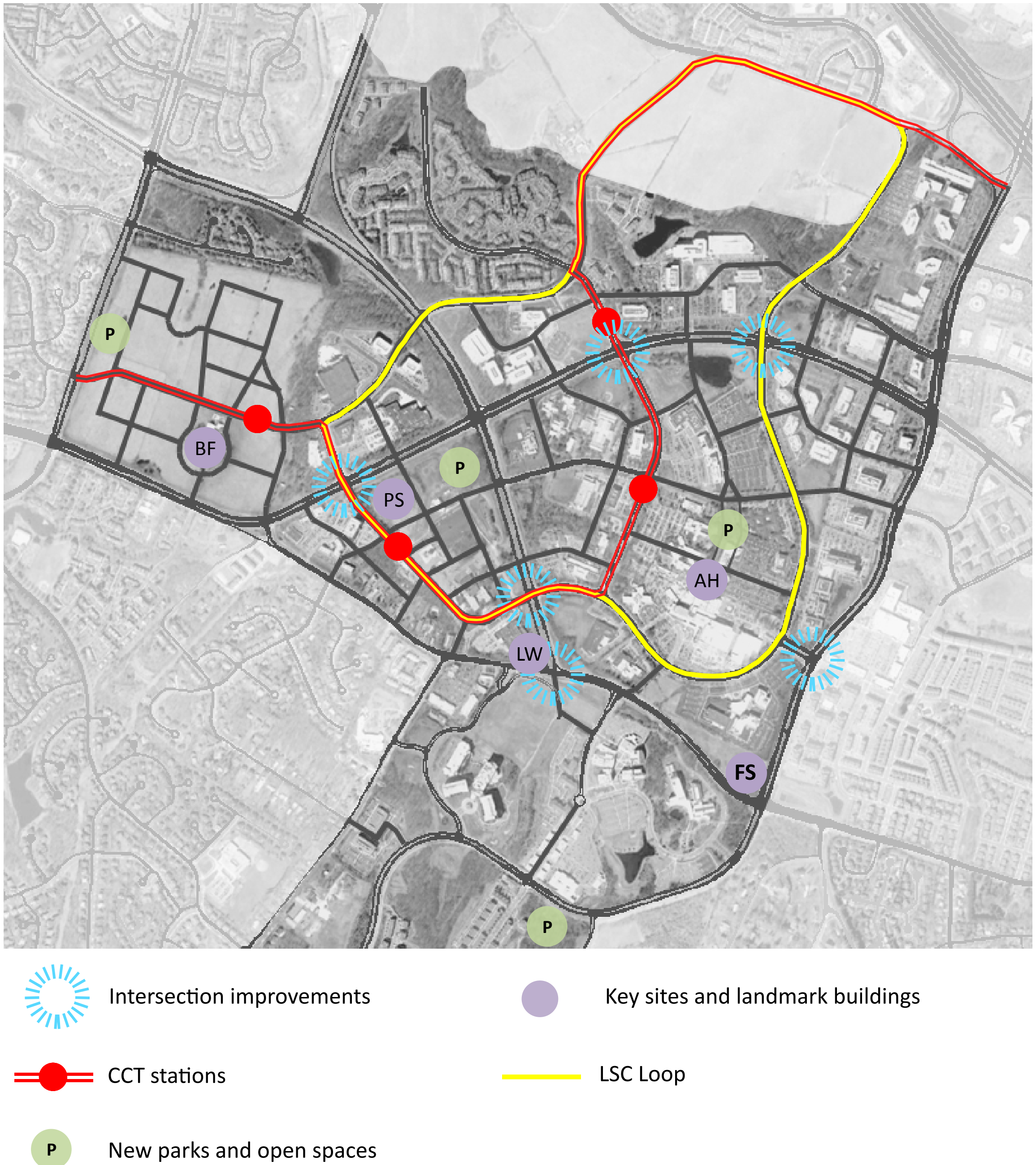
Create a true mix of uses to support an active urban environment that supports the life sciences by:

- implementing land use patterns that combine laboratories, offices and academic institutions along with residential, office, and retail uses
- creating housing opportunities that accommodate a range of family needs
- creating an attractive, compact built environment that fosters collaboration between professionals and academics in a variety of disciplines.

The Corridor Cities Transitway

The Science Corridor: Establishing and Connecting Community

The Corridor Cities Transitway (CCT) will be the catalyst for a new development pattern, building on and reorganizing existing low-density building patterns around transit stations. Transit station plazas will provide a hub of activity at each station. New roads and recreational amenities will create a more connected pedestrian and cyclist environment by linking the CCT, LSC Loop, and local and regional trails to encourage healthier, less automobile-dependent lifestyle choices. Over time, development will radiate from transit centers and create opportunities to strengthen connections between districts.



Opportunities

Buildings

Key properties present opportunities for landmark buildings and are crucial to establishing neighborhood character. They include:

- FS Fire Station
- PS Park School
- LW LSC West at Great Seneca Highway and Darnestown Road
- AH Adventist Hospital
- BF Belward Farmstead

Open Space

CCT plazas, linear greens and stream valley parks can create an extensive network of recreational space that is tied into the regional network.

Streets

The CCT's intersections with major roadways provide an opportunity to create pedestrian-friendly crossings to enhance connectivity. Additionally, connections across major roadways that link to significant community assets outside the plan area should be considered for improvements.

The LSC Loop, a shared-use path for pedestrians, joggers, and cyclists also presents recreational opportunities to link each of the districts in the Life Sciences Center.

Guidelines

Open Space

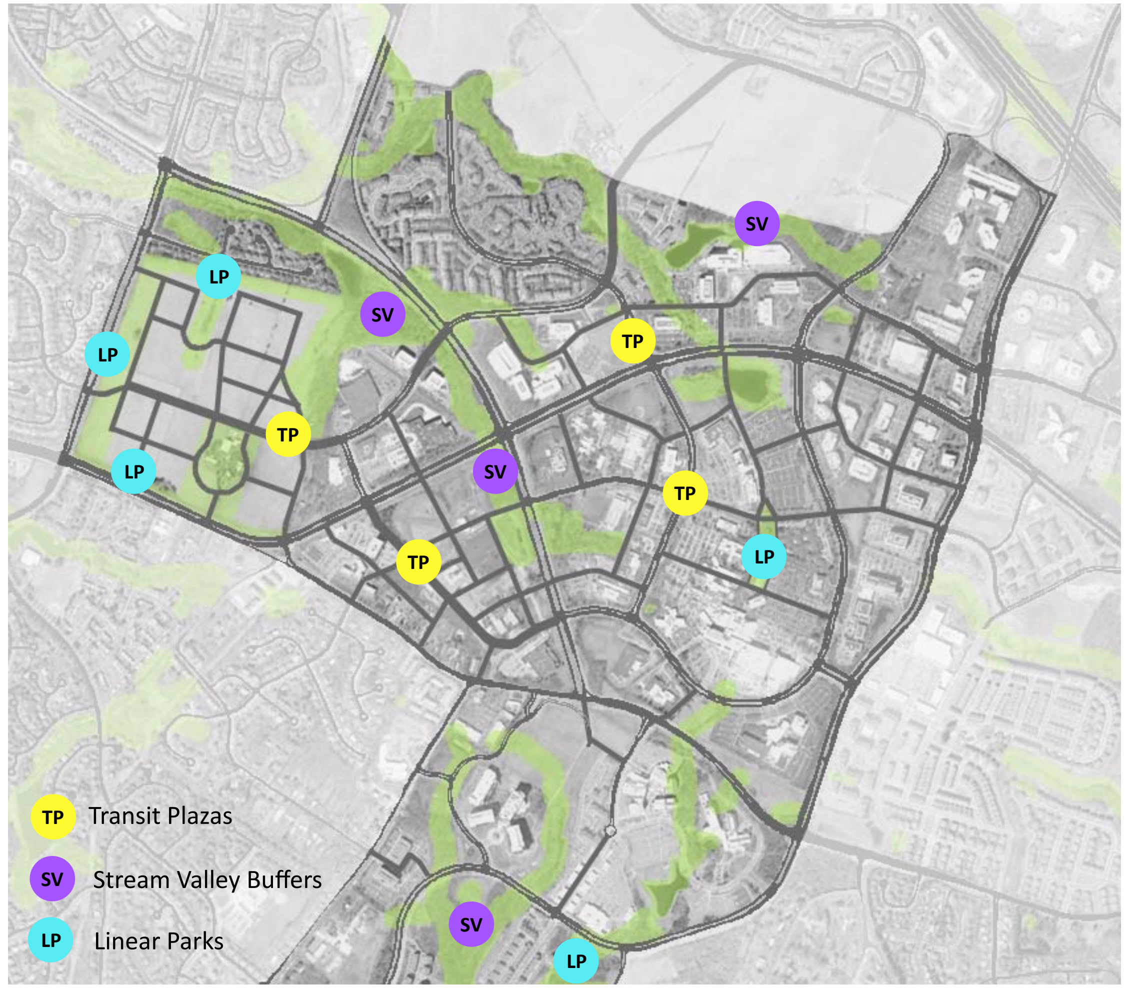
A hallmark of the Great Seneca Science Corridor Master Plan area is the variety of open spaces, ranging from urban transit plazas to stream valley parks and forests. Design guidance for these spaces includes:

- agressive Environmental Site Design through the following techniques (to the maximum extent feasible):
  - bioswales
  - planter beds
  - rain gardens
  - pervious pavement
- landscaping that does not require extensive watering and fertilization
- targeting unforested portions of regulated areas for reforestation.

The Plan also gives the following design guidance:

- create civic greens at each CCT station
- create open spaces as destinations to draw pedestrians and cyclists
- use open spaces and green roofs for community gardens to promote the consumption of locally-grown produce
- create or enhance connections to existing neighborhoods
- design open spaces as part of a comprehensive system that contributes to a sustainable community.

Public use space required by zoning should respond to project needs and adjacent uses. When open space does not contribute to a development's needs, public use space and amenities should be provided off site or through an in-lieu payment.



TP CCT Transit Plazas

CCT Transit Plazas are designated for each of the four stations in the Plan area and should:

- be 1/4 to 1/2 acre in size
- be integrated with the station platform
- balance green area and hard surfaces
- maximize sunlight exposure
- provide bicycle storage
- use special lighting to create ambiance and a unique setting
- use site design features such as low walls and steps for informal seating

LP Linear Parks

Linear parks are green spaces that serve one of two purposes:

- buffer areas between new development and neighboring communities or busy roadways
- create urban green space running the length of one or more blocks.

Guidance and design considerations for specific linear parks are discussed in the district sections.

Public Use Space

Small public open spaces will be created under the Zoning Code requirements for open space. They should:

- allow active or passive recreation
- be visible and usable
- have a strong relationship to adjacent architecture and open space networks
- avoid creating barriers between buildings and public streets

Outdoor public use spaces from several projects can be combined to create a larger public use areas.

SV Stream Valley Buffers

The existing forest and wetland areas, including the Muddy Branch and Great Seneca stream valleys, Great Seneca Creek State Park, and connected lands should be preserved and enhanced for recreation and enjoyment of the natural environment.

- Minimize the impact of new development on stream valleys
- Minimize impervious surfaces by using pervious paths or raised boardwalks
- Restore and enhance natural settings, native plant species, and indigenous ecosystems

Streets

Road Code

Chapter 49 of the Montgomery County Code, the Road Code, codifies street classification standards, including rights-of-way and paving widths. The Road Code emphasizes context sensitive street design to create a network of “complete streets” for automobiles, transit, cyclists, and pedestrians for an area such as the Great Seneca Science Corridor Master Plan area.

All applicants must comply with the Road Code. Applicants pursuing streetscape designs inconsistent with the Road Code must apply for a waiver.

Utilities

Utilities should be accommodated underneath sidewalks and streets within the right-of-way limits, and be coordinated by MCDOT and utility companies.

Streetscape

Closely-spaced street trees will be included along all streets. Sidewalks should be at least 15 feet from curb to building.

Intersections

The Great Seneca Science Corridor Master Plan identifies the possibility for grade separated intersections, including urban diamonds at:

- Great Seneca Highway and Muddy Branch Road
- Shady Grove Road and Key West Avenue.

Improvements of other intersections should include:

- Special crosswalk paving
- Raised and planted medians
- Pedestrian priority signal timing.

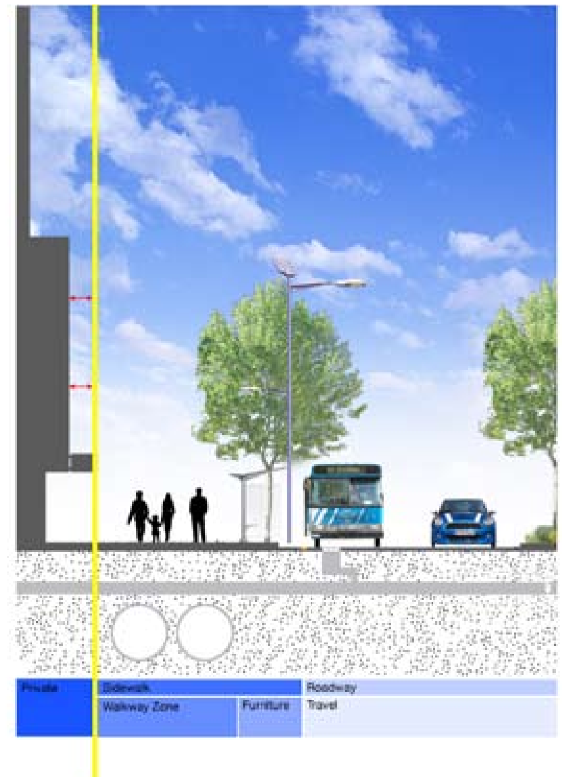
B2-B12
Business District Streets

Master Plan
Min. R.O.W.: 70 ft
Lanes: 2

Guidelines
Parking: Both Sides
Trees: 30-35’ o.c.
Sidewalk: Minimum 15’
Setback: None
Median: None

Comments
The proposed Business District Streets show the general location of streets, not actual alignments. Specific alignments, parking and streetscape will be determined during regulatory review.

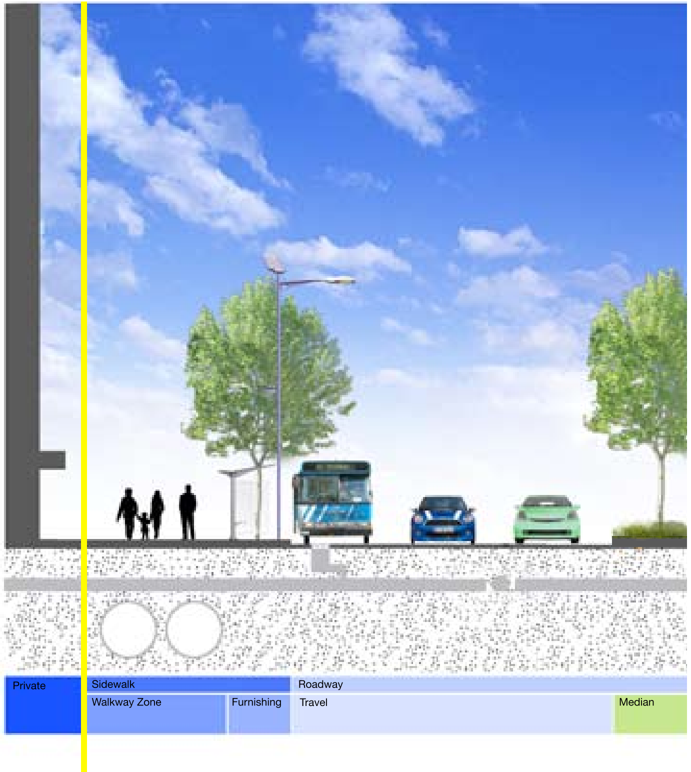
Medical Center Drive
Arterial Street (A-261)



Master Plan
Min. R.O.W.: 100 - 150 ft
Lanes: 4 - 6

Guidelines
Parking: Off-peak
Trees: 30-35’ o.c.
Sidewalk: 20’ wide
Setback: None
Median: Planted with turn lanes

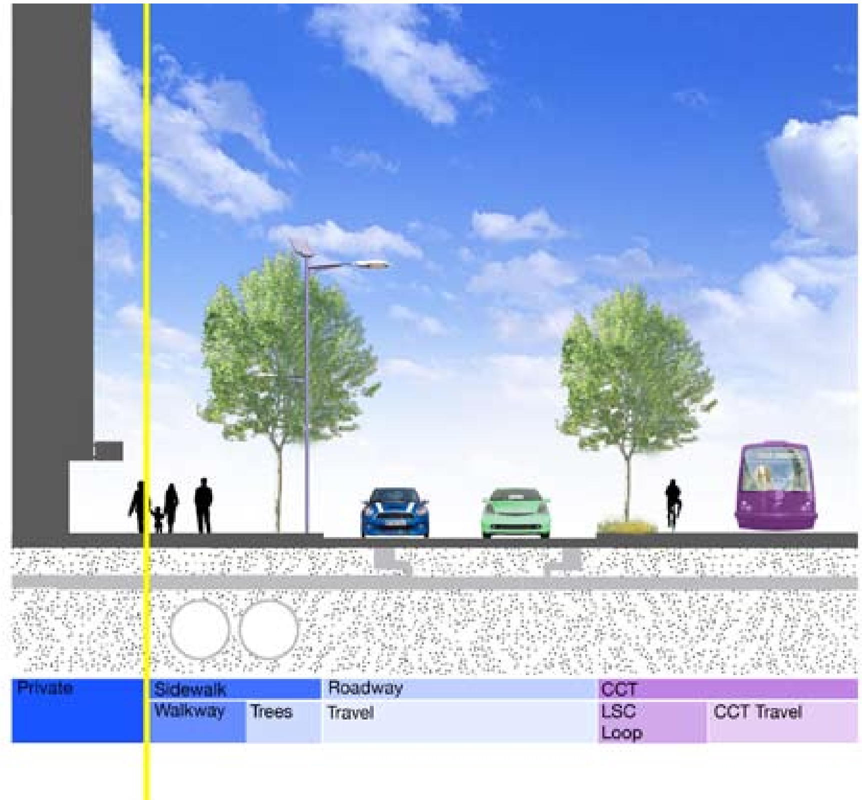
Major Highways



Master Plan
Min. R.O.W.: 150 ft
Lanes: 4-6

Guidelines
Parking: Off-peak
Trees: 40'-50' o.c.
Sidewalk: 20' wide
Setback: None
Median: Planted with turn lanes

Transitway



Master Plan
Min. R.O.W.: 150 ft
Lanes: 4

Guidelines
Parking: Both sides
Trees: 30-35' o.c.
Sidewalk: 20' wide
Setback: None
Median: Accommodate CCT transitway and LSC Loop in transit median

The LSC Loop

The LSC Loop is a multi-use recreation and transportation path connecting all of the LSC districts and the surrounding areas. It will run along existing streets, including the CCT alignment, as well as along off road trails. The 3.5 mile LSC Loop will incorporate a path as part of the CCT as it runs through the LSC West and the LSC Belward areas. The loop should include:

- recreational features that connects the districts and destinations throughout the area
- connections from the Loop to area amenities, including the natural path system, the historic Belward Farm, and the civic spaces in each district

CCT Right-of-Way

Where they coincide, the LSC Loop will run parallel to the CCT alignment.

- If the CCT is located in the middle of the roadway, the LSC Loop should be located on the opposite side of the transit plazas to minimize pedestrian/bicycle conflicts.
- If the CCT is located on the side of the roadway, the LSC Loop should be located on the inside of the CCT, and perform similar to the on-road LSC Loop.

On-Road LSC Loop

Where the CCT is absent, the LSC Loop should be located between the sidewalk and roadway.

- Use street trees and plantings to differentiate the LSC Loop from sidewalk
- Allow approximately an additional width of two to three feet adjacent to the roadway for vehicle unloading and door opening.
- Include transition areas prior to intersections to prevent conflicts

Off-Road Trails

In certain areas, the trail will leave the roadway.

- Minimize impact of trail on existing trees.
- Include a pervious trail next to the shared use path to allow pedestrians and joggers to avoid trail traffic
- Areas not along roadways may use asphalt, blacktop, or other surface.

Road Crossings

Road crossings should be marked with separate travel areas and designed to enhance the street character

Defined Travel Areas

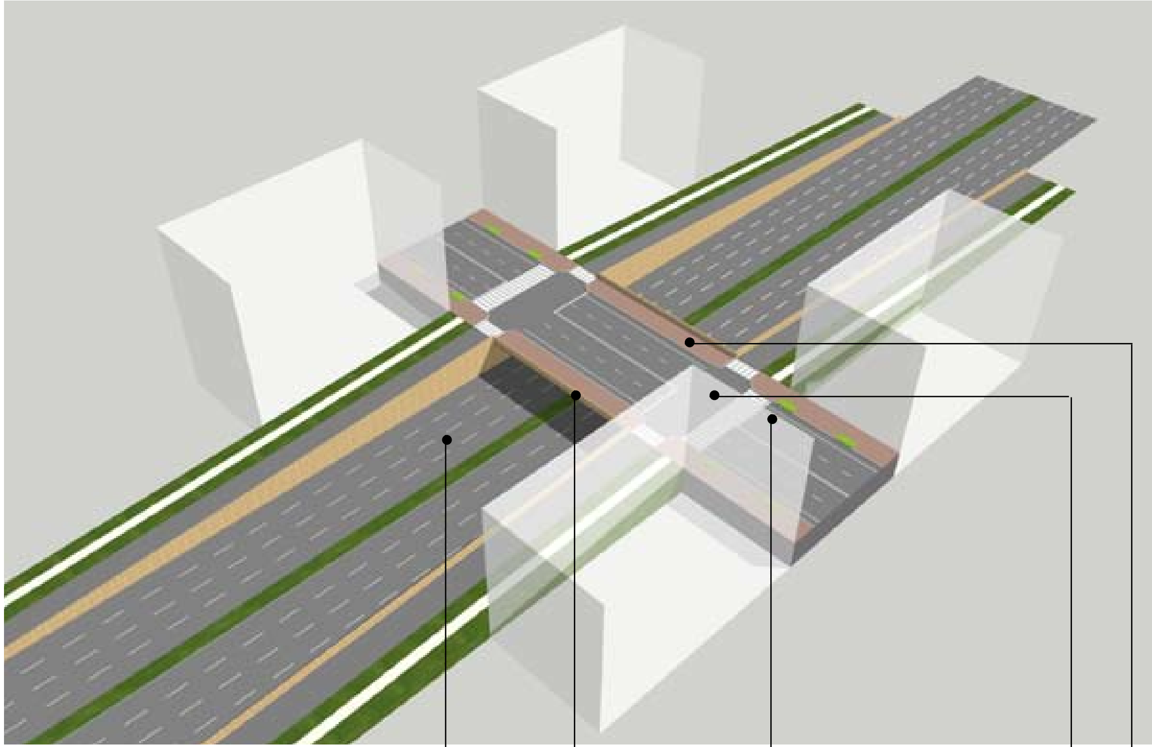
Use signage and special paving to distinguish the LSC Loop from the sidewalk.

- The shared use path should be paved to make it distinct from the sidewalk
- Creative use of materials is encouraged.
- Orient street furniture and other sidewalk features to be equally accessible from the sidewalk and the shared use path

Grade-Separated Intersections

The Duke Ellington Bridge
Washington, DC

The Duke Ellington Bridge maintains consistent lighting and sidewalk widths, and employs an elegant, vertically oriented fence on a stone base to create a context-sensitive crossing linking pedestrians from Metrorail to restaurants and nightlife in Adams Morgan. The bridge also incorporates an on-road bike lane in each direction.



Minimize Crossing Distance
Create the shortest possible pedestrian crossing. Consider use of retaining walls and minimize turning radii.

Mitigate Fast Entry and Egress
To the extent possible, reduce the number of turning lanes and width of turning radii to encourage slower automobile travel.

Continuous Streetscape
To the extent possible, maintain consistent streetscaping, sidewalk widths, and lighting.

Bike Lanes
Where possible, incorporate bike lanes to define travel space and encourage multi-modal travel patterns.

Aesthetic Enhancement
Discourage use of chain-link fencing and concrete. Consider material upgrades, and integrated artwork to enhance overall appeal.

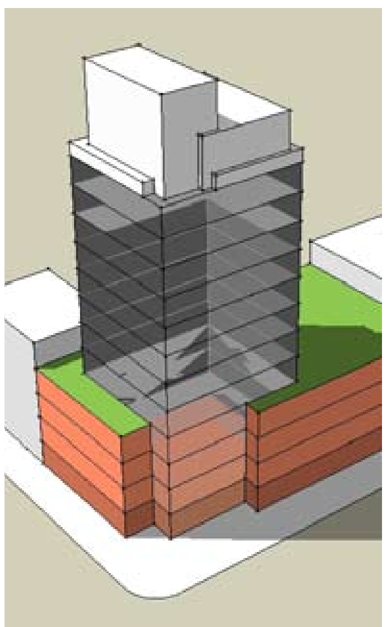
Buildings

The Great Seneca Science Corridor Master Plan's building recommendations include height, street-orientation, design character and scale, and retail locations. It encourages use of sustainable building practices and site design to reduce energy use and stormwater runoff.

The guidelines help visualize the Plan's recommended building heights by providing building examples for each district, and by illustrating how buildings might define the public realm.

Building design should:

- provide landmarks and street walls
- create a design character for the area
- be energy-efficient, adaptable, and mitigate environmental impacts.



Building Rooflines

Encourage distinctive building rooflines on towers.

Towers

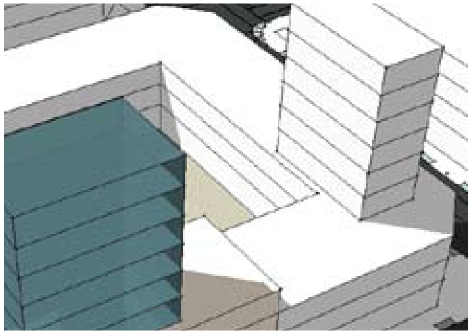
Set back or locate to reduce their impact on the streets below, allowing for light and air flow.

Towers to the south of residences or open space should be located as far away as possible to prevent shadows and be as high as permitted by the Plan to reduce bulk.

Podiums

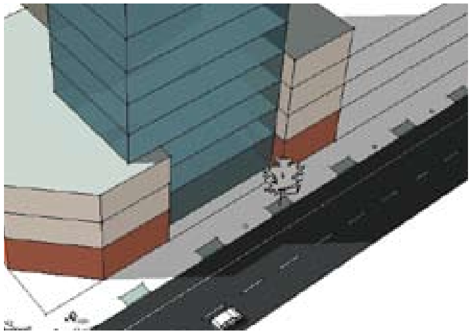
The structure's lower floors should establish continuity with adjacent buildings. Height should vary from two to five stories, depending on location.

Consider use of townhouses or apartments with individual walk-up entrances to activate non-retail streets.



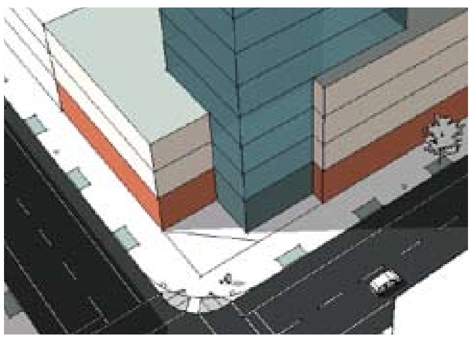
Tower Setback

Should be used on streets with right-of way of 70 feet or less. Amount of setback to be determined by building's structure, but should be no less than 15 feet.



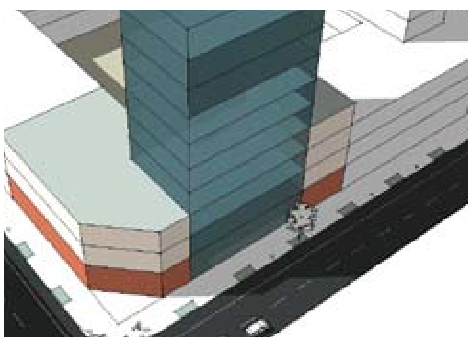
Street Wall Recess

Full tower height may be shown in relation to primary entrances or open space and may be set back from right-of-way.



Corners

Full tower height may be expressed at corners, as part of building articulation. Street wall continuity should be maintained through distinct articulation.

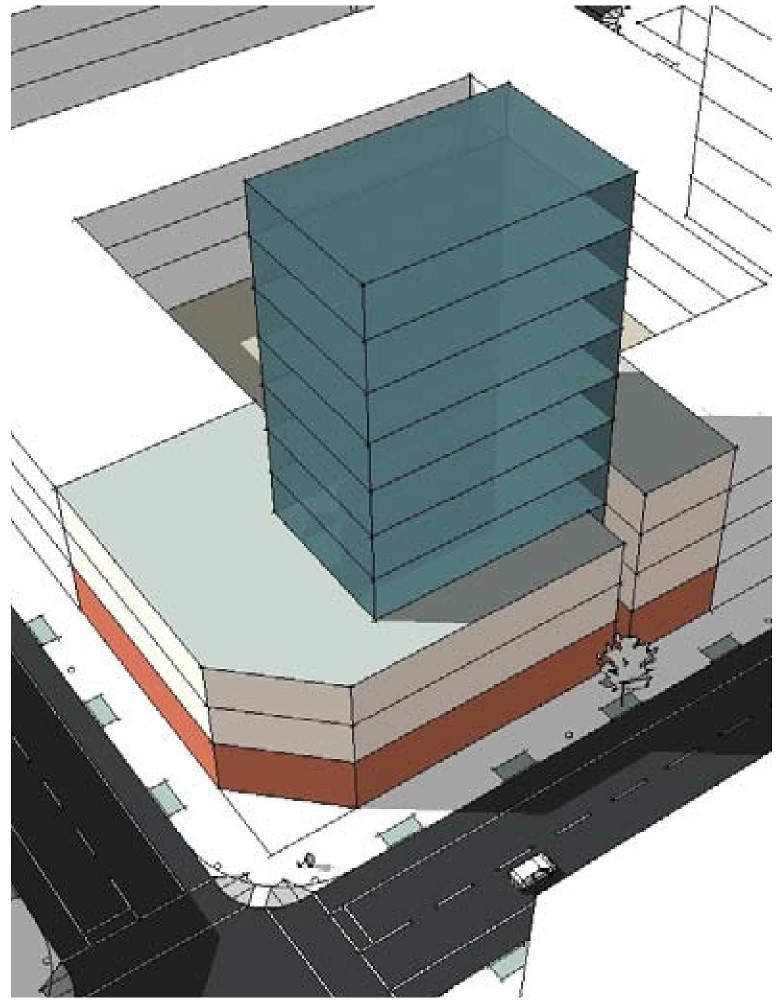


Tower Separation

Podiums should meet walls at corners. Facade articulation is strongly encouraged.

Building Towers

Building towers should be located to reduce their impact on the pedestrian environment and on adjacent open space.



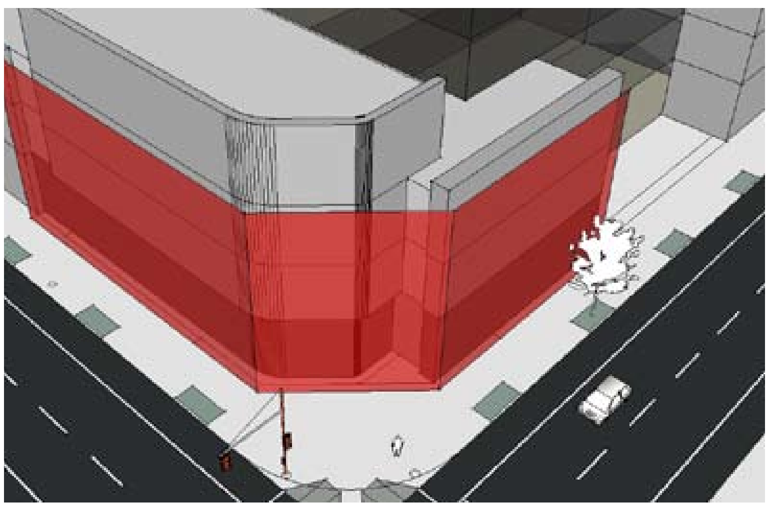
Street-Defining Buildings

Streets should be defined by consistent street walls. Building podiums should meet build-to lines on both sides of the street where indicated on district maps.

The Ellington
Washington, DC
Torti Gallas and Partners

Street Walls

Breaks along street walls with block frontages 200 feet or longer are appropriate. Breaks should occur away from block corners, and should be infrequent on retail streets.



Street wall

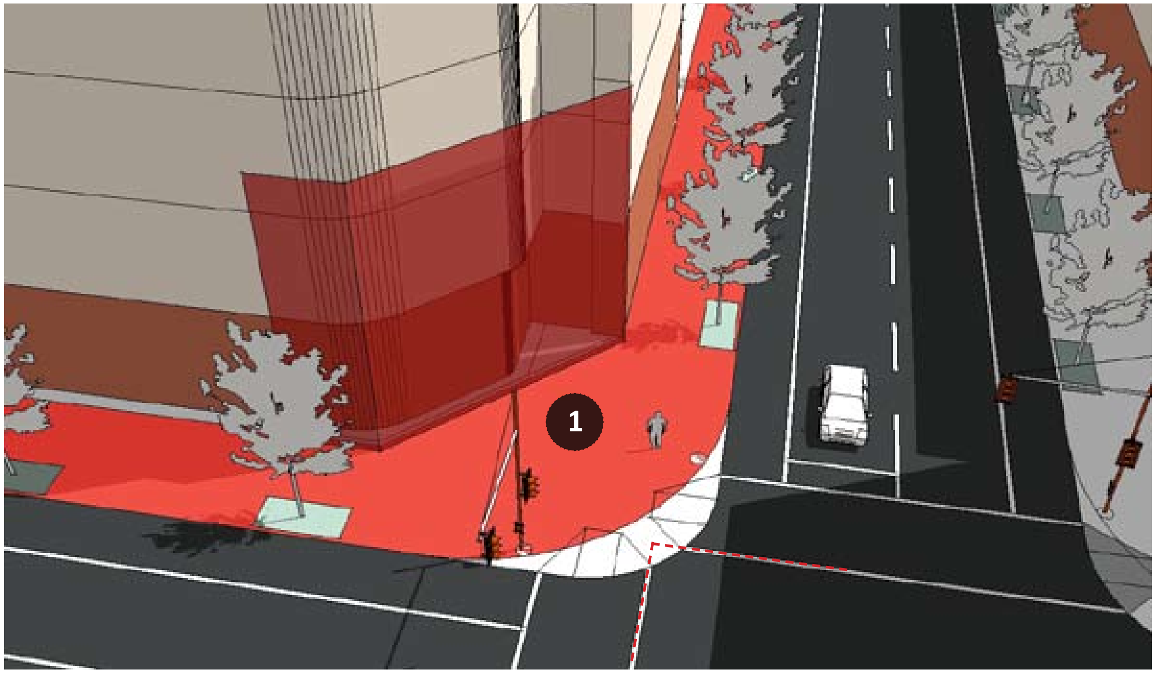
40 Mercer
New York, NY
Jean Nouvel Ateliers

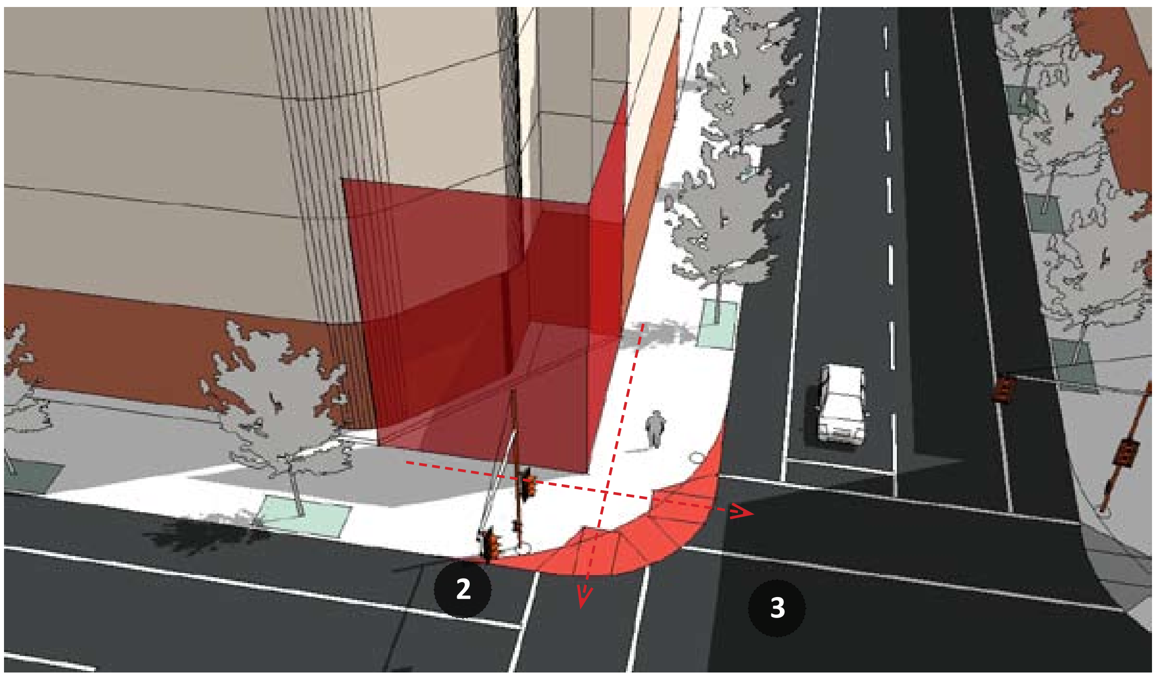
Memorial Sloan-Kettering Cancer Center
New York, NY
Granary Associates

Podiums

Podium heights should range between two and five stories, as indicated on street sections.

Urban Corners





Urban street corners should be designed to increase pedestrian safety and to accommodate public safety and other service vehicles.

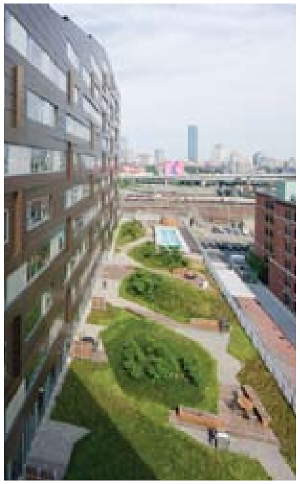
1. Road Code - Highlighted area indicates sidewalks and required corner truncation per MCDOT standards at the intersection of two hypothetical streets. A corner radius of 30 ft is shown. This standard requires a handicapped ramp oriented toward the center of the intersection.

2. Design Guidelines - Corner radii should be tighter than suburban standards (15 feet shown), and should include a double ramp at the corner. The truncation requirement should be waived for most urban streets. Ramps should align with path of pedestran travel and street crossings.

3. Vehicle turning radius - The effective turning radius, not the curb radius, should be 30 feet in the recommended configuration.

Focus Elements

Green Roofs and Living Walls

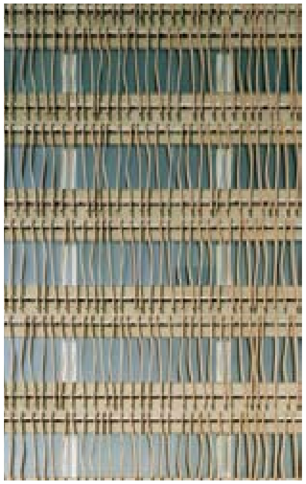


Use green walls and green roofs to reduce heat island effect and increase perviousness. Where possible, use native vegetation and species that require little or no watering or fertilization. Green roofs should cover at least 33 percent of the roof, excluding mechanical equipment space, and have a minimum depth of four inches. Green walls should be on blank walls facing streets, open spaces, and parking garage facades as well as for general aesthetic enhancements.

Natural Ventilation

Use building design and mechanical systems to reduce HVAC loads and improve indoor air quality. Where possible, design buildings with thin floor plates and operable windows to allow natural cross ventilation. Consider use of fan-assisted cooling systems and open staircases to provide stack ventilation.

Recyclable and Renewable Materials



Use rapidly renewable building materials and materials made from recycled content. These materials are typically harvested within a ten-year cycle, and FSC Certified Wood products are encouraged. Materials extracted, harvested or recovered as well as manufactured within 500 miles of the project site are strongly encouraged.

Building Sustainability

The Great Seneca Science Corridor Master Plan strongly encourages use of sustainable building practices and site design:

- use existing infrastructure and adaptive re-use of existing buildings
- use site and building design and orientation for passive solar heating and lighting
- maximize the potential for renewable solar energy systems
- incorporate passive cooling through proper shading and ventilation
- reduce energy and water consumption
- use recycled building materials, locally produced materials, and local labor
- use building deconstruction techniques to facilitate re-use and/or building material recycling
- adopt minimum energy efficiency standards of 17.5% below baseline performance or the appropriate ASHRAE advanced energy standard for new buildings
- meet 10.5% energy efficiency standard below calculated baseline performance for renovated buildings
- incorporate renewable energy systems such as wind, solar power, and geothermal heating and cooling systems
- use light-reflecting roof surfaces where green roofs cannot be used

Adaptive Reuse

Reuse existing buildings to mitigate construction and demolition waste. Reuse can strengthen neighborhood character and create a diversity of architectural styles.

Passive Solar Design

Reduce the need for artificial lighting with extensive glazing and building orientation. Shifting buildings to maximize solar exposure can accommodate additional sustainability features.

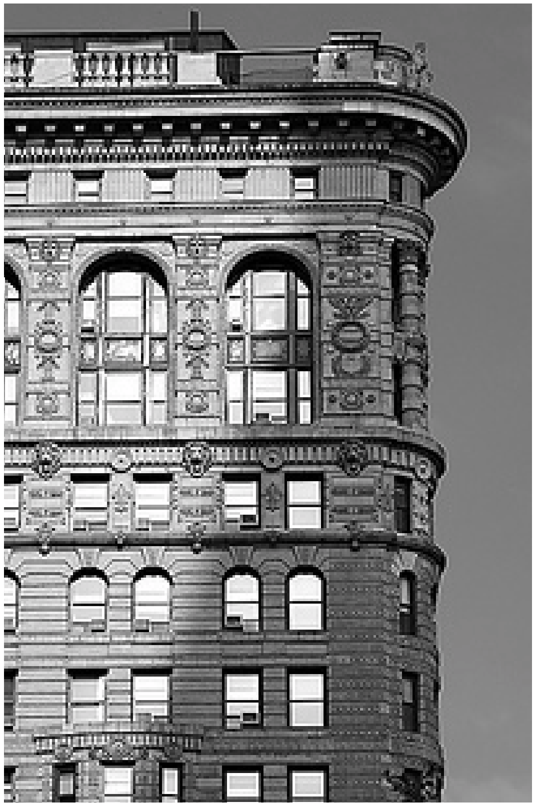
Renewable Energy

Use building-integrated renewable energy sources such as wind turbines and photovoltaics to reduce energy use. Photovoltaics can be placed on roofs, surface-mounted, or embedded in transparent surfaces to diffuse light entering the building.

Right:
The Beauregard
Washington, D.C.
Sorg & Associates

Far Right:
Flatiron Building
New York, NY
Daniel Burnham

Below:
156 West Superior
Chicago, IL
Miller Hull Partnership



Facade Articulation

Facades should be articulated to promote pedestrian activity, enhance the overall urban environment, and create a diversity of architectural styles.

- Incorporate the most public and active building space on the ground floor to activate the street.
- Create retail frontages that are as transparent as possible. Avoid long stretches of blank walls.
- Design building entrances to be in the street frontage.
- Provide vertical articulation along street walls to reduce their visual length.
- Use materials, finishes, and architectural features that refine building facades by creating visual interest and texture.
- For residential buildings, consider using balconies to provide variation in facade depths.

Design Excellence

A diverse range of building styles will improve quality and attract growth. Whether contemporary or traditional, flexible structures and innovative building materials will advance the cause of better design. Architectural excellence would support the vision for world class research and development in the Life Sciences Center.

Above:
Islington Towers
London, UK
Benson & Forsyth

Left:
1111 E. Pike Mixed-Use
Seattle, WA
Olson Kundig Architects

Far Left:
Biomedical Research Building
University of Michigan
Ann Arbor, MI
Polshek Partnership

Parking

Great Seneca Science Corridor Master Plan
The Plan recommends a strong pedestrian orientation for future development, reducing the amount of surface parking lots by:

- reducing parking requirements and using structured and/or shared parking
- relieving smaller properties from self-park requirement
- establishing a 30 percent non-auto driver mode share goal for LSC employees.

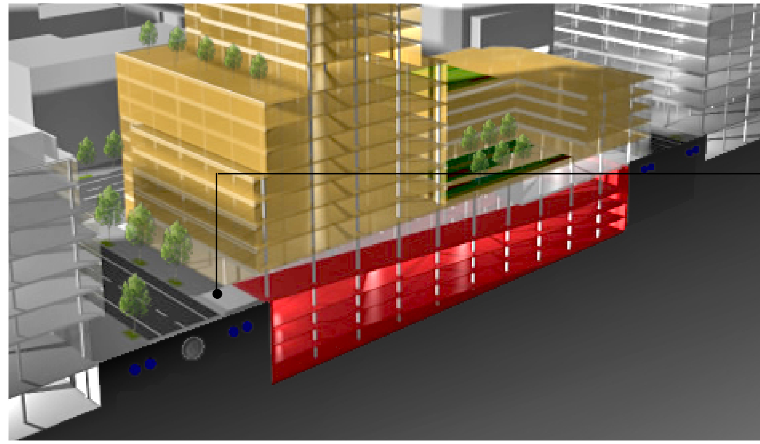
Public garage sites will be defined at Preliminary Plan for publicly owned properties in the LSC Central and LSC West districts.

Zoning Ordinance
Parking requirements in the Great Seneca Science Corridor Master Plan area are set by the Montgomery County Zoning Ordinance. **For a list of uses, see Section 59-E of the Zoning Ordinance.**

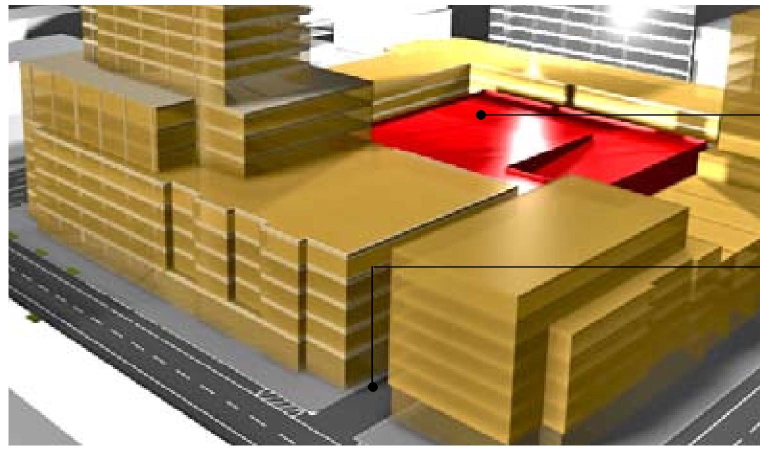
The Commercial Residential (CR) Zones have specific parking requirements, **see Section 59-C-15**, and provide incentives for constructing below-grade parking facilities.

St. Mary's Square Garage and Park
San Francisco, CA

Using the site's slopped topography, St. Mary's Garage is built into the side of a hill and covered with a public park. The park is heavily vegetated to mitigate runoff and reduce the garage's visual impact on the street.

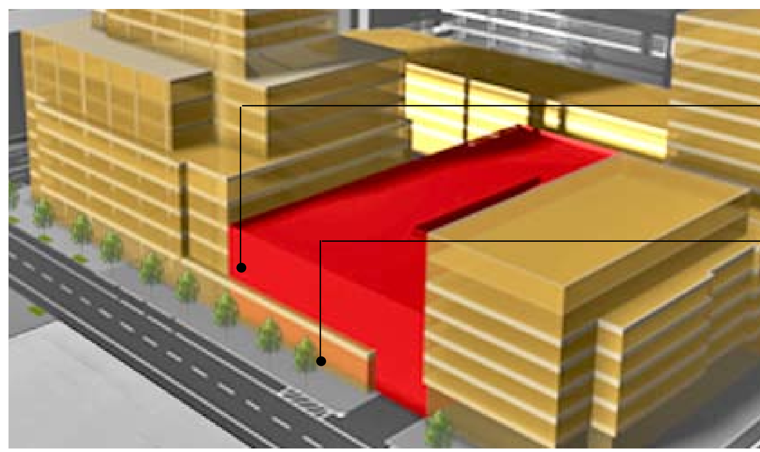


Narrow Entrance
minimize width of entrance and egress lanes



Wrapped Parking Deck
place garage centrally within the block

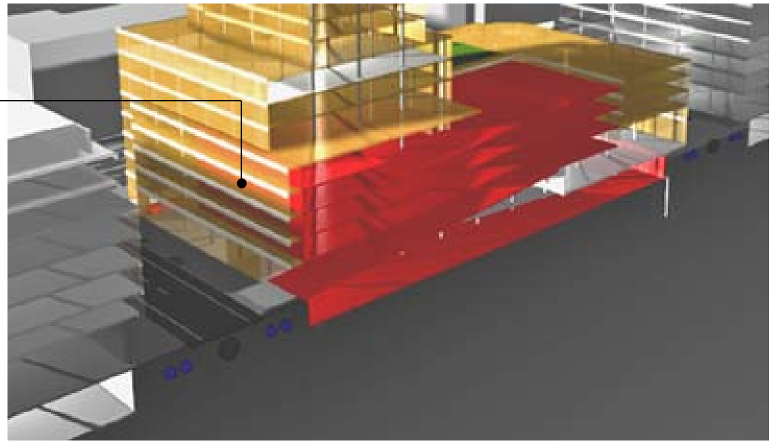
Access off Alley
consolidate access points with adjacent properties

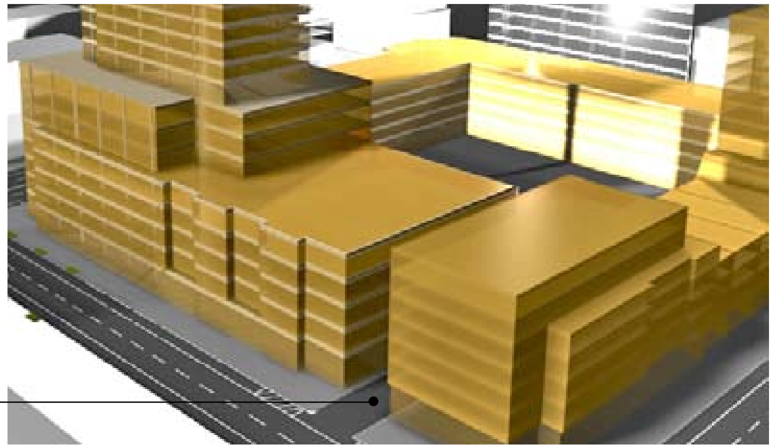


Minimize Street Exposure
reduce the amount of garage facade facing the street

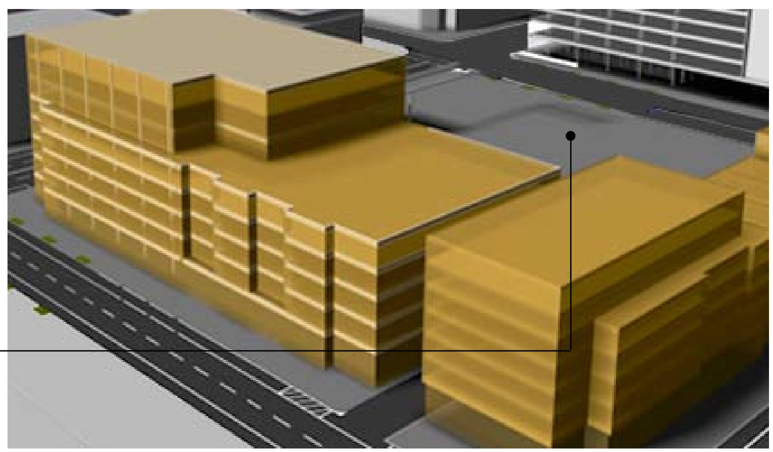
Ground Floor Frontage
activate ground floor with retail or other uses

Integrated Building Facade
garage and building are indistinguishable





Access off Side Street
provide side street access to minimize traffic impact



Parking Behind Building
internalize parking structures where possible

The Contemporaine creates an integrated aesthetic by applying the same materiality and design sensibility to both the podium parking structure and residential units. The ground floor of the building is activated by retail on the primary street while the garage is accessed from an alley in back.

The Contemporaine
Chicago, IL
Perkins + Will

Parking Best Practices

Underground and Structured Parking
Parking should minimize its impact on the pedestrian environment and public realm.

- Locate entrances and exits along service alleys or business district streets.
- Minimize impact on building's architectural character. When building above structured parking, building and garage facades should be compatible in order to enhance overall architectural quality. Consider enhancements such as artwork, murals, interactive features, or vegetative screens.
- Minimize the width of driveways and height of garage entrances. Ensure adequate access clearances are being provided at all times for public safety vehicles.
- Combine loading dock and garage access, if feasible.

Surface Parking
When surface parking cannot be avoided, locate parking on the back or side of the building, with the building fronting the primary streets and sidewalks. Surface parking should not be visible from primary streets.

- Cover surface with a low-albedo pervious surface to reduce heat island warming. Provide tree canopy and permeable areas to treat stormwater.

Far Left:
University of Toronto Biosciences Lab
Toronto, ON
Foster + Partners

Middle:
Calit2, UC San Diego
La Jolla, CA

Left:
Harvard Graduate Housing
Cambridge, MA
Richard Burck Associates

Districts

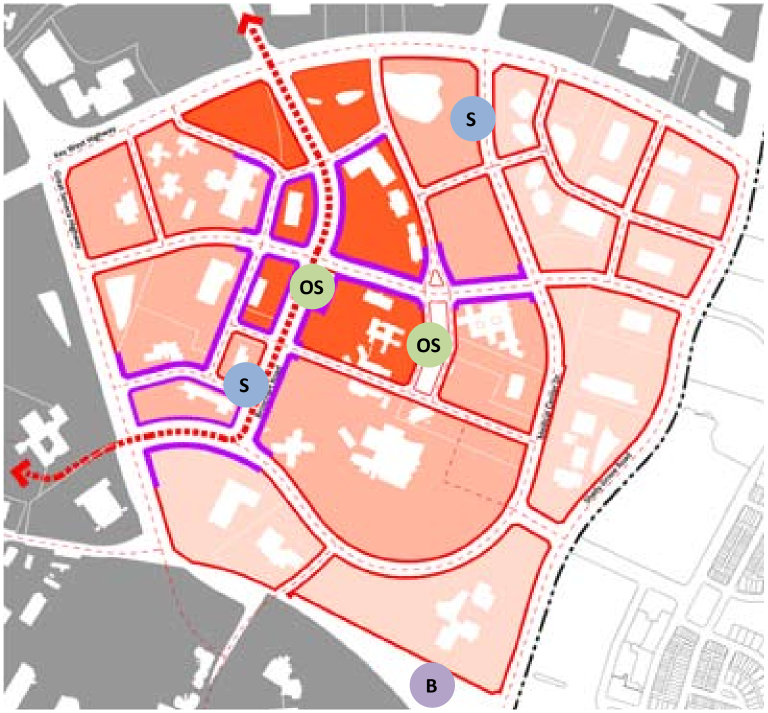
Great Seneca Science Corridor Master Plan
The Plan focuses on the future of the Life Sciences Center (LSC) and makes recommendations for five districts:

- LSC Central
- LSC West
- LSC Belward
- LSC North
- LSC South

The Plan notes that the guidelines will provide detail to shape new development and implement the urban form recommendations. Plan recommendations include standards for density and percentages of housing and commercial uses, along with the desired development character for each district.

The guidelines illustrate the desired design quality and development character in each district with recommendations for streets, buildings, and open spaces. Case studies addressing potential issues clarify recommendations and provide solutions exemplifying design excellence.

LSC Central: A Medical and Biotechnology Center



General

- Proposed R.O.W.
- Proposed Mass Transit
- Proposed Transit Stop
- Planning Area Outside District
- Planning Area Boundary
- Built-to Lines

Building Height

- 150 ft Max.
- 110 ft Max.
- 50 - 110 ft Max.

Above right:
Peter L. and Clara M. Scott Laboratory
Ohio State University
Columbus, OH
Polshek Partnership

Great Seneca Science Corridor Master Plan

The LSC Central district envisions redeveloping portions of the block surrounded by Broschart Road, Medical Center Drive, Great Seneca Highway, and Blackwell Road. This redevelopment will transform surface parking lots and aging medical support buildings into a highly concentrated medical, research, science and technology district. These uses will be augmented with local retail, housing, and public use open spaces.

Zoning: Life Sciences Center (LSC)

Key Recommendations

- **S** Design Broschart Road as an urban street, lined with buildings and activating street-level uses.
- **S** Create an identifiable LSC Loop along Medical Center Drive that connects pedestrians to other transit centers, natural pathways, and open spaces.
- **B** Locate a fire station at Shady Grove Road and Darnestown Road
- **OS** Establish a CCT station on Broschart Road near Blackwell Road
- **OS** Establish a linear park south of Blackwell Road

Streets

K Street Transit Corridor
Washington, DC

- Create a tree-lined boulevard on Broschart Road and Medical Center Drive.
- Create block lengths no longer than 800 feet. An average of 400 to 500 foot long blocks is desirable.
- Integrate LSC Loop.
- Enhance intersections for pedestrian safety across Shady Grove Road at Fallsgrove Boulevard and Blackwell Road.
- Create pedestrian connections through Adventist Hospital campus.

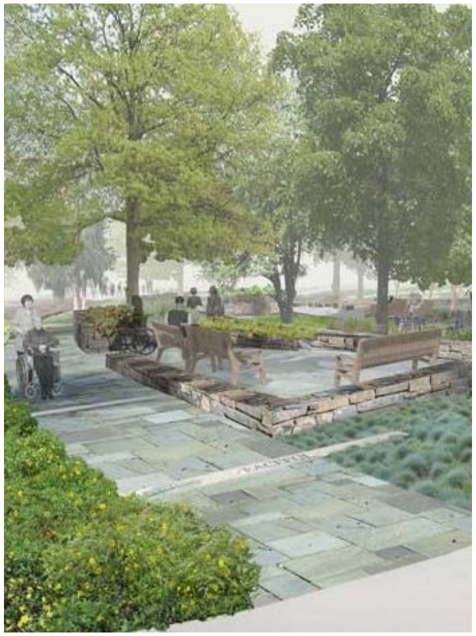
Buildings

North New Women & Infants Center
Indianapolis, IN
RTKL Associates Inc.

- Concentrate tallest buildings along Broschart Road.
- Design buildings to allow the evolution of advanced research, science, and technology industries.
- Consolidate and conceal delivery areas to minimize impact on streetscape and building frontage.
- Expansion of Adventist Hospital should create entrances on Broschart Road and the future road between Broschart Road and Medical Center Drive.
- Create a mixed-use retail center at the CCT station and on the block north of Blackwell Road.

Open Space

Tanner Springs Park
Portland, OR
Peter Walker & Partners Landscape Architecture



Medical Quadrangle and Esplanade
Duke University, Durham, NC
Olin Partnership

- Consider relocating existing stormwater ponds to create a central landscape and/or water amenity in common space between buildings.
- Where possible, use native plant species.
- Design public spaces to accommodate a variety of civic activities and community life.

Transit Plaza

- About 1/4 acre in size
- Balance green space and landscaping with hardscaped plaza to accommodate pedestrian activity.

Linear Park

- Design for passive recreation with benches and trees for shade.
- Design the park as an entry feature to the Adventist Hospital.

Case Study: Urban Hospital Expansion

Project: Cleveland Clinic
Location: Cleveland, OH
Architect: NBBJ

The expansion of the Cleveland Clinic allowed the reorganization of the building's functions to create an identifiable entrance, while filling a city block to create a more defined presence within the urban fabric.

In the Life Sciences Center, the future expansion of Shady Grove Adventist Hospital and Johns Hopkins University present similar opportunities to strengthen the quality of the urban environment and enhance the area's overall architectural quality.

Linear Green Space

The linear green space accommodates an artistic water feature that doubles as stormwater management, creating a strong axial promenade leading to the main entrance of the building.

Access and Frontage

Automobile drop-off space is recessed from the street, allowing the curved facade to create a distinct and identifiable building entrance.

Filling the Block

On all other sides, the hospital fills the urban block, providing secondary entrances and transparent facades to enhance the streetscape.

Civic Presence

The red-framed glass bay doors showcase the fire engines inside, establishing them as a visually prominent civic icon. Through the arrangement of the building's mass and use of materials, the building feels firmly anchored in the site, giving it a strong presence in the community.

Anchor Site Edges

The fire station provides a street wall along three major street fronts, continuing the urban fabric while ensuring that the technical needs for emergency response activities are unhindered.

Attractive Facade and Noise Buffer

Given its security requirements, the front is relatively closed off. The fire station uses attractive streetscaping and public artwork as well as a narrow band of windows to mitigate the lack of activation on the street. By positioning the larger mass of the building closest to residences across the street, the building simultaneously anchors a well-defined streetfront and shields residents from siren noise.

Case Study: Fire Station on a City Block

Project: Fire Station 10
Location: Seattle, WA
Architect: Weinstein A+U

Balancing the technical needs of large vehicles and equipment with the role of the building in an urban context. Seattle's Fire Station 10 is both a secure, high-functioning emergency dispatch facility and a bold civic building.

The presence of a fire station at the corner of Shady Grove Road and Darnestown Road provides an opportunity to create highly visible civic building that can establish itself within the fabric of the LSC Central District.

LSC West: A New Residential Community

General

- Proposed R.O.W.
- Proposed Mass Transit
- Proposed Transit Stop
- Planning Area Outside District
- Planning Area Boundary
- Built-to Lines

Building Height

- 150 ft Max.
- 110 ft Max.
- 50 - 110 ft Max.

Above right:
Dockside Green
Victoria, BC
Perkins + Will

Great Seneca Science Corridor Master Plan

The existing Public Safety Training Academy (PSTA) should be redeveloped with housing, neighborhood-serving retail, employment uses, and active public spaces that use outstanding practices of sustainable town planning, layout, and design. An interconnected street grid will create walkable blocks with a mix of uses, including street level retail and wide sidewalks to accommodate outdoor cafes.

Zoning: Commercial-Residential (CR)
Residential-Townhouse (RT-8)
Commercial, Transitional (C-T)

Key Recommendations

- **B** Use corner of Darnestown Road and Great Seneca Highway as a signature site for a significant building.
- **B** Locate a multi-story elementary school, if needed.
- **OS** Create a new central, civic open space serving the residential community.

Streets

Portland Streetcar
Portland, OR

- Create block lengths no longer than 800 feet. An average of 400 foot long blocks is desirable.
- Integrate LSC Loop with CCT alignment.
- Create pedestrian-friendly crossings at Great Seneca Highway, Darnestown Road, and the CCT to improve pedestrian safety and connectivity between districts.

Buildings

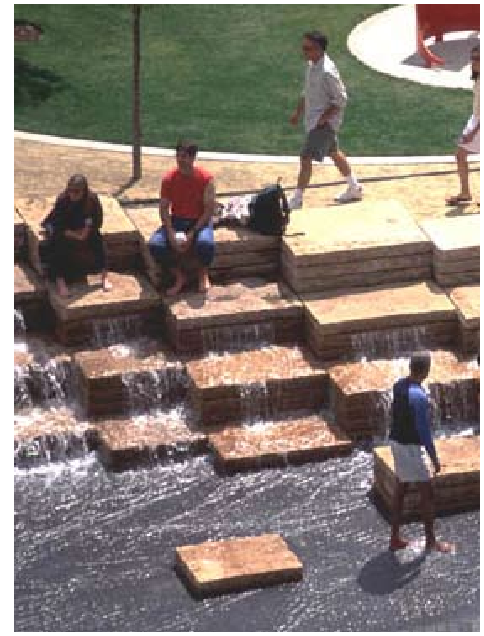
Greenbridge
Chapel Hill, NC
McDonough + Partners

- Create a landmark building at the corner of Great Seneca Highway and Darnestown Road
    - concentrate height along Great Seneca Highway
    - anchor corner through use of visually prominent design features at Great Seneca Highway and the CCT crossing
- Establish strong building frontage and maximum building heights along Medical Center Drive extended.

Hancock Lofts
West Hollywood, CA
Koning Eizenberg

- Maximize energy efficiency and environmental responsibility by establishing a comprehensive sustainable development plan to guide the project over the course of build out.
- All buildings should strive for the highest possible LEED rating.

Open Space



Jamison Square
Portland, OR
Peter Walker & Partners Landscape Architecture

- Include a civic green space at the transit station.
- Encourage use of sustainable site features that are also community amenities.

Case Study: Sustainable Park School

Project: The Sidwell Friends School
Location: Washington, DC
Architect: Kieran Timberlake

Sidwell Friends is a model school that combines sustainable architectural and site design practices on a compact, urban site. By reusing and expanding an existing building, Sidwell Friends School minimized construction waste and the need for new materials. The building recycles both stormwater and wastewater, held first in a treatment tank before recycling out into artificial wetlands to filter contaminants. This water is eventually used as greywater for the building's non-potable uses.

In the LSC West, the potential establishment of the Park School creates similar opportunities to use architecture as a didactic resource while working within the constraints of a smaller lot. The building can also establish itself as a key civic asset by establishing a relationship to the street as part of the larger community fabric.

Green Roof and Garden

The school maintains a large green roof as well as a garden that is maintained and harvested by students. Access to the roof also allows use of photovoltaic panels. Students are given a hands on learning experience with this technology, making the roof an instructional as well as a functional component of the building.

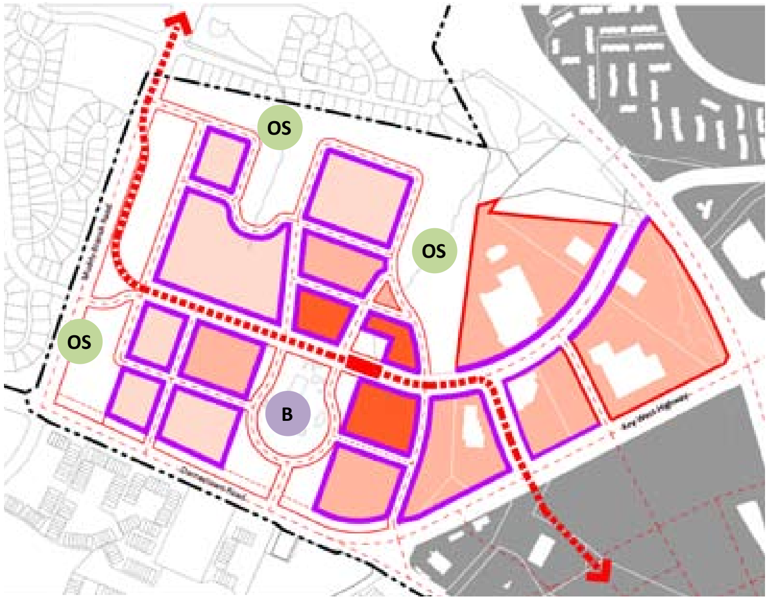
Recycled and Renewable Materials

The building makes use of numerous renewable interior finishes such as cork, gypsum, linoleum, bamboo, and wheatboard substrate that were harvested with little environmental impact. The vertical wood building skin is made from western red cedar reclaimed from wine casks.

Anchoring an Urban Street

The school building establishes a clear relationship with the street while maintaining a degree of separation through the use of landscaping, terracing, and stair and ramp access.

LSC Belward: A Science and Research Community



General

- Proposed R.O.W.
- Proposed Mass Transit
- Proposed Transit Stop
- Planning Area Outside District
- Planning Area Boundary
- Built-to Lines

Building Height

- 150 ft Max.
- 110 ft Max.
- 50 - 100 ft Max. (*)

(*) 50 ft maximum heights should occur next to the buffer areas along Muddy Branch and Darnestown Roads. 100 ft maximum heights within the same zone should occur adjacent to the edges of the next height zone (110 ft maximum).

Above right:
Daniel L. Malone Engineering Center
Yale University
New Haven, CT
Pelli Clarke Pelli Architects

Great Seneca Science Corridor Master Plan

LSC Belward presents a unique opportunity to create world-class research and academic facilities on 107 acres of largely undeveloped land. The Plan locates the most intensive building heights adjacent to the CCT station while establishing a 10-12 acre historic farm setting. A new grid of streets will enhance mobility options. Open space buffers to the north of the site and along Muddy Branch Road provide transitional space between existing neighborhoods.

Zoning: Life Sciences Center (LSC)

Key Recommendations

- **OS** Create substantial open space through dense building patterns with structured parking.
- **B** Preserve views of the farmstead, to the extent feasible, from Darnestown Road and residential neighborhoods to the south and west.
- **OS** Create an open space along Muddy Branch Road with a minimum width of 100 feet and a 60-foot landscaped buffer on Darnestown Road.
- **S** Create new streets with short blocks.

Streets

Madrid Tramway
Paris, FR

- Meet the Plan's requirement to preserve views of the farmstead.
- Create a grid of streets with an average block length of 400 feet to disperse congestion and improve pedestrian connectivity.
- Connect to the residential neighborhoods south of Darnestown Road by creating pedestrian friendly crossings.
- Create a tree-lined transit boulevard along Decoverly Drive extended.
- Include services for multi-modal transit hub of vehicles, bicycles, pedestrians, and transit riders.

Buildings

Charles Commons
Johns Hopkins University
Baltimore, MD
Design Collective

- Use clusters of buildings to create niche open spaces.
- Design buildings to accommodate evolution of advanced research, science, and technology industries.
- Locate parking in garages surrounded by buildings.
- Provide flexible, unprogrammed areas for social interaction.
- Consider Belward Farm for reuse as a cultural venue.
- Concentrate retail immediately adjacent to CCT station.

Open Space

Mill Canyon Creek Earthworks Park
Kent, WA
Herbert Bayer

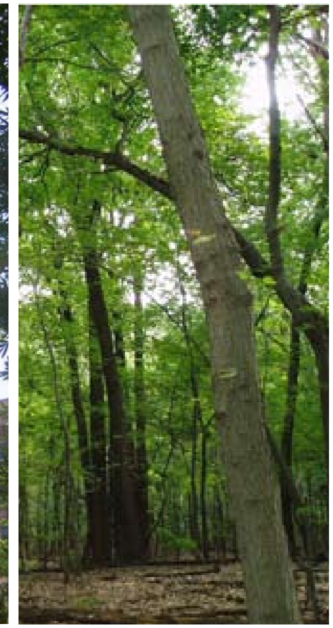
Tulip Poplar Alley
University of California, Berkeley

- Consider use of artistic landscaping and reforestation to enhance the setting and safety along Muddy Branch Road.
- Maintain plantings and trees in the historic farm setting along Darnestown Road.
- Incorporate stormwater management and environmental site design (ESD) features into open space on Muddy Branch Road.
- Enhance stream valley buffers through reforestation.

- Given the proximity of the Belward Farm open space, the CCT plaza should form a narrow, linear open space linking the CCT to the farm along Decoverly Drive.
  - The linear open space should average 15 feet in width
  - Use special pavement, street furniture, and public art to differentiate this open space area from the rest of the sidewalk.

LSC Belward: Neighborhood Compatibility

The Belward Science and Research Community will be adjacent to several existing single family neighborhoods. This section provides compatibility guidelines for future development on the Belward Farm.



Building Heigth and Form

Building height should step down from 150 feet maximum at the transit center to 50 feet adjacent to Muddy Branch Road, Darnestown Road and the northern boundary of the property. Building scale , lighting, and facade articulation should be carefully considered for compatibility with adjacent residential communities, without necessarily copying residential scale and materials. A variety of roof levels should be considered throughout the Belward campus. Mechanical equipment should be concealed from view, and noise generated must meet Montgomery County Standards.

Setbacks

Buildings located immediately to the east of Muddy Branch Road should maintain a setback of approximately 300 feet from the public right-of-way. Buildings along the northern property line of the Belward Campus should provide a minimum setback of 200 feet from the property line, and buildings along Darnestown Road should maintain a minimum setback of 60 feet from the public right-of-way. Building heights above 50 feet along Muddy Branch Road, Darnestown Road, and along the northern property line should be located a minimum of 60 feet from the setback areas.

Open Space

A substantial amount of open space should be provided adjacent to existing single family neighborhoods. The setback area along Muddy Branch Road should become a linear open space that includes landscaping. Existing contours around the existing large tree should be maintained. Along the property's northern boundary, open space should preserve and supplement existing forestry, and protect existing streams. Open space along Darnestown Road should provide substantial landscaping, and preserve views into the historic farmstead.

Architectural Relationship to Farm

Facades immediately adjacent to the Belward Farm should establish an appropriate architectural relationship with the farmstead through creative use of scale, form, materials, and texture, to integrate the farm buildings into the overall science campus.

Stephen M. Ross School of Business
University of Michigan, Ann Arbor, MI
Kohn Pederson and Fox Associates

10 - 20 Foot Setback

Buildings immediately to the east and west of the Belward Farm viewshed should maintain a setback of 10 to 20 feet above 60 feet. The setback does not apply to buildings north of Decoverly Drive extended. Setbacks provide opportunities to alter the architectural character in response to surrounding context.

Center for Biotechnology & Interdisciplinary Sciences
Rensselaer Polytechnic Institute, New York
Bohlin Cywinski Jackson

Extended Linear Open Space

Open space at the transit plaza should connect the station to the Belward Farm open space through consistent design treatment.

Future landscaping and site alterations on the farm should provide primary frontage and access to Decoverly Drive.

Life Sciences Building/Shortlidge Mall
Pennsylvania State University, State College, PA
Payette Architects

The Belward Farmstead: Compatibility Guidelines

The Belward Farmstead will be preserved within a 10 to 12 acre historic setting envelope that will allow views into it from Darnestown Road and from surrounding neighborhoods. The farmstead should be adaptively reused for civic purposes, and an appropriate relationship with the future Decoverly Drive should be established through creative landscaping and site design. Preservation of auxiliary buildings, such as animal sheds, is not required.

LSC North: Residential and Office

Great Seneca Science Corridor Master Plan

Zoning: Life Sciences (LSC)
Residential (R-60/TDR)
Commercial-Residential (CR)
Office Building, Moderate (OM)
Hotel-Motel (H-M)
General Commercial (C-2)

Key Recommendations

- Extend Decoverly Drive into and through Crown Farm to Fields Road
- Create LSC Loop from Fields Road along CCT alignment connecting to the LSC Belward and Central districts
- Create new streets with short blocks
- Construct interchanges at Great Seneca Highway and Sam Eig Highway and at Key West Avenue at Shady Grove Road

General

Proposed R.O.W.
Proposed Mass Transit
Proposed Transit Stop
Planning Area Outside District
Planning Area Boundary

Building Height

150 ft Max.
80 ft Max.
42 - 60 ft Max. (*)

(*) Max. Heights within these areas shall be as follows:

1. 50 ft Max. within 100 ft distance from R.O.W.
2. As permitted by R60/TDR zone.
3. As permitted by O-M zone.
4. As permitted by O-M/C-2/H-M/PD zones. Refer to Master Plan for zone extents.

LSC South: Mixed-Use Center

Great Seneca Science Corridor Master Plan

Zoning: Life Sciences (LSC)
Commercial-Residential (CR)
Planned Development (PD-22)

Key Recommendations

- Improve pedestrian connections between LSC South and areas to the North, emphasizing connections to future transit stations
- Protect the Piney Branch sub-watershed
- Construct Traville Local Park
- Extend Great Seneca Highway as a business district street south of Darnestown Road

General

Proposed R.O.W.
Planning Area Outside District
Planning Area Boundary

Building Height

50 - 110 ft Max. (*)

(*) Max. Heights within these areas shall be as follows:

1. As permitted by C-4 zone.
2. As permitted by R&D zone.
3. As permitted by MXN/LSC zones. Refer to Master Plan for zone extents.

Streets

Metro Light Rail
Phoenix, AZ

- Create safe, context-sensitive crossing at Great Seneca Highway and Darnestown Road and at Key West Avenue and Broschart Drive.
- Crossings should use special pavement, as well as other methods to alert drivers to the intersection.
- If grade-separated interchanges are necessary, minimize the total crossing distance and create pedestrian and bicycle friendly crossings to the extent possible.

Buildings

The Terry Thomas
Seattle, WA
Weber + Thompson

- In **LSC North**, street-oriented buildings should continue the urban fabric from Crown Farm
  - establish primary street wall along Broschart Drive and Decoverly Drive.
  - locate tallest building heights along Shady Grove Road and Key West Avenue.
- In **LSC South**, street-oriented buildings connect to LSC Central and West by focusing height at Darnestown Road crossings.
  - Continue street wall along Travilah Gateway Boulevard.

Open Space

South Boston Maritime Park
Boston, MA
Machado Silvetti Architects

Woodley Gardens Park
Rockville, MD

- Create the Traville Local Park as a large community oriented park with athletic fields and connections to trails in the stream valley parks.
- Enhance stream valley buffers with native planting and reforestation
- Use trees to provide shading for field spectators and create a sense of enclosure around athletic fields.