FRAMEWORK PLANS AND STREET TYPOLOGY

Submitted to
Fairfax County

Submitted by
Cambridge Systematics, Inc.
SmithGroup / JJR - HNTB

May 2008

SPRINGFIELD CONNECTIVITY STUDY

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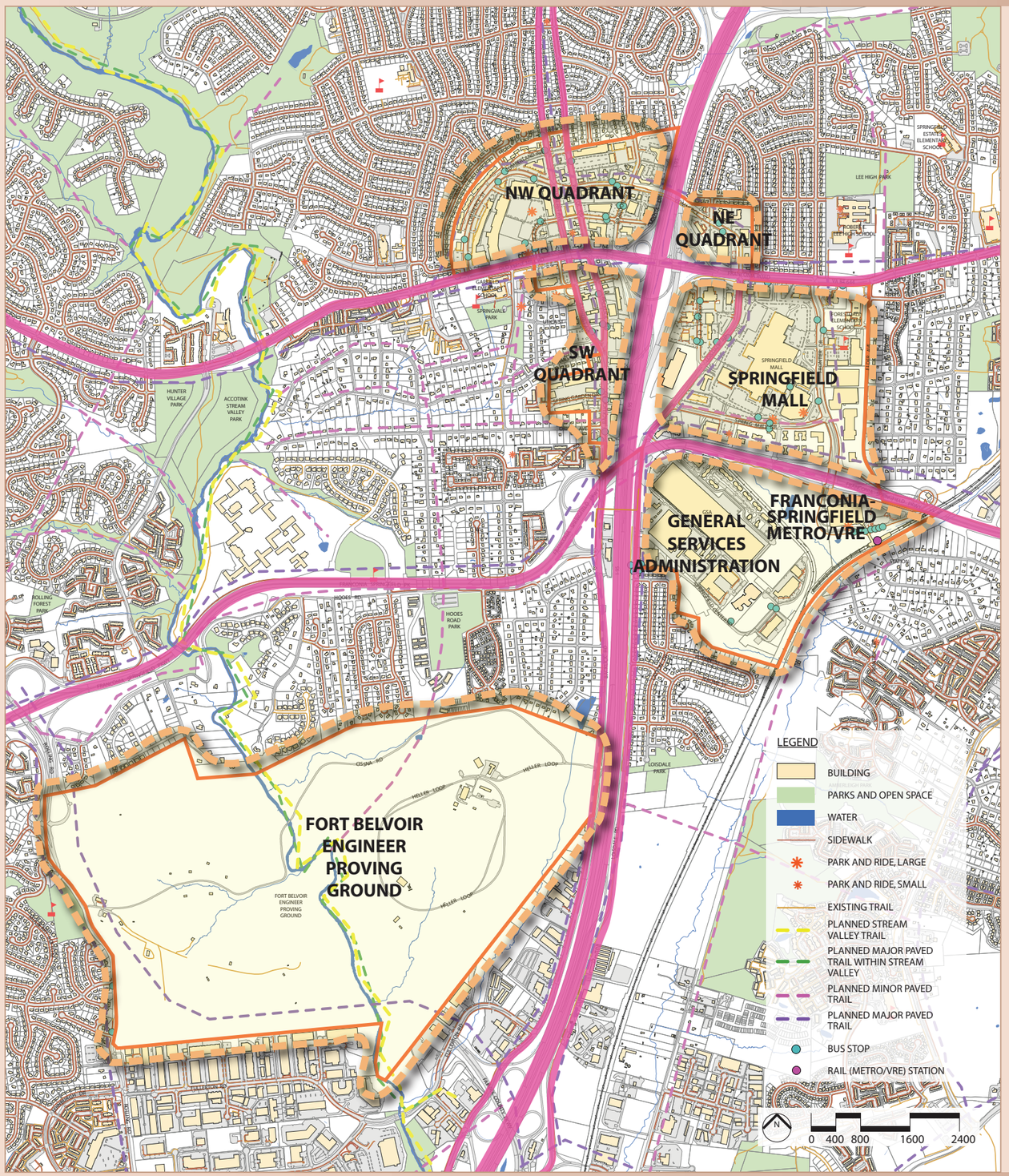
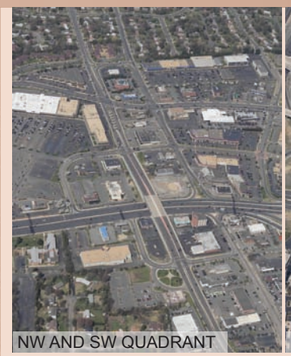
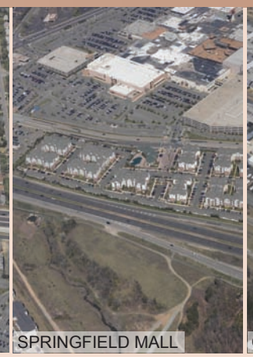



NW AND SW QUADRANT

NE QUADRANT


SPRINGFIELD MALL

GSA

EPG

The Springfield Connectivity Study addresses the need for improved physical linkages in the study area, based on existing development and road patterns, future development, recommendation of a May 2006 Urban Land Institute panel, and the 2005 Base Realignment and Closure (BRAC) proceedings. In response to this need, the study examines the existing urban framework in each of the study area quadrants at the regional, street, and pedestrian scales and presents conceptual plans and recommendations for a comprehensive and integrated multi-modal transportation system as it would operate with the proposed land use concept.

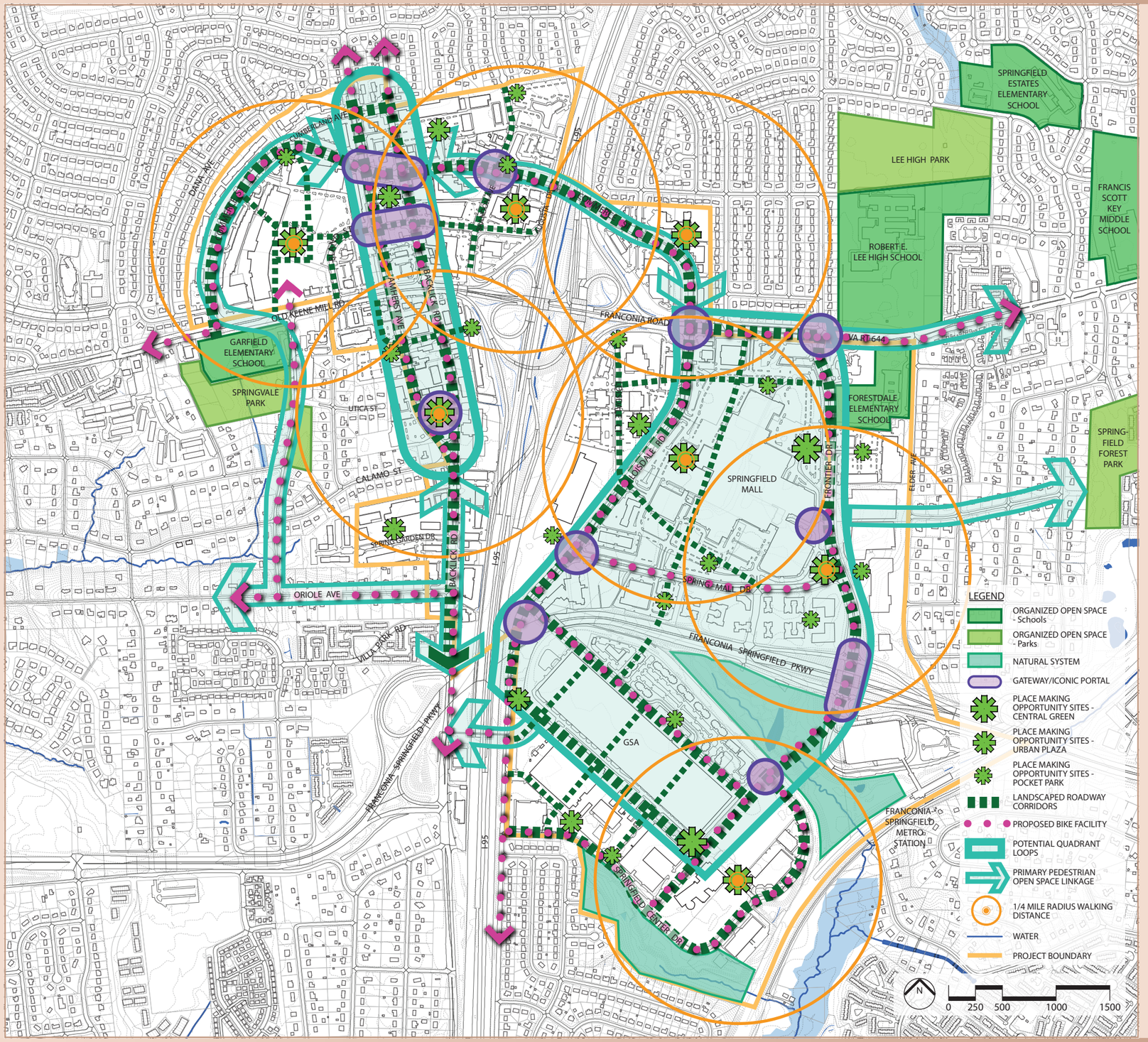
A lack of connection occurs in the study area as a whole and internally, within each of the quadrants. As mentioned in the Existing Conditions report, several major transportation corridors divide the area into four quadrants, making safe and convenient connections between these areas difficult, especially for non-motorists. Interstate 95 dominates the area as a major north-south transportation corridor and effectively cuts off pedestrian-scale connections across Springfield, except for the Commerce Street bridge to the north and an existing pedestrian bridge to the south. Old Keene Mill/Franconia Road and Franconia Springfield Parkway only provide good east-west vehicular connections within the study area, and serve as major roadways for through-traffic. Finally, within each of the quadrants, the lack of continuous sidewalks and trails, presence of large surface parking lots, and the general orientation of the built environment to the automobile impede the movement of pedestrians and bicyclists.

The proposed Framework Plans illustrate conceptual redevelopment plans. They depict improvements to the urban realm that support improved connectivity relative to future redevelopment and development in each of the quadrants. The plans show the urban design concepts for a 2030 scenario, coinciding with the land use alternatives evaluated in the transportation portion of the Springfield Connectivity Study and the US Army BRAC proceedings. These plans also respond to the recent Urban Land Institute recommendations for the area and current development proposals, such as the Springfield Mall in the Southeast quadrant, the new Marriott Hotel development in the Northwest Quadrant and both the WMATA Long Range Plans and Boston Properties intent to develop adjacent to the GSA site. For the purposes of this document, the Northwest, Northeast, and Southwest Quadrants have been consolidated into one exhibit, while individual exhibits have been created for the Springfield Mall and General Services Administration areas. A more detailed analysis of intersections, and gateways follow the quadrant plans.

The Framework Plans include recommendations for the creation of "pedestrian priority corridors" (streets that provide safe, convenient and attractive pedestrian access through the study area), as well "address streets," (primary corridors on which major uses are fronted and encourage more activity than thru-movement), key pedestrian and vehicular intersections, gateways, and existing and planned pedestrian connections.

Major pedestrian flows are shown with arrows. "Animated streets" are those on which pedestrian-oriented uses, such as ground-floor retail and cafés, are located. Plazas and focal points of placemaking also are identified, and the development pattern in core areas has been generalized to show building mass, and openings between buildings at the conceptual level. In addition to the major transportation corridors (in pink), the Regional Context map shows existing and planned trails, sidewalks, bus stops, and rail (Metro/VRE) stations.

Finally, a hierarchy of streets has been identified, and the function of these streets has been assessed as to how well and to what extent they support pedestrian linkages, and how these linkages can be enhanced through streetscape improvements and other measures.



The following pages highlight recommendations regarding urban design guidance for open space, and placemaking improvements to transform Springfield into a more pedestrian-oriented environment. These pathways and places show the connectivity among the quadrants by creating networks beyond the roadway patterns. It is organized into three sections:

1. Recommendation for an Open Space Framework Plan
2. Identification of existing open spaces
3. Illustrations of comparable images of various open space types

Systems Map

The plan on this page depicts a "framework" of existing and proposed open spaces and connections within and adjacent to the Springfield Study area. The primary goal of illustrating connectivity and linkages of corridors, streets, trails, and bike facilities.

As mentioned previously, Springfield is very fragmented and bisected by major transportation corridors - I-95 is by far the largest. The primary pedestrian-oriented corridors linking both sides of I-95 are Commerce Street and the existing pedestrian bridge across I-95 near the GSA. This pedestrian bridge, the only connection between both sides of I-95 on south of Franconia-Springfield Parkway, is planned to be removed during the construction of improvements to the Franconia-Springfield Parkway. It should be replaced to preserve the connection.

The thick, solid aqua lines depict primary pedestrian and bicycle movements and potential "loops" on both sides of the Interstate. The thin aqua lines depict pedestrian and bicycle movements between these quadrant loops.

Proposed recommendations include:

- Gateways - Primary entrance points, portals at significant intersections
- Placemarking Opportunities - Whether public or private, these are places and spaces within the built environment, accessible to the public to enhance the quality of life.
- Landscaped Roadway Corridors - These design lines represent the need for more "regional" connectivity and linkages.

The green asterisks represent three different placemaking "scales". The larger asterisk represents a significantly scaled major open space, i.e., a town square or central plaza. Green or paved or a combination thereof, these spaces should be designed to accommodate large venues, audiences and should be animated by appropriate mixes of use. Smaller, secondary open spaces, such as pocket parks, tot lots, dog walk areas, sports courts, or other smaller open spaces are shown as medium and small asterisks.

Many existing open spaces adjacent to the study area are the primary recreational amenities or green buffer for residents of the Springfield community. They are categorized into three types:

- Organized - existing parks or schools
- Natural Systems - natural drainage areas, restricted open spaces, storm water facilities, etc.
- Accotink Stream Valley Park and Corridor

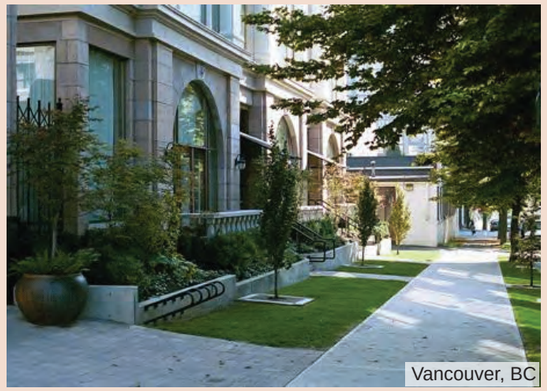
The following pages represent a possible vision for the proposed open spaces and depict existing open spaces .

Wilmington, DE

Miami, FL

Silver Spring, MD

Lincoln Street, Columbia, SC


Vancouver, BC

Vancouver, BC

Gateway

As identified on the System Map Diagram as purple circles or ovals, these areas are primary gateway opportunities in Springfield. A gateway is an entrance or portal into a community or neighborhood. It announces to drivers, bicyclists and pedestrians the entrances to important places or destinations. The gateway creates the first impression of that location. Generally, they should be located at intersections of key streets. They should accommodate both public and private participation in creating and emphasizing a theme or brand for Springfield. The brand design, materials, and condition of a gateway communicate to an observer what they can expect from the location as a whole. They reflect the character of the community, or the character that the community would like to portray. The design of the gateway can contain signage, landscape, architectural elements as illustrated in the photographs to the left.

Placemaking Opportunity Sites

Placemaking opportunities are significant civic places. The “Town Square” in several Springfield Quadrants exemplify these opportunities. They serve as focal points for urban centers and provide opportunity for organized and casual recreation. These areas help establish a design vocabulary of furniture, materials, and planting and help add to the sense of place and character for the area. They serve to clearly demarcate pedestrian and vehicular circulation, add pleasure and enjoyment to the environment and provide opportunities for special interaction, recreation, exercise, civic gathering and special events. Safety and security are equally important for these areas. They create a hierarchy of spaces to provide different level of use. Design of these spaces should encourage community involvement, thus cultivating a sense of ownership among residents and business owners.

Landscaped Roadways Corridors

These are the streets and open space corridors. They become lineal, green spaces that enhance the pedestrian, and accommodate the bicyclist. They separate the pedestrian and the motorist. They also provide spaces for some recreational uses, such as jogging.

Theme/Branding

A theme or a branding system should be created through the design of Gateway, placemaking opportunity sites and streetscape elements. A single theme, such as ULI’s recommendation of “water” or “spring”, should be expressed in each of the quadrant. Any redevelopment should be an opportunity to incorporate, contribute to and build upon the theme. The choice of the theme could also be an opportunity for public participation.

Central Green

Farragut Square, Washington DC

Munn Park, Lakeland, FL

Urban Plaza

Reston, VA

Silver Spring, MD

Pocket Park

Bethesda, MD

Open spaces within the study area should be considered urban park spaces and should focus on functionality and use of these spaces for recreation activities as well as create a unique sense of place integrated within future uses and neighborhoods".

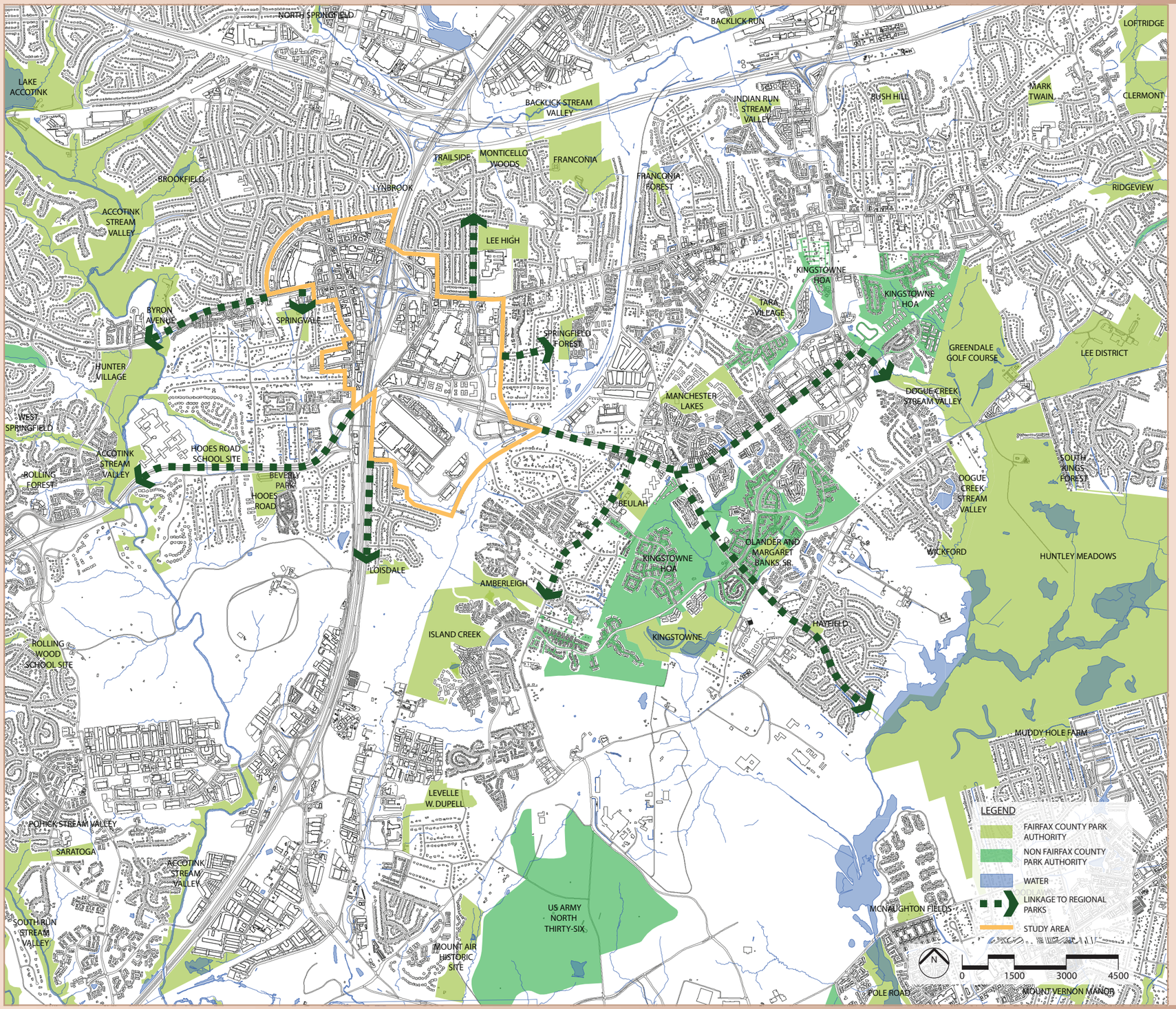
Urban open spaces should be provided in a "tiered" urban park system. The Systems Map and Open Space Framework Plan represent a series of "suggested" locations for these "tiered" open spaces to be sited. As Springfield transitions to a more urban community with higher density development, the County in partnership with the private sector should fulfill these requirements. This "tiered" urban park system is categorized as follows:

- Central Green - (larger, centralized spaces) - These park spaces are considered more "traditional" community parks, provide a combination of passive and active recreational opportunities such as trails, outdoor courts, etc. They could be very formal (I.e. Town Squares) to very informal and recreational focused.

- Urban Plaza - (median-sized space) - In these places, the line between public and private is not clearly defined. Public/private partnership are encouraged to "share" with the implementation of these spaces. These places include a great range of recreational facilities and amenities - both active and passive. Elements could include: plazas, water features, tot-lots, off-leash dog areas, multi-use courts, community garden plots and skate parks.

- Pocket Park - (smaller, infill-type space) - These places would likely be integrated into future mixed-use development projects to provide publicly accessible outdoor spaces for casual, social activities, such as gathering areas, plazas for outdoor dining, sites amenities like fountains or other focal elements of interest.

The images on the left depict the character of what these spaces and places could look like.



Future redevelopment in Springfield will also create additional need for active recreation such as field sports or other athletic activities. These activities require larger park sites that cannot reasonably be accommodated within the study area. Those recreation needs may be mitigated using spaces outside of the study area, but within the park service area for the region.

Several existing park sites are located at the edges of the study area. These sites provide an opportunity for larger-scale recreational facilities to serve the study area residents. As re-development occurs, these most proximate parks can be updated to include newer, more urban oriented facilities. Parks at the edge of the study area are:

- Lee High Park
- Springfield Forest Park
- Springvale Park
- Loisdale Park

These parks are close enough to the study area that pedestrian/bicycle linkages to the study area development are possible.

Several larger parks, which can be accessed by vehicles, will also serve new residents of the study area. Some of these parks include:

- Lee District Park
- Accotink Stream Valley
- Huntley Meadows Park
- Hooes Road Park

Robert E. Lee High School and Lee High Park

Hooes Road Park

Garfield Elementary School and Springvale Park

Existing Organized Open Space

These open spaces are existing parks and public school sites available to the public for recreation - passive and active. They include:

Parks - Hooes Road
Beverly
Springvale
Lee High
Schools - Garfield Elementary
Forestdale Elementary
Springfield Estates Elementary
Francis Scott Key Middle
Robert E. Lee High

WMATA Storm Water Management Area

South of Springfield Center Drive

Hampton Creek

Existing Natural Systems

These open spaces are existing, unorganized spaces and natural ecosystems whether by design or naturally occurring. They are “green spaces”, but are not “public” and don’t support recreation activities. They function as storm water management ares, wetland, or green buffer. They include:

- WMATA Storm Water Management Area
- South of Springfield Center Drive
- Hampton Creek

South of Old Keene Mill Road

North of Franconia-Springfield Parkway

North of Old Keene Mill Road

Accotink Stream Valley Natural / Recreation Ecosystem

The Accotink Creek is a tidal tributary stream of the Potomac River and the most significant stream ecosystem in all of Springfield. The stream valley parallels I-95, north to south, but is located outside the study area to the west.

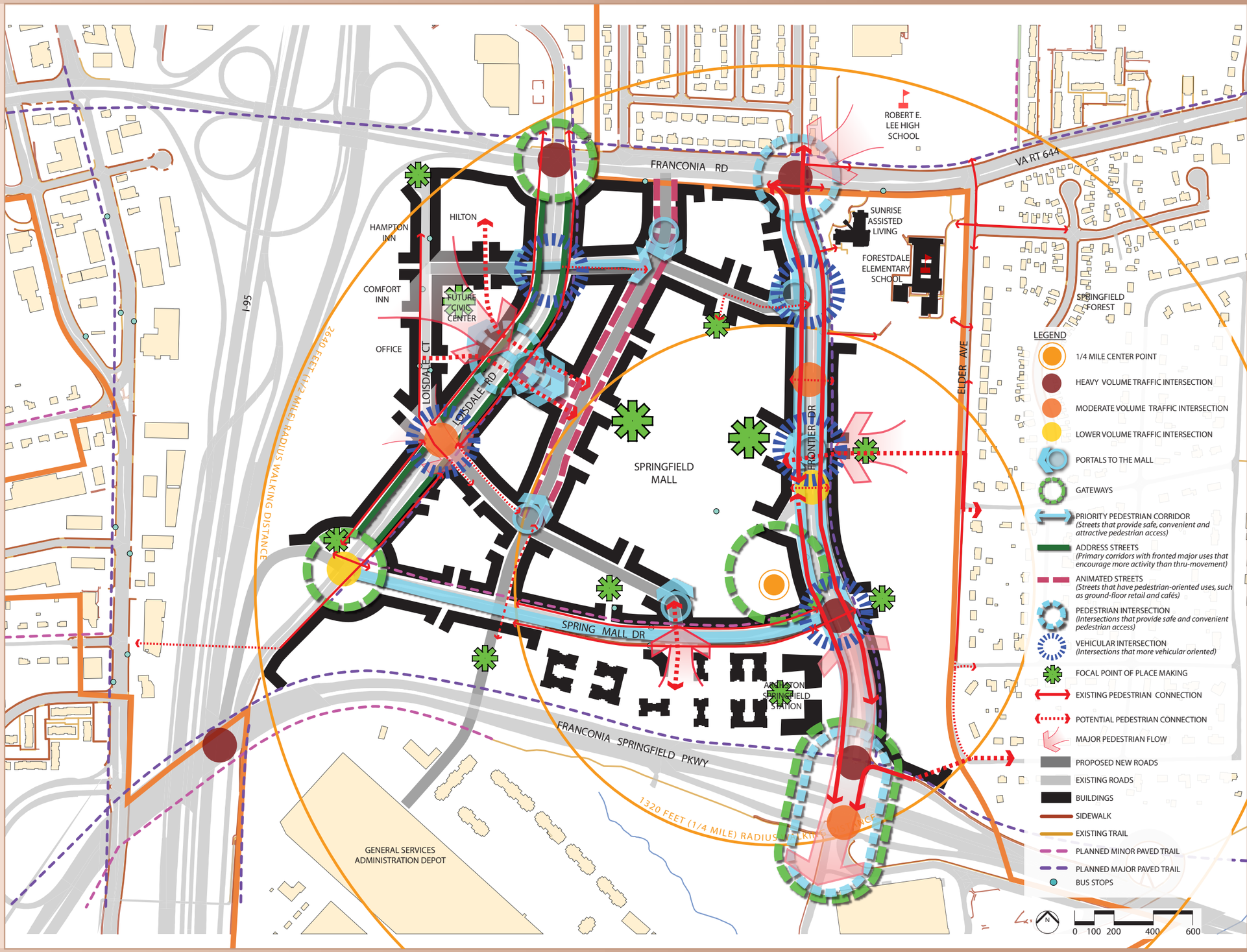
The Springfield Mall area offers many opportunities for improved pedestrian and transit connections.

Reconfiguration of the mall would allow for a place making opportunity along Frontier Drive and Loisdale Road, and create connection to the Metro Station. If this occurs, these entrances could serve as a major pedestrian accesses into the mall. Other key points are across Franconia Road from Lee High School, and points to the south across Spring Mall Drive and into the Metro Station.

The enclosed mall is directed inward, but, from a connectivity standpoint, can be modified to function better as public space. The redevelopment of the mall could become an integrated mixed use activity center, improving the community as a whole.

Loisdale Road, in particular, has the opportunity to become an “address street” where companies throughout the region would want to locate and could be redefined with street-level activities. To reinforce this status, pedestrian facilities should be maximized and the streetscape enhanced. A new internal north-south mall road offers an opportunity to complement activity along Frontier Drive with an animated streetscape and ground floor retail. Frontier Drive and Spring Mall Drive are envisioned to serve as pedestrian priority corridors and require pedestrian improvement.

Within this area are several possible gateways – at Loisdale and Franconia Roads, at Loisdale and Spring Mall Drive, between the mall and the Metro station along Frontier Drive, and at existing Macy’s garage.



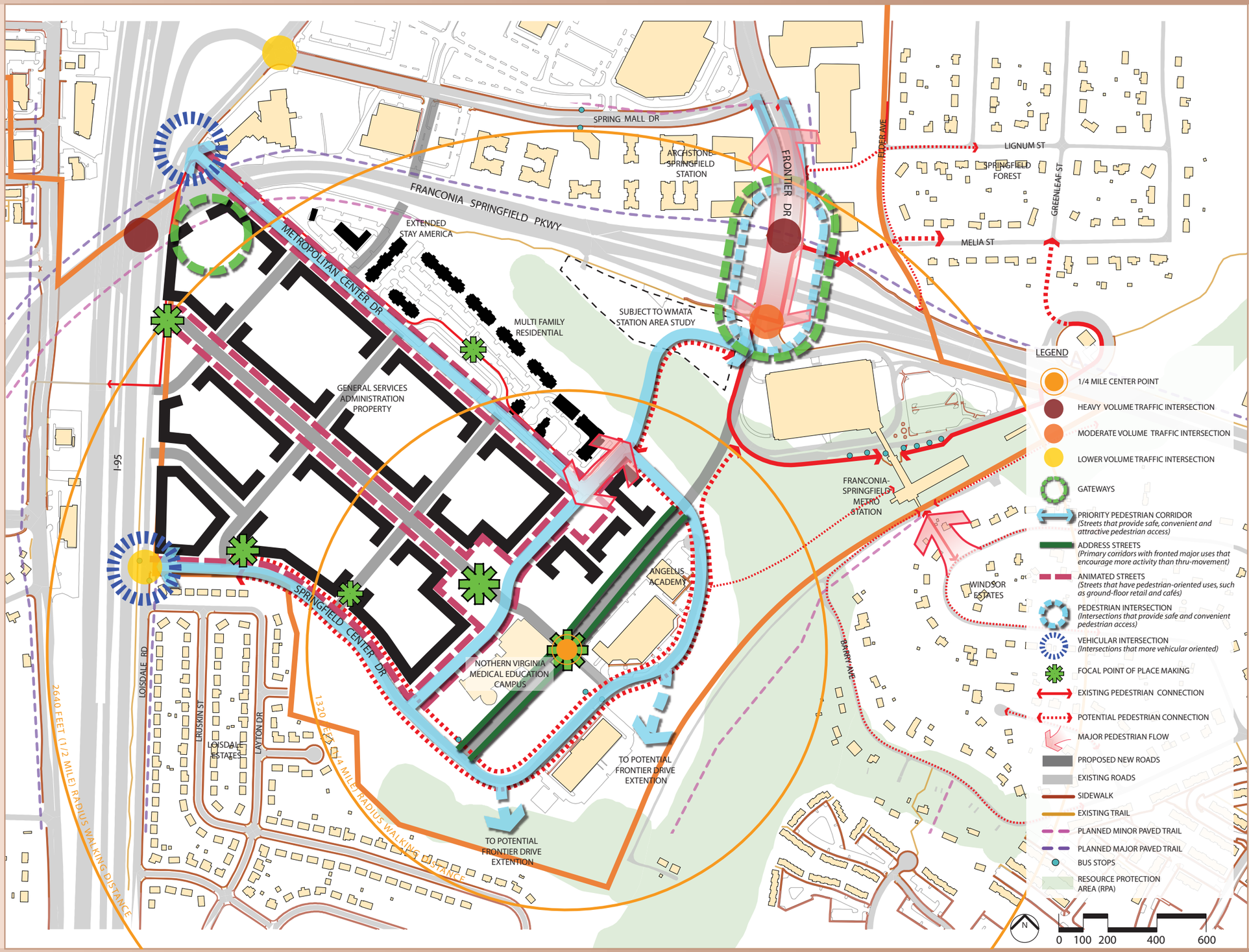
The General Services Administration property provides a significant opportunity for large-scale redevelopment in the study area. Providing the appropriate pedestrian infrastructure and street connections will be important as this area is redeveloped, especially connections to the Franconia-Springfield Metro Station and to the Springfield Mall across Franconia-Springfield Parkway. Currently, WMATA is conducting a study to evaluate feasibility of locating Metro police sub-station and cell phone waiting area within the study area.

This framework plan shows a grid of streets at the GSA site, with new buildings fronting Metropolitan Center Drive and Springfield Center Drive, creating a street edge. These streets, as well as a new "spine" road that parallels these drives, should be animated with pedestrian-supportive uses. The intersection of this spine road with a new road connecting to Frontier Drive provides an opportunity to create a public space across from the existing Northern Virginia Medical Education campus. The existing uses north of Metropolitan Center Drive also would be retained but with pedestrian facilities that connect it to the new development within the grid of streets area.

The intersection of Metropolitan Center Drive and Loisdale Road should serve as a gateway into the redeveloped area. The intersection of Frontier Drive and Franconia-Springfield Parkway also serves as a gateway, as well as a pedestrian intersection linking the Metro Station and the areas to the south with the Springfield Mall area and residential and retail uses to the north of the parkway. Improved connections between the Metro station and the GSA area, such as the extension of Frontier Driver, should be considered.

With the allocation of government/military workforce as a result of BRAC, the GSA area will likely be a high security area. The open space for placemaking should serve the employee in this quadrant, but may not function as a public space from a programming or after hours utilization standpoint. To achive its security requirement, limited setbacks should be recommended. The NCPC's (National Capital Planning Commission) National Capital Urban Design and Security Plan could be used as reference for the design of open space and streetscape features.

The existing pedestrian bridge crossing I-95 is planned to be removed with Franconia-Springfield Parkway ramp improvements, but replacement should be considered to maintain the pedestrian/bicycle connectivity.



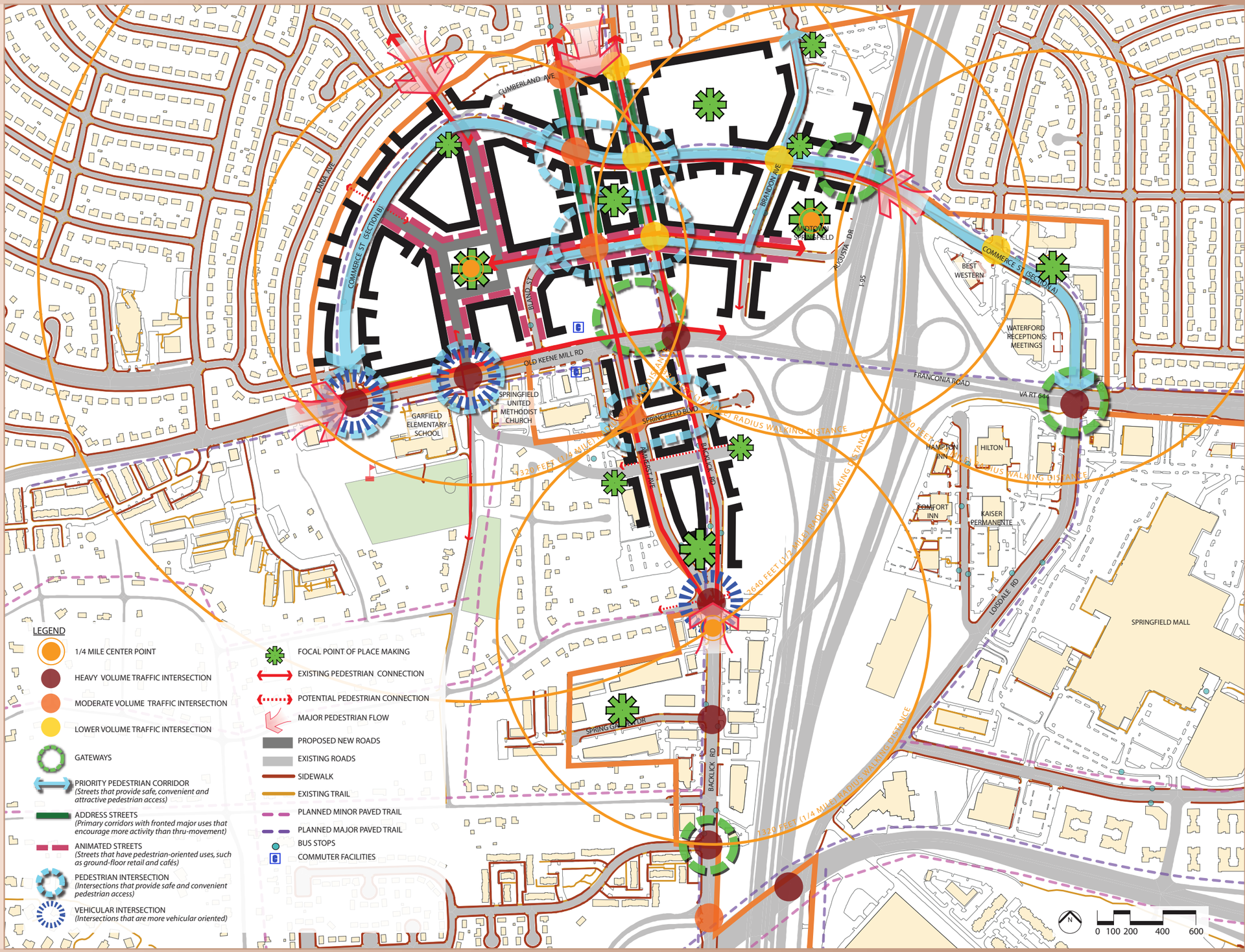
The Northwest, Northeast and Southwest quadrants present several opportunities to connect the adjacent neighborhoods to the area's retail uses and to improve connections and pedestrian facilities amid a heavily-traveled transportation corridor. The Community Business Center encompasses the Northwest and Southwest quadrants, west of I-95. The BRAC proceedings, which involve the relocation of Department of Defense government agencies to the Engineer Proving Grounds, reinforces the need for better connections, road improvements, and the addition of multi-modal facilities/ amenities to the Community Business Center, on the west side of I-95.

Commerce Street rings the Northwest quadrant and could serve as a priority pedestrian corridor with the planned paved trail along this road. Gateway opportunities exist in the area where Commerce Street crosses Interstate 95 from the east, and in the area of Amherst Avenue and Backlick Road north of Old Keene Mill Road.

The parallel roadways of Amherst Avenue and Backlick Road carry moderate amounts of traffic and their intersections with Commerce and Bland Streets provide pedestrian connections. Improvements to these roads will be necessary due to BRAC. Two blocks along each street in this area offer the potential of becoming "address streets". The confluence of these roadways, in the Southwest Quadrant, provides a convenient access and connection to the Engineer Proving Grounds and should be considered a gateway.

This framework plan shows a conceptual redevelopment of the Springfield Plaza shopping center, which is bounded by Commerce Street and Amherst Avenue. The plans illustrate a public square and improved road and pedestrian connections to the streets and areas around it. These streets should be animated with ground-floor retail uses that cater to pedestrian activity. As with other framework plans, building locations are generalized.

Another key pedestrian feature denoted at Old Keene Mill Road, between Bland and Commerce Streets, responds to the need to make safe a major pedestrian crossing location used by commuters who join car pools on the south side of Old Keene Mill Road after parking at Springfield Plaza, which offers a commuter parking area.



Sustainable development includes concepts for regional planning as well as specific site design elements.

The U.S. Green Building Council (USGBC) is a non profit organization that certifies sustainable businesses, homes, hospitals, schools, and neighborhoods. USGBC is dedicated to expanding green building practices and education, and its LEED® (Leadership in Energy and Environmental Design) Green Building Rating System™.

Their Mission states: To transform the way buildings and communities are designed, built and operated, enabling an environmentally and socially responsible, healthy and prosperous environment that improves the quality of life.

The LEED program is currently the most widely accepted standard for sustainable and green practices in the country. This program has been useful for measuring the relative sustainability of buildings and renovations of structures. However, from a site design and planning perspective an accepted standard has not yet been established. The USGBC (United States Green Building Council) program under development, known as "LEED for Neighborhood Development", addresses environmental issues at a large scale. This program may be a good model for Springfield and the County to follow in the use of sustainable practices.

Municipalities and local governments are increasingly stepping ahead of the federal government and states in the area of sustainable practices. As part of a highly urbanized region, Springfield and Fairfax County are in an area where environmental issues are particularly relevant. By employing sustainability in planning and design, Springfield can promote increased quality of life for the public and improve the quality of natural resources.

The following bullets are a summary of best practices outlined by this program and are separated into items that should be incorporated into planning policy, and those that are site specific. These should be the guiding principles for Fairfax County to consider as this "movement" becomes internationally embraced. These could be implemented in the public realm or by private developers. These items can be seen as a starting point, as there are many more specific issues that can be addressed:

Planning

- Locate development near existing or planned public transportation or neighborhood shops, services, and facilities.
- Locate development where it can be served by existing water and waste water infrastructure.
- Locate development on sites where imperiled species or ecological communities do not occur.
- Locate development on sites that do not include wetlands or water bodies.
- Locate development on sites that have a minimal amount of prime agricultural or unique soils.
- Locate development so that it does not occur in floodplains.
- Locate development on brownfields or sites that present an opportunity for environmental improvement.
- Locate development in existing communities on infill sites or sites adjacent to developed sites.
- Locate developments so that they are in walking distance of existing or proposed schools.
- Establish deed restrictions that do not prevent growing food on residential properties.
- Promote mixed use development that allows users to address a variety of needs without making additional vehicle trips.
- Include a residential component to site developments.
- Include a variety of housing types in a development
- Include rental units as part of a residential development.
- Include moderately priced dwelling units as part of a residential development.
- Provide street networks that promote interconnectivity .
- Provide public transit facilities.
- Locate public open spaces within walking distance of most dwelling units in a residential development.

Public Realm And Project Sites

- Avoid disturbing portions of a project site that have slopes greater than 15%.
- Incorporate bicycle facilities into development.
- Protect portions of a site that include significant native habitat or wetlands.
- Restore native habitat and wetlands on a site and remove invasive species.
- Create a management plan for native habitat and wetlands that includes a funding source.
- Designate streets and sidewalks that are part of a project to be for public use.
- Maximize density in residential developments by building high numbers of dwelling units per acre.
- Locate parking at the sides or rears of buildings.
- Provide adequate sidewalks and comfortable pedestrian environments.
- Provide handicap accessible routes and facilities throughout a project.
- Include public meetings as part of the design process.
- Create a sediment erosion control plan for all construction activities.
- Construct buildings in a project to be LEED certified structures.
- Minimize water use for irrigation or other functions on a site.
- Reuse existing buildings when feasible.
- Minimize site disturbance through site design.
- Minimize site disturbance during construction.
- Cleanup brownfield sites.
- Reduce impervious surface
- Reduce pollutant loads in stormwater and mimic natural hydrology in stormwater management, greenroofs, rainwater cisterns, green water systems, etc.
- Plant trees to provide shade.
- Site buildings and other facilities to take the best advantage of solar orientation for heating and cooling.
- Include on site energy production by means of clean renewable energy sources.
- Provide a centralized heating and cooling system for various buildings on a site.
- Use lighting fixtures that reduce power consumption.
- Reuse wasterwater onsite where possible.
- Use recycled materials during construction.
- Recycle or trade construction waste materials.
- Implement a recycling program for facilities developed on a site.
- Minimize light pollution by lighting only areas that are necessary for safety.

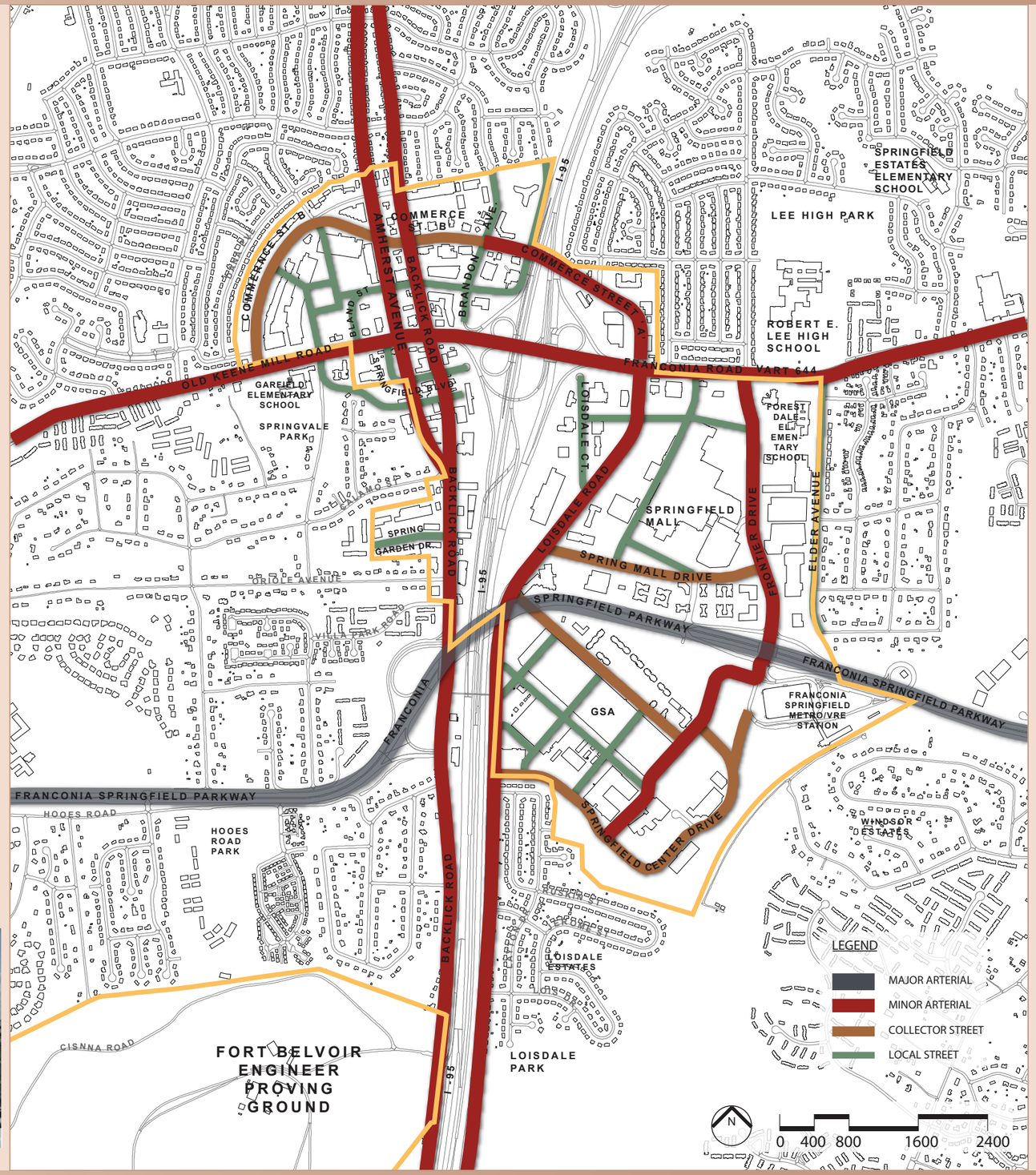
A typology of streets was developed to create a pattern of context sensitive road designs for Springfield, based on the need of the surrounding land use. The proposed roadway cross sections establish a framework that can be used to improve roads and facilitate active streetscapes. The framework provides guidance to achieve smoothly flowing modes of transportation including pedestrian, cycling, and vehicular traffic. Consistent and continuous street and streetscape treatments will reduce pedestrian and vehicular conflicts and improve accessibility. A primary aim of these recommendations is to strengthen the sense of place in Springfield by reinforcing the existing urban infrastructure and enhancing multimodal opportunities.

The road classification system included in this document expands upon VDOT's functional classification system*. The intent is to use this document to collaborate with VDOT to prepare and agree upon context sensitive design strategies in support of VDOT objectives and community desires. Four different street types are addressed:

- Major Arterial
- Minor Arterial
- Collector Street
- Local Street

Each street type has particular characteristics in terms of traffic capacity, lane width, sidewalks, setbacks, building zone, landscape buffers and other elements. To illustrate the proposed improvements to the pedestrian and vehicular realm in Springfield, cross-sections have been generated for the last three types of street. The cross sections show how Springfield's identity and sense of place can be enhanced as streets are rebuilt and adjacent uses are developed .

The map at right shows the proposed roadway classification of each street in the study area. Street qualitative analysis and recommendation of streetscape elements are shown on the next few pages, followed by cross sections for each type of street.



*The Highway System in Virginia has been functionally classified as Principal Arterial, Minor Arterial, Collector and Local Service. The American Association of State Highway and Transportation Officials (AASHTO) utilizes, as presented in the Publication:A Policy on Geometric Design of Highways and Streets, a similar functional classification system. The designations used are Freeway, Arterial, Collector, and Local Roads and Streets. Relationships between the two classification systems have been generally developed.
Principal and Minor Arterial highways provide direct service between cities and larger towns and are high speed, high volume facilities. Collector highways serve small towns directly, connecting them and local roads to the arterial systems.
-VIRGINIA DEPARTMENT OF TRANSPORTATION, ROAD DESIGN MANUAL, VOLUME I, Copyright 2005, Commonwealth of Virginia, APPENDIX A - DESIGN GUIDELINES, Page A-60, http://www.extranet.vdot.state.va.us/locdes/Electronic%20Pubs/2005%20RDM/RoadDesignCoverVol.1.pdf

Bland St. Looking East

Metropolitan Center Dr. Looking East

Frontier Dr. Looking South

Within context sensitive design, streets serve an urban design function as well as a transportation function. The table at right shows how the streets within the Springfield area can function as both in the future. A street such as Loisdale Road, for example, serves as a minor arterial from a transportation perspective, while, in terms of urban design, it functions primarily as both an address street and pedestrian priority street through the study area.

A street, in this context, can be an address street, a pedestrian priority street, or a service street, or some combination of the three, depending on the pedestrian and urban design function they serve. The table at right shows the proposed classifications of these streets, as well as a qualitative analysis of their urban design function, and existing and proposed rights-of-way.

The Franconia-Springfield Parkway and Franconia Road between I-95 and Frontier Drive within the study area, function as major arterials and would not necessitate streetscape improvements. As such, the Future State descriptions remain blank.

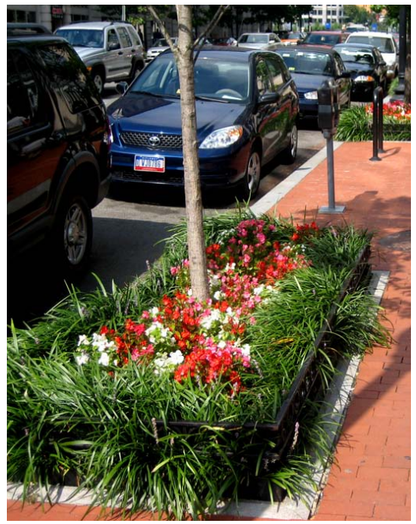
The proposed right-of-way of streets within the Springfield area is based on typical sections shown in the following pages.

	STREET NAME	PROPOSED ROADWAY CLASSIFICATION	FUTURE STATE: ADDRESS STREET/ PEDESTRIAN PRIORITY STREET/ SERVICE STREET	EXISTING R.O.W.	PROPOSED * R.O.W.
1	Franconia Road**	Major Arterial		210’ - 231’	Same
2	Old Keene Mill Road	Minor Arterial		133’ - 151’	Same
3	Franconia Springfield Parkway**	Major Arterial		174’ - 252’	Same
4	Amherst Avenue	Minor Arterial		82’ - 121’	116’
5	Backlick Road	Minor Arterial		78’ - 103’	116’
6	Commerce Street Section A	Minor Arterial		91’ - 125’	116’
7	Commerce Street Section B	Collector Street		79’	94’
8	Frontier Drive	Minor Arterial		120’ - 138’	116’
9	Spring Mall Drive	Collector Street		86’	94’
10	Loisdale Road	Minor Arterial		82’ - 135’	116’
11	Bland Street	Local Street		50’ - 70’	78’
12	Loisdale Court	Local Street		45’ - 60’	78’
13	Brandon Avenue	Local Street		66’	78’
14	Springfield Center Drive	Collector Street		60’	94’
15	Springfield Blvd.	Local Street		57’ - 60’	78’
16	Spring Garden Drive	Local Street		50’	78’
17	Metropolitan Center Drive	Collector Street		72’	94’

Address Street Pedestrian Priority Street Service Street

*These sections are exclusive of any additional right-of-way needed to provide turn lanes or additional capacity at intersections
**Franconia Road and Franconia-Springfield Parkway are primarily limited access in the Springfield study area and do not function as address streets, pedestrian priority streets or service streets

STREET TREES WITH PLANTING BEDS



TREE GRATES

PLANTERS

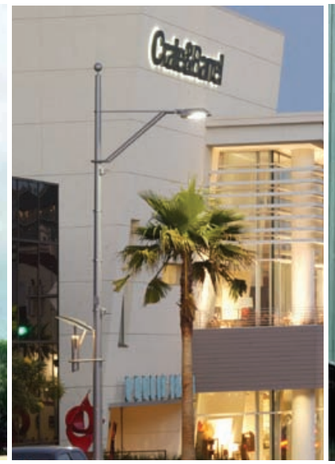
MEDIAN

PARKING LOT

The design of new street elements should complement the existing features, in order to create a consistent theme and sense of the place. A branding theme should be considered to create an image for Springfield. Size and scale form significant parts of the visual aspect of a street. Simple, well designed structures add character to a street. Establishing guidelines can create uniform application of these amenities and can reinforce the hierarchy of streets and places. Signage, public information strategy and other wayfinding elements, which includes banners, street maps, street signs, directional signs, etc., should be designed to coordinate with the guidelines.

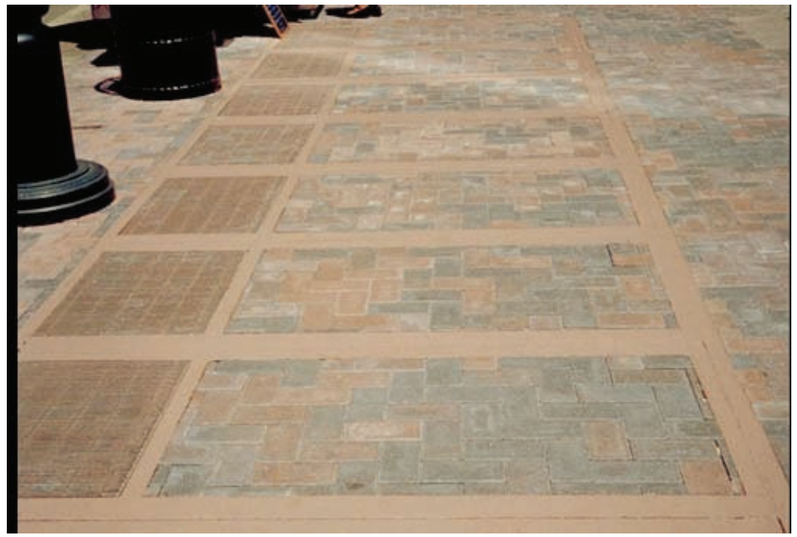
The images above and in the following pages illustrate examples of treatment for different street elements.

Street trees/ planter boxes/ planting strips not only form barriers between vehicle and pedestrian traffic but also provide shade to pedestrians. Street trees should be planted in the landscape and amenity zones on all streets where possible. Continuous street tree trenches will provide maximum soil area for roots to spread and water and air to penetrate. Species that are adaptable with urban street constrains should be used. Planting beds with perennials or groundcovers can be used where the sidewalk is wide. Tree grates should be used where there is heavy pedestrian traffic. Planters can be used at curb extensions. Street medians should be planted with trees and lawn or groundcovers. All surface parking lots should be landscaped and provide shade for parked cars.



STREET LIGHTING

BUS SHELTER



PAVING

Contemporary style high-level lights with a large amount of space between the lights should be used. High level lights would be unobtrusive. They will provide light, but not detract from the architecture and lights of the adjacent businesses. Some low-level pedestrian lights can also be attached to the pole of high level light to provide additional lighting for pedestrian. Other pedestrian scale lights should be used in more intimate applications on smaller streets, open spaces, etc.

Bus shelters should also follow a contemporary style to fit with other site furnishing components. Shelters should be located adjacent to paved sidewalks in locations that will not impede pedestrian circulation. Seating and signs with bus route maps and schedules should be provided.

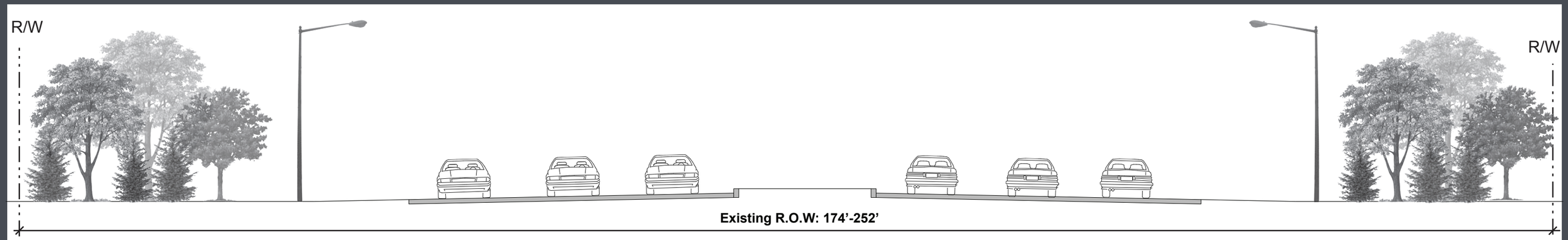
Paving should use materials and patterns that are more contemporary in style. Different materials and patterns can be used to define different zones and uses.

BENCHES

TRASH RECEPTACLES

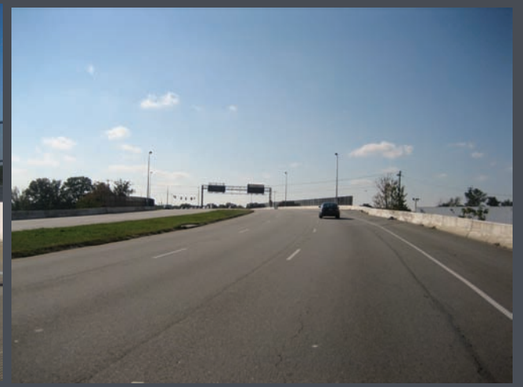
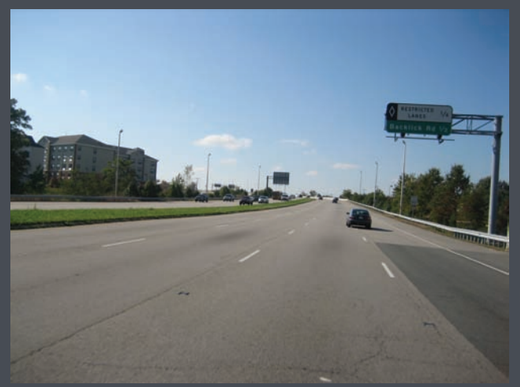
BIKE RACKS

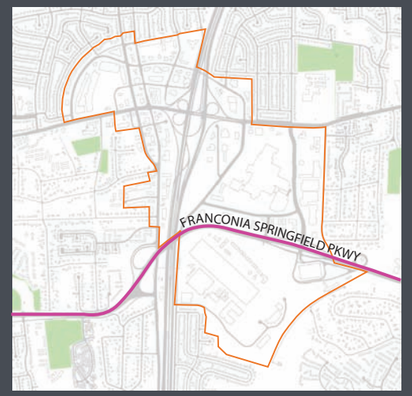
Street elements like benches, trash receptacle, newspapers stands, light fixtures, etc., can add amenity to the user, but over-use can clutter a street. Using a contemporary style of site furnishing should be consistent to reflect the character of Springfield. Furnishings should be low-maintenance, vandal-resistant, and easily replaceable. Benches, trash receptacles and bike racks would be best placed at curb extension areas, amenity zones along sidewalks or other areas where there is sufficient room for them without interfering with pedestrian traffic. Neither of these items should conflict with the opening of doors for parallel parked cars.



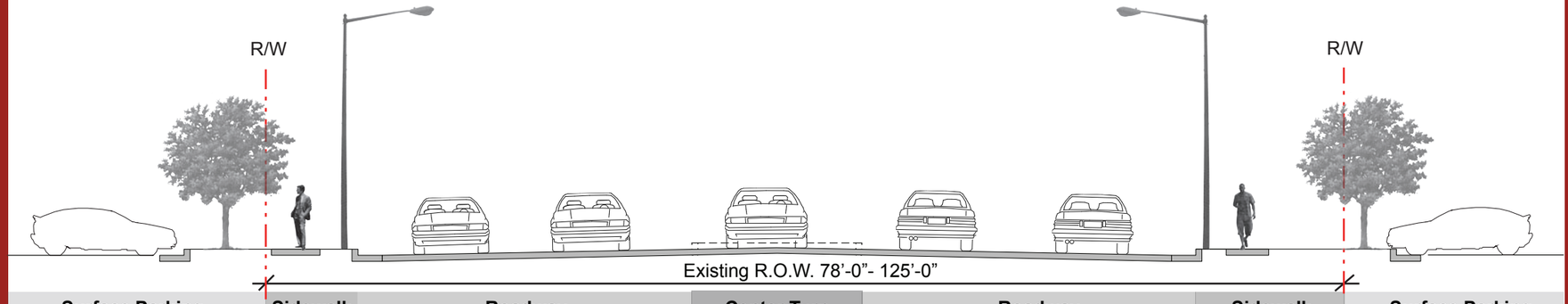
Transition Area with vegetation	**Shoulder** 10’ wide, asphalt	**Roadway** 3 travel lanes with turn lanes and on and off ramp	**Center Median** grass or concrete, width varies	**Roadway** 3 travel lanes with turn lanes and on and off ramps	**Shoulder** 10’ wide, asphalt	**Transition Area** with vegetation

FRANCONIA SPRINGFIELD PKWY - TYPICAL EXISTING CONDITION

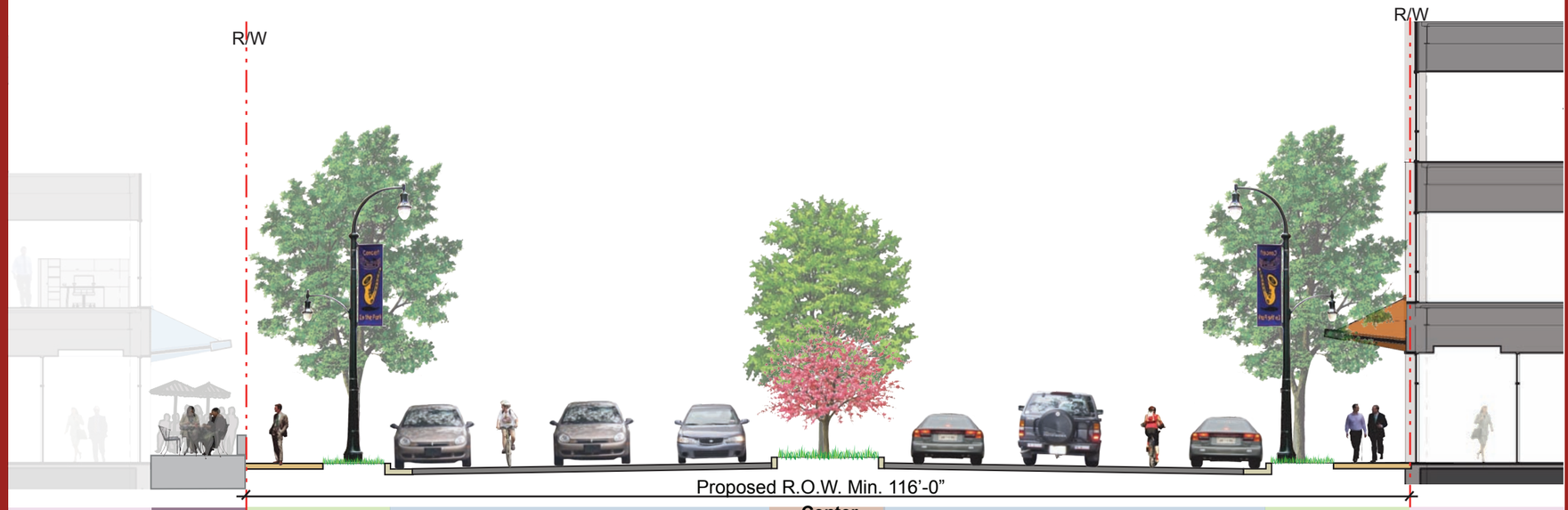


EXISTING CONDITION PHOTOS FRANCONIA SPRINGFIELD PKWY



Surface Parking	Sidewalk	Roadway	Center Turn Lane/Median	Roadway	Sidewalk	Surface Parking
serving adjacent commercial uses, with limited landscaping element	3’ to 6’ with min. 2’ grass median	2 travel lanes May have extra turn lanes Lane width varies	May or may not have center turn lane/ median Center median is concrete or landscaped Width varies	2 travel lanes May have extra turn lanes Lane width varies On street parking on east side of Backlick Rd, from south of Springfield Blvd.	3’ to 6’ with min. 2’ grass median	serving adjacent commercial uses, with limited landscaping element

TYPICAL EXISTING CONDITION



Commercial/ Offices	Building Zone	Sidewalk	Roadway	Center Median	Roadway	Sidewalk	Commercial/ Offices
Office with commercial/ restaurants at street level	Width varies	Min. 8’ with min. 7’ lawn panel	2 travel lanes @ 11’-0’ each, with 5’ bike lane, and 8’-0” parallel parking	Shade trees/ ornamental trees and /understory planting, min. 8’-0” max. 20’-0”	2 travel lanes @ 11’-0’ each, with 5’-0” bike lane and 8’-0” parallel parking	Min. 8’ with min. 7’ lawn panel	Office with commercial/ restaurants at street level

PROPOSED ROADWAY SECTION - TYPICAL

EXISTING CONDITION PHOTOS

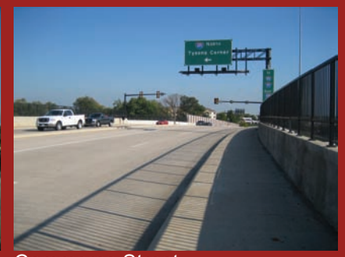
Backlick Road

Amherst Avenue

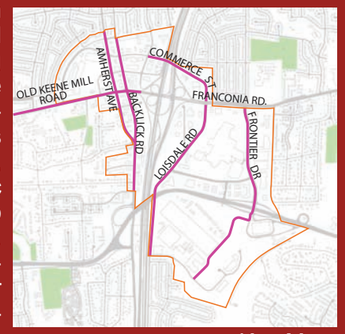
Loisdale Road

Loisdale Road

Frontier Drive


Commerce Street

Minor Arterial streets act as local distributors and through-streets, and carry significant volumes of vehicular traffic, as well as bicycle and pedestrian traffic. Minor Arterials should have special purpose lighting that would serve to enhance the vehicular and pedestrian experience. Since Minor Arterials have high traffic volumes, safety measures such as traffic medians should be employed to serve as a pedestrian refuge. Minor Arterials serve as front-doors to retail and offices. Their status in Springfield’s road hierarchy should be reflected in the design of detail and use of materials.



Key Map

Commercial/Office
Office with commercial/ restaurants at street level

PRIVATE
Width varies

Building Zone
width varies
Area associated with outdoor dining/ private use zone.

- A1 PAVING
  Brickpavers/ Concrete Pavers
- A2 SITE FURNISH-INGS
  Tables and chairs, benches, trash receptacle

Sidewalk
min. 8' wide

- B1 PAVING
  Brickpavers/ Concrete Pavers
- B2 SITE FURNISH-INGS
  Benches
  Street width to be min. 8' if outdoor seating is proposed

Landscape/ Amenity Panel
min. 7' wide

- C1 PAVING
  Brick pavers/ Concrete Pavers
- C2 SITE FURNISHINGS
  Bus Shelters/ Historical Pedestrian and Street Lights/ Trash Recep-tacle
- C3 LANDSCAPING
  Street Trees/ Understory Planting
  -Perennial
  -Ground
  -Cover/Lawn
  Mulch/ Contiguous Tree Root Zone

Parallel Parking Lane
min. 8' wide

- D1 PAVING
  Concrete Pavers/ Asphalt
- D2 CURB AND GUTTER
  Concrete Curb and Gutter
  Curb Cuts and Driveways
  - Concrete ramps, contiguous sidewalk finish, ADA ramps with truncated domes

Bike Lane
min. 5' wide

- E1 PAVING
  Asphalt

Roadway
2 travel lanes @ 11'-0" per lane

- F1 PAVING
  Crosswalks - Thermoplastic stripping/Unit pavers

Center Median
with landscaping
min 8'-0" , max 20'-0"

- G1 LANDSCAPING
  Street Trees/ Ornamental Trees/ Understory Planting
  - Evergreen or Perennial Ground Cover/Lawn

Commercial/Office
Office with commercial/ restaurants at street level

PRIVATE
Width varies

Building Zone
width varies
Area associated with outdoor dining/ private use zone.

A1 PAVING
Brickpavers/ Concrete Pavers

A2 SITE FURNISH-INGS
Tables and chairs, benches, trash receptacle

Sidewalk
min. 8' wide

B1 PAVING
Brickpavers/ Concrete Pavers

B2 SITE FURNISH-INGS
Benches
Street width to be min. 8' if outdoor seating is proposed

Landscape/Amenity Panel
min. 15' wide, allows for bus pull off area and potential right-of-way for future on-street parking, where necessary.

C1 PAVING
Brick pavers/ Concrete Pavers

C2 SITE FURNISHINGS
Bus Shelters/ Historical Pedestrian and Street Lights/ Trash Recep-tacle

C3 LANDSCAPING
Street Trees/ Understory Planting
-Perennial
-Ground
-Cover/Lawn
Mulch/ Contiguous Tree Root Zone

Bike Lane
min. 5' wide

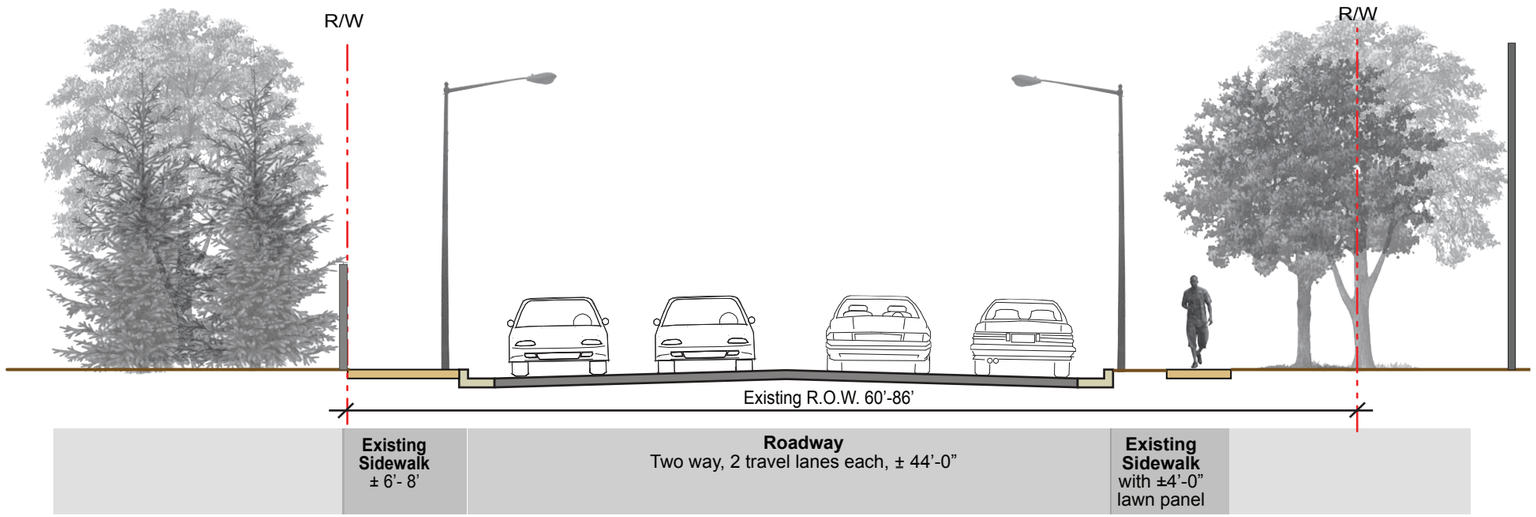
E1 PAVING
Asphalt

Roadway
2 travel lanes @ 11'-0" per lane

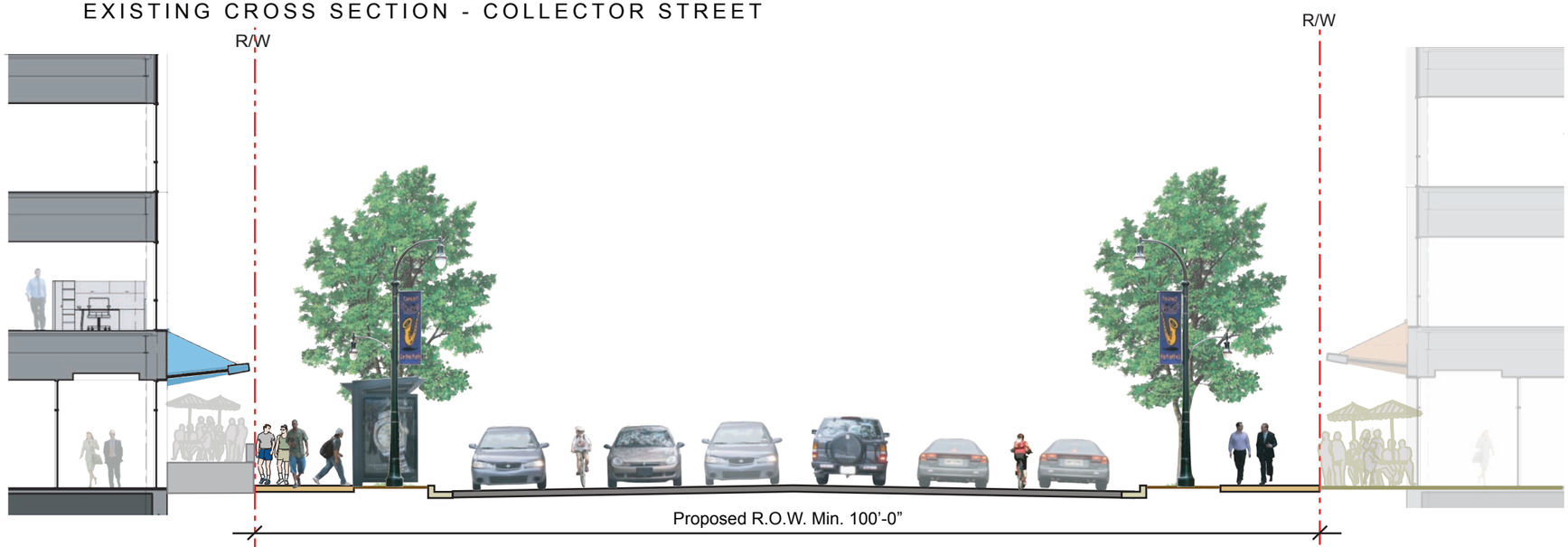
PAVING
F1 Crosswalks - Thermoplastic stripping/Unit pavers

Center Median
with landscaping
min 8'-0" , max 20'-0"

LANDSCAPING
G1 Street Trees/ Ornamental Trees/ Understory Planting
- Evergreen or Perennial Ground Cover/Lawn



EXISTING CROSS SECTION - COLLECTOR STREET



PROPOSED CROSS SECTION - COLLECTOR STREET

EXISTING CONDITION PHOTOS

Spring Mall Drive

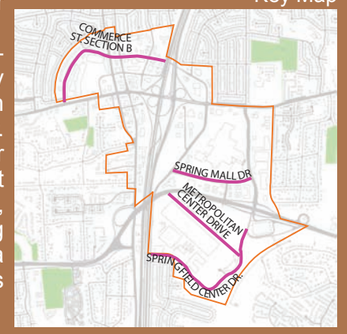
Springfield Center Drive

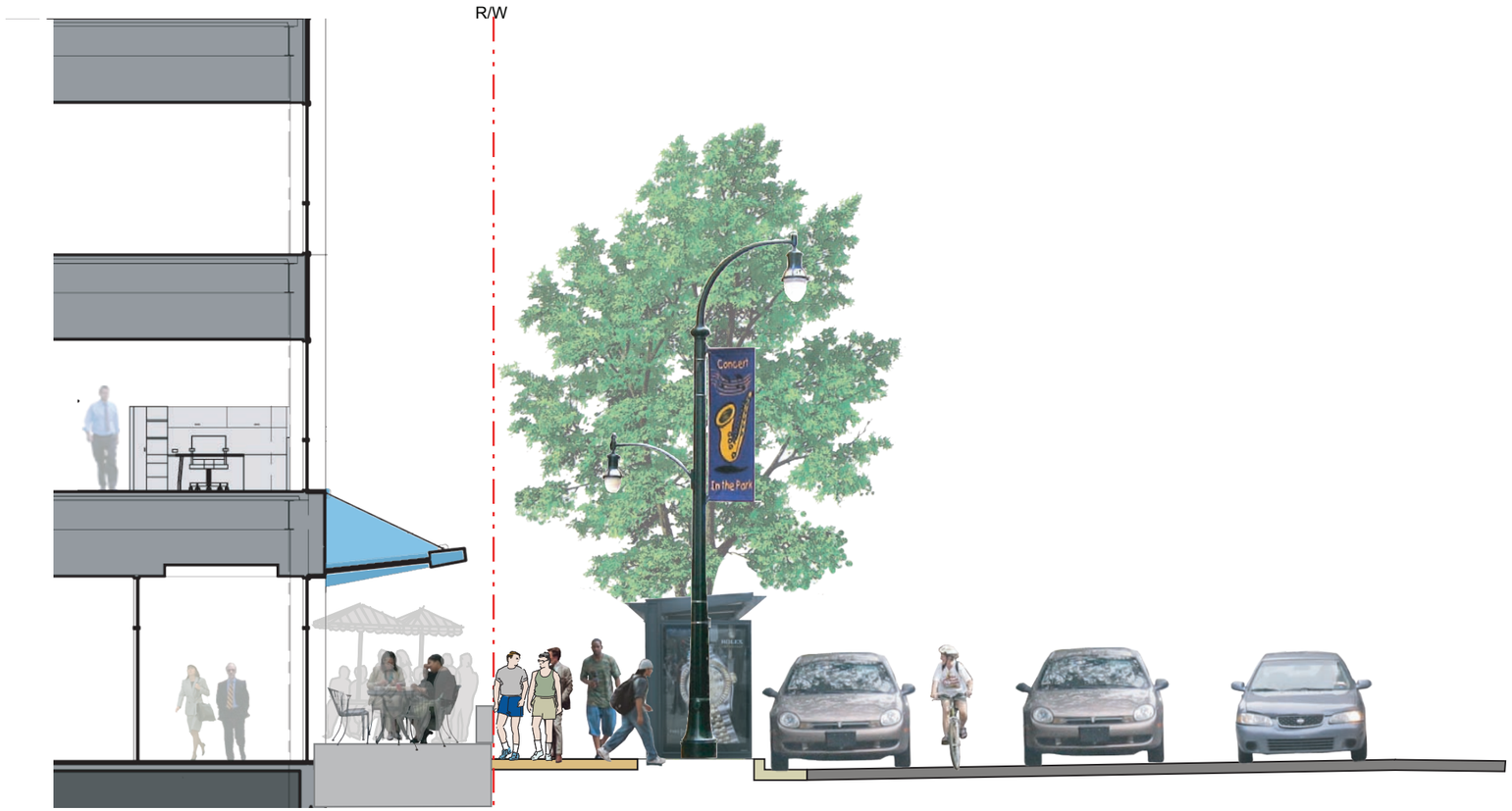
Commerce Street Section B

Metropolitan Center Drive

Collector Streets carry less vehicular traffic than Minor Arterials and act as local distributors from/to residential and commercial areas. They have to balance the scale between pedestrian and vehicular priority. The character of the Collector Streets can vary using different types of street trees, paving, lighting, and street furniture. Traffic calming measures may be employed in a Collector Street. Parallel parking is usually provided.

Key Map





Commercial/Office
Office with commercial/ restaurants at street level

PRIVATE
Width varies

Building Zone
width varies
Area associated with outdoor dining/ private use zone.

A1 PAVING
Brickpavers/ Concrete Pavers

A2 SITE FURNISH-INGS
Tables and chairs, benches, trash receptacle

Sidewalk
min. 8' wide

B1 PAVING
Brickpavers/ Concrete Pavers

B2 SITE FURNISH-INGS
Benches
Street width to be min. 8' if outdoor seating is proposed

Landscape/ Amenity Panel
min.7' wide

C1 PAVING
Brickpavers/ Concrete Pavers

C2 SITE FURNISHINGS
Bus Shelters/ Historical Pedestrian and Street Lights/ Trash Recep-tacle

C3 LANDSCAPING
Street Trees/ Understory Planting
-Perennial
-Ground
-Cover/Lawn
Mulch/ Contiguous Tree Root Zone

Parallel Parking Lane
min. 8' wide

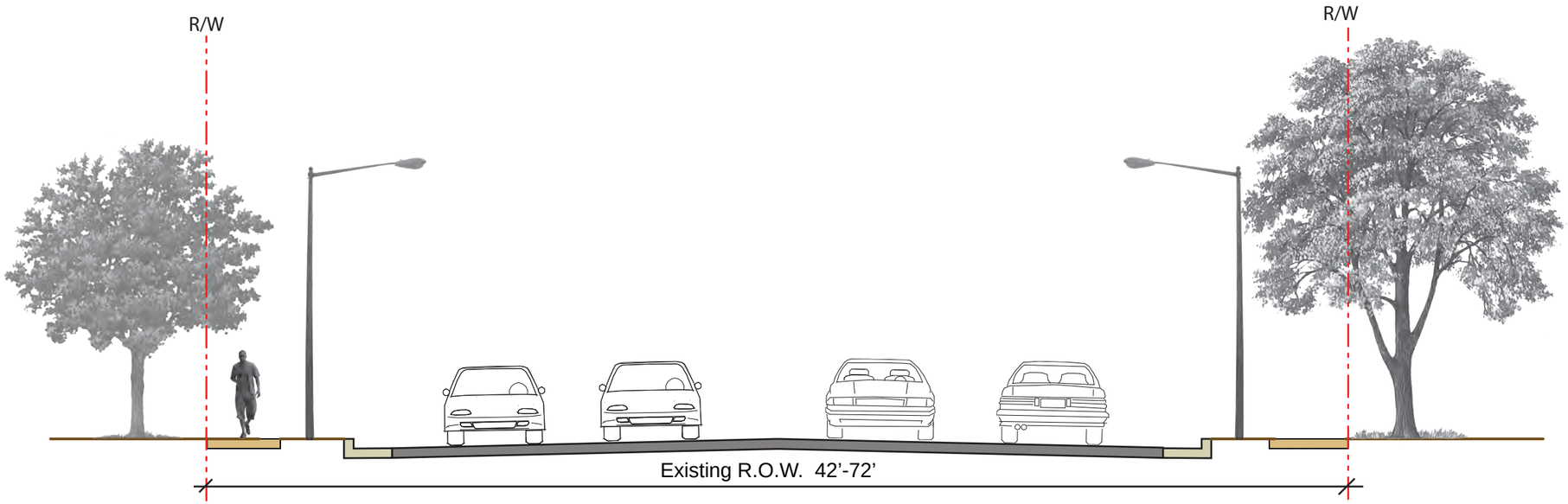
D1 PAVING
Concrete Pavers/ Asphalt

D2 CURB AND GUTTER
Concrete Curb and Gutter
Curb Cuts and Driveways
- Concrete ramps, contiguous sidewalk finish, ADA ramps with truncated domes

Roadway
2 travel lanes each way, 11' inside lanes, and 14' wide outside lanes

E1 PAVING
Asphalt
Crosswalks - Thermoplastic stripping/Unit pavers

PROPOSED CHARACTER IMAGES



	Existing Sidewalk ± 4’-0“ with ±4’-0” lawn panel	**Existing Two Way Roadway** ± 44’-0”	**Existing Sidewalk** ± 4’-0“ with ±4’-0” lawn panel

EXISTING CROSS SECTION - LOCAL STREET TYPE 1 AND TYPE 2

Springfield Blvd.

Loisdale Court

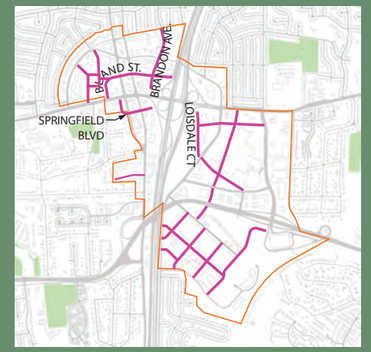
Loisdale Court

Brandon Avenue

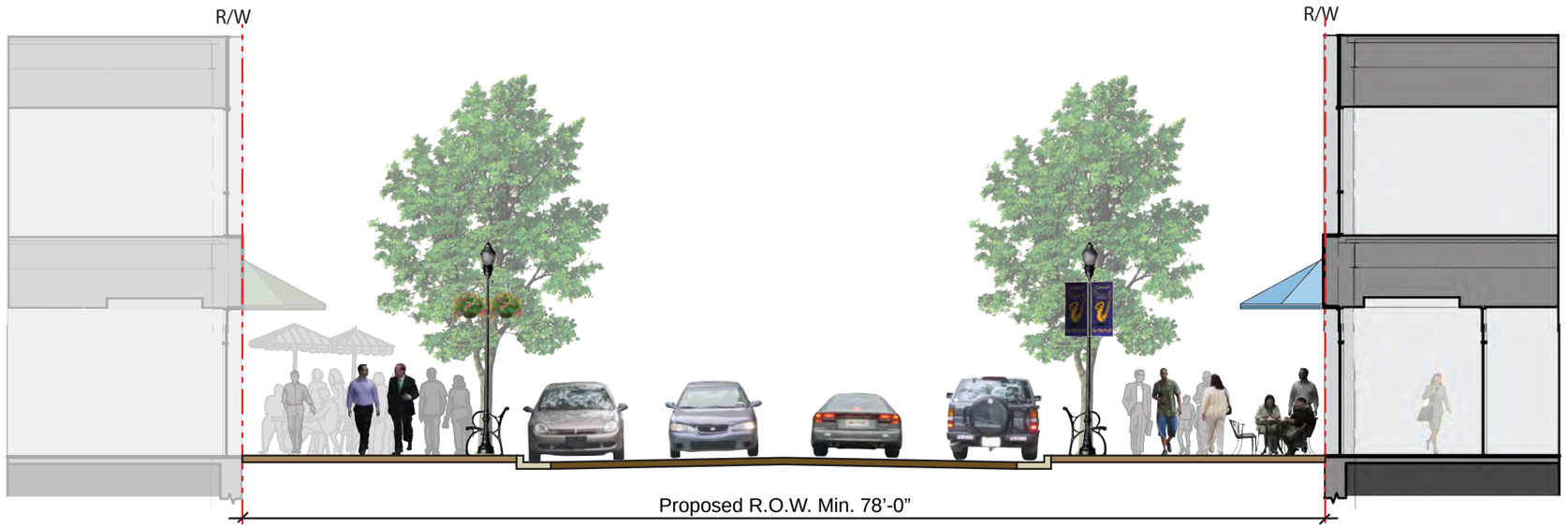
Brandon Avenue

Bland Street

Bland Street

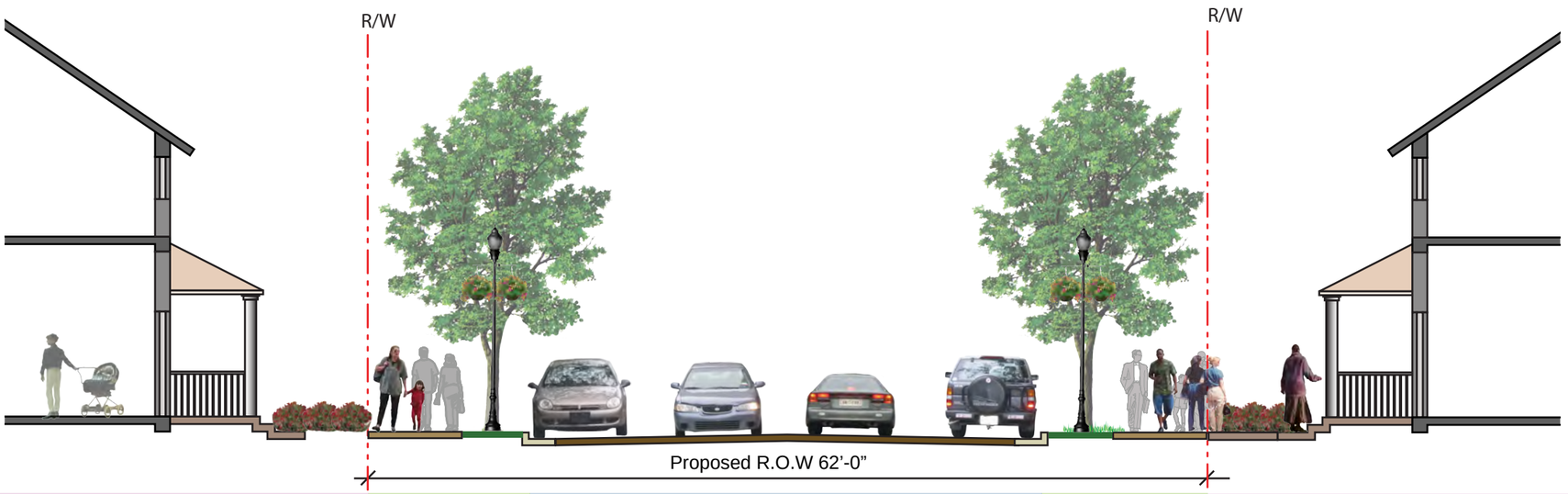


Key Map



Retail/ Commercial/ Offices/Residential	Sidewalk min. 20’ wide with trees	Two Way Street @ 38’-0” with parallel parking on either side	Sidewalk min. 20’ wide with trees	Retail/ Commercial/ Offices/Residential

PROPOSED LOCAL STREET TYPE 1



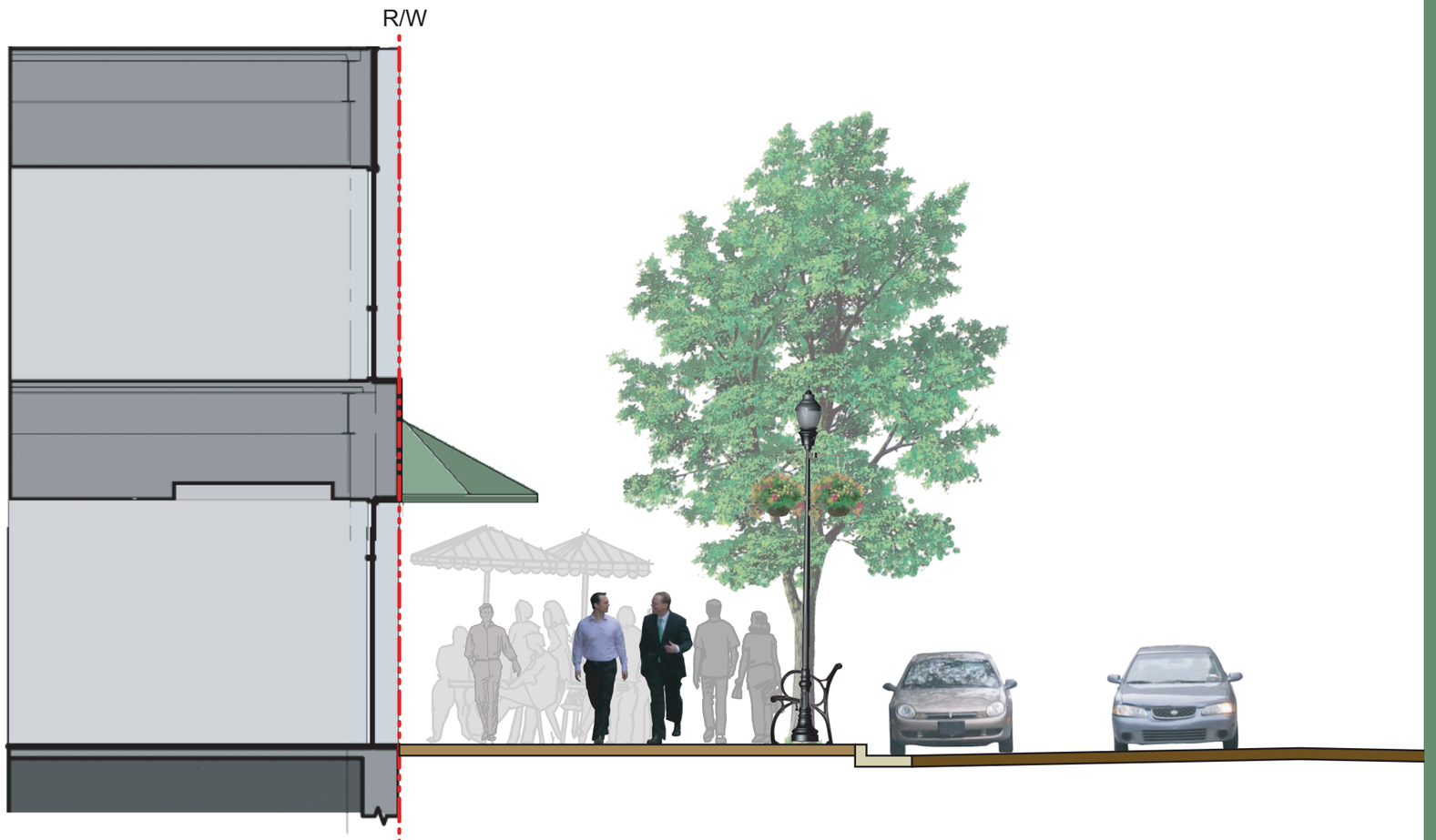
Residential	Sidewalk min12’ wide with trees	Two Way Street @ 38’-0” with parallel parking	Sidewalk min.12’ wide with trees	Residential

PROPOSED LOCAL STREET TYPE 2

PROPOSED CHARACTER IMAGES

LOCAL STREET TYPE 1:
This is a typical retail/ destination street with both pedestrian and vehicular traffic. The sidewalks should be wide enough to accommodate pedestrian volumes and the overflow of activity from the surrounding retail. Pedestrian circulation takes precedence over vehicle traffic. Cafe tables, chairs and other street furniture, street art are an integral part of this landscape.

LOCAL STREET TYPE 2:
This is a residential street that carries mostly local traffic. Traffic calming measures can be achieved by providing on-street parking and narrow travel lanes. A strong local character and a sense of place help maintain a considerable amount of social equity in the area served by this type of street.



Retail/ Commercial/ Offices/Residential

Private:
Width varies

Sidewalk
min 12’ wide
Street level activity like outdoor seating/ local art displays/ street performances

A1 PAVING
Brick pavers/ Concrete Pavers

A2 SITE FURNISHINGS
Benches/Dining Tables and Chairs/Street Art

Tree Grate/ Planter Panels
min. 8’ wide

B1 PAVING
Brick pavers/ Concrete Pavers with tree grates

B2 SITE FURNISHINGS
/ Historical Pedestrian and Street lights/ Trash receptacle/ Benches

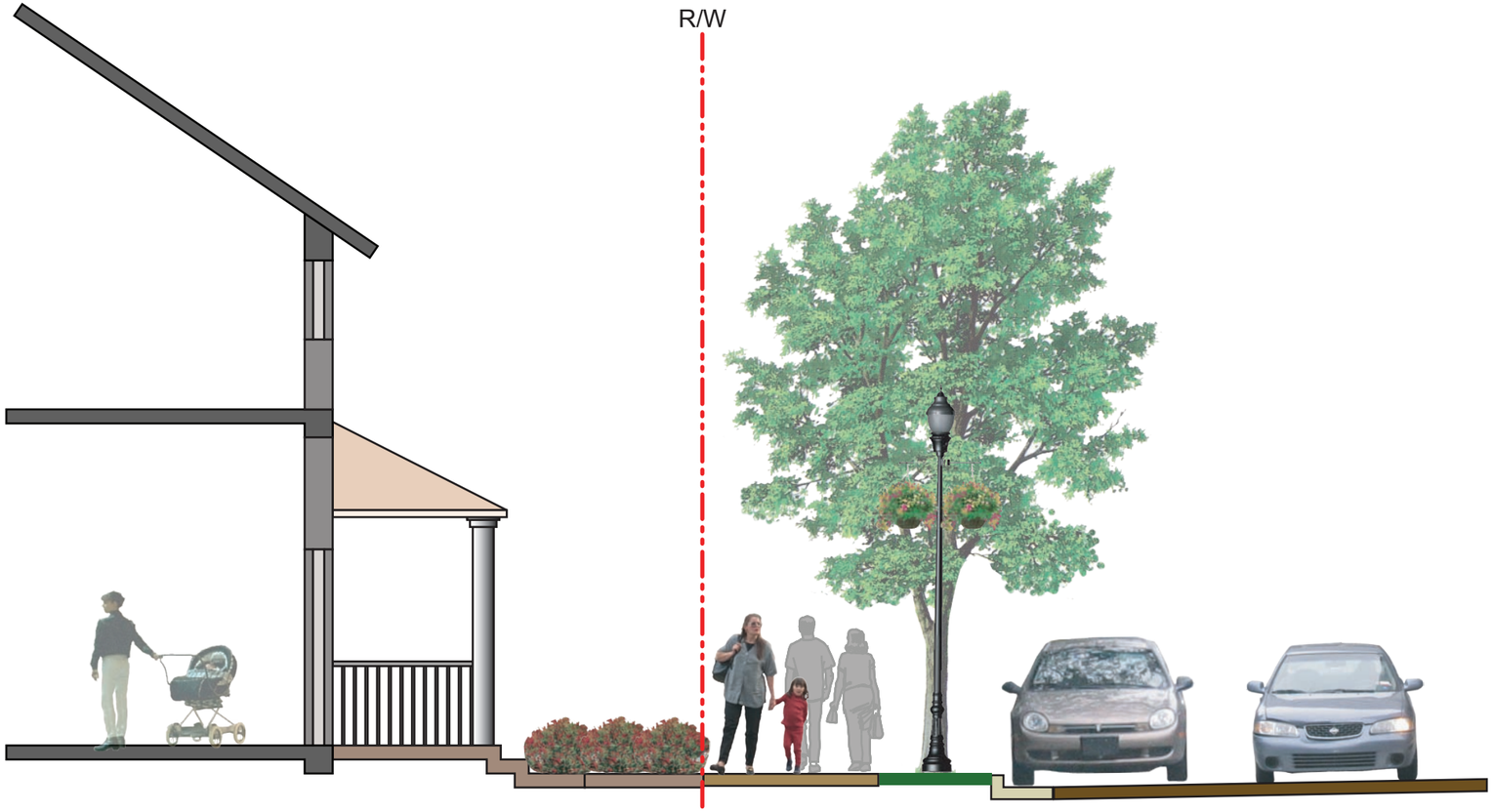
Parking Lane
min. 8’-0”

C1 Paving
Parking lanes: Pavers

C2 Curb and Gutter
Granite Curb and Gutter
ADA ramps: Ramps with truncated domes

Travel Lane
@ 11’-0” each

E1 Paving
Travel lane: Asphalt/ Pavers
Crosswalks: Special paving



Residential

PRIVATE:

Width varies. Privacy to be maintained using grade change, fences, material change, porches, bay windows

Sidewalk
min. 6’-0”

A1 PAVING

Brick Pavers/ Concrete Pavers

Landscape Panel
min. 6’-0”

B1 Grass Median

with trees/ Trees in tree grates

B2 SITE FURNISHINGS

Historical Pedestrian and Street lights with neighborhood banners/ flower pots

Parallel Parking
min. 8’-0”

C1 PAVING

Unit Pavers/ Brick Pavers

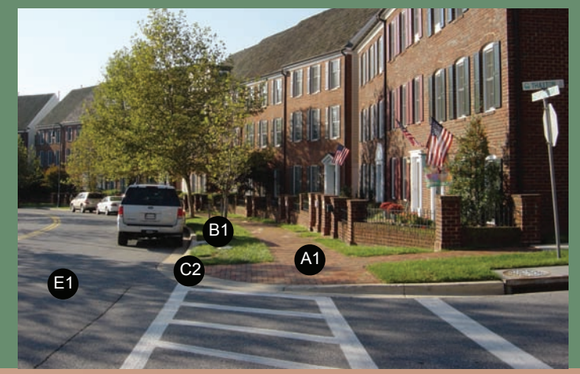
C2 CURB AND GUTTER

Granite Curb and Gutter
ADA ramps: Ramps with truncated domes

Travel Lane
min. 11’-0”

E1 PAVING

Asphalt



Bike and Pedestrian suitability can be assessed at the street segment level or the intersection level. For the purpose of this study, a segment level analysis was conducted. In addition, general information about bike and pedestrian intersection quality level of service (QLOS) is included. Images that exemplify QLOS standard are located on the following pages.

The methodology used to determine bike and pedestrian quality level of service was taken from the 2002 Florida Department of Transportation Quality/Level of Service Handbook. Florida is a leader in assessing bike, pedestrian, and multi-modal levels of service. As such, their model was chosen for this preliminary assessment.

To complement the segment level analysis, intersection QLOS design factors are discussed. Charlotte, North Carolina's Urban Street Design Guidelines provided a basis for this section. They serve as basic recommendations and are intended to help guide planning and development decisions around intersections.

Current Land Use And Urban Design Context

Presently, the Springfield Study Area's street system is not well suited for cyclists or pedestrians. Existing street designs severely inhibit safe bike and pedestrian movement and generally provide an unwelcoming non-motorized transportation environment. Indeed, the challenge facing Springfield is to develop a bike and pedestrian friendly environment in the midst of the one of the largest highway interchanges in the country.

As discussed in the Existing Conditions report, the predominant land uses in the study area are retail and office, with single family housing surrounding the retail and office space. Retail outlets are typically in the form of single-story strip malls, with parking located in front of buildings. While this type of development is conducive to vehicular traffic, it is not favorable for pedestrian and bike movement.

The Study Area clearly provides needed retail and professional services for people located both inside and outside of Springfield. Its transportation network functions well for vehicular traffic. The objective now is to provide a range of transportation options, outside of driving, for people who live in or visit Springfield. Recent development studies and plans envision more intensive land uses and a tighter street grid for the Springfield Study Area. This assessment is intended to provide an understanding of the current bike and pedestrian environment and to provide guidance for future planning and investment in the area.

Table 1: Variables Considered in the Bike and Pedestrian Quality Level of Service Model

Pedestrian Model QLOS Variables	Bike Model QLOS Variables
• Existence of a sidewalk - Width of sidewalk • Lateral separation of pedestrians from motorized vehicles. - Width of outside lane. - Width of shoulder or bicycle lane. - On-street parking effect. - % of segment with on-street parking. - Buffer area between sidewalk and street. • Motorized vehicle volumes. • Motorized vehicle speeds.	• Average effective width of the outside through lane. - Total width of outside lane (and shoulder) pavement. - % of segment with occupied on-street parking. - Width of paving between the outside land stripe and the edge of pavement. - Width of pavement striped for on-street parking. - Effective width as a function of traffic volume. • Motorized vehicle volumes. • Motorized vehicle speeds. • Heavy vehicle (truck) volumes. • Pavement conditions.

The Transportation Context

The majority of streets in the Study Area are vehicular oriented. From a pedestrian or cyclist point of view the streets are uninviting, cold, and unsafe. This is reflected in the current bike and pedestrian QLOS maps in Figures 1 and 2.

Looking at the existing Pedestrian QLOS, Old Keene Mill Road, Franconia Road, and the portion of Backlick Road, from Old Keene Mill Road north, have a QLOS rating of D or worse. The majority of street segments have a QLOS score of C. A portion of Commerce Street, Brandon Avenue, and Loisdale Court have a score of B. No streets have a score of A. The situation for bikes is similar to the situation for pedestrians. Nearly all assessed roadways have a QLOS score of D or E. Loisdale Road and Spring Mill Drive performed the worst and a portion of Commerce Street and Bland Street performed the best, with scores of C and B respectively.

Figure 1: Present Pedestrian Quality Level of Service in Springfield Study Area Model

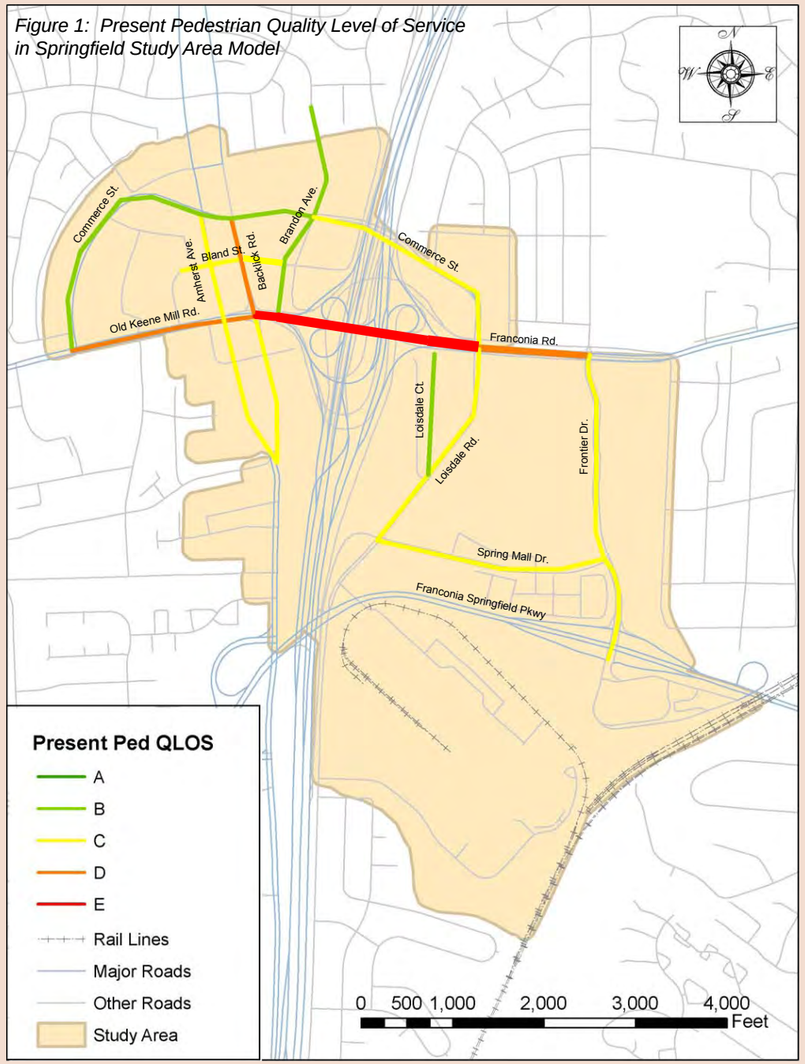
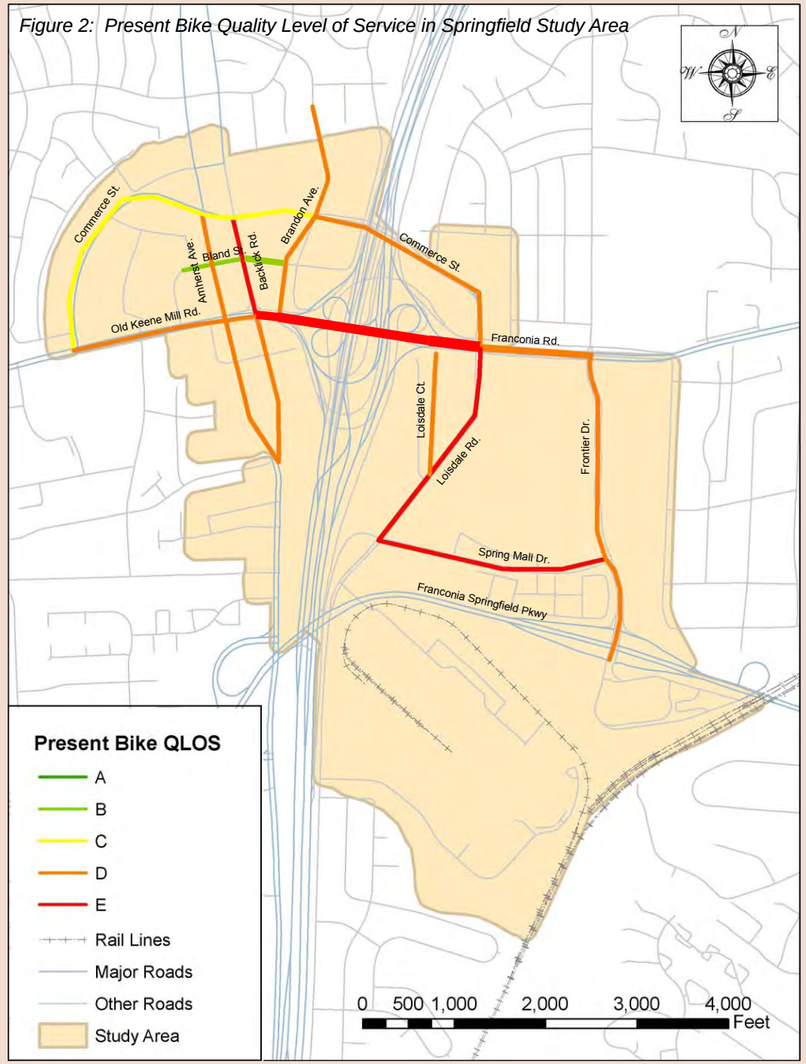


Figure 2: Present Bike Quality Level of Service in Springfield Study Area



A number of factors determine the outcome of the pedestrian and bike QLOS models. A list of variable are provided in Table 1 on the previous page. The existence of sidewalks and the traffic volumes are the two most important variables when considering Pedestrian QLOS. The existence of a paved shoulder/bicycle lane and the traffic volumes are the two most important variables when determining Bike QLOS. Poor QLOS scores in the Study Area are reflective of Springfield's high traffic volumes and vehicular centered street design. Typically there are narrow sidewalks or no sidewalks available; there are very few buffers between vehicles and pedestrians; and no dedicated on-road bike facilities exist. The existing pedestrian bridge provides the only connection across I-95 on south of Franconia-Springfield Parkway, and is planned to be removed during Franconia-Springfiled Parkway improvements.

Future Objectives

As mentioned previously, the urban design recommendations developed for the Springfield Study Area break streets into four categories: Major Arterial, Minor Arterial, Collector Street, and Local Street. Each street serves a particular purpose. The purpose determines the guidelines. For example, Major and Minor Arterial roads are focused primarily on vehicular traffic, and Collector and Local Roads are designed more toward bicycle and pedestrian traffic. Conflicts between vehicular and bike/pedestrian design may occur on street segments. As a result, it is necessary for the community to make choices about which streets and intersections should be a bike/pedestrian priority and which streets and intersections should be a vehicular priority. The street grid in the future is more connected, with additional local streets. The design guidelines recommend that the majority of streets, with the exception of major arterial segments, include buffers, wider sidewalks, on-street parking, and, on the minor arterials, bike lanes. The replacement of the pedestrian bridge across I-95 should also be considered.

Figure 3: Future Pedestrian Quality Level of Service in Springfield Study Area

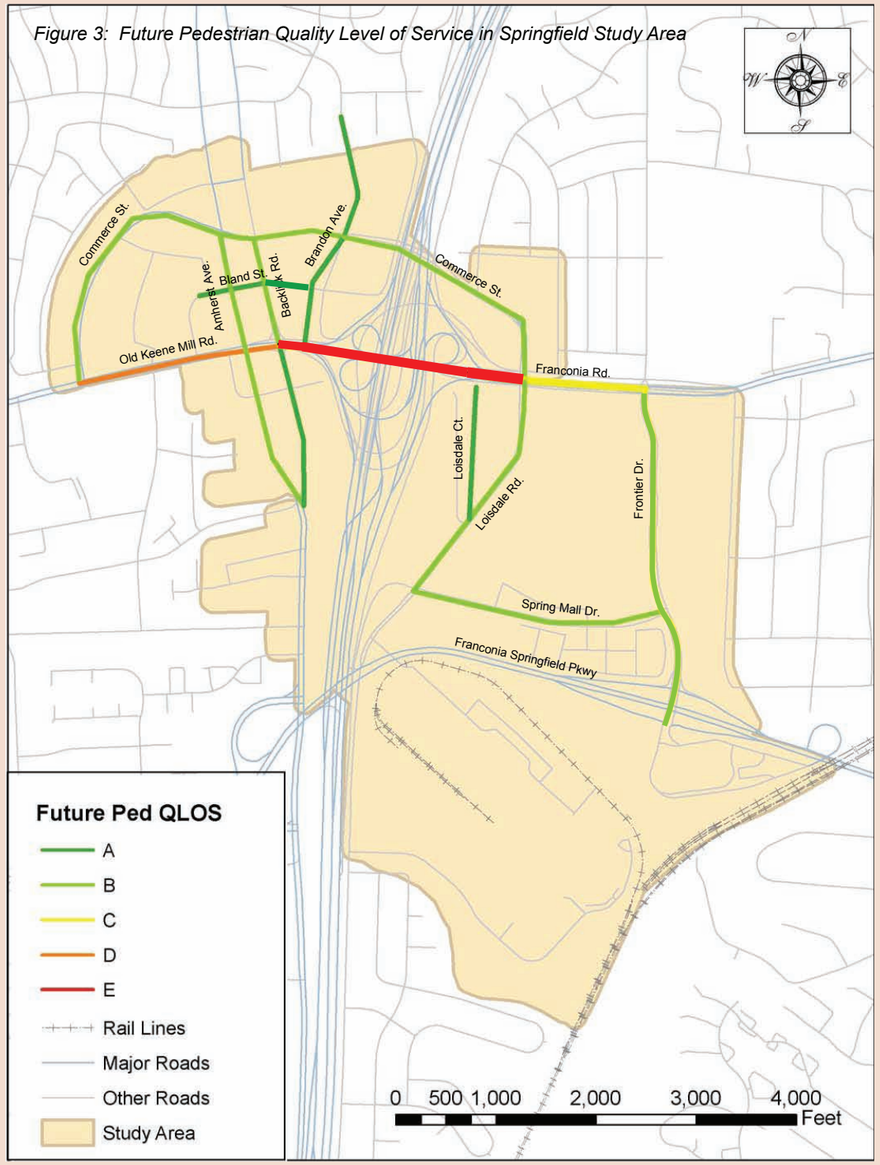
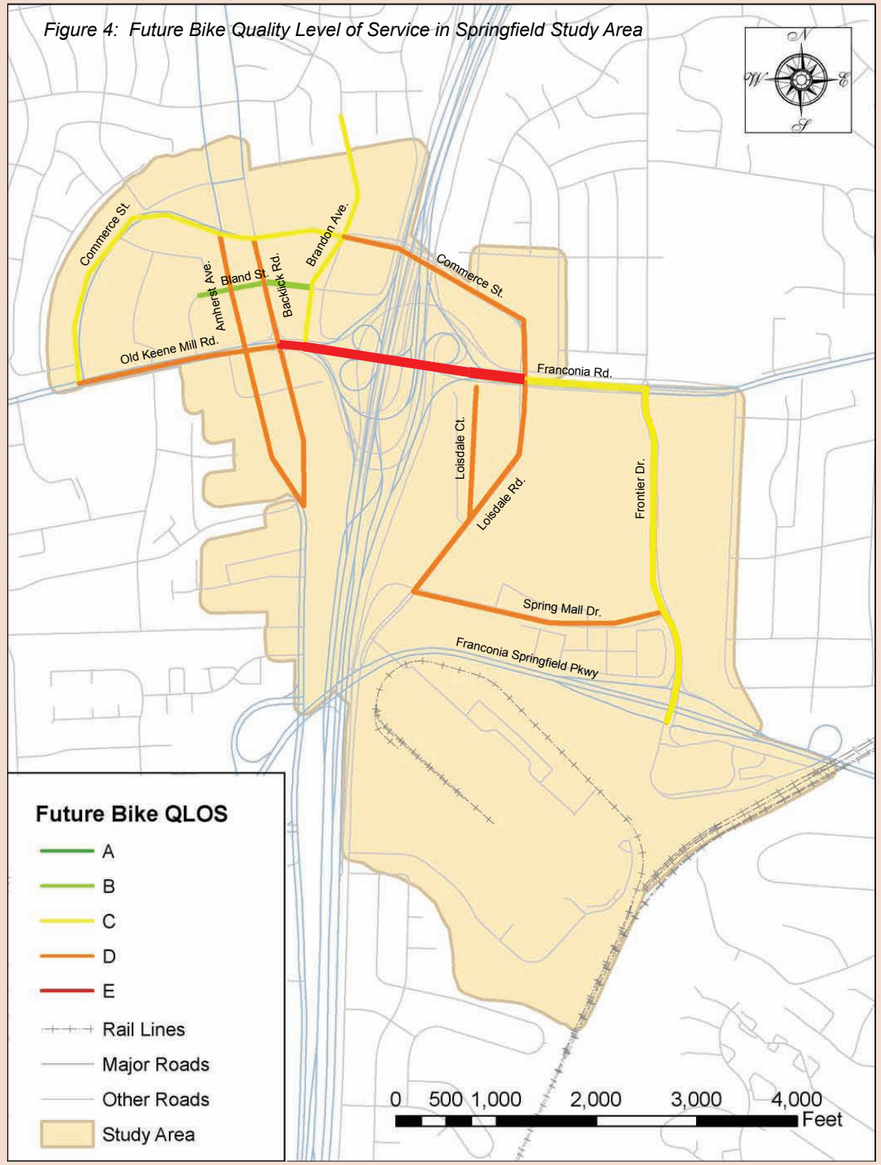


Figure 4: Future Bike Quality Level of Service in Springfield Study Area



EXAMPLE OF LEVEL OF SERVICE BY MODE FOR URBAN ROADWAYS
(Source: FDOT Quality/Level of Service Handbook)

The urban design recommendations were applied to the bike and pedestrian QLOS models. The result was a significant improvement in pedestrian QLOS scores and a minor improvement in bike QLOS scores.

For Pedestrian QLOS, street segments that had a QLOS score of C have increased to B or higher. Brandon Avenue and Loisdale Court improved from a score of B to A. The portion of Backlick Road, north of Old Keene Mill Road, changed from a score of D to B. Franconia Road, east of Commerce Street improved from a score of D to C, while the west portion remains the same. For the bike QLOS, Brandon Avenue, Frontier Drive, and the portion of Franconia Road, from Commerce Street east, increased from a score of D to C. North portion of Backlick Road from Old Keene Mill Road, Loisdale Road and Spring Mall Drive improved from a score of E to D.

Emphasis On Street Segments And Intersections

For the purpose of this study, intersections were designated as either pedestrian/bike priority or vehicular priority. There are various types of intersections, due to the multiple combinations of street types. These varying street types intersect with one another at intersections. These transitional areas cause conflicts. Most vehicular delays occur at intersections. As a result, they are typically designed to minimize vehicle delay. Unfortunately, design elements that minimize vehicle delay may also make it difficult for bikes and pedestrians to cross an intersection. For example, a dedicated turn lane might ease congestion, while at the same time, making it difficult for a pedestrian to safely cross the street.

Through thoughtful consideration of trade-offs, intersections can be designed with a particular group of users in mind and still facilitate movement of other modes of traffic. To accomplish this, it is essential to consider how the design and operational elements of an intersection best accommodate the requirements of multiple stakeholders.

Well designed pedestrian intersections take into consideration a number of elements, including crossing distance, signal phasing & timing, corner radii, right turns on red, and crosswalk treatments. Well designed bike intersections provide enough space for bikes to travel along motorists, have lower traffic speeds, and seek to minimize conflicts with turning vehicles.

Figures 5 and 6 show intersections in the Springfield Study area and their designation in relation to the bike and pedestrian QLOS.

Figure 5: Future Pedestrian Quality Level of Service in Springfield Study Area with Intersection Priority

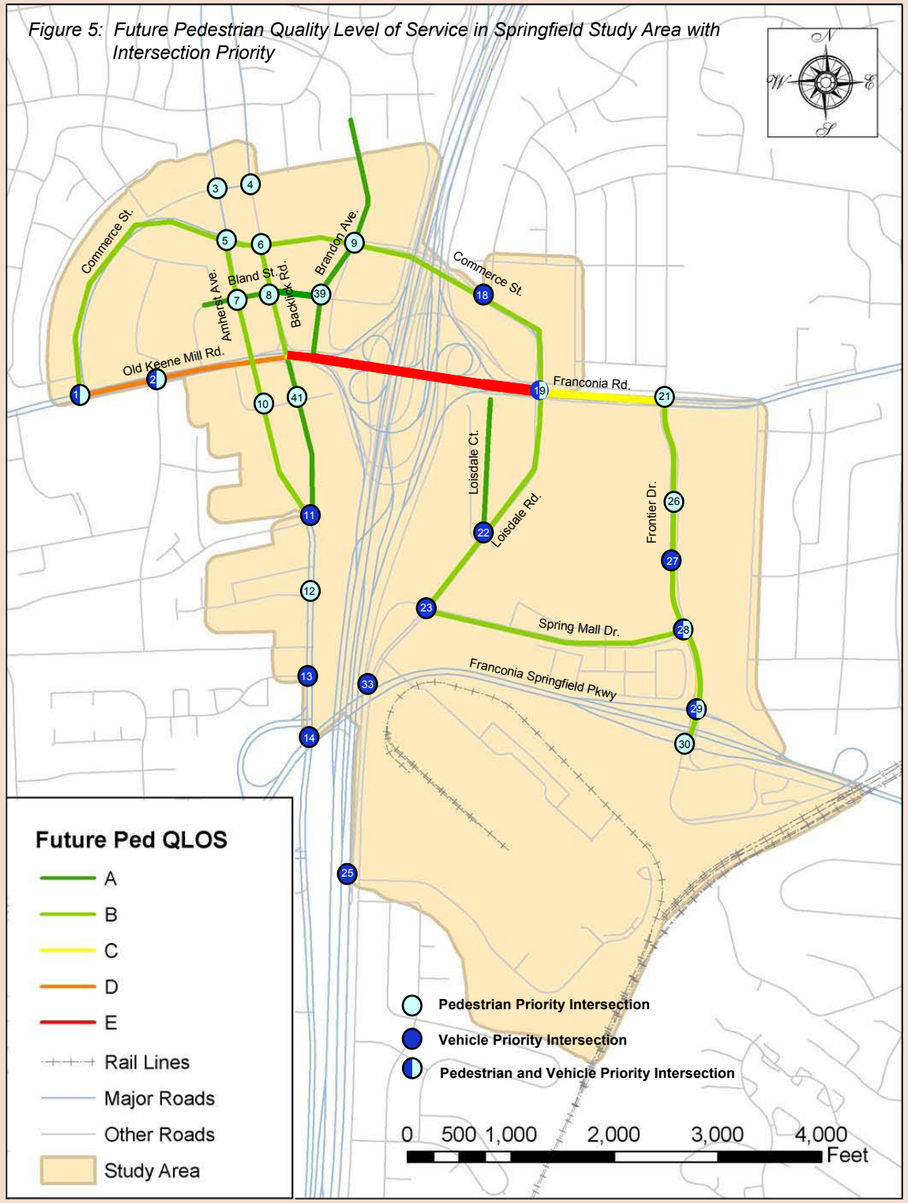
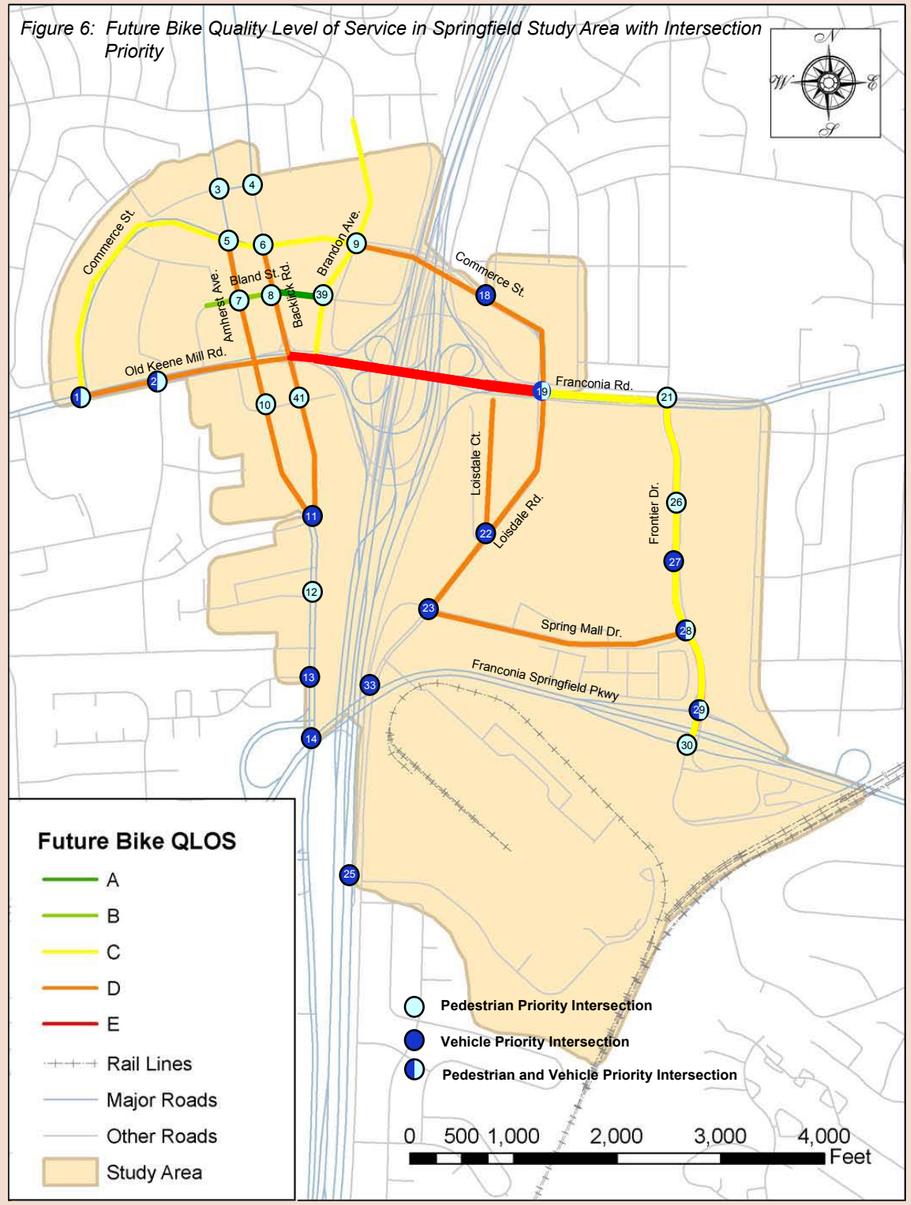


Figure 6: Future Bike Quality Level of Service in Springfield Study Area with Intersection Priority



The design of intersections can be very complex. Operational design and physical design are the two most important factors.

Operationally, road volumes, capacity, and level of service (LOS) at intersections may dictate a vehicular priority over bicycle or pedestrian movement, to allow for uninterrupted travel and ease of access to Springfield's regional network of roads. The physical, geometric design of vehicular priority intersections can favor the motorist, as well as accommodate the bicyclist or pedestrian. Curve radii, number of traffic lanes/turning lanes, signal timing, and on/off ramps movements to I-95 influence "priority" of mode. Additionally, existing and future land uses also influence priority.

Pedestrian Priority

Pedestrian Priority intersections should "favor" safe crossings by the pedestrian/bicyclist while accommodating the motorist. Vehicular volume, capacity, and LOS are all factors that must be balanced with the physical design and pedestrian amenities that favor the pedestrian/bicyclist.

Elements to consider include, but are not limited to:

1. Right-of-way width
2. Number of lanes to cross
3. Curb radii
4. Curb extensions
5. Turn lanes (left and right)
6. Crosswalks
7. Bus stops
8. Pedestrian refuge medians
9. Technologies such as audible pedestrian signals and pavement pedestrian/bicycle detectors.

Existing and future land uses are major influences to establishing intersection priority. Retrofitting Springfield's vehicular-dominant suburban infrastructure must happen in order to accommodate a densification to the area from both the public and private sectors.

Springfield Mall, GSA/BRAC, and the revitalization of Springfield Plaza are substantial redevelopment that will transform Springfield into a more urban center. Linkages to the Franconia-Springfield Metro Station, emerging residential projects, and potential expansions of civic/conference/hospitality uses should require implementation of pedestrian enhanced amenities throughout Springfield.

The examples on page 35 - 39 in this section are intended to illustrate the various possible intersection types for combinations of the following roadways:

- Minor Arterial
- Collector Street
- Local Street

These are meant to illustrate the key design elements of existing roads enhanced and/or new ones constructed. Existing functions will need to incorporate specific land uses, existing context and site conditions.

Additional plans have been prepared to illustrate specific design elements to improve four existing intersections within the Springfield Study area. These are shown on page 40 - 43.

- Old Keene Mill Road and Commerce Street
- Old Keene Mill Road and Spring Drive
- Metropolitan Center Drive and Loisdale Road
- Frontier Drive and Franconia Parkway

Physical And Operational Design

Both physical and operational design parameters are equally important. The intent of these recommendations is to enhance the pedestrian/bicycle experience and improve safety, while balancing the operational functionality of the vehicular LOS.

Pedestrians want to feel safe/protected while bicyclists want additional area next to vehicles or clearly marked lanes to increase the separation from vehicles.

Traditionally, intersections have been designed to optimize LOS, volume and capacity - typically adding more through lanes and designated right and left hand turn lanes. However, adding additional pavement is counter-productive to creating a "pedestrian friendly" experience. Balancing LOS for vehicles and bicyclists must be considered in implementing these recommendations.

Design Elements

Balancing the multiple objectives of designing physical elements related to motorists, pedestrians and bicyclists must balance LOS, traffic signal turning and pedestrian signal time.

Physical design elements should be embrace Context Sensitive Solutions (CSS). Federal Highway Administration defines CSS - "CSS is a collaborative, interdisciplinary approach that involves all stakeholders to develop a transportation facility that fits the physical setting and preserves scenic, historic and environmental resources, while maintaining safety and mobility. CSS is an approach that considers the total context within which a transportation project will exist."

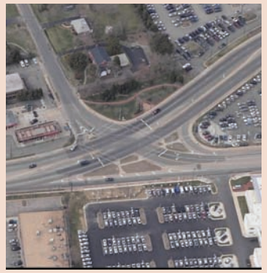
PEDESTRIAN PRIORITY INTERSECTION

VEHICLE PRIORITY INTERSECTION

Brandon Ave. and Commerce St.

Backlick Rd. and Franconia-Springfield Parkway Eastbound

Frontier Dr. and Franconia Rd.



Amherst Ave. / Backlick Rd. and Calamo St.

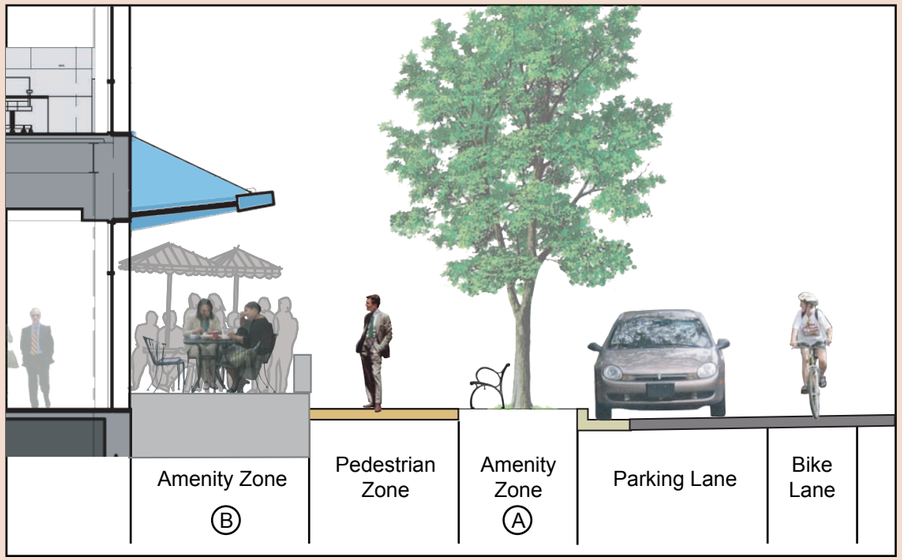
Metro Station and Franconia-Springfield Parkway

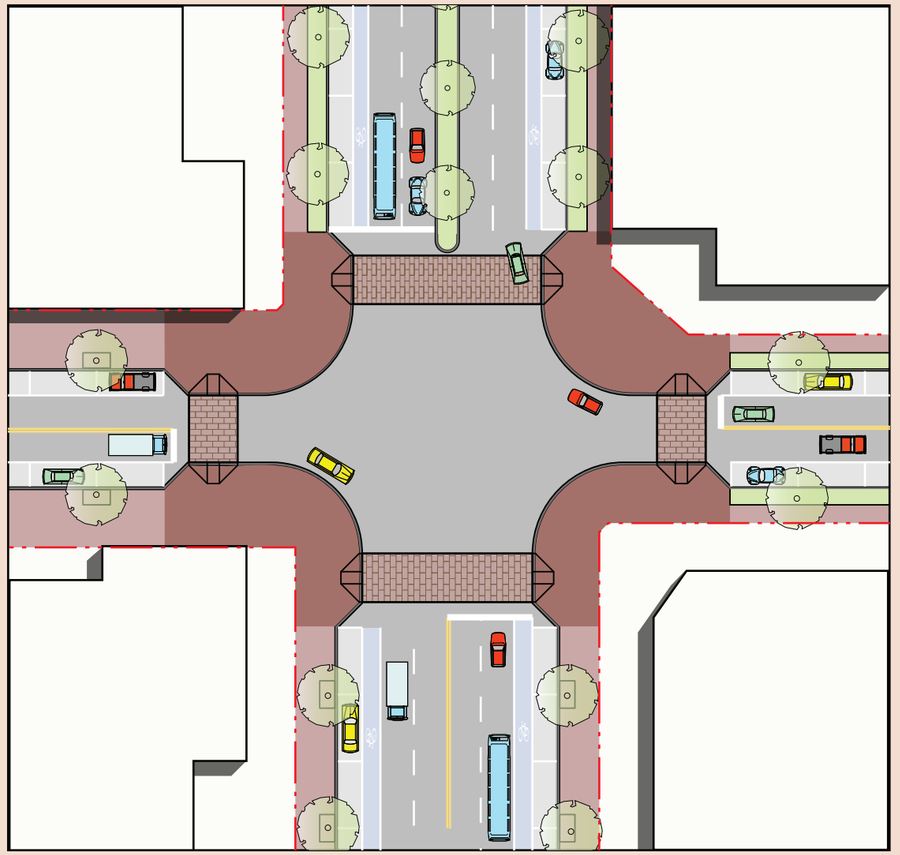
Loisdale Rd and Loisdale Ct.

There are many different permutations of intersection types because of the multiple combination of street types. Physical design and signalization scenarios will vary greatly depending on the types of intersecting streets. Likewise, these scenarios will also be effected whether there is a vehicular or pedestrian priority preference to the individual intersection.

Intersection Design Elements may include:

- Roadway Medians
- Medians with Pedestrian Refuges
- Turn Lanes
- Through Lanes
- Bicycle Facilities
- Parking Lanes
- Curb Radii
- Curb Extensions
- Handicap Ramps
- Crosswalk Delineation
- Signal Phasing and Timing
- Handicap/ADA Provisions
- Landscaping





Crosswalks

A clearly defined zone delineated on the street pavement directing pedestrians where to cross the street and where motorists are to avoid.

Can be installed at intersections or at mid-block locations. Delineations vary and can include:

- painting
- enhanced paving, or
- combination of both

Curb Extensions/Bump-outs/Bulb-Outs

An extension of the curb typically into the parking lane at intersection or mid-block crossings used primarily to reduce the width of street and pavement the pedestrian has to cross. They also enhance visibility for pedestrians and motorists and control how close to the intersection they can park.

Curb Radii

The radius of the curb at street intersection or curb cut defining the space available for vehicle turning movements.

Bike Lane

The zone adjacent to the curb or parking lane of sufficient width to accommodate bicycle travel.

Bicycle lanes can be striped, bicycle routes can be signed and not striped and adjacent travel lanes sized to accommodate safe bicycle travel.

Ⓐ Amenity Zone A

The area directly adjacent to the street/back-of-curb where streetscape amenities are located.

- Trash receptacle
- Benches
- Newspaper Kiosks
- Street Plantings, Planting Beds, Tree Grates, and Lawn Panel
- Street Lights

Ⓑ Amenity Zone B

Similar to above, except this zone is adjacent to the building where excessively wide sidewalks exist this zone is ideal for outdoor eating and locating moveable tables and chairs.

Parking Lane

The designated “lane” for parking on-street vehicles within the street right-of-way. On-street parking enhances pedestrian/bicycle safety, aids in traffic calming and adds to an active street environment.

Planting Strip

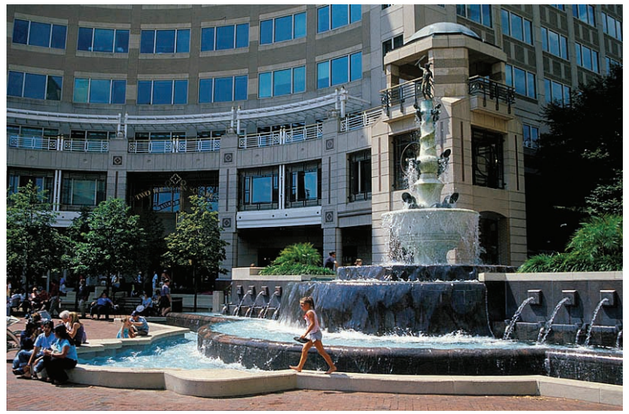
A landscaped, unpaved area within the public right-of-way adjacent to the street behind the back of curb.

Bus Stop Placement

Each new bus stop location should take into consideration a number of factors that should be applied to in the design or each individual intersection design within the study area, including:

- Location of the expected passenger traffic generator, either based on population density and/or specific use (i.e. major employment centers, regional shopping centers, hospitals, etc.), for the stop,
- Traffic safety,
- Pedestrian safety and access to stop, pathways leading to and from bus stop areas should be level, have a firm surface, and be free of obstacles,
- Availability of adequate right-of-way to ensure that the bus stop meets the Americans with Disabilities Act (ADA) accessibility standards,
- Curb Clearance – adequate space for buses to stop, and return to the traffic flow,
- Operational effectiveness issues (including relation to the nearest intersection, bus turning requirements, and re-entering the travel lane).

INTERSECTIONS AND CROSS WALKS



PEDESTRIAN/ STREET ART/ INTERACTION

Intersections And Crosswalks

Intersections create a vehicular and pedestrian interface. Some may be prioritized for vehicular movement and others to maximize pedestrian safety and connectivity. State of the art signalization, adequately marked crosswalks, and pedestrian refuges are just a few facilities to be considered. Crosswalks also serve as visual and physical connecting elements that reinforce the pedestrian system. Variations of paving types can also aid in differentiating between pedestrian, bike, bus and auto zones.

Pedestrian/ Street Art/ Interaction

Street art can be passive or active. Art enlivens a city by capturing people's imaginations and stimulating debate. Artistic diversity is a key element to an enlivened urban area. Street art should be inclusive and access should not be diminished because of income level, disability and cultural difference. Street art, such as interactive fountains, help animate spaces by engaging all age groups. It is essential to consult with the community-residences, business, visitors in the decision making process, to cultivate a sense of ownership.

Specific design elements to consider when designing an intersection are listed below. The importance of one element over another element varies depending on the types of streets intersecting with one another and the modal priority of the intersection.

Table 3: Specific Elements Associated with Bike and Pedestrian Intersection Design

Design/Operations Element	Purpose / Benefit	Design Considerations
Bicycle Detector: A device at a signalized intersection used to detect bicycles for traffic actuated signals.	• Activates the traffic signal in the absence of motor vehicle traffic, thereby keeping the cyclist from having to wait for another vehicle to "trip" the signal or, after a prolonged wait, to run the signal..	• Detectors should be located in the bicyclists' expected path, whether the intersection includes bike lanes, a bike box, or a wide outside lane. • Bicycle detectors are most important on the less traveled leg of a signalized intersection, because the wait for another vehicle to "trip" the light will be longer. However, a strong case can be made for using detectors on all legs, as the time of day can make a difference even on the more traveled legs. • Markings on the roadway surface can be used to indicate the optimum location for bicycle detection.
Bicycle Lane: The portion of the street specifically designated for the use of bicyclists by pavement markings or other means of delineation on the street.	• Provides a clearly marked area of the street for bicycle travel and separates cyclists from motor vehicles. • Help reduce conflicts between motor vehicles and bicycles. • Provides an additional buffer between pedestrians and motor vehicles. • Gives motorists more confidence about passing cyclists, because they know where the cyclist's "space" is and they know that the cyclist knows where his/her space is, as well. The uncertainty about passing in the absence of bike lanes can create unnecessary backups or dangerous passing conditions.	• Right-of-way width, traffic speed and volume, signalization, turn lanes and parking. • A marked bicycle lane should be a minimum of four feet wide (not including gutter), with 5' generally preferred. • Wider lanes are preferred next to on-street parking (to avoid opening car doors) and on steep hills (to allow room for weaving caused by pedaling uphill). • If there is a right turn lane at an intersection, the bicycle lane should be placed to the left of the right turn lane, to clearly separate the bicycle's through movement from the motor vehicles' turning movements.
Bike Box: A marked, designated area at a signalized intersection that places bicyclists at the front of the traffic queue when the signal is red.	• Puts bicyclists at the head of the queue, allowing them to enter and clear an intersection before motor vehicles. • Bicyclists are more visible to motorists at the front of the queue.	• Should only be used at signalized intersections where there is no right turn on red. • May require additional signage to inform motorists and cyclists how to correctly use the bike box.
	• Provides a storage area for bikes at an intersection where there is heavy bicycle traffic and left turn movements. • Stores vehicles further back from the crosswalk, providing a better crossing environment for pedestrians.	• Must be accessed via a bike lane, which allows cyclists to safely move ahead of motor vehicles in the intersection.
Corner Island: A raised triangular or semi-triangular island used to direct traffic in a particular direction, described herein to separate a right-turn lane from the through lanes at an intersection. Also referred to as a "Channelization Island".	• Helps to separate the turning traffic from the through traffic, potentially enhancing flow. • If properly designed, a corner island can be used for pedestrian refuge at large intersections.	• Consider the use of well-designed corner islands to "break up" the distance and conflicting turning movements that must be traversed by pedestrians at wide intersections. • The safest design for pedestrians is when the corner island is designed to bring the turn lane into the receiving lane at an angle, rather than as a sweeping curve. Otherwise, the turning driver is likely to be looking over his/her left shoulder at oncoming traffic, rather than at pedestrians trying to cross the turn lane. • The use of corner islands (and their design) should be based upon the intersection volume and the surrounding land use and design characteristics. The potential "pedestrian refuge" benefit should also be weighed against the additional right-of-way requirements and overall dimensions of the intersection.
Crosswalks: The crosswalk generally refers to the most direct pedestrian pathway across a given leg of an intersection, whether marked or unmarked.	• Crosswalks clearly define the pedestrian space, enhancing safety and comfort for all users. • Crosswalks are an important part of the pedestrian network - they form a continuation of the pedestrian's travel path and enhance pedestrian connectivity. • Crosswalks support the overall transportation system because other users, such as motorists, bicyclists and transit users will be pedestrians at some point during their trip and may need to cross the street.	• Can be installed at intersections or designated mid-block crossing locations. • The crosswalk location should be highly visible, so the pedestrian can see and be seen by traffic while crossing. • Signalized intersections will typically have crosswalks on all approaches. • Installation at unsignalized intersections and mid-block locations may be affected by a number of factors, including: street classification, width of street, traffic speed and volume, use of traffic control devices such as stop signs, and surrounding land uses. • Pedestrian crossing distance should be minimized; on some streets this may require the use of other street design elements (see Curb Extension, Pedestrian Refuge).
Curb Extension: A feature that extends from the sidewalk into the pavement at an intersection or at a mid-block crossing (also sometimes called a "curb bulb", "neckdown" or "bulbout"). A curb extension can be hardscape, landscaped, or a mix of both.	• Reduces street width both physically and visually, thereby shortening pedestrian crossing distance at crosswalks and potentially helping to reduce traffic speeds. • Provides increased visibility for pedestrians and motorists. • Moves parked vehicles away from street corners, improving visibility.	• Should be used whenever possible in pedestrian-oriented areas. • Should also be used for transit stops, where full-time, on-street parking exists. • Should only be used where there is a permanent parking lane. • Should not encroach into the bike lane. • Street furniture or plants on the curb extension should not impede motorist or pedestrian sightlines. • Should be designed to accommodate both large and small vehicles; tight curb radii can accommodate low speed turning movements by large vehicles if the intersection is designed properly.
Curb Radius: The curved section of the curb connecting the curb lines of two intersecting streets. The curb radius measurement is taken from the back of the curb.	• Defines the space for (and helps direct) vehicle turning movements at intersections. • The curb radius dimension can affect ease and speeds of vehicular turning movements.	• Radii should be minimized, to allow the necessary dimension for traffic, while minimizing impacts on pedestrians, cyclists, and the adjacent land uses. • Smaller curb radii narrow the overall dimensions of the intersection, shortening pedestrian crossing distance and reducing right-of-way requirements. • A smaller curb radius provides a more visible pedestrian waiting space at the intersection. • Smaller radii help reduce the turning speeds of vehicles. • A smaller radius allows for more flexibility in placement of curb ramps. With a larger radius, the ramp(s) may need to be located in the radius or will be too far from the corner for good visibility. • Larger radii may be required on streets that carry a high percentage of truck traffic, because they allow easier turning movements for large vehicles. • The presence of a bike lane or parking lane creates an "effective radius" that allows a smaller curb radius than might otherwise be required for some motor vehicles, because they provide extra maneuvering space for the turning vehicles.

Design/Operations Element	Purpose / Benefit	Design Considerations
Leading Pedestrian Interval: Used at signalized intersections, the Leading Pedestrian Interval (LPI) is a signal phase that provides a pedestrian crossing signal a few seconds before the green signal for vehicles.	• Allows pedestrians to enter the crosswalk ahead of turning vehicles, thereby establishing their right-of-way. • Improves visibility of pedestrians by providing them with a “head start” before vehicles are allowed to move. • Reduces potential conflicts with turning vehicles.	• LPI should typically have an equivalent audible signal for vision-impaired pedestrians. • They are often included where there are large numbers of pedestrians crossing the street, for example, but are also important where there are fewer pedestrians. This is because it is sometimes easier for large groups of pedestrians to “take” their right-of-way, than for a lone pedestrian to do so. Lone pedestrians are also less visible to motorists.
Median: A raised barrier that separates traffic flows. Generally used to control access and reduce vehicular turning movements.	• Separates opposing traffic flows, reducing or eliminating vehicular conflicts. • Can be used for access management, by restricting turning movements into driveways or side streets. • If properly designed, can provide a pedestrian and bicycle refuge on wider streets. • If properly designed, can provide a landscaped element to the streetscape.	• Design and installation of a median will vary according to street type and right-of-way width. • Generally, if a median is used, it should be wide enough for landscaping and pedestrian refuge. • In the absence of other design elements such as landscaping, street trees, and onstreet parking, a median may encourage higher traffic speeds. This unintended consequence should be carefully considered when designing streets in residential areas or where there are likely to be many pedestrians. • Spacing between median openings depends on the street type and land use context. In general, spacing should be longer in areas with higher speeds, fewer driveways, and larger setbacks. Spacing should be more frequent in areas where smaller block lengths and more access are desired.
Pedestrian Refuge: A protected area between traffic lanes that separates a pedestrian crossing into segments and allows pedestrians to wait safely for gaps in traffic (also called a “median refuge”, “refuge island” or “pedestrian refuge island”).	• Reduces pedestrian/ vehicular conflict. • Shortens the distance a pedestrian must cross at one time. • Allows the pedestrian to consider traffic coming from only one direction at a time, potentially reducing confusion and increasing crossing opportunities. • Can reduce the time a pedestrian must wait to cross by increasing the number of gaps in traffic, since the	• Typically, would be provided on wider, multi-lane roads, to reduce the effective crossing width. • Should be signed and illuminated to identify purpose. • Should be a minimum of 6’ wide to provide sufficient space for refuge. Wider is preferable, particularly on higher-speed streets or in areas where there may be many pedestrians crossing at one time. • Might be used at signalized or unsignalized crosswalks, intersections, and midblock crossings. • Landscaping on pedestrian refuges should not impede visibility of pedestrians or drivers.

Design/Operations Element	Purpose / Benefit	Design Considerations
	pedestrian need only cross traffic coming from one direction.	• The crosswalk should pass through the refuge at grade, for accessibility by all travelers. • Should typically include some sort of vertical element, such as landscaping or signs, so that drivers can clearly see and avoid running into the refuge. • A key trade-off when providing pedestrian refuge islands is the additional width required. The design team should carefully consider whether the pedestrian and the adjacent land uses are better served by a narrower crossing or by the addition of the refuge. For intersections that are already very wide, with multiple turning movements, the addition of pedestrian refuges may be the only way to improve the pedestrian crossing environment.
Sight Distance: The length of roadway that is visible to the driver traveling on a street or approaching (or waiting to enter) an intersection. More generally, sight distance refers to the ability of motorists to see one another as they approach an intersection or enter a street.	• Increased sight distance improves safety for motorists, by providing visibility and increasing the amount of time to respond to other vehicles on or entering the street. • Increased sight distance for motorists entering the street allows the motorist to feel more comfortable and better judge “gaps” in the stream of approaching vehicles. • Adequate sight distance improves safety for pedestrians and cyclists by making them more visible to drivers and by allowing them to see approaching vehicles, as well.	• Sight distance regulations for motor vehicles may conflict with pedestrian friendly objectives such as the desire to have buildings close to the street, especially on Main Streets. • Sight distance does not need to be as great for motorists approaching a stop sign as it does for motorists approaching an uncontrolled intersection. • Motorists tend to feel more comfortable traveling at higher speeds when sight distances are very long. Increased safety related to provision of sight distance might, in some circumstances, actually increase speeds. This needs to be considered when designing for streets in different contexts, particularly where there are many pedestrians.
Street Lighting: Refers to the illumination of a street’s travel lanes. Other portions of the street right-of-way may also be illuminated by the street lighting and/or by pedestrian-scale lighting, which	• Street lighting enhances safety for all travelers, by illuminating hazards, curves, and other travelers in the street. • Lighting can also improve safety and security around buildings and in parking areas.	• The optimal type and number of streetlights depends on street classification, configuration, and adjacent land uses. • Street lighting that reduces glare or unnecessary uplighting should be considered, to ease localized light pollution. Cobraheads should be avoided.

Design/Operations Element	Purpose / Benefit	Design Considerations
specifically illuminates the sidewalk or other pedestrian areas.	This may best be accomplished by a mix of street and pedestrian-scale lighting, depending on the context.	• Consider whether pedestrian-scale lighting can be used to illuminate or define a curve or other feature and, therefore, reduce the need for streetlights in some spots. • Areas of high pedestrian activity or primary pedestrian routes should have pedestrian-scale lighting, which is specifically intended to illuminate the sidewalk, as opposed to the travelway. For proper illumination and to avoid glare, pedestrian-scale lighting should typically be no more than 12’ in height. Even in parking areas, which may need street lighting, pedestrian-scale lighting can better define and enhance the pedestrian “space”.
Wide Outside Lane: An extra wide traffic lane that provides enough space for motor vehicles and bicycles to use the same lane (also called a shared lane). Typically used where there is not enough space for a separate, marked bicycle lane.	• Provides some increase in safety and comfort for both cyclists and motorists, in the absence of a bicycle lane (which is the preferred treatment for bicycle safety).	• Should be wide enough to allow a motor vehicle to pass a cyclist without crossing into the next lane (minimum 14’ width). • Extra width is required if the wide-outside-lane is to be used with on-street parking (to reduce the risk to cyclists from opening car doors). • Wide outside lanes can also make motorists feel more comfortable speeding, so they should be used carefully. Marked bicycle lanes are the preferred option.

Conclusions

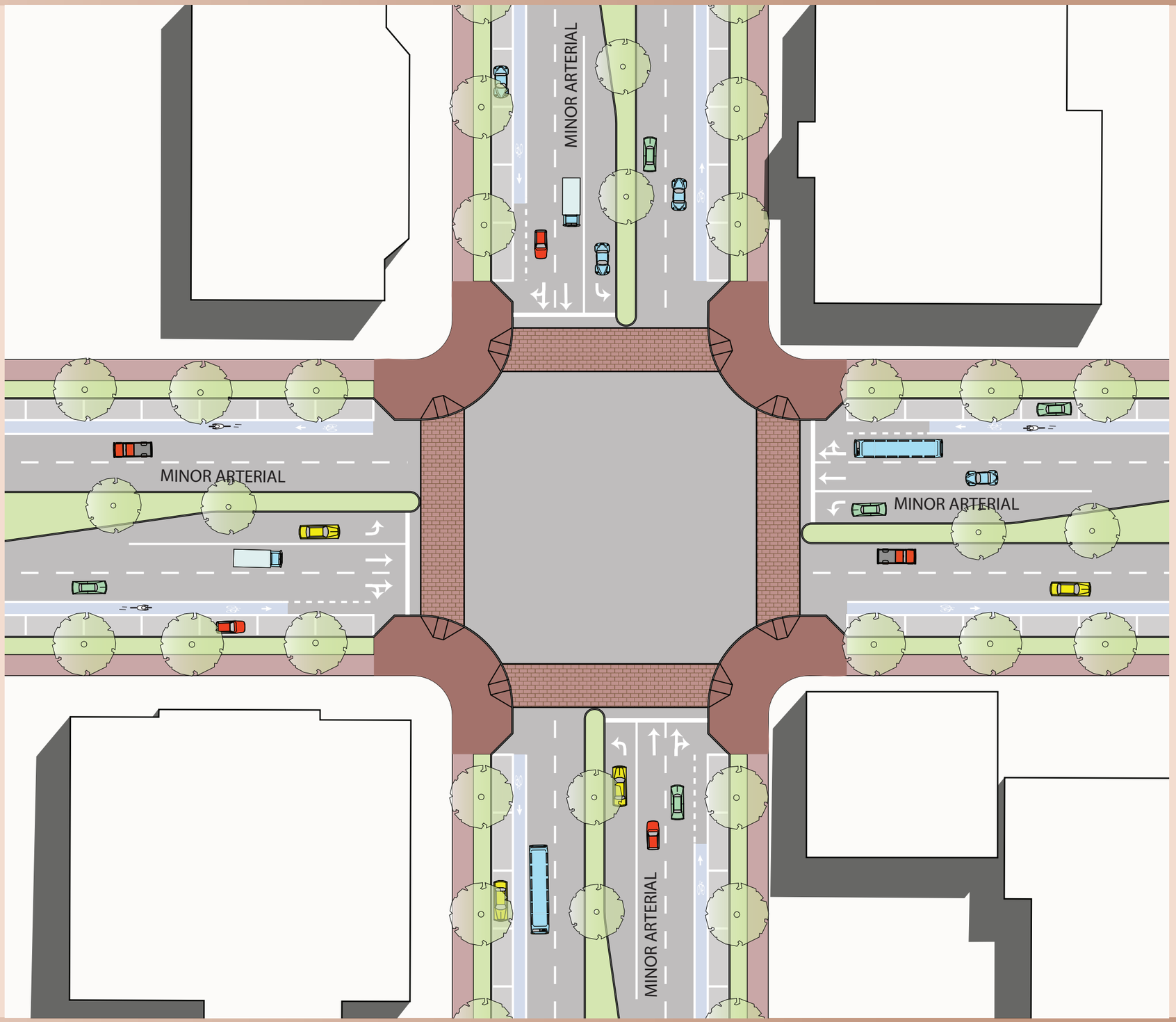
Through careful analysis and implementation of the redesign guidelines, Springfield can provide a pleasant and safe environment for people traveling by all modes. There are typically competing uses for often-limited rights-of-way. This creates complex situations where there is a desire to accomplish a variety of objectives within constrained conditions. Under these conditions, trade-offs should be considered. Designing streets that increase transportation choices, make better non-motorized connections to destinations, and guide development should be encouraged. Ultimately the goal is to create complete streets. Streets that are safe, functional, multi-modal and serve all users.

ID	Intersection Name	Pedestrian Priority	Vehicular Priority	Existing Conditions Comments
1	Commerce St. and Old Keene Mill Rd.	X	X	Cross walks on west side of Old Keene Mill Rd, and north side of Commerce St.
2	Old Keene Mill Rd. and Spring Rd.	X	X	Painted cross walks on all sides
3	Amherst Ave. and Cumberland Ave.	X		No cross walk on north side of Amherst Ave, and east side of Cumberland Ave.
4	Backlick Rd. and Cumberland Ave.	X		One cross walk crossing north side of Backlick Rd.
5	Amherst Ave. and Commerce St.	X		
6	Backlick Rd. and Commerce St.	X		
7	Amherst Ave. and Bland St.	X		
8	Backlick Rd. and Bland St.	X		Cross walks on east side of Bland St, and south side of Backlick Rd.
9	Brandon Ave. and Commerce St.	X		
10	Amherst Ave. and Springfield Blvd.	X		
11	Amherst Ave. / Backlick Rd. and Calamo St.		X	No cross walk on Backlick Rd
12	Backlick Rd. and Spring Garden Dr. / Shopping Center	X		One cross walk crossing Spring Garden Dr.
13	Backlick Rd. and Villa Park Dr.		X	One cross walk crossing Villa Park Dr.
14	Backlick Rd. and Franconia-Springfield Parkway Eastbound		X	Cross walks crossing the ramp to Fran-Spring Pkwy
18	Bowie Dr. and Commerce St.		X	
19	Commerce St./Loisdale Rd. and Franconia Rd.	X	X	Painted cross walks on all sides
21	Frontier Dr. and Franconia Rd.	X		Painted cross walks on all sides, sidewalk under bridge
22	Loisdale Rd. and Loisdale Ct.		X	One cross walk on west of Loisdale Ct.
23	Loisdale Rd. and Spring Mall Dr/I-95 Northbound Off-Ramp		X	Cross walks of north side of Loisdale Rd, and on east side of Springfield Center Dr.
25	Loisdale Rd. and Springfield Center Dr.		X	One cross walk on south side of Loisdale Rd
26	Frontier Dr. and Springfield Mall Entrance North	X		Cross walks on north side of Frontier Dr, and west side of Mall Entrance
27	Frontier Dr. and Springfield Mall Entrance South		X	
28	Frontier Dr. and Spring Mall Dr.	X	X	Cross walks on west of Spring Mall Rd, and on south of Frontier Dr.
29	Frontier Dr. and Franconia-Springfield Parkway	X	X	Painted cross walks on all sides, sidewalk under bridge
30	Metro Station and Franconia-Springfield Parkway	X		Painted cross walks on west, south, east sides
33	HOV 3 I-95 Ramps and Franconia-Springfield Parkway		X	
39	Bland St. and Brandon Ave.	X		
41	Springfield Blvd. & Backlick Rd.	X		

Note: Intersections nos. 15,17, 24, 31,32,34,35,36, and 37 as per the existing conditions report have not been analyzed in this particular study.

Minor Arterial Section

Design Elements	Minor Arterial
Median	Yes, except on one way streets. 8' at intersection with left turn lane, 20' without left turn lane.
Pedestrian Refuges	In median
Turn Lanes	Left turn lane; Right turn lane combined with through lanes.
Through Lanes	2 to 3 lanes in each direction
Bike Facility	5' wide bike lanes
Parking	8' wide parking lanes
Curb Radii	Keep the curb radii as small as possible to minimize the distance of pedestrian crossing and reduce speed of turning vehicles.
Curb Extensions	Yes, same width as parking lanes.
Handicap Ramps	Follow VDOT's Guidelines for the design and location of handicap ramps.
Crosswalk	Crosswalk should be on all legs unless physical restriction or safety-related reasons limit the use of it. Use enhanced marking or paving.
Landscaping	Continuous landscaped strip



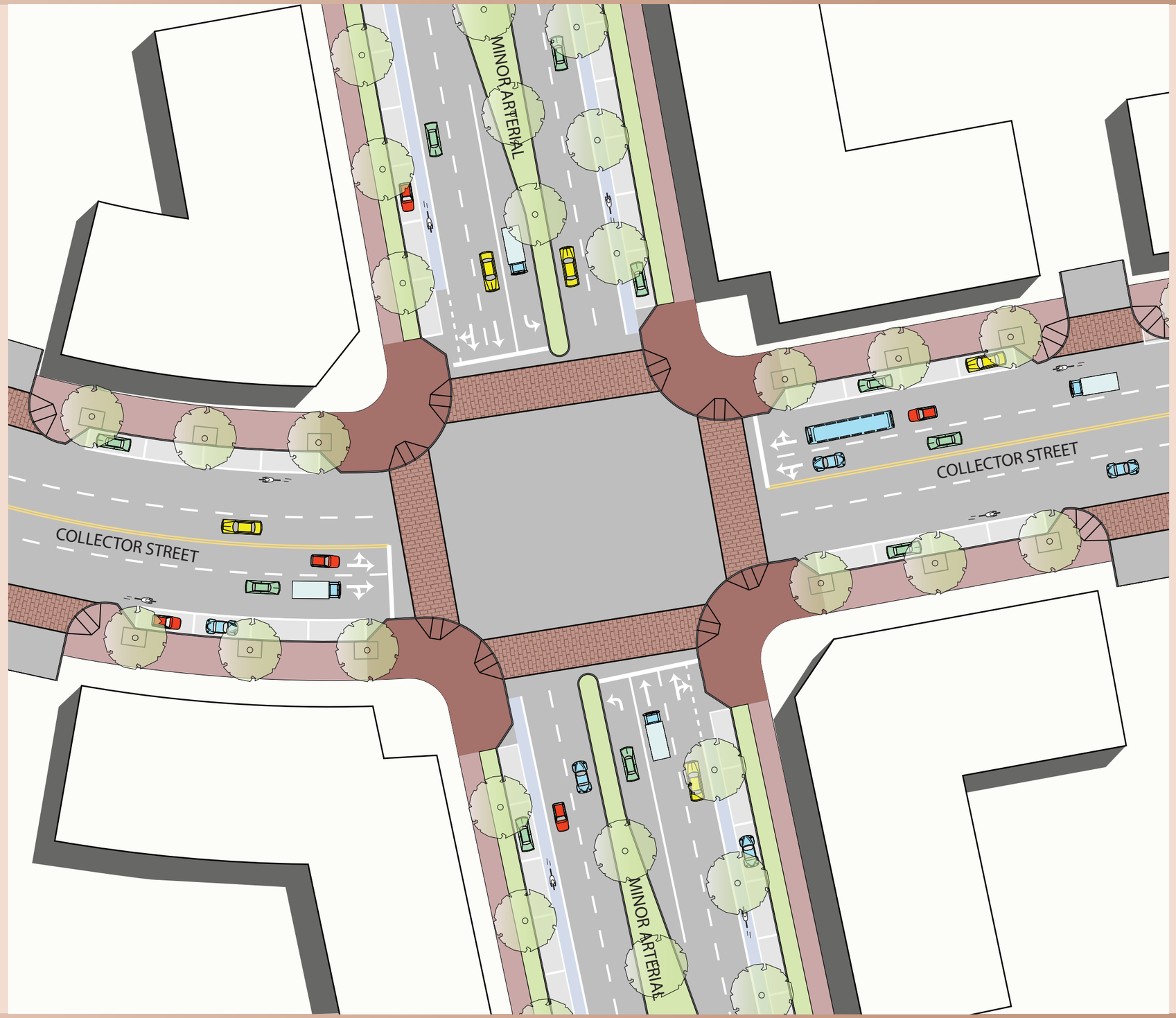
TYPICAL INTERSECTION IMPROVEMENT PLAN - MINOR ARTERIAL TO MINOR ARTERIAL

SPRINGFIELD CONNECTIVITY STUDY

Minor Arterial Section

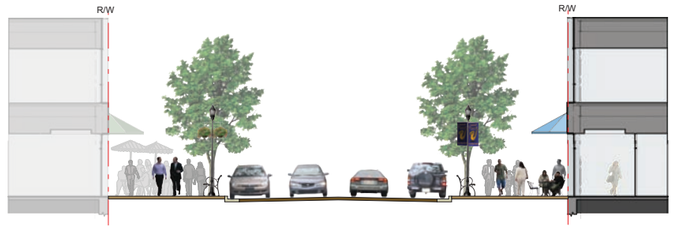
Collector Street Section

Design Elements	Collector Street	Minor Arterial
Median	None	Yes, except on one way streets. 8' at intersection with left turn lane, 20' without left turn lane.
Pedestrian Refuges	None	In median
Turn Lanes	Left and right turn lanes combined with through lanes.	Left turn lane; Right turn lane combined with through lanes, and cut out from median.
Through Lanes	2 lanes in each direction	2 to 3 lanes in each direction
Bike Facility	14' wide outside lanes to accommodate bike.	5' wide bike lanes
Parking	8' wide parking lanes	8' wide parking lanes
Curb Radii	Keep the curb radii as small as possible to minimize the distance of pedestrian crossing and reduce speed of turning vehicles.	
Curb Extensions	Yes, same width as parking lane.	Yes, same width as parking lane.
Handicap Ramps	Follow VDOT's Guidelines for the design and location of handicap ramps.	
Crosswalk	Crosswalk should be on all legs unless physical restriction or safety-related reasons limit the use of it. Use enhanced marking or paving.	
Landscaping	Use tree grates on streets with more pedestrian traffic, use continuous landscape strip on streets with less pedestrian traffic.	Continuous landscaped strip



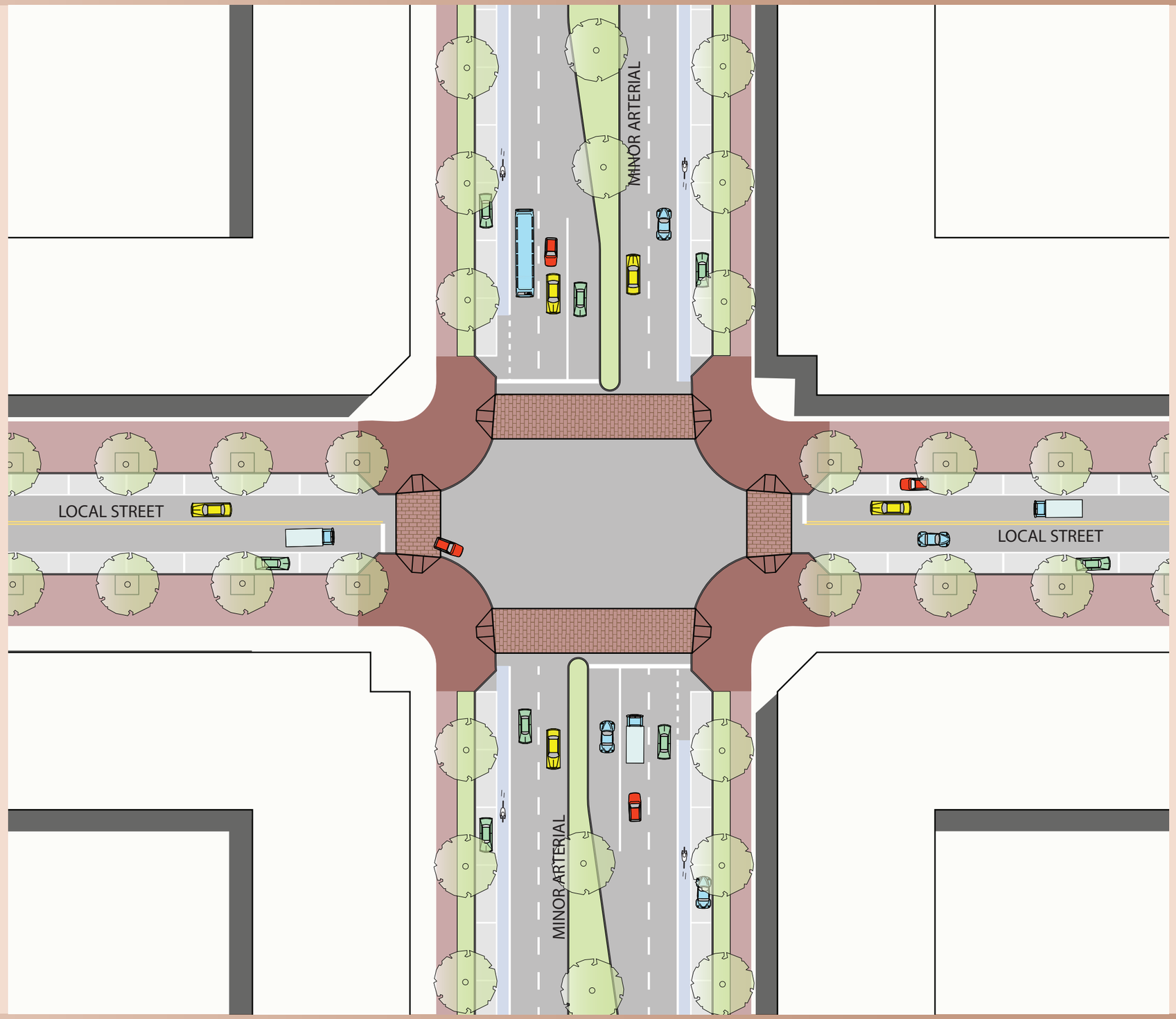
TYPICAL INTERSECTION IMPROVEMENT PLAN - COLLECTOR STREET TO MINOR ARTERIAL

Minor Arterial Section



Local Street Type 2 Section

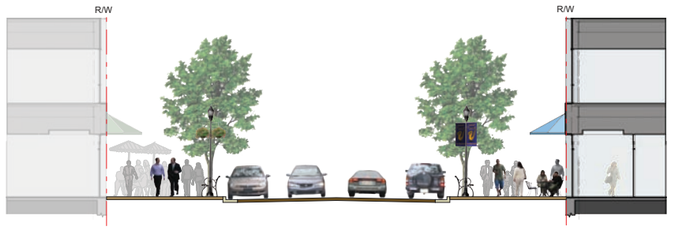
Design Elements	Local Street	Minor Arterial
Median	None	Yes, except on one way streets. 8' at intersection with left turn lane, 20' without left turn lane.
Pedestrian Refuges	None	In median
Turn Lanes	None	Left turn lane; Right turn lane combined with through lanes.
Through Lanes	1 lane in each direction	2 to 3 lanes in each direction
Bike Facility	None	5' wide bike lanes
Parking	8' wide parking lanes	8' wide parking lanes
Curb Radii	Keep the curb radii as small as possible to minimize the distance of pedestrian crossing and reduce speed of turning vehicles.	
Curb Extensions	Yes, same width as parking lane.	
Handicap Ramps	Follow VDOT's Guidelines for the design and location of handicap ramps.	
Crosswalk	Crosswalk should be on all legs unless physical restriction or safety-related reasons limit the use of it. Use enhanced marking or paving.	
Landscaping	Use tree grates on local commercial streets. Use continuous landscaped strip on local residential streets.	Continuous landscaped strip



TYPICAL INTERSECTION IMPROVEMENT PLAN - LOCAL STREET TO MINOR ARTERIAL

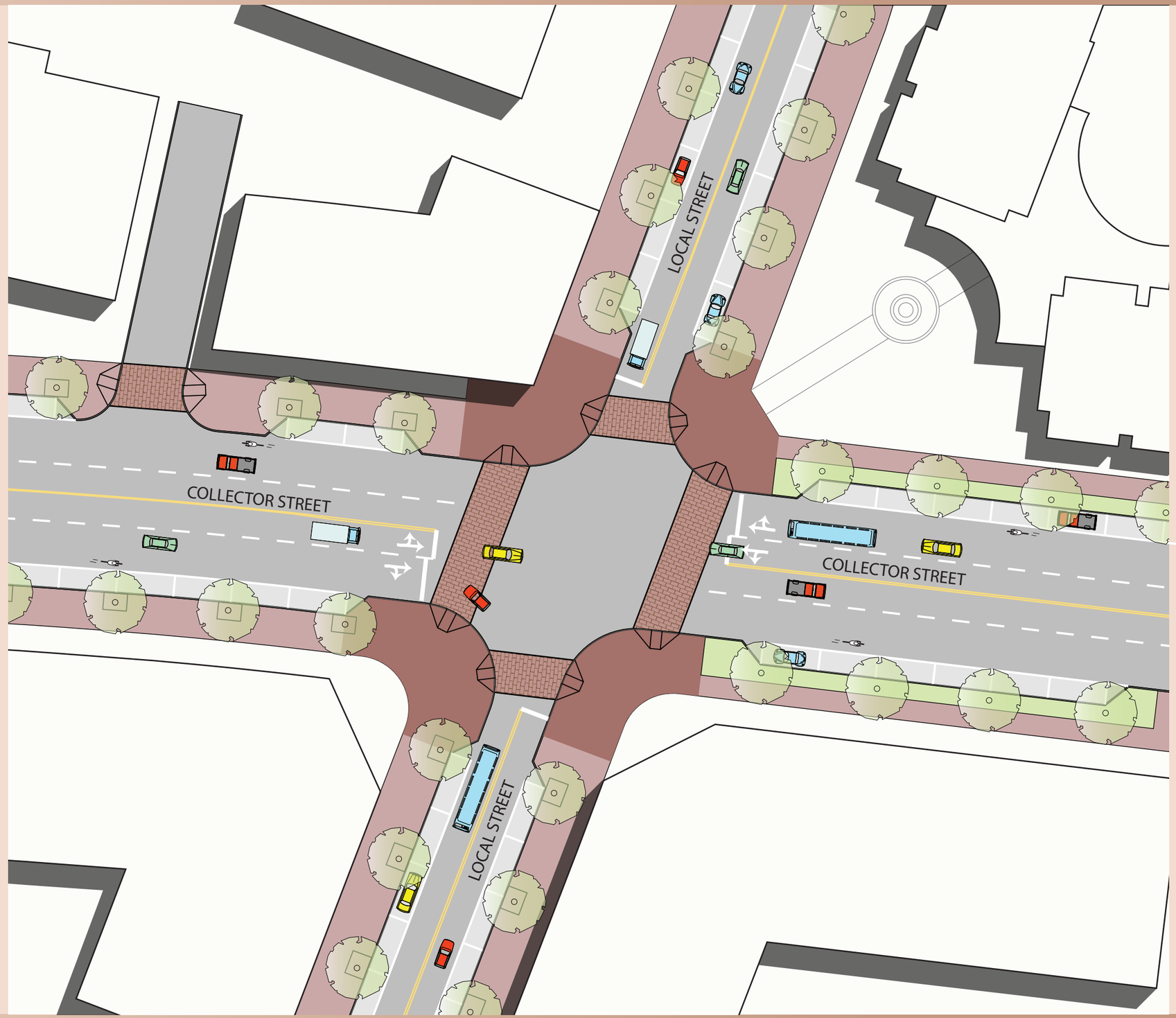
SPRINGFIELD CONNECTIVITY STUDY

Collector Street Section



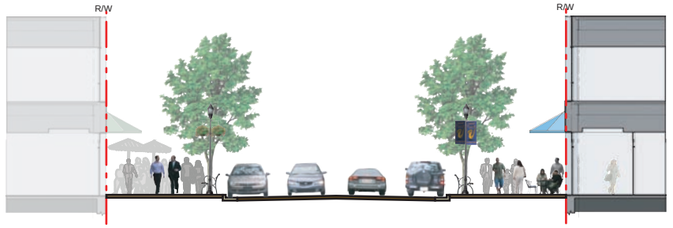
Local Street Section

Design Elements	Collector Street	Local Street
Median	None	None
Pedestrian Refuges	None	None
Turn Lanes	Left and right turn lanes combined with through lanes.	None
Through Lanes	2 lanes in each direction	1 lane in each direction
Bike Facility	14' wide outside lanes to accommodate bike.	None
Parking	8' wide parking lanes	None
Curb Radii	Keep the curb radii as small as possible to minimize the distance of pedestrian crossing and reduce speed of turning vehicles.	
Curb Extensions	Same width as parking lane	
Handicap Ramps	Follow VDOT's Guidelines for the design and location of handicap ramps.	
Crosswalk	Crosswalk should be on all legs unless physical restriction or safety-related reasons limit the use of it. Use enhanced marking or paving.	
Landscaping	Use tree grates on streets with more pedestrian traffic, use continuous landscape strip on streets with less pedestrian traffic.	Use tree grates on local commercial streets. Use continuous landscaped strip on local residential streets.

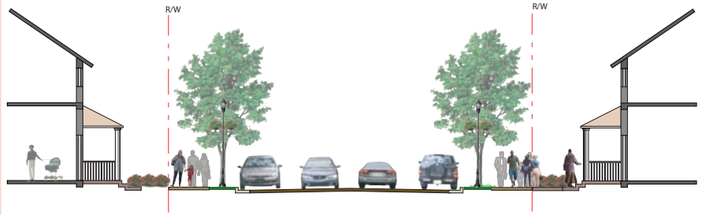


TYPICAL INTERSECTION IMPROVEMENT PLAN - LOCAL STREET TO COLLECTOR STREETS

SPRINGFIELD CONNECTIVITY STUDY

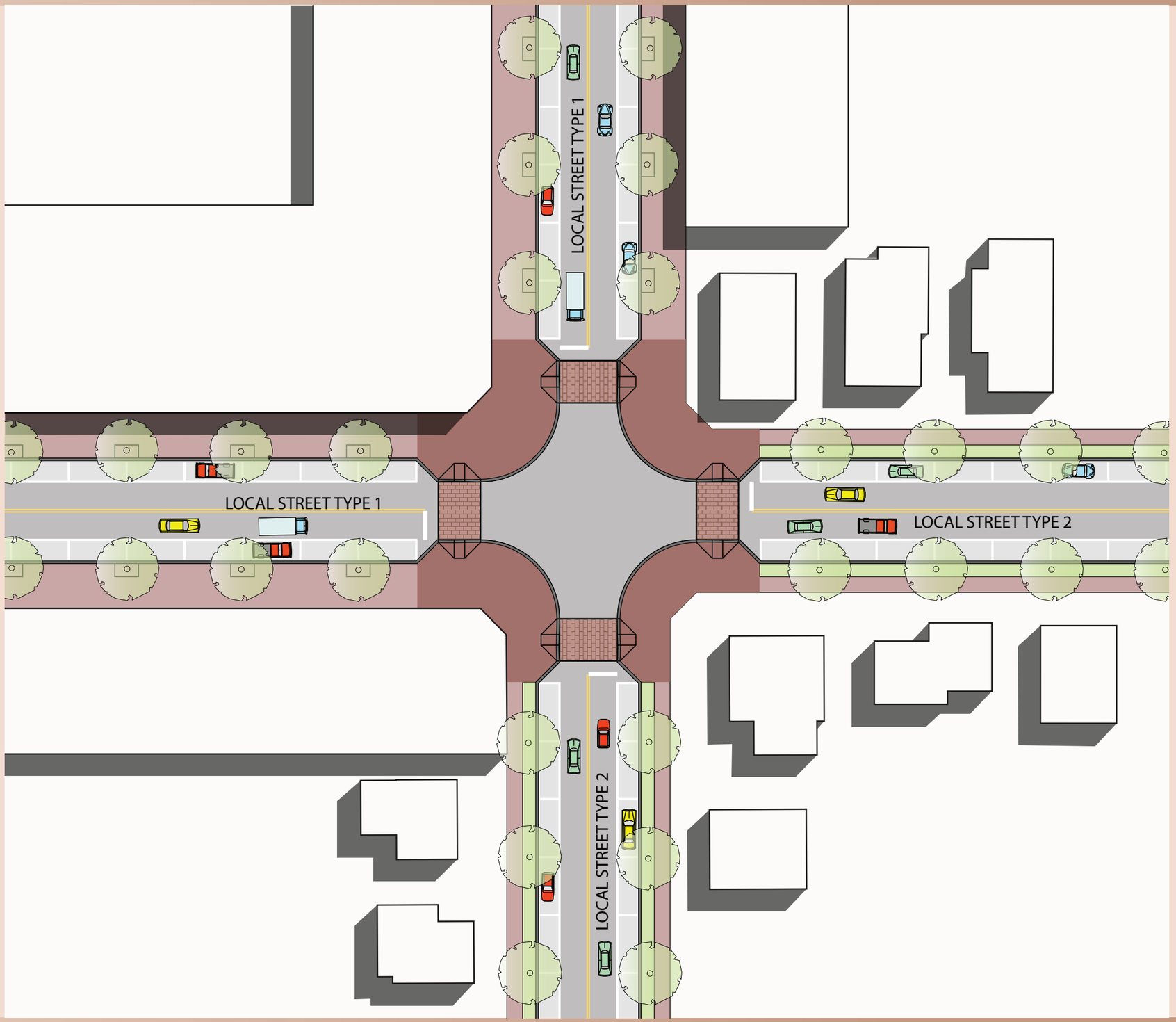


Local Street Type 1 Section

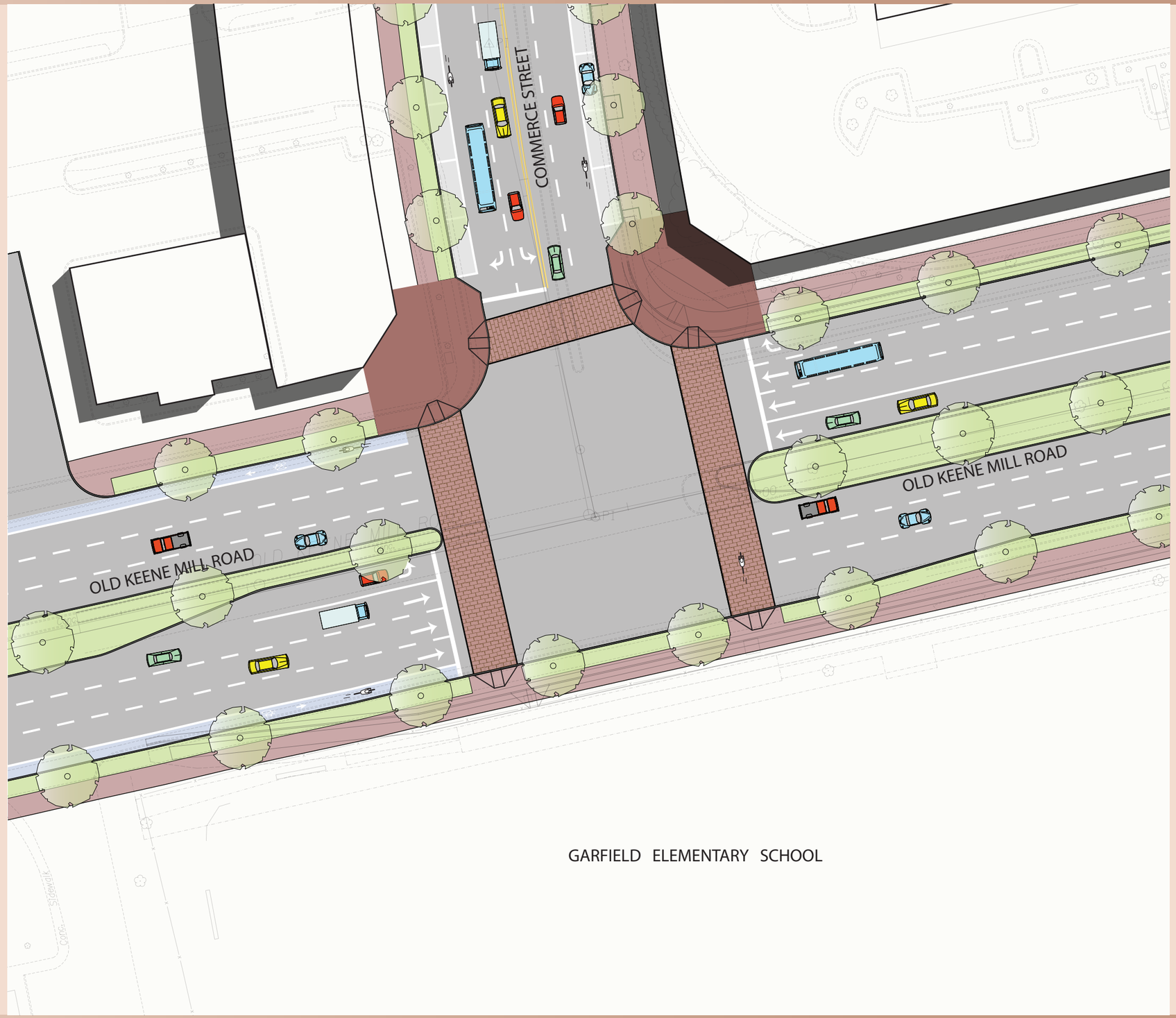


Local Street Type 2 Section

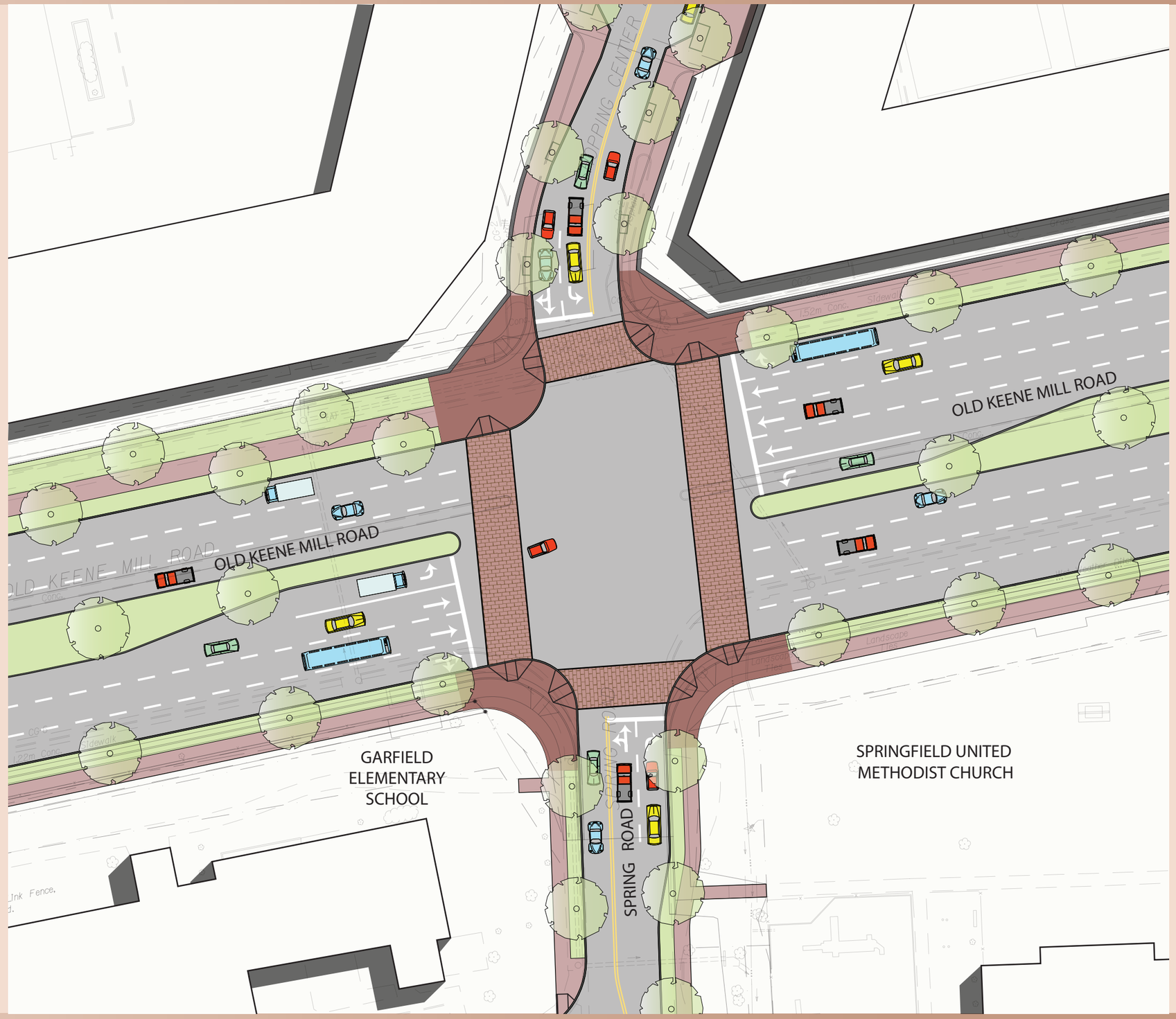
Design Elements	Local Street
Median	None
Pedestrian Refuge	None
Turn Lanes	None
Through Lanes	1 lane in each direction
Bike Facility	None
Parking	8' wide parking lanes
Curb Radii	Keep the curb radii as small as possible to minimize the distance of pedestrian crossing and reduce speed of turning vehicles.
Curb Extensions	It should has the same width as parking lane.
Handicap Ramps	Follow VDOT's Guidelines for the design and location of handicap ramps.
Crosswalk	Crosswalk should be on all legs unless physical restriction or safety-related reasons limit the use of it. Use enhanced marking or paving.
Landscaping	Use tree grates on local commercial streets. Use continuous landscaped strip on local residential streets.



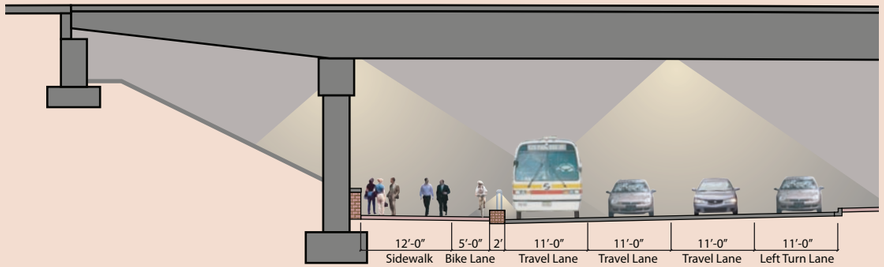
Design Elements	Old Keene Mill Road	Commerce Street
Median	8' at intersection with left turn lane, 20' without left turn lane.	None
Pedestrian Refuges	Yes, in median	None
Turn Lanes	Left turn lane on east bound, right turn lane on west bound.	Right and left turn lanes only.
Through Lanes	3 lanes in each direction	2 lanes in each direction, combined with Turn lanes.
Bike Facility	5' wide bike lane west of intersection	14' wide outside lanes to accommodate bike.
Parking	None	8' wide parking lanes
Curb Radii	Keep the curb radii as small as possible to minimize the distance of pedestrian crossing and reduce speed of turning vehicles.	
Curb Extensions	None	Yes, same width as parking lane.
Handicap Ramps	Follow VDOT's Guidelines for the design and location of handicap ramps.	
Crosswalk	Crosswalk should be on all legs unless physical restriction or safety-related reasons limit the use of it. Use enhanced marking or paving.	
Landscaping	Continuous landscaped strip	Use tree grates on streets with more pedestrian traffic, use continuous landscape strip on streets with less pedestrian traffic.



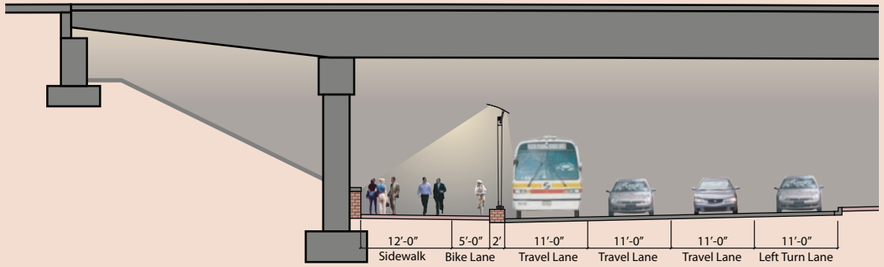
Design Elements	Old Keene Mill Road	Spring Road
Median	8' at intersection with left turn lane, 20' without left turn lane.	None
Pedestrian Refuges	Yes	None
Turn Lanes	Left turn lanes on both direction. Right turn lane on west bound. Right turn lane combined with through lane on east bound.	Left turn lane on south bound. Right turn lane on north bound.
Through Lanes	3 lanes west of Spring Rd; 4 lanes east of Spring Rd.	1 lane in each direction, can be combined with turn lanes.
Bike Facility	None	None
Parking	None	None
Curb Radii	Keep the curb radii as small as possible to minimize the distance of pedestrian crossing and reduce speed of turning vehicles.	
Curb Extensions	None	None
Handicap Ramps	Follow VDOT's Guidelines for the design and location of handicap ramps.	
Crosswalk	Crosswalk should be on all legs unless physical restriction or safety-related reasons limit the use of it. Always use enhanced marking or paving.	
Landscaping	Continuous landscaped strip	Use tree grates on north of Old Keene Mill Road due to higher pedestrian volumes. Use continuous landscaped strip on south.



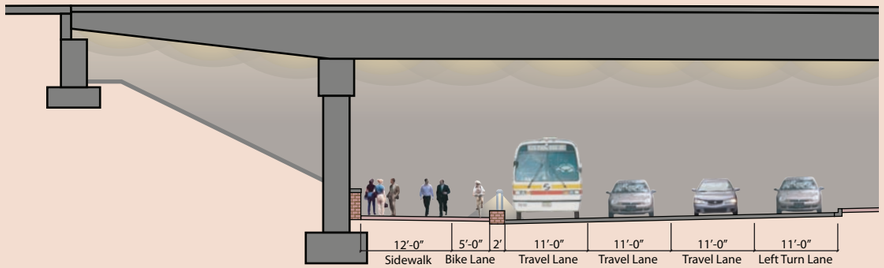
Design Elements	Loisdale Road	Metropolitan Center Drive
Median	8' at intersection with left turn lane, 20' without left turn lane.	None
Pedestrian Refuges	None	None
Turn Lanes	Left turn lane on south bound, right turn lane combined with through lane on north bound.	Left and right turn lanes only.
Through Lanes	2 lanes in each direction	2 lanes in each direction
Bike Facility	5' wide bike lane	14' wide outside lanes to accommodate bike.
Parking	8' wide parking lane only on northeast side of intersection	None at intersection
Curb Radii	Keep the curb radii as small as possible to minimize the distance of pedestrian crossing and reduce speed of turning vehicles.	
Curb Extensions	Northeast side, same width as parking lane.	None
Handicap Ramps	Follow VDOT's Guidelines for the design and location of handicap ramps.	
Crosswalk	None	Yes, use enhanced marking or paving.
Landscaping	Continuous landscaped strip	Continuous landscaped strip



Proposed Underpass Section - Down Lighting



Proposed Underpass Section - Pedestrian Scale Lighting

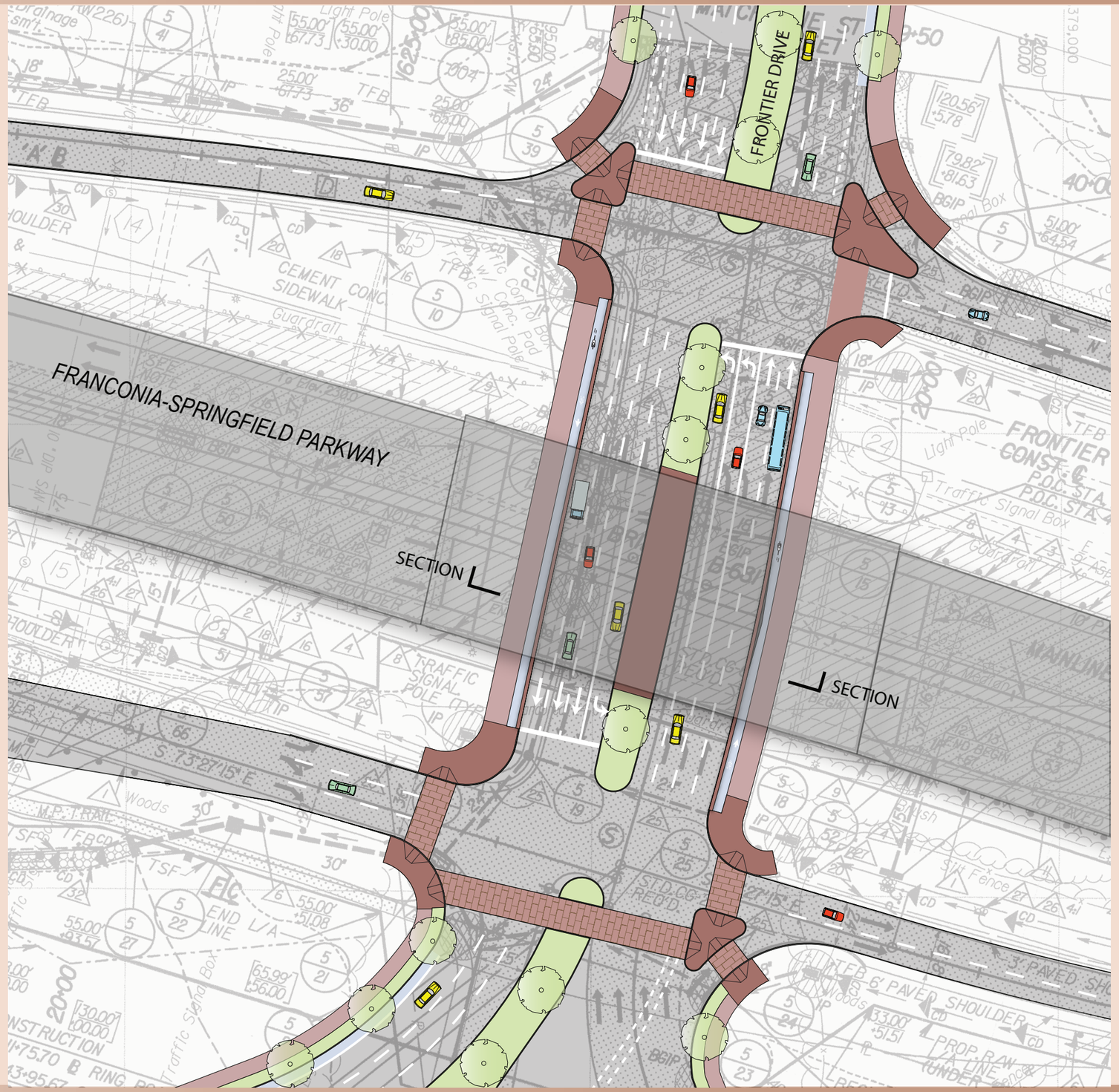


Proposed Underpass Section - Up Lighting

North/South Pedestrian Facilities Under Franconia Springfield Parkway

Pedestrian safety is central in all aspects of context sensitive street design. Enhancing the pedestrian experience under bridges is also challenging. Technologies and techniques have advanced to address these issues.

The cross sections on this page illustrate possible architectural modifications to the concrete, sloped embankments to enhance the pedestrian facilities. In addition, the cross sections illustrate methods of lighting that can dramatically make the pedestrian crossing under the overpass less foreboding. The cross section includes addition of a 5' bike lane in each direction to improve connectivity to/from the Metro station.



Context Sensitive Design (CSD) and Context Sensitive Solutions

These are principles that have been and are being embraced in the transportation planning, design and construction disciplines world-wide, such as Federal Highway Administration, US Department of Transportation, State DOT's, Municipal DOT's, etc. They apply to all aspects of transportation. New street cross sections, highway design finishes, and pedestrian amenities are just a few of the components.

They also apply to the "architectural" components and their design - especially bridge overpasses, underpasses and the structures themselves. A sample of photographs, sketches and design details highlight the breath of opportunities being integrated into today's transportation projects and for consideration for enhancing the underpass of Frontier Drive under the Franconia/Springfield Parkway.

Bridge Architecture

Bridges are important functional and historic structures in both urban and rural settings. Context sensitivity of bridge architecture requires designers to address the aesthetic design of a bridge, its linkages to the surrounding context at each end of the bridge, and the functions that bridges can serve for pedestrians, bicyclists and motorists. As seen in the below photographs, bridge architecture can be more traditional in nature or have more attractive façade vernacular.

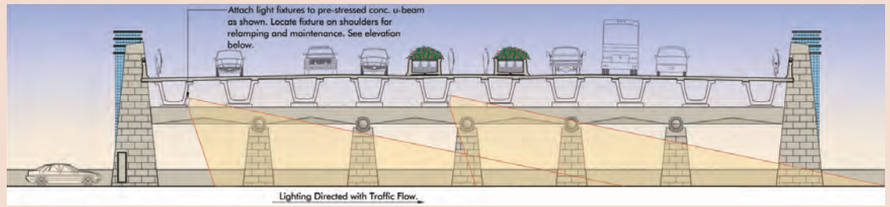
Bridge Architecture – Underpass Design

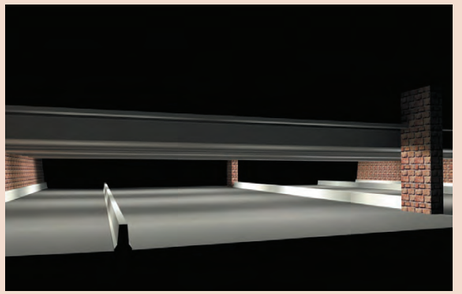
Critical to the success of improving the pedestrian linkage of "Springfield" to the Franconia/Springfield Metro Station and Frontier Drive extended in the future is the design and improvement to the bridge underpass. The underpass architecture can be as equally aesthetic as the exterior façades to heighten the visual experience.

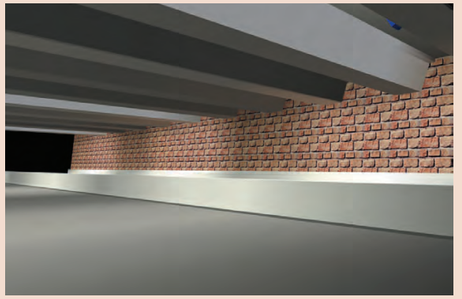
Bridge Underpass Lighting

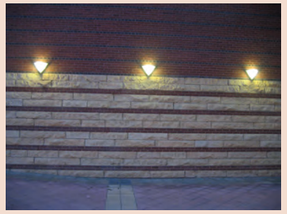
Lighting the underpass of "highway" bridges where pedestrian movement is directed is essential both during the day and dark of night. Refractive/directional light can illuminate and offer a more ambient "glow" of the structure while illuminating the corridor with a higher increase of light. Up-lighting, down-lighting and even sconce style lighting are now commonly being incorporated into context sensitive solutions of bridge design.

BRIDGE UNDERPASS LIGHTING



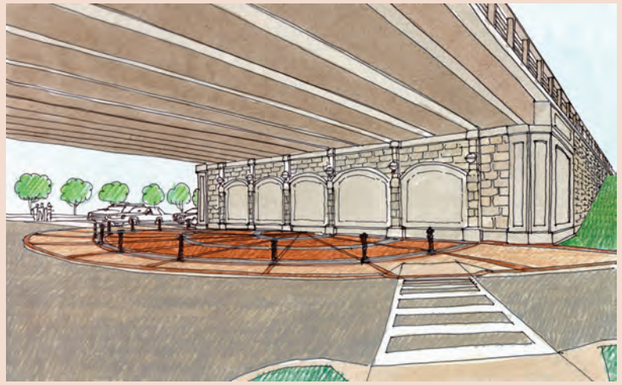


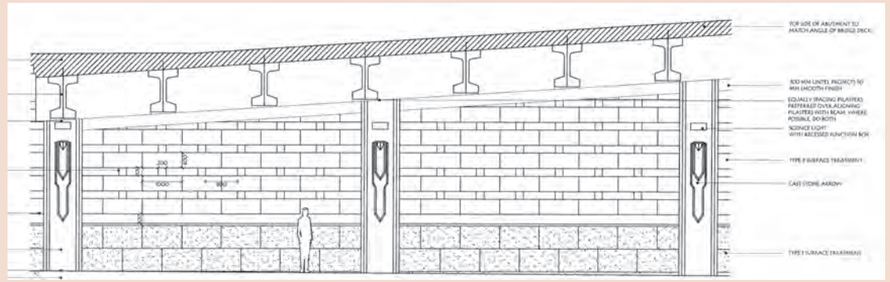


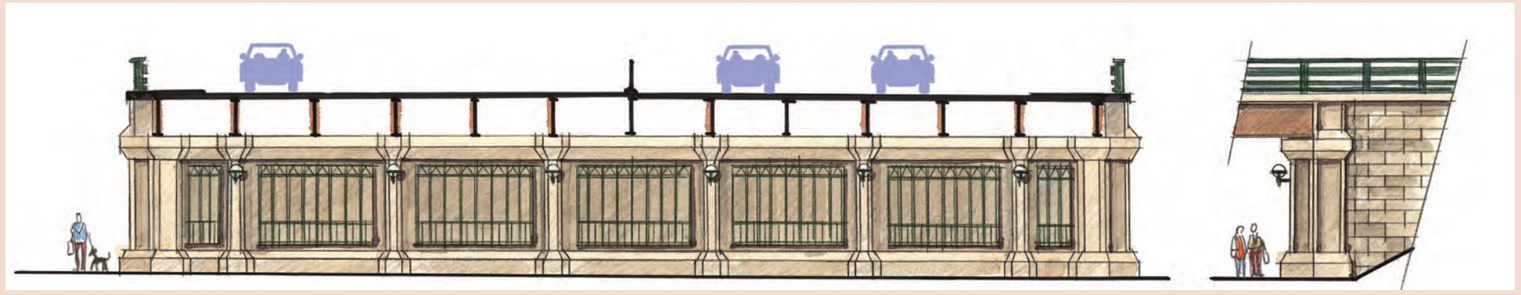


BRIDGE ARCHITECTURE

BRIDGE ARCHITECTURE – UNDERPASS DESIGN







Besides the design of street element as discussed previously, a wayfinding system also helps form a consistent theme sense of the place. It creates a “visitor friendly” environment and improves the community’s self image. It provides directional information at decision points for visitors (usually intersections along main visitor corridors).

A series of signs are designed with uniform elements that are consistent in appearance and nomenclature, regardless of their function, location or message. These elements include color, shape, typography, logo, assembly, etc.

The theme and wayfinding plan should be incorporated into any redevelopment in Springfield. The images here provide a visual depiction of a prototypical typology of signs listed below:

- Gateway Signs
- Municipal Facility Identity Signs
- Identity Banners and Banner-Like Signs
- Directional Signs
- Trailblazer Signs
- Pedestrian Kiosks
- Visitor Amenity Signs, such as Parking

Gateway & District Identity Signs

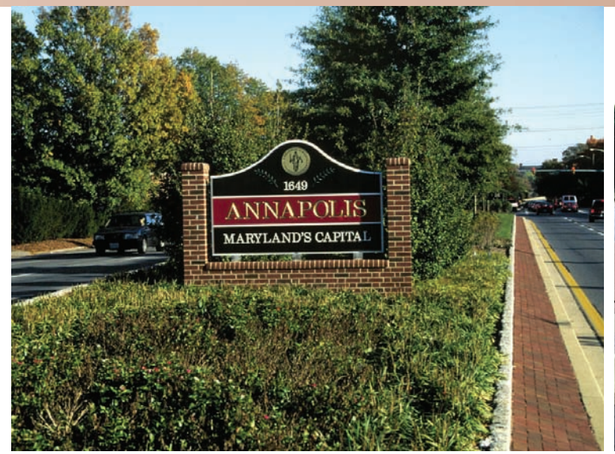
These are “Identity” signs signifying the community entrance portals – either at a city-scale, neighborhood scale or sub-area scale. They are located at key entry and key decision points, have a more monumental scale, and can begin to set the theme and “brand” for Springfield.

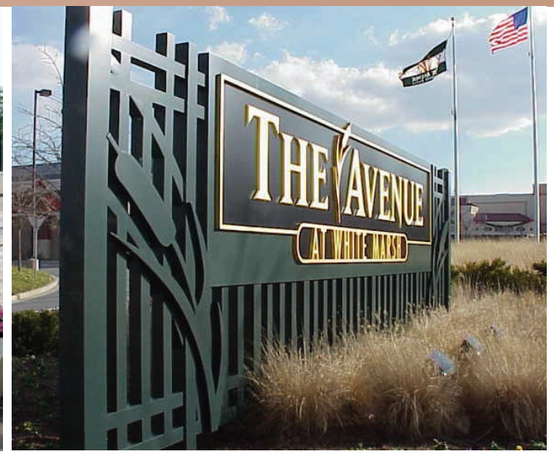
Identity Banners & Banner-like Signs

Banners displaying a site-specific logotype and thematic icons, such as the Springfield Town Center, identify “visitor friendly” areas to motorists and pedestrians. Repetitions of banners, singlely or in pairs create a sense of entry and welcome.

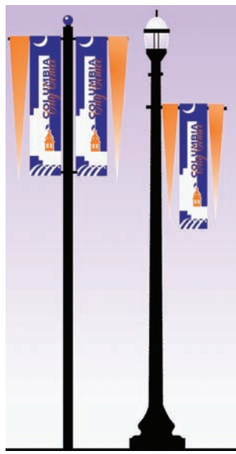
Trailblazer & Directional Signs

Functioning in concert with these district signs are Trailblazer signs that point in key directions and lead visitors down the main visitor corridors





GATEWAY & DISTRICT IDENTITY SIGNS



IDENTITY BANNERS & BANNER LIKE SIGNS

TRAILBLAZER & DIRECTIONAL SIGNS

Pedestrian Kiosks

In addition to providing orientation information about nearby attractions and amenities such as restaurants, theaters, shops, etc., information kiosks can also assist visitors to connect via public transportation.

This additional visibility and connectivity will be especially important for Metro schedules, routes and stops that can be displayed.

To inspire confidence of visitors, the information display must be accurate, well maintained and current.

Parking Signs

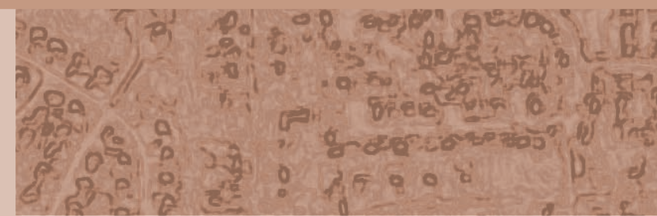
The importance of visitor friendly parking facilities cannot be overstated. "Visitor friendly" means:

- close to visitor attractions and venues
- highly visible with easy vehicular access
- well-lighted and safe
- clearly endorsed by authorities through use of consistent area identity graphics.

Even privately owned and operated lots that meet standards for safety and maintenance could be considered for participation in this graphics program, since all concerned - visitors, the city and the lot owners - would benefit from this increased visibility. It is only when visitors make the transition from passengers to pedestrians that they can truly become active participants in area activities: shopping, dining and entertainment.

To make parking visible and accessible, a number of sign types are proposed:

- identity signs for structured parking
- identity banners or banner-type signs for lightposts in surface parking lots
- identity graphics on pay stanchions, as applicable
- "disk" parking directional panels, either on posts with trailblazer signs, or singly on dedicated posts

PEDESTRIAN KIOSKS

PARKING SIGNS SEEN AT GARAGE ENTRANCE AND ON DIRECTIONAL/TRAILBLAZER SIGNS POSTS