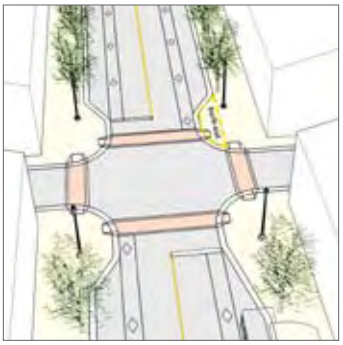
ROUTE 522 CORRIDOR STUDY
MULTIMODAL DESIGN GUIDELINES



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RENAISSANCE PLANNING GROUP

DRAFT June 2010

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introduction

One of the ways that localities will be able to preserve roadway capacity along the corridor is by managing the quality of future growth so that development supports and expands transportation choices. The purpose of this chapter is to provide localities with a series of design standards to be considered in guiding public and private improvements along the Route 522 corridor.

Multimodal planning refers to planning for different modes of transportation (e.g.,automobile, bus, bicycles, pedestrian, rail) and the connections among them. To make multimodal travel truly safe, convenient, and desirable, attention must be paid not only to providing the appropriate mix of land uses and supporting multimodal infrastructure, but also to the quality of the built environment. Common elements of multi-modal site design include the presence of mixed-use activity centers, connectivity of streets and land uses, transit-friendly design features, and accessibility to alternative modes of transportation. For destinations to be truly pedestrian and transit friendly, attention also must be paid to design features such as parking arrangement, building setbacks, streetscaping, and the provision of open/civic space.

This chapter is composed of illustrative design guidelines to shape growth along the corridor. They are not prescriptive rules, regulations or law, but rather intended to provide guidance for the form, character, and quality of future development. Public and private sector actions will be needed to make these ideas a reality.

Organization

The Design Guidelines are organized into two sections:

Section 1: General Design Standards that support multimodal corridors and a summary of potential implementation measures for localities to consider.

Section 2: Corridor Types that apply specific design standards to different segments along the 522 corridor.

Design Standards

The section on Design Standards identifies various design elements based on specific zones within the overall corridor:

I. ROW - Right of way is the publicly owned land between the curbs that includes travel lanes for private vehicles, goods movement, transit vehicles, bicycles, and pedestrians. Medians, curbs, and crosswalks and are included in the right of way zone. Outside of the right of way, the land is privately owned and cannot be assumed to be available for thoroughfare construction without acquiring the land through dedication or purchase.

II. Edge - The edge zone is the space generally between the public right of way and the edge of adjacent buildings and includes a variety of public and private elements that contribute to the pedestrian experience and reinforce the adjacent land use setting.

III. Adjacent Land Use - The Adjacent Land Use zone incorporates buildings adjacent to the roadway, and extends to surrounding land uses that are generally accessible and functionally related to the corridor. It can extend from a few hundred feet to a mile or more away from the roadway. Buildings, landscaping, land use mix, site access and public and semi-public open spaces are the primary shaping elements of the built and natural environment within the adjacent land use zone.

IV. Road System - The Road System zone is more loosely defined than the previous 3 zones and is meant to include the entire functional system of transportation that is directly related to the corridor, including parallel roads and the overall connected secondary road network. Road system includes aspects of operations and maintenance that apply to the entire corridor, and include discussion of access management, connectivity and travel speed.

Corridor Types

A Context Sensitive Solutions (CSS) approach was considered in the development of the corridor types. As part of the study, both the existing roadway design and surrounding context were analyzed. Meetings were held with staff from the corridor localities to better understand the long term future land use plans, as well as the near term development projects with the study area. Consistent with the future land use plans and the approach of Warren County's Corridor Overlay Guidelines, the following Corridor Types were developed:

- Mixed Use Low Speed Corridor

- Mixed Use Moderate Speed

- Mixed Use High Speed

- Rural High Speed

These corridor types describe both the context and function of the Route 522 corridor in the future, ranging from a more urban setting on the northern end of the corridor within the Winchester city limits and portions of Frederick County, and passing through both suburban and rural areas in Frederick, Clarke and Warren Counties. The corridor typology is based on a CSS approach, but modified for a corridor that is prioritized for vehicular mobility because of its statewide function and regional importance.

Model Corridor Overlay Ordinance

In addition, a Model Corridor Overlay ordinance is included after these guidelines that is intended to serve as a potential regulatory tool for implementing the measurable and quantifiable aspects of the guidelines. The draft ordinance language is designed to ultimately be customized and adopted into each jurisdiction's Zoning Ordinance, if desired, to supplement existing regulations that now apply to properties within the study area. The focus of the ordinance language is not on land uses, but rather the form of development and elements such as building heights, building setbacks and locations on a site, landscaping requirements, and sign regulations. The underlying zoning requirements, which typically include such elements as permitted land uses, height and bulk regulations for structures, and lot area requirements, would continue to remain in place.

2 design standards

1 right of way

street and lane width

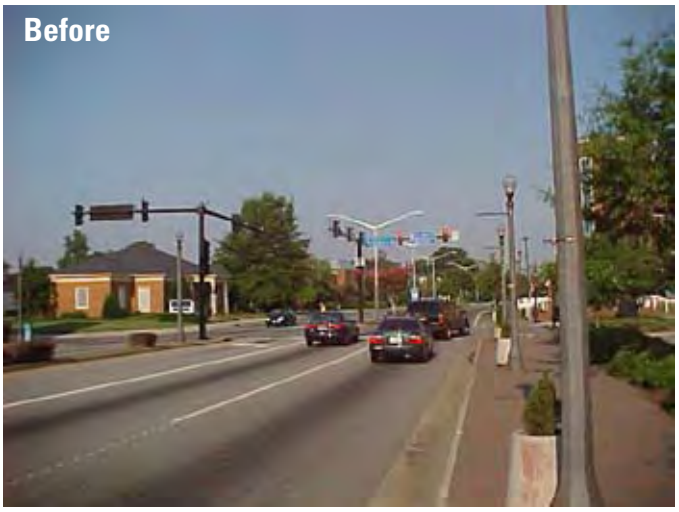
GENERAL DISCUSSION:

Most newer streets are designed with lanes that are 12' wide with a significant buffer area between the edge of pavement and adjacent buildings, encouraging high-speed traffic and discouraging cycling and pedestrian activity. This is an appropriate width along regional arterials in rural and suburban areas, although widths may be reduced to 10' in urban contexts with slower travel speeds. On many local streets, 10-11' lanes are adequate, narrowing the street and providing additional right-of-way for on-street parking, cycling lanes, or wider sidewalks.

NOTE: The recommendations on this page relate to the adjacent and connecting secondary roadways in the vicinity of the corridor, rather than to Rt. 522 specifically.

DESIGN OBJECTIVES:

- Balance the needs of pedestrians, bicyclists, and drivers
- Reduce crossing times, which can help optimize signal timing
- Balance vehicle speed with function and context
- Improve social interaction and neighborhood feel along streets



Example of an urban street which balances the needs of cars, bicycles and pedestrians by reducing the width and number of travel lanes. Photos courtesy of Lynn Allsbrook, City of Hampton Public Works

POTENTIAL IMPLEMENTATION STRATEGIES TO CONSIDER

- Work with VDOT to establish design standards by street type and use similar to the ITE/CNU Handbook *Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities*, particularly for secondary streets in areas adjacent to the corridor. which provide street section examples specifying typical widths for travel lanes, parking lanes, sidewalks, bike lanes, and sidewalk buffer space.

- In addition, localities should work with VDOT to allow exceptions for non-standard street design where multimodal improvements, such as bike lanes or shared use paths, are desired, and implementing multimodal facilities concurrent with planned roadway improvements.

- Consider development and adoption of a public facilities manual that governs the design of all new public facilities including streets, sidewalks, bike lanes, landscaping, streetscaping, etc. Specific reference to applicable requirements can then be made within the zoning and subdivision ordinances. Retrofitting of existing facilities can also be required through the land development approval process at the time of application for redevelopment..

1 right of way

on-street parking

DESIGN OBJECTIVES:

- Enhance safety of all roadway users, particularly pedestrians, by providing a buffer between pedestrian and vehicular traffic
- Reduce on-site parking requirements to encourage compact development, active streetscapes and good urban form

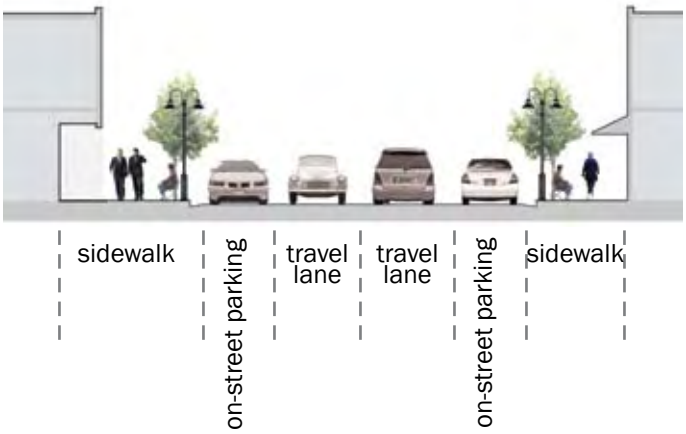
GENERAL DISCUSSION:

On-street parking is an important part of the urban fabric. It provides convenient front door parking opportunities along urban roadways, contributes to the street environment, and creates a protective buffer between pedestrian and vehicular traffic. Further, on-street parking acts as a visual cue that tells motorists they are in a more urbanized, lower-speed area. On-street parking should be considered along all roadways in urban areas and along pedestrian-friendly local streets within major developments, as it can reduce on-site parking needs by providing parking spaces within the thoroughfare right-of-way. On street parking is not recommended along arterials in rural and suburban contexts.

NOTE: The recommendations on this page relate to the adjacent and connecting secondary roadways in the vicinity of the corridor, rather than to Rt. 522 specifically.

EXAMPLE OF ON-STREET PARKING IN URBAN CONTEXT

EXAMPLE OF ON-STREET PARKING WITHIN NEW DEVELOPMENTS



POTENTIAL IMPLEMENTATION STRATEGIES TO CONSIDER

- Incorporate design guidance within the Comprehensive Plan related to on-street parking as a way to reduce overall parking requirements within large scale developments.
- Include standards within the zoning or subdivision ordinances or within a public facilities manual, to allow on-street parking along other street types, such as in and around mixed-use and commercial activity centers.
- Work with VDOT to allow exceptions as needed or identify other incentives within the local development review process to foster multimodal improvements, such as the provision of on-street parking.

1 right of way

bicycle facilities

GENERAL DISCUSSION:

Streets should provide an efficient and interconnected network for bicyclists. Bicycle connections should include safe, direct routes between residential areas and popular destinations such as schools, parks, and business districts. Accessible bicycle facilities and bicycle parking areas are needed to make bicycling an appealing transportation alternative. Bicycle facilities and crossings should be clearly marked to ensure the safety of bicyclists.

On-street bike lanes should be a minimum of 4' in width or 5' in width when on-street parking is present. If there is no opportunity to include dedicated bike lanes, a wide outside lane of a minimum 14' in width, or 15' for roadways with high speeds, can be used, or paved shoulders in accordance with required standards. Multi-use trails that allow for bicycle access should be a minimum of 12' in width.

All reconstruction or restriping projects should consider the best means of accommodating bicyclists.

Rural/Suburban Context
12' shared-use trail

Urban Context
5' lane with on-street parking

Urban/Suburban
4' bicycle lane without on-street parking

Example of a shared-use facility along an arterial in a rural (top image) and suburban (bottom image) context.

DESIGN OBJECTIVES:

- Create travel facilities for bicyclists within the corridor
- Maximize bicyclist safety in the design and placement of bicycle facilities.

POTENTIAL IMPLEMENTATION STRATEGIES TO CONSIDER

- Incorporate guidance within the Comprehensive Plan for the design and function of bikeways and shared use paths as a critical element of a multimodal transportation plan.

- Localities should work with VDOT on potential implementation measures, such as incorporating facilities into future road improvements and seeking funding from the six year plan or federal grant programs to install bicycle and shared use facilities in key locations along the Rt. 522 Corridor.

- Work with VDOT to grant exceptions if needed or identify other incentives within the local development review process to foster multimodal improvements, or include multimodal facilities concurrent with planned roadway improvements.

medians

DESIGN OBJECTIVES:

- Manage motor vehicle traffic and provide comfortable left-hand turning pockets with fewer or narrower lanes
- Provide a landing for pedestrians crossing the street
- Provide space for street trees, signage and other landscaping improvementsts

GENERAL DISCUSSION:

Medians are raised barriers in the center portion of the street or roadway that can serve as a landing place for pedestrians who cross a street mid-block or at an intersection location, storing or restricting left-turn vehicles, managing access, and providing an attractive landscaping or streetscaping treatment.

Raised medians are most useful on high-volume, high-speed roads, and they should be designed to provide tactile cues for pedestrians with visual impairments to indicate the border between the pedestrian refuge area and the motorized vehicle roadway. Medians installed to serve as pedestrian refuges should ideally be 8' in width, with 6' being the recommended minimum. Median widths greater than 18' should only be used in rural areas or to provide landscaping treatments in suburban contexts.

Raised medians help to establish the character of the roadway and provide refuge for pedestrians.
Source: PBIC Library, Dan Burden

POTENTIAL IMPLEMENTATION STRATEGIES TO CONSIDER

- Consider development and adoption of a public facilities manual that governs the design of all new public facilities including streets, sidewalks, bike lanes, landscaping, streetscaping, etc. Specific reference to applicable requirements can then be made within the zoning and subdivision ordinances. Retrofitting of existing facilities can also be required through the land development approval process.

curb radii

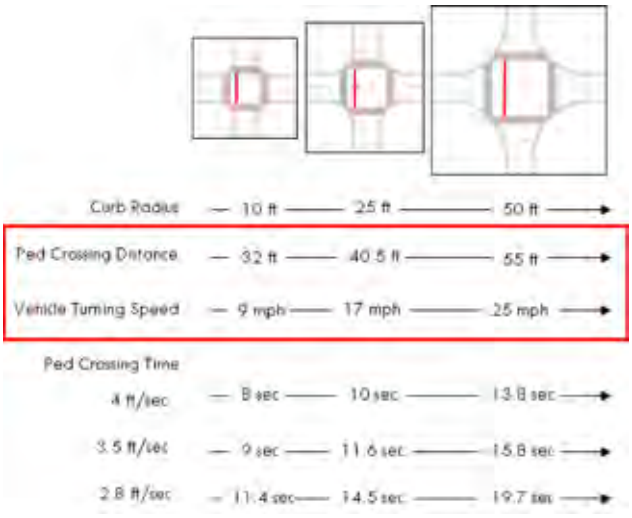
DESIGN OBJECTIVES:

- Reduce the speed of turning vehicles
- Shorten pedestrian crossing distance, which can improve signal timing
- Improve visibility between drivers and pedestrians
- Provide space for accessible curb ramps

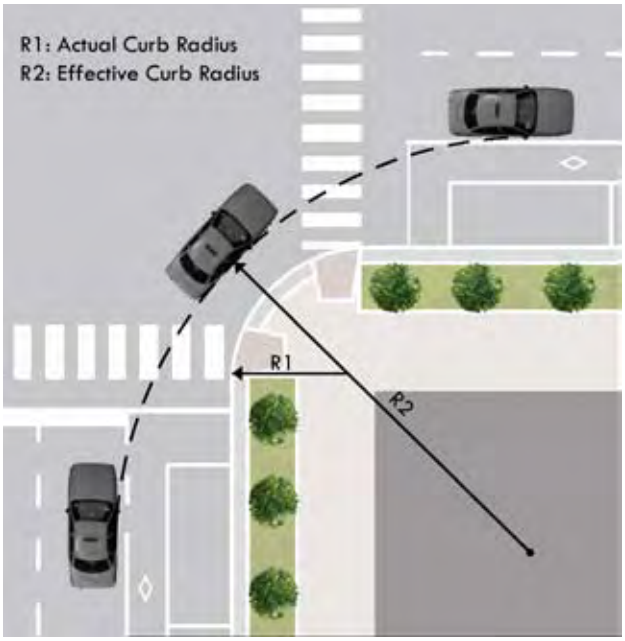
GENERAL DISCUSSION:

Large turning radii encourage high-speed turning movements and lengthen the street crossing distance for pedestrians. Nearby land uses and types of road users should be considered when designing an intersection so that curb radii are sized appropriately. If a curb radius is made too small, large trucks or buses may ride over the curb, placing pedestrians in danger and degrading or undermining the integrity of the infrastructure. Where there is a parking and/or bicycle lane, curb radii can be even tighter, because the vehicles will have more room to negotiate the turn.

There are numerous conditions that have an impact on the appropriate choice of curb radii at each intersection (such as the mix of traffic, level of pedestrian activity, presence or absence of bike lanes, differences between actual curb radius and effective curb radius, speed and volume of through traffic). A curb radius of 5'-10' is safest for pedestrians, however, the complex conditions at each intersection make it nearly impossible to provide a conclusive standard for curb radii design without first performing an analysis of the specific conditions present on-site. Turning radii larger than 25' should only be used in special conditions where significant large vehicle (truck and bus) movements are expected. Otherwise, radii as small as 5' may be sufficient in low-speed, urban areas.



A small curb radius slows down turning vehicles and shortens the distance a pedestrian must walk to cross the street.



Where there is on-street parking and/or bicycle lane, curb radii can be even tighter, because the vehicles will have more room to negotiate the turn.

POTENTIAL IMPLEMENTATION STRATEGIES TO CONSIDER

- Localities should consider incorporating language in the Comprehensive Plan related to balancing the safety needs of multiple users at intersections.
- Localities should also work with VDOT to properly design maximum curb radii based on land use context and facility type as provided in ITE's *Context Sensitive Solutions for Major Urban Thoroughfares*, in areas where pedestrian activity is encouraged, and/or grant exceptions for specific road improvements in pedestrian-rich areas, where wide curb radii would create pedestrian safety problems.
- Consider development and adoption of a public facilities manual that governs the design of all new public facilities including streets, sidewalks, bike lanes, landscaping, streetscaping, etc. Specific reference to applicable requirements can then be made within the zoning and subdivision ordinances. Retrofitting of existing facilities can also be required through the land development approval process.

street crossings

DESIGN OBJECTIVES:

- Provide higher visibility and greater safety to pedestrians crossing the street
- Include interconnected pedestrian networks to facilitate multi-modal transportation

GENERAL DISCUSSION:

Ensuring that people can cross streets safely and conveniently to access destinations is essential to creating an effective transportation network. People who are traveling by other modes will also need to cross streets; those who arrive by transit or car may need to cross the street to access a destination after getting off at a bus stop or parking, for example. People need to be able to cross streets at intersections and mid-block locations, at controlled (signals, stop signs, etc.) and uncontrolled locations, on major streets and on minor streets. Getting across the street can be one of the primary barriers to achieving true accessibility and mobility, and every effort should be made to accommodate efficient pedestrian crossings.

Crosswalks are needed to provide higher visibility to pedestrians at logical crossing points. Basic crosswalks consist of reflective white striping, although crosswalks with higher visibility, traffic calming measures (raised crosswalks), or those that are more aesthetically pleasing (colored concrete or brick crossings) are more appropriate in commercial areas or locations with high pedestrian volumes. Care should be used so that the surface does not impede wheelchair access or provide a hazard for the visually impaired or elderly. Crosswalk lighting should be provided at least to the level of general street illumination, although higher luminance should be used at key pedestrian crossings. Countdown pedestrian signals also facilitate pedestrian movement at intersections with heavy traffic volumes or signalized mid-block crossings.

Advanced stop bar and ladder striping enhance visibility for pedestrians.
Source: PBIC

POTENTIAL IMPLEMENTATION STRATEGIES TO CONSIDER

- Incorporate guidance related to design and function of crosswalks as a critical element of a pedestrian circulation plan which may be addressed as part of the comprehensive plan.
- Establish a hierarchy of intersections to identify places where crosswalks would be required, such as schools, parks, public facilities, transit stops, parking structures, or other locations with a high demand for pedestrian crossing, as well as mid-block crossings in blocks greater than 1/8 of a mile in length.
- Work with VDOT on potential implementation measures, such as incorporating crosswalks into future road improvements and seeking funding from the six year plan or federal grant programs to install crosswalks at key locations.
- Consider development and adoption of a public facilities manual that governs the design of all new public facilities including streets, sidewalks, bike lanes, landscaping, streetscaping, etc. Specific reference to applicable requirements can then be made within the zoning and subdivision ordinances. Retrofitting of existing facilities can also be required through the land development approval process.

1 right of way

pedestrian facilities

DESIGN OBJECTIVES:

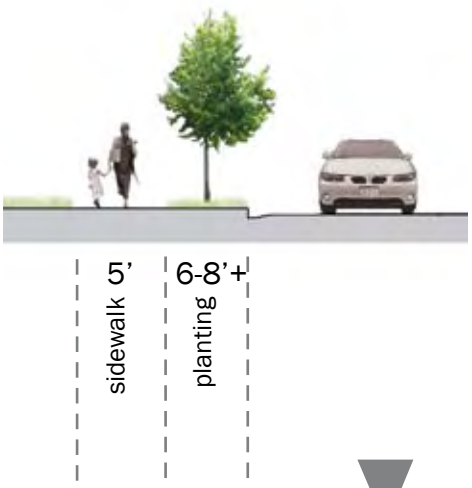
- Improve pedestrian safety
- Provide an interconnected network to facilitate multi-modal transportation objectives
- Provide safe, convenient, and inviting access for transit users.

GENERAL DISCUSSION:

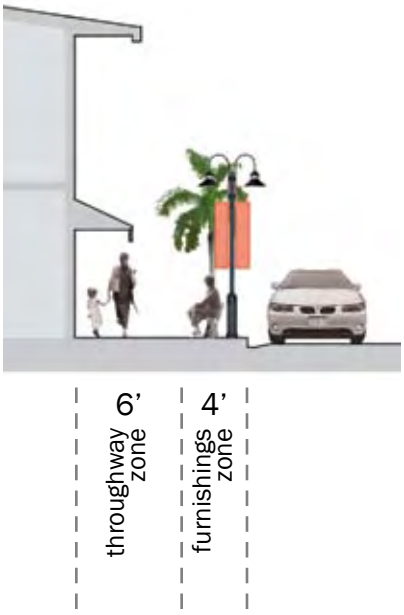
Sidewalks and walkways are an important element in pedestrian-oriented design. In commercial and industrial areas, and along arterials, sidewalks should be required on both sides of all streets, with a minimum width of 5 feet. In low-density areas, sidewalks should be installed whenever the roadway changes from open swales to curb and gutter. Wider sidewalks of 10 foot width or greater should be required in commercial areas to encourage pedestrian activity, provide comfortable space for high pedestrian volumes, and provide space for outdoor dining or other pedestrian-supportive uses.

The presence of buffers, comprised of landscaping in suburban areas, and street furniture, street trees and street lights in urban areas, is important to the comfort and perceived safety of pedestrians. The widest buffers - at 6' to over 8' - are recommended on arterials with high speeds.

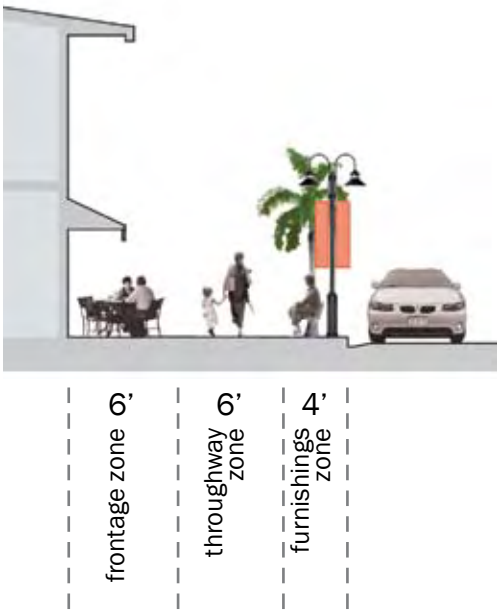
5' sidewalk design
(non-commercial areas)



Typical 10' sidewalk design
(commercial areas)



Enhanced 16' sidewalk design
(commercial areas)



POTENTIAL IMPLEMENTATION STRATEGIES TO CONSIDER

- Consider incorporating design guidance related to the function of sidewalks as gathering places in designated areas, such as commercial locations and transit stops, within the Comprehensive Plan.
- Amend zoning and subdivision ordinance to require the installation of sidewalks for new and redeveloped land uses as part of rezoning or site plan review process.
- Work with VDOT to ensure minimum widths of 10' or wider in commercial locations, particularly adjoining transit stops or in locations where outdoor restaurant seating, retail activity, or other sidewalk uses are expected.
- Consider development and adoption of a public facilities manual that governs the design of all new public facilities including streets, sidewalks, bike lanes, landscaping, streetscaping, etc. Specific reference to applicable requirements can then be made within the zoning and subdivision ordinances. Retrofitting of existing facilities can also be required through the land development approval process.

2 edge

setback

GENERAL DISCUSSION:

Buildings should be located directly adjacent to pedestrian sidewalks to provide direct access between the sidewalk and buildings. Large setbacks add to the distance a pedestrian must travel to access buildings. In addition, buildings drawn to the street edge create a defined edge providing "spatial enclosure," an important quality for a pedestrian-friendly streetscape.

DESIGN OBJECTIVES:

- Provide direct, convenient access between the public sidewalk, parking lots, and buildings.
- Minimize distance pedestrians must travel to access buildings.

Encouraged: little to no setback with parking to rear of building

Discouraged: large setbacks with parking between sidewalk and building

POTENTIAL IMPLEMENTATION STRATEGIES TO CONSIDER

- Revise zoning ordinance to allow more flexibility for front and side setback requirements in multi-family, mixed-use, and non-residential development along the corridor. Reduce parking requirements and permit shared parking in commercial areas, perhaps even requiring on-street parking in appropriate areas to increase the level of on street activity and vitality.

- Landscaped buffer and screening requirements may need to be amended where they preclude the ability to locate buildings directly adjacent to the public sidewalk.

DESIGN OBJECTIVES:

- Improve the aesthetics of a street
- Enhance safety of all roadway users, particularly pedestrians, by providing a buffer between pedestrian/vehicular traffic
- Improve nighttime security
- Calm traffic by creating a visual narrowing of the roadway

GENERAL DISCUSSION:

The design of the space between the edge of the curb and the front of a building is essential for encouraging pedestrian activity and promoting safety and security. In addition to providing a spatial buffer between vehicles and pedestrians, the streetscape should consist of trees for shade and softening the urban environment, pedestrian-scaled lighting for security and aesthetics, and benches, drinking fountains, newspaper boxes, or other pedestrian-oriented amenities. For high-pedestrian use sidewalks, six feet of sidewalk width should always be maintained as an obstacle-free throughway zone with the trees, lighting, and other amenities located either in the furnishings zone between the street and sidewalk or in the frontage zone next to the buildings. Additional landscape amenities such as window boxes and planters within the public realm might be encouraged within appropriate areas to increase the level of visual interest.

Encouraged: pedestrian-oriented lighting & signage

Discouraged: auto-oriented lighting & signage

Warren County's overlay district successfully regulates signage along the corridor.

POTENTIAL IMPLEMENTATION STRATEGIES TO CONSIDER

- Incorporate design guidance related to desired streetscape elements in the Comprehensive Plan.
- Work with private developers and VDOT to include improvements in new public or private construction projects.
- Develop a Public Facilities Manual that includes standards for streetscape elements, street furniture and multimodal enhancements (such as planting buffers, lighting and street trees) so that all new improvements will be harmoniously designed.

on-site parking

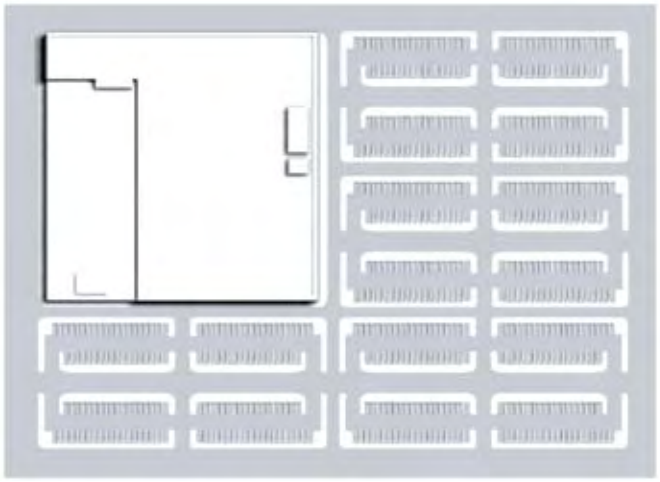
DESIGN OBJECTIVES:

- Allow for safe pedestrian access
- Improve the environment and aesthetics of large expanses of asphalt with landscaping
- Reduce on-site parking requirements to encourage compact development, active streetscapes and good urban form

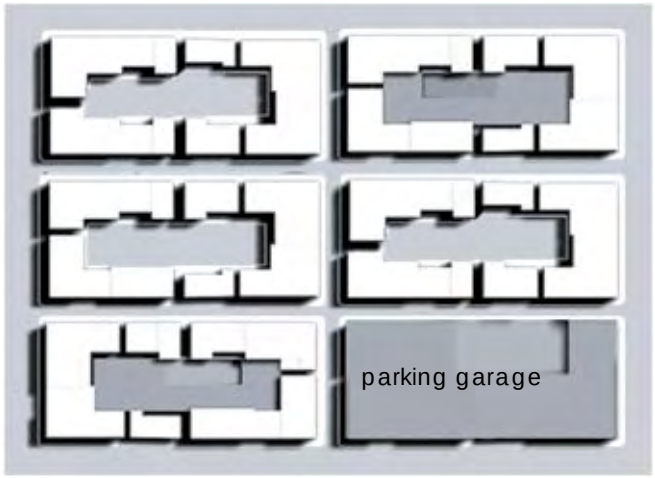
GENERAL DISCUSSION:

Parking policy and design can be a major factor in the walkability of a place. Providing an overabundance of free parking encourages driving, while on-site parking can serve as a barrier to pedestrian access of destinations. On-site parking reductions should be encouraged through elimination of parking minimums, use of parking maximums, shared-parking agreements, in-lieu agreements to shift parking to community parking facilities, or similar strategies.

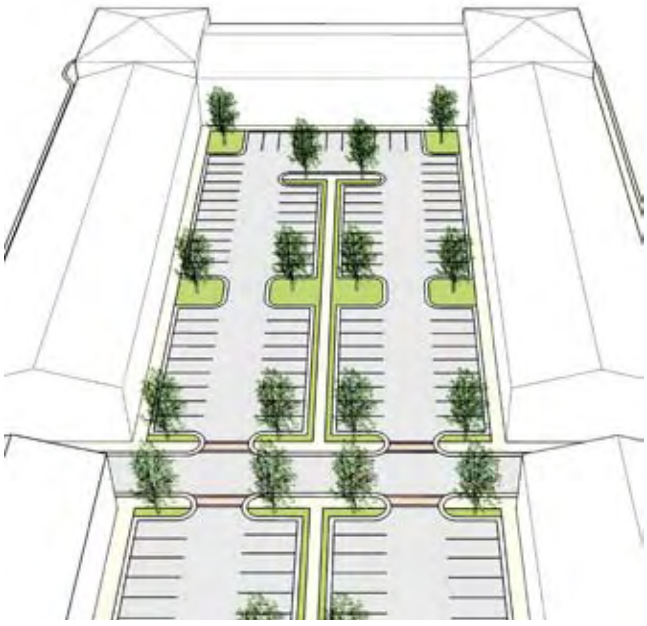
On-site parking located between the sidewalk and buildings creates an inconvenient and potentially unsafe barrier to pedestrian activity. Parking should be located to the rear of the building wherever possible. Any off-street parking adjacent to the public right-of-way should be screened with landscaping or fencing in such a way that does not create a barrier to adjacent sites or blocks. Long aisles of parking bays should be broken up with landscaped islands. Pedestrian access should be designed around the perimeter of on-site parking and between parking aisles.



Discouraged: auto-oriented, parking dominated development



Encouraged: shared or public parking in mixed use, walkable development pattern - interior, rear or on-street parking.



POTENTIAL IMPLEMENTATION STRATEGIES TO CONSIDER

- Incorporate design guidance related to on-site parking in the Comprehensive Plan.
- Amend the zoning ordinance to require parking to be located to the rear of the building wherever possible, and where not, possible to include landscaping and screening recommendations; provide incentives, such as increased density or reduced parking requirements to those who use shared parking; decrease parking requirements within mixed use developments; and present parking requirements as maximums to reduce the overall amount of parking.
- Incorporate general landscaping requirements in the code to improve parking lot design and promote pedestrian access between the public sidewalk, parking areas and building entrance. All references to screening should allow access between neighboring uses and any public sidewalk.

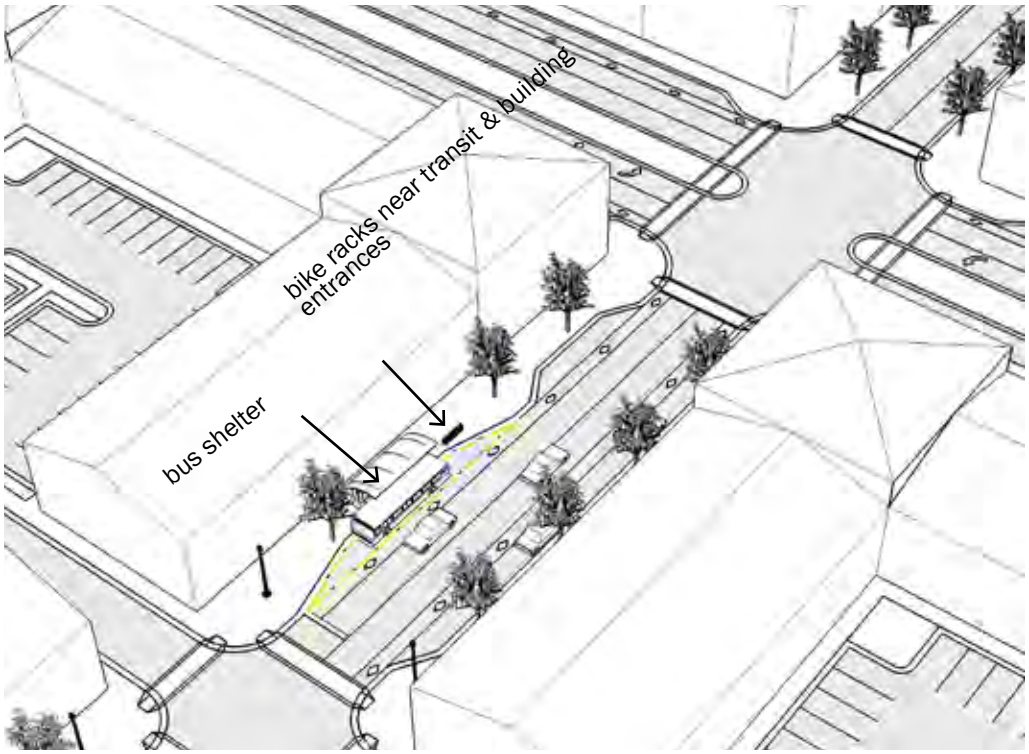
bicycle parking

DESIGN OBJECTIVES:

- Encourage multi-modal transportation by providing convenient and safe facilities for bicyclists

GENERAL DISCUSSION:

In addition to travel way facilities, bicycle amenities are critical to support bicycle activity. Bicycle parking - racks or lockers - should be considered at certain destinations, such as commercial, employment, and transit centers. Provision of bicycle parking is another means to justify a reduction in vehicular parking where reasonable cycling access exists or can be expected..



Bicycle parking should be located adjacent to building entrances to encourage use.

POTENTIAL IMPLEMENTATION STRATEGIES TO CONSIDER

- Incorporate language related to bicycle amenities in the Comprehensive Plan.

- Amend the zoning ordinance to require bicycle parking as a percentage of vehicle parking for any non-residential or multi-family residential developments. Revisions could also include provisions for secure, longer term bicycle storage facilities, especially associated with development around commercial/office uses and at transit stops.

- Develop a Public Facilities Manual that includes standards for streetscape elements, street furniture and multimodal enhancements (such as bicycle parking, planting buffers, lighting and street trees) so that all new improvements will be harmoniously designed.

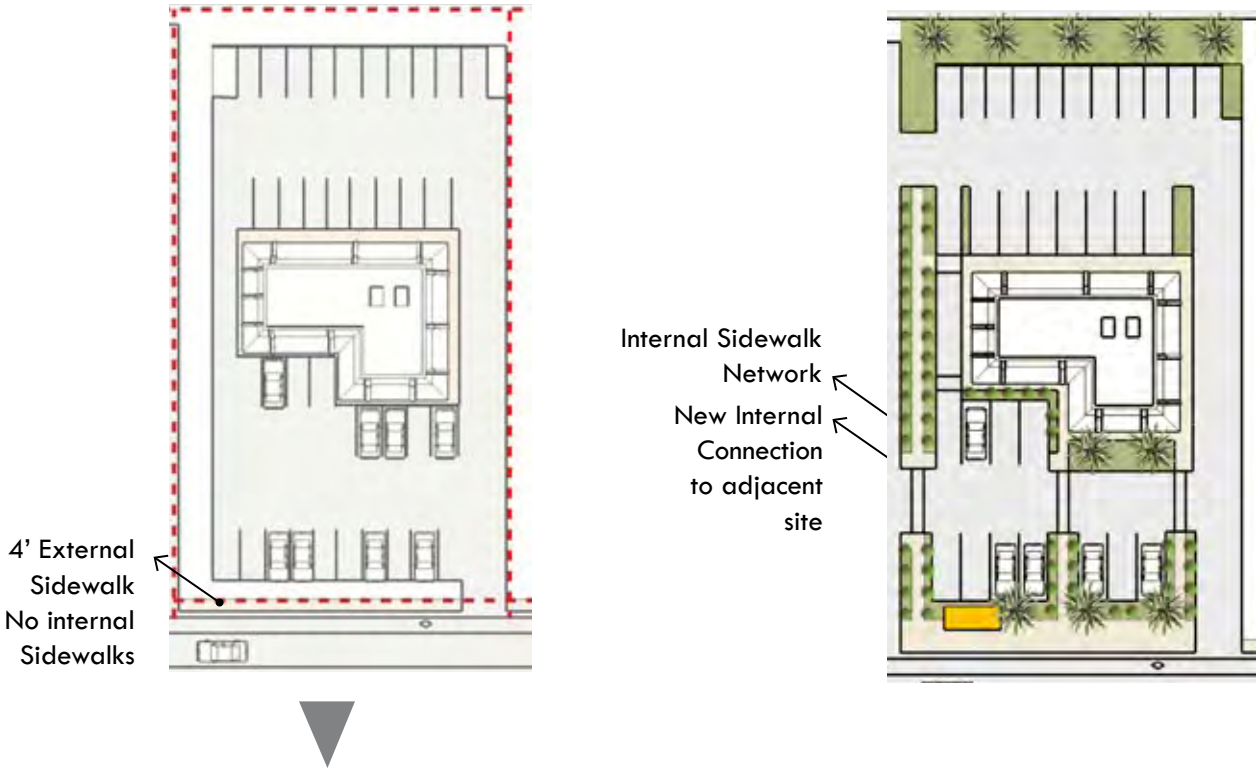
walkways

DESIGN OBJECTIVES:

- Provide interconnected pedestrian walkway networks to facilitate multi-modal transportation

GENERAL DISCUSSION:

Cross-parcel walkways within developments promote pedestrian movement by connecting users from the public sidewalk network to their ultimate destinations. They also allow citizens to park once and walk safely and conveniently between buildings and uses without returning to their car. Walkways should be built between adjacent development sites to connect all primary building entrances, surrounding streets, external sidewalks, adjacent trails, transit stops, parking areas and recreational facilities. Pathways should be at least 5 feet wide and should be clearly marked to ensure visibility to both pedestrians and motorists.



POTENTIAL IMPLEMENTATION STRATEGIES TO CONSIDER

- Incorporate language in the Comprehensive Plan to specify the importance of the function and design of the internal sidewalk network of private developments to the overall pedestrian circulation network.

- Revise the existing zoning ordinance to reflect a 5 ft. minimum standard on common walkways in new developments and require sidewalks along all internal streets, bisecting large blocks, and connecting all buildings, parking areas, transit stop locations, and adjacent parcels in the site plan review and subdivision standards. Alleyways and low volume residential streets would be excluded from this requirement.

- Revise Subdivision standards to require easements and walkways for cross-parcel pedestrian connections.

- Consider development and adoption of a public facilities manual that governs the design of all new public facilities including streets, sidewalks, bike lanes, landscaping, streetscaping, etc. Specific reference to applicable requirements can then be made within the zoning and subdivision ordinances. Retrofitting of existing facilities can also be required through the land development approval process.

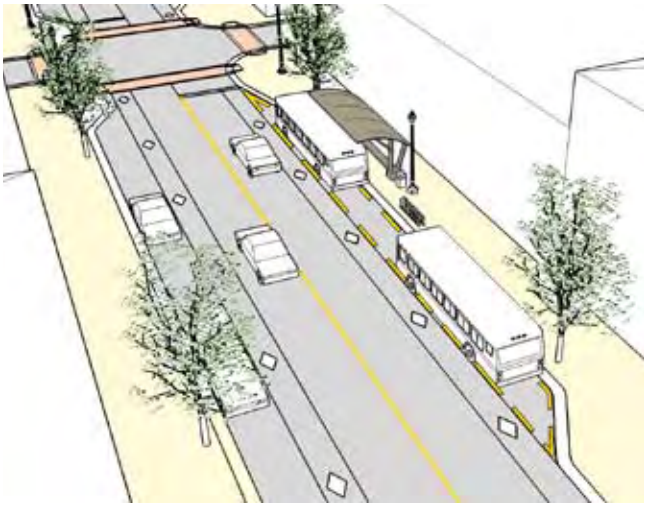
transit stops & amenities

DESIGN OBJECTIVES:

- Provide for safe integration of transit into existing roadway network
- Provide convenient, safe, and inviting facilities for transit users

GENERAL DISCUSSION:

Transit stops should be accessible to pedestrians, located at the core of compact developments and surrounded by a good mix of land uses. Transit shelters should provide a safe environment that is integrated with the streetscape and surrounding activities. Transit stops should include at least one shelter, bench, and trash receptacle, as well as bicycle parking, lighting, and transit system information. Bus bays allow buses to safely load and unload passengers without disturbing the flow of traffic. Bus bays may be preferable in special circumstances, such as where multiple buses will transfer or where long dwell times are expected.



POTENTIAL IMPLEMENTATION STRATEGIES TO CONSIDER

- Work with private developers and VDOT to require easements to accommodate bus bays or other facilities that cannot fit in the existing right-of-way and include transit shelters and amenities in new public or private construction projects adjacent to corridors planned for transit.

- Pursue funding opportunities, such as Federal SAFETEA-LU, Safe Routes to School programs, Statewide opportunities such as the VDOT six-year improvement plan, or local Community Development Block Grants to fund these types of multi modal improvements.

- Develop a Public Facilities Manual that includes standards for transit shelters and amenities for any development along existing or planned transit routes.

2 edge

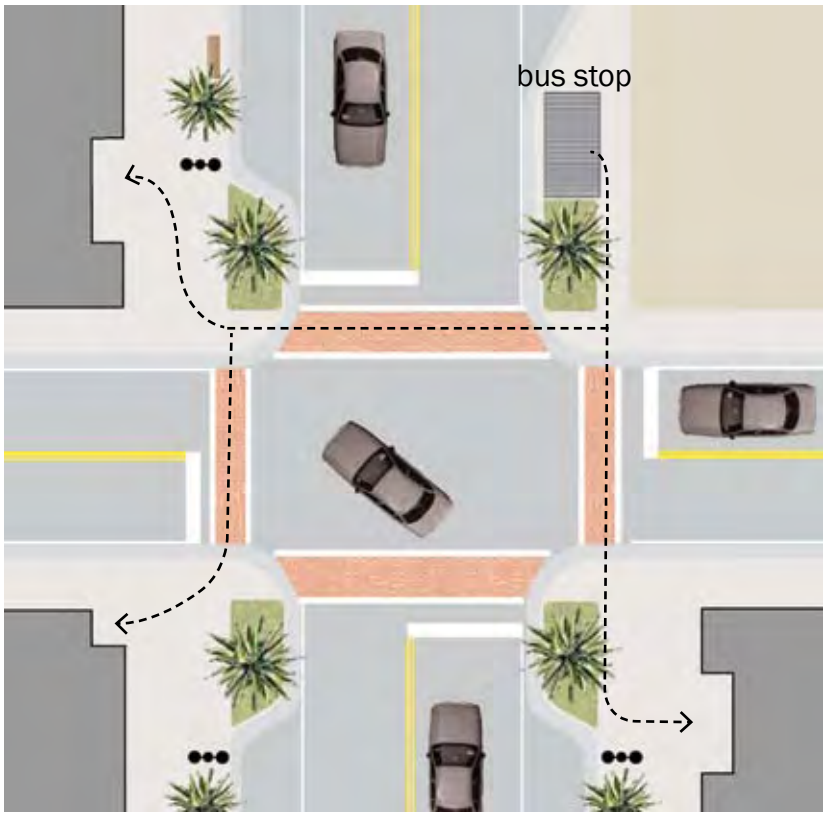
sidewalk connections

GENERAL DISCUSSION:

All transit users are pedestrians for some portion of their trip both at the origin and destination. Providing direct sidewalk connections from transit stops to origins and destinations is vital to ensure convenience for transit users.

DESIGN OBJECTIVES:

- Provide interconnected pedestrian networks to facilitate access to transit



POTENTIAL IMPLEMENTATION STRATEGIES TO CONSIDER

- Work with VDOT on potential implementation measures, such as incorporating accessible sidewalks into future road improvements and seeking funding from the six year plan or federal grant programs to install sidewalks at key locations.

- Consider developing a Public Facilities Manual that includes standards for accessible sidewalks that connect from transit stops to public sidewalk networks and adjacent buildings with a minimum 8 foot wide waiting area at the transit stop.

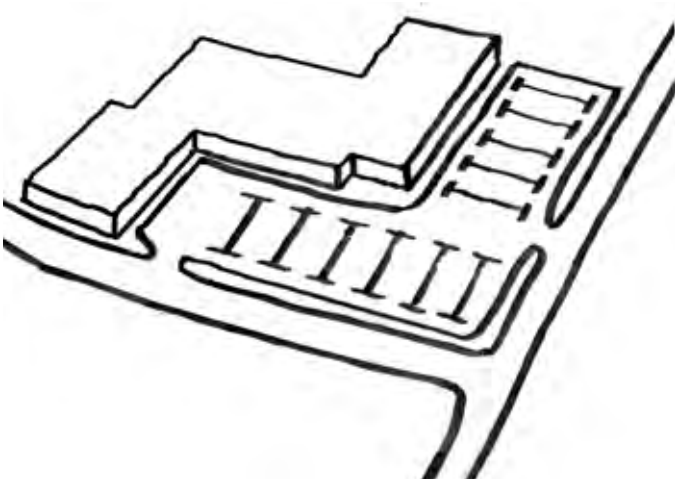
3 adjacent land use

GENERAL DISCUSSION:

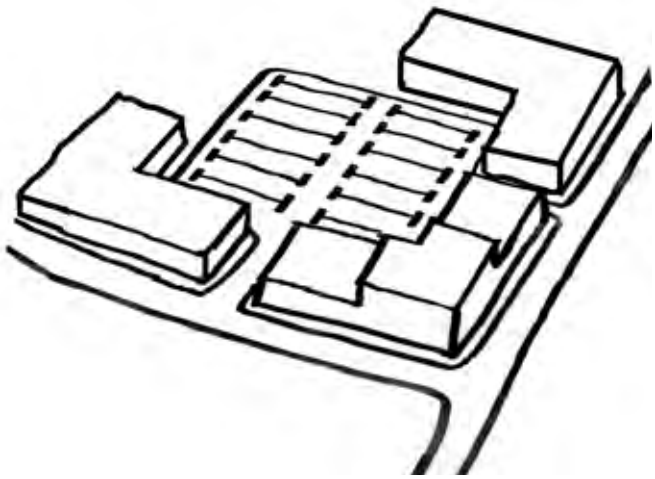
Successful site design balances automobile and pedestrian accessibility and creates a presence that is welcoming to all users. A key factor is the organization of buildings and parking relative to adjacent streets. Frequently, buildings are set too far back from the road, leaving a large, open expanse of parking visible to visitors from the roadway , and a wide, often uninviting, expanse of asphalt to be crossed by pedestrians.. A more desirable alternative reverses this placement, drawing the building to the street edge and moving parking to the rear, in turn providing a more intimate pedestrian-friendly frontage along the roadway. In this way, buildings frame the street - enhancing and enlivening - the pedestrian environment with storefronts and entrances along the sidewalk. It is important to note that standard parking requirements can lead to an oversupply of parking spaces and open expanses of asphalt.

DESIGN OBJECTIVES:

- Provide convenient pedestrian access between public sidewalks, on-site parking, and buildings.
- Provide a more continuous street wall with building entries that encourage pedestrian activity and reinforces a sense of place
- Orient entrances to the sidewalk to enliven the pedestrian realm.



Discouraged: Site design that separates buildings from pedestrians



Encouraged: Site Design that encourages pedestrian activity by placing street walls and entries along the sidewalk.

A wide, uninviting, expanse of asphalt creates a barrier to pedestrian activity and encourages shoppers to drive to other destinations within the site.

POTENTIAL IMPLEMENTATION STRATEGIES TO CONSIDER

- Revise zoning ordinance to reduce or eliminate minimum off-street parking requirements, setting average-usage standards rather than peak-usage standards to reduce parking needs and the required area for land disturbance.
- Consider establishing maximum setbacks, in addition to minimum setbacks, in a zoning district or corridor overlay district, in order to bring buildings closer to the sidewalk.

3 adjacent land use

mixed use development

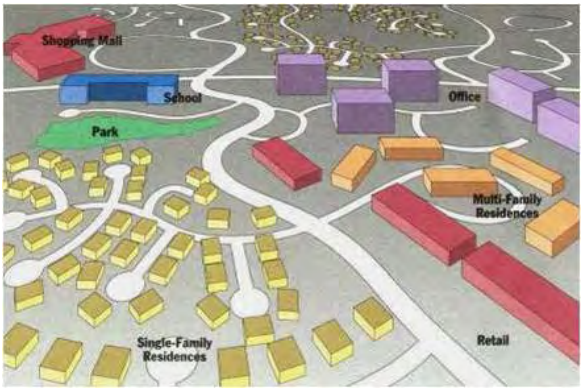
DESIGN OBJECTIVES:

- Offer a variety of land uses in a compact, walkable area to promote walking, biking and transit
- Create opportunities for local trips
- Allow a greater variety of uses to occupy a given space
- Provide pedestrian-supportive uses on the ground floor and other uses in the stories above

GENERAL DISCUSSION:

Creating a compact, walkable environment typically includes providing a careful balance of land uses, jobs, housing, restaurants and shopping within a compact area. To be successful, mixed use development must utilize both vertical (multiple floors) and horizontal (adjacent buildings) mixed use; include an interconnected street network that enhances mobility for pedestrians and cyclists, and allows users to park once and walk between several uses; and provide a balance between activities that occur between the daytime, evening, and weekend hours, fostering a busier, safer, and more exciting environment 24 hours a day.

Regulations can require mixed use development for individual parcels or promote single land uses that provide land use diversity within a ¼-mile range of a parcel, and prohibit developments, such as drive-through businesses, that discourage pedestrian activity. In all cases, a specific definition of mixed use is needed that establishes a threshold by which the mix of uses is measured.



Discouraged: single uses disconnected from one another

Encouraged: horizontal mixed use within an interconnected street network

POTENTIAL IMPLEMENTATION STRATEGIES TO CONSIDER

- Create a mixed use zoning district and/or amend existing districts to provide for housing, employment and retail uses in one location. All mixed use districts should focus on requiring mixed use development for larger projects (including residential and commercial uses) in appropriate locations, such as centers of activity, and transportation hubs.
- Establish a maximum percentage for a single use within the mixed use development district.
- Consider developing a Public Facilities Manual that includes standards for architectural or facade design.

3 adjacent land use

natural features

DESIGN OBJECTIVES:

- Conservation of natural features can provide areas for passive recreation, while preserving the environmental functions of wildlife habitat and stormwater management.
- Spatially defined areas such as town greens, lawns, squares or other types of common areas can provide similar functions, as well as areas for more active recreation.
- Neighborhood parks, tot lots and playgrounds provide opportunities for active recreation within residential areas.

GENERAL DISCUSSION:

Carefully planned open space is necessary to maintain the richness of rural areas over time. Open space is a broad classification for public spaces ranging from community recreational areas to town squares. Formal civic spaces, such as town squares, should be located in urban settings serving areas of highest intensity, while recreational facilities, greenways, and preserved open spaces should be strategically placed to serve the community at large. Often, environmental and natural features are integrated into open space planning. Viewsheds and natural features, including waterbodies, wetlands, and steep slopes, should be preserved as open public space wherever possible.

greenway

neighborhood park

POTENTIAL IMPLEMENTATION STRATEGIES TO CONSIDER

- Consider comprehensive plan amendments to articulate community wide green infrastructure goals and objectives for open space preservation, as well as mapping and identifying green infrastructure resources.
- Consider zoning ordinance and subdivision ordinance amendments to require passive or active open space protection within new development.
- Consider developing a Public Facilities Manual that includes standards for the design of parks, greens, squares, plazas and playgrounds.

3 adjacent land use

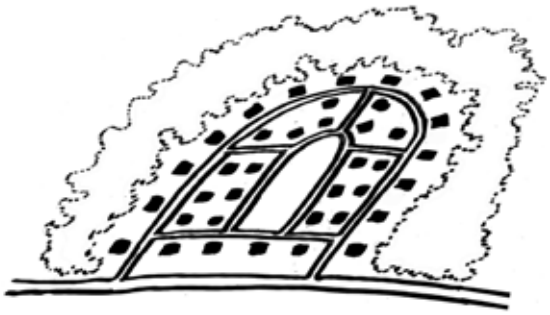
compact development

DESIGN OBJECTIVES:

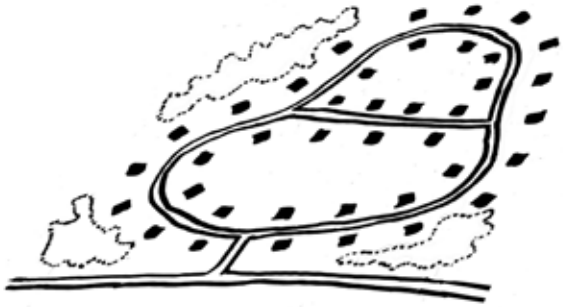
- Provide wider transportation choice
- Preserve open space
- Encourage efficient use of land and infrastructure

GENERAL DISCUSSION:

Development in rural and suburbanizing areas presents a unique set of challenges. Paramount among these challenges is the efficient use of land. In rural settings, compact development strategies are encouraged to minimize land consumption and allow for a percentage of preserved open space. Through compact development, connnected open spaces may be protected as shared parks and greenways, rather than divided between large, private lots. Additionally, compact development allows scenic viewsheds to be preserved without prohibiting development altogether. In suburbanizing areas, providing houses and jobs within close proximity, create opportunities to use multiple modes of transportation. By developing compactly with higher numbers of people and greater employment and shopping opportunities, not only reduces trip lengths, but also offers greater opportunities for walking and biking along with more public transportation options.



encouraged



discouraged

POTENTIAL IMPLEMENTATION STRATEGIES TO CONSIDER

- Revise zoning and subdivision ordinance to allow and encourage cluster and conservation subdivision design.
- Encourage the use of Transfer of Development Rights or Purchase of Development Rights programs to preserve key rural areas
- Encourage private conservation easements to protect rural landscape.

3 adjacent land use

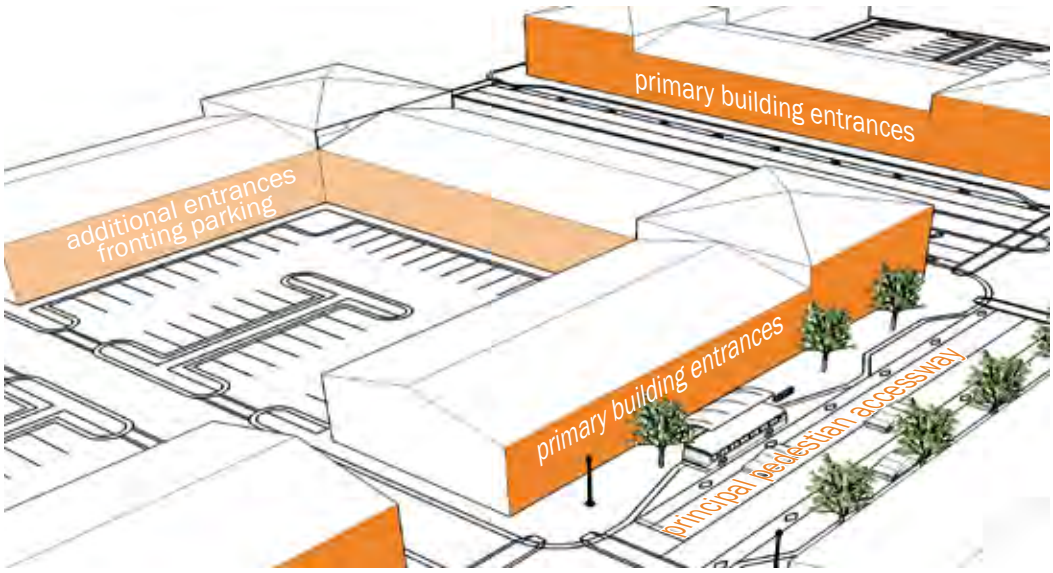
building orientation

DESIGN OBJECTIVES:

- Provide convenient pedestrian access between public sidewalks, on-site parking, and buildings.
- Provide a more continuous street wall that encourages pedestrian activity and reinforces a sense of place
- Orient entrances to the sidewalk to enliven the pedestrian realm.

GENERAL DISCUSSION:

Successful site design depends on proper building orientation to create a presence that is welcoming to pedestrians. By simply reconfiguring a site, building placement can reduce walking distances for customers and make streets more useful for pedestrians, transit users, and bicyclists. Building entries should border main streets and public thoroughfares to foster a vibrant, walkable environment. The primary building entrance should be oriented toward the principal pedestrian accessway, typically the public sidewalk or an interior sidewalk where the majority of pedestrian traffic is expected to be coming from within the site. Additional entrances may be permitted that are oriented towards on-site parking.



POTENTIAL IMPLEMENTATION STRATEGIES TO CONSIDER

- Incorporate more specific design guidance in the Comprehensive Plan that addresses the need to orient a primary entrance toward the public sidewalk or towards an interior sidewalk where the majority of pedestrian traffic is expected to be internal to the site.

- Amend zoning to include language related to building orientation in any future mixed use district, and providing for maximum setbacks and percent frontage on a primary street at the building setback line.

3 adjacent land use

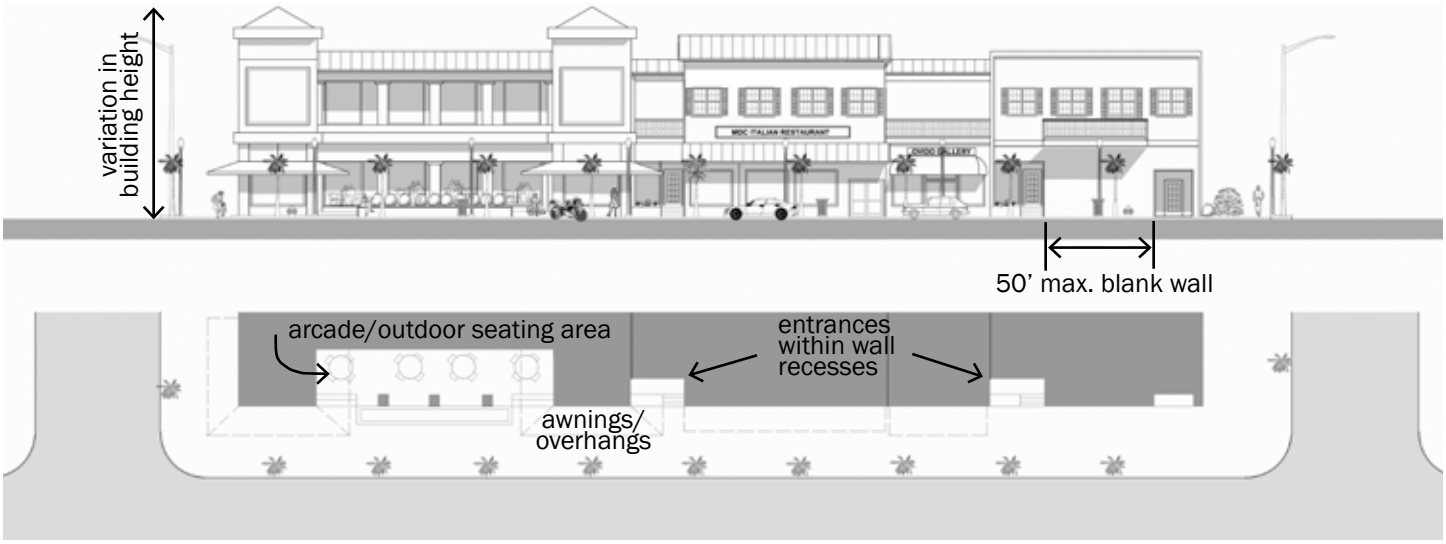
massing and facade design

GENERAL DISCUSSION:

Buildings should be designed to provide visual interest to the pedestrian through massing and articulation in façade design Massing describes the physical form of a building or group of buildings. Large buildings or adjacent buildings along a block often present a scale that is overwhelming or uninteresting to the pedestrian, limiting the desirability to walk along these blocks. Variations in height, horizontal divisions, window treatments, and facade materials help break up the mass of a building. Awnings, display windows, recessed entryways, arcades, or public art can be used to create a pedestrian-friendly and interesting street wall within a site.

DESIGN OBJECTIVES:

- Create a human-oriented sense of scale by varying building massing and form
- Provide visual interest to pedestrians through variation in the streetscape



example of block with massing variation and interesting façade design

encouraged

POTENTIAL IMPLEMENTATION STRATEGIES TO CONSIDER

- Revise the zoning ordinance to encourage height variation, for example, by allowing a percentage of the building frontage to exceed the maximum height restriction.

- Consider establishing a corridor overlay district with a design review board (enabled under State Code if connected to a historic district) that could help ensure appropriate building facade treatments along the corridor. This may include standards to discourage unadorned facades and encourage variety, visual interest, and consistent character in commercial districts.

3 adjacent land use

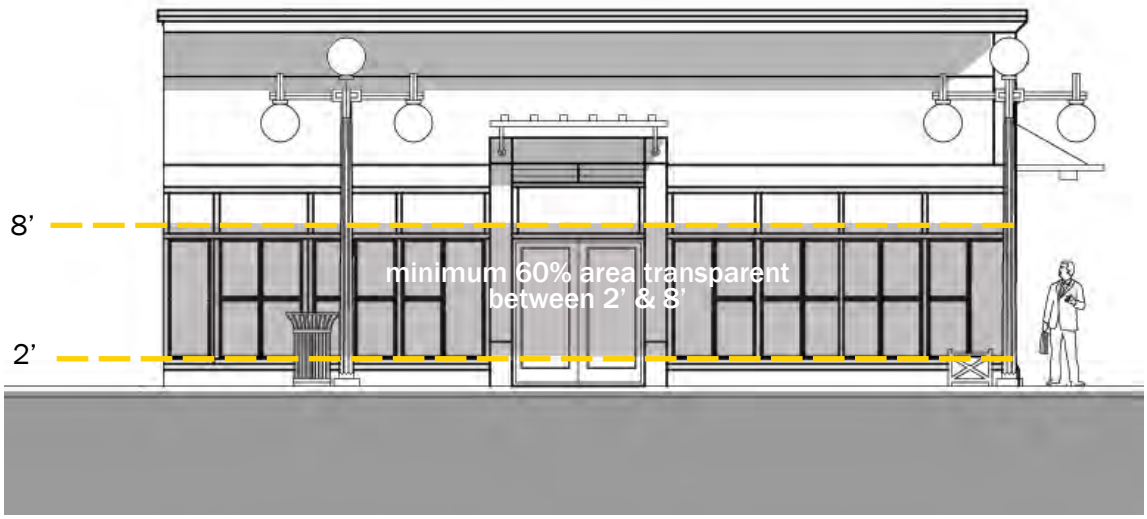
transparency

DESIGN OBJECTIVES:

- Provide visual interest to pedestrians
- Improve security through enhanced visibility

GENERAL DISCUSSION:

Transparent building façades featuring display windows generate interest for the pedestrian and improve security through enhanced visibility. For all buildings fronting public right-of-ways with non-residential uses on the ground floor, a high degree of transparency on the first floor allows pedestrians to see inside buildings and to be seen by tenants to enhance security.



A high degree of transparency is recommended along local streets where pedestrian activity is expected. Between 40% and 60% or more of the total ground floor facade area between 2 and 8 vertical feet should be transparent to promote pedestrian use.

Large, blank walls are discouraged.

POTENTIAL IMPLEMENTATION STRATEGIES TO CONSIDER

- Incorporating more specific design guidance in the Comprehensive Plan to address transparency in pedestrian-oriented destinations.
- Revise existing commercial zoning or create a new zoning district (commercial highway overlay district) that requires transparency in non-residential development along Route 522 and within pedestrian oriented commercial areas.
- Consider establishing a corridor overlay district with a design review board (enabled under State Code if connected to a historic district) that could help ensure appropriate building facade treatments along the corridor, particularly in mixed use and pedestrian–intensive areas.
- Create design guidelines that could include standards to discourage unadorned facades and encourage variety, visual interest, and consistent character in mixed use and commercial districts.

3 adjacent land use

block size

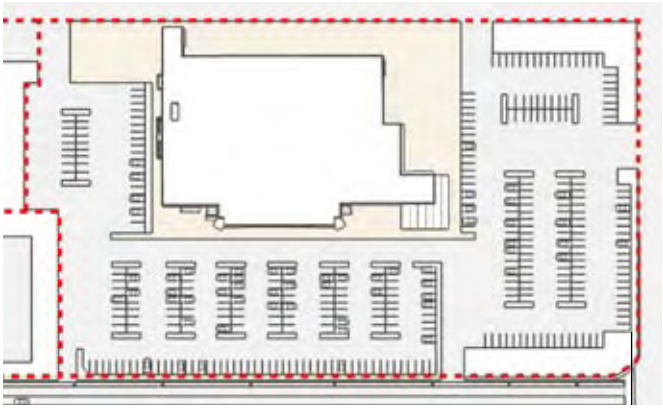
DESIGN OBJECTIVES:

- Disperse traffic by providing multiple routes
- Provide opportunities for shorter trips
- Reduce congestion on major thoroughfares

GENERAL DISCUSSION:

Well-connected areas promote pedestrian and bicycle activity by making connections between destinations accessible and convenient. Many communities have adopted maximum block length standards or street connectivity standards to encourage a grid of vehicular connections and small blocks to be traversed by the pedestrian. The block length standards should encourage pedestrian-oriented block lengths, 200 to 600' in length. As pedestrians typically will walk only ¼ of a mile for most trips, block lengths no longer than 1/8 of a mile should be encouraged.

The example above shows how a typical auto-oriented site (illustration below) could redevelop with a pedestrian oriented block sizes.



POTENTIAL IMPLEMENTATION STRATEGIES TO CONSIDER

- Incorporate language related to street connectivity in the Comprehensive Plan.
- Amend zoning to include block length standards consistent with the pedestrian-oriented standard (200 to 600 feet), and consider expanding these standards to include provisions for mid-block pedestrian crosswalks in blocks longer than 900'.
- Ensure that new development meets the connectivity measures in VDOT's new Secondary Street Acceptance Requirements.

access management

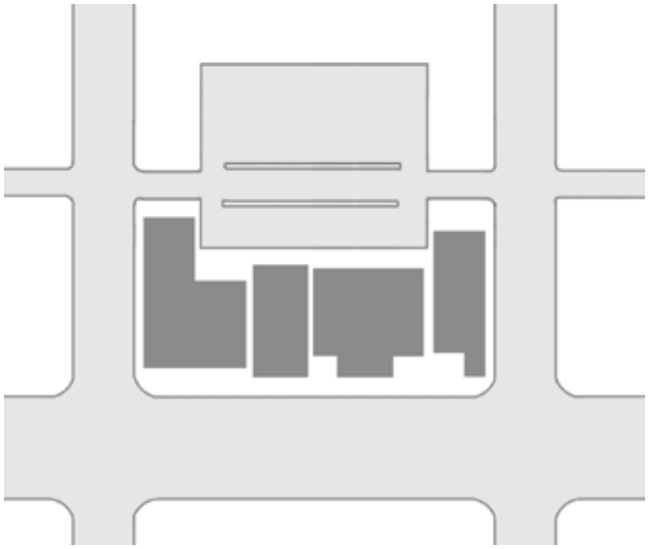
GENERAL DISCUSSION:

Access management should be used to minimize unnecessary driveway connections and to encourage shared and cross-access between adjacent parcels. When applied, access management can reduce the number of full access points and include median separators, thus helping to create a refuge for pedestrian crossings at mid-block locations.

DESIGN OBJECTIVES:

- Reduce the potential for pedestrian and vehicular conflicts
- Provide better through traffic flow
- Improve vehicular/pedestrian/bicycle safety by reducing entrances onto major roads

discouraged:
separate driveways & parking in front



encouraged:
shared access & parking/access in rear

POTENTIAL IMPLEMENTATION STRATEGIES TO CONSIDER

- Work with VDOT to ensure compliance with new Primary Street Access Management standards on the Route 522 corridor.
- Incorporate access management standards as part of a facilities design and construction standards manual.
- Include the VDOT standards as part of the site plan review process.

4 road system

connectivity

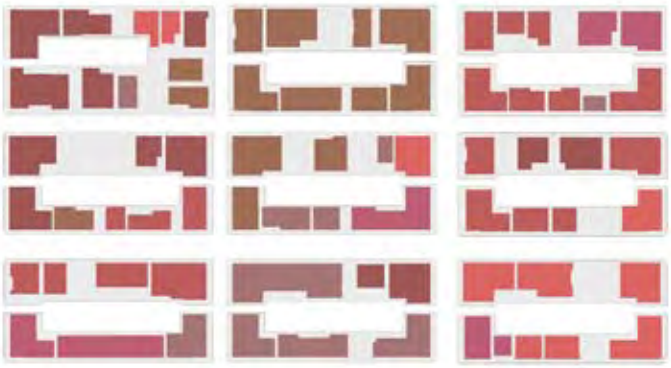
GENERAL DISCUSSION:

Well-connected areas promote pedestrian and bicycle activity by making connections between destinations accessible and convenient. An interconnected street network also provides the framework for mixed-use development with smaller block sizes and a greater diversity of building types within close proximity. Increased street connectivity also disperses traffic flows, subsequently helping to transform the street into a comfortable space for pedestrians. Interconnected transportation networks can provide advantages such as enhanced vehicular and pedestrian access, reduced traffic congestion, and enable emergency vehicles to respond in a more timely manner. Well-connected areas promote pedestrian activity and encourage walking in place of driving for local trips.

DESIGN OBJECTIVES:

- Disperse traffic by providing multiple routes
- Provide opportunities for shorter trips
- Reduce congestion on major thoroughfares

POORLY NETWORKED USES/STREETS



WELL NETWORKED USES/STREETS

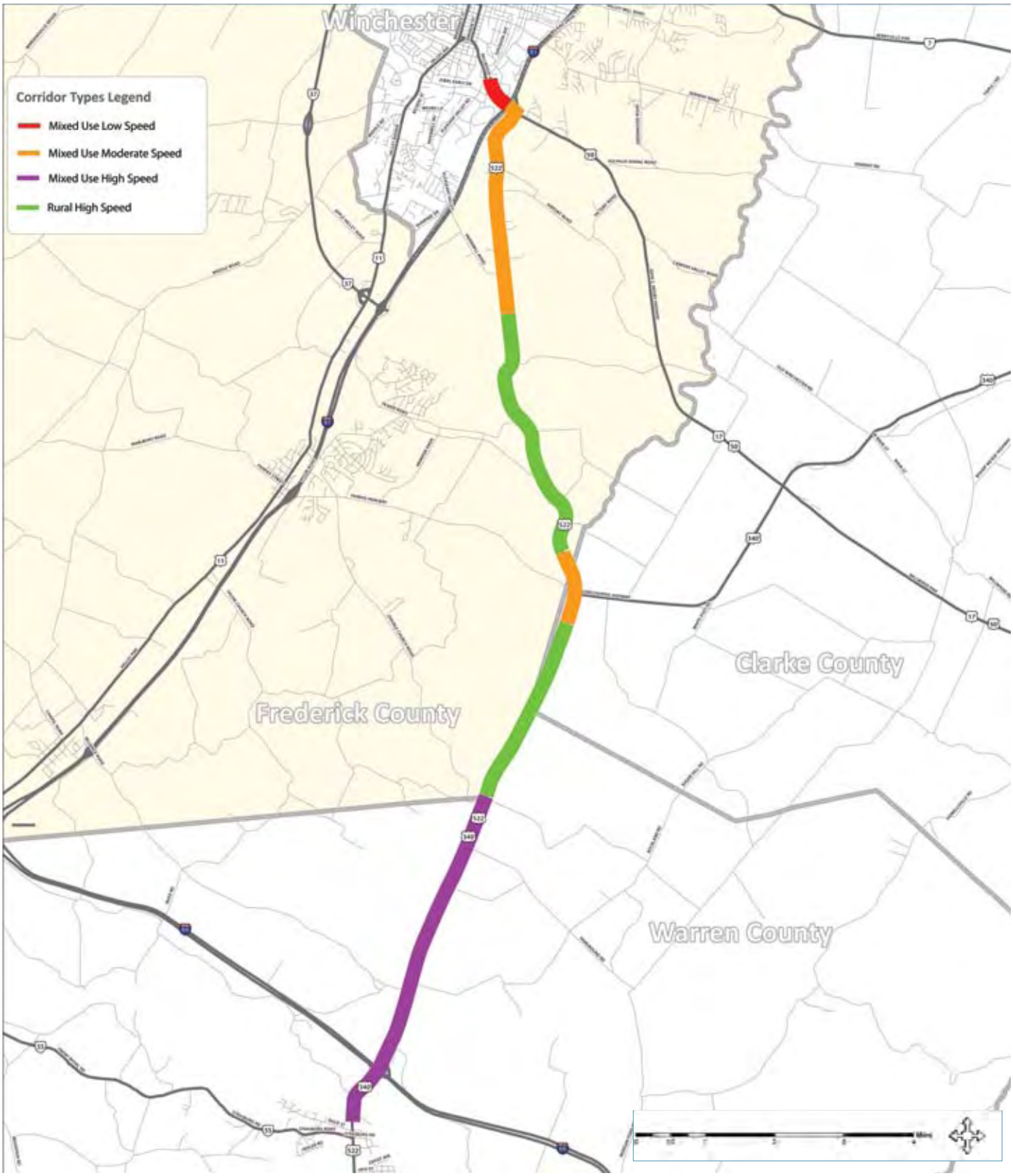
POTENTIAL IMPLEMENTATION STRATEGIES TO CONSIDER

- Incorporate language related to street connectivity in the Comprehensive Plan.
- Adopt block length standards to be consistent with the pedestrian-oriented standard (200 to 600 feet) and include provisions for mid-block pedestrian crosswalks in blocks longer than 900'.
- Ensure that new development meets the connectivity measures in VDOT's new Secondary Street Acceptance Requirements.

3 corridor types

introduction

The 522 corridor includes an eclectic mix of land uses set against the scenic backdrop of the Shenandoah Valley. The corridor serves a variety of travel markets, including regional, commuter, local and freight. The following corridor types illustrate idealized cross-sections that support the future land use vision for the corridor, and are intended to be implemented over time, as development occurs and if the corridor is reconstructed/expanded. The sections are ideal and may or may not be achievable in all locations, depending on right of way constraints. The map below shows recommended locations for the corridor types and cross sections identified on the following pages.



mixed use low speed type

Description:
The Mixed Use Low Speed Type is located in the eastern portion of the City of Winchester along 522 from Millwood Avenue and Pleasant Valley Rd. to I-81. It is intended to support future multimodal transportation and development around Shenandoah University and the Apple Blossom Mall, which is expected to develop with commercial and institutional uses and generate significant amounts of pedestrian activity in the next 25 years.

Parallel Street Grid ←

Very narrow setbacks with formal landscaping

→ *Parallel Street Grid*

Wide Sidewalk *Bike Lane* *Travel Lanes* *Landscaped Raised Median* *Travel Lanes* *Bike Lane* *Wide Sidewalk*

Tree Lawn *Tree Lawn*

Adjacent Land Use Context:

Future development along the Mixed Use Low Speed Corridor includes institutional and commercial uses associated with Shenandoah University and future commercial development around the Apple Blossom Mall. Higher density, mixed use buildings pulled close to the street edge, an interconnected local street grid and wide sidewalks should be provided to facilitate both access and travel choices for drivers, cyclists, pedestrians, and future transit riders.

Edge Context:

Very narrow setbacks and street trees within tree grates at the edge of the right of way create a pedestrian friendly environment along the roadway.

Public ROW Context:

Future development would support an urban section with curb and gutter, a raised, landscaped median, bicycle lanes, potential bus stops, and a wide sidewalk to facilitate multi-modal travel to local businesses.

mixed use moderate speed type

Description:
The Mixed Use Moderate Speed Type is located in the northern portion of Frederick County, from 1-81 to just south of Papermill Road where the current road section has a continuous center turn lane, and in the Double Tollgate Area of Clarke County, approximately 1/2 mile north and south of the intersection with 340. Both of those areas are designated for future growth. In Frederick County, growth is intended to be urban in character and to support a more intensive, dense form of residential development. The Double Tollgate area in Clarke County is envisioned as the future commercial center for the County.

Parallel Street Grid ← *Very narrow setbacks with formal landscaping* → *Parallel Street Grid*

Wide Sidewalk *Bike Lane* *Travel Lanes* *Landscaped Raised Median* *Travel Lanes* *Bike Lane* *Wide Sidewalk*

Tree Lawn *Tree Lawn*

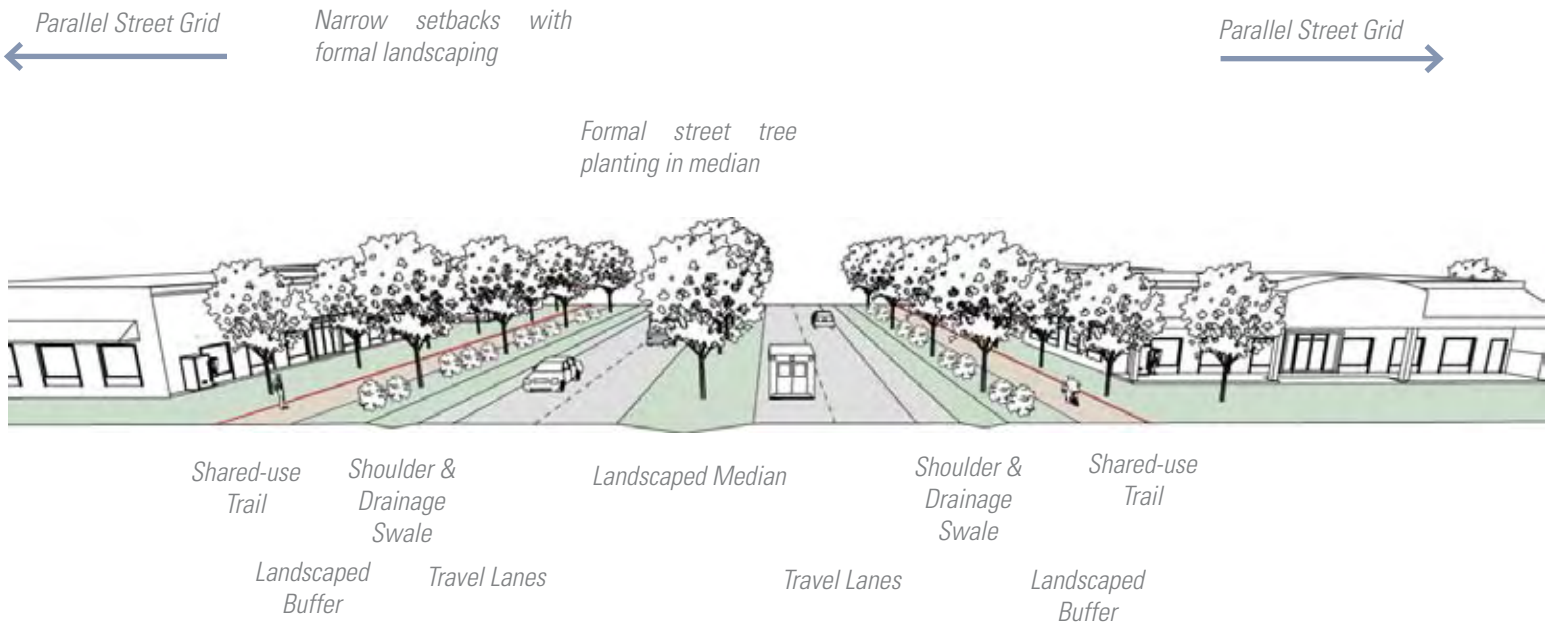
Adjacent Land Use Context:
Development along the Mixed Use Moderate Speed Corridor includes smaller, locally owned businesses and industries, with some larger retail or office uses and entrances to residential neighborhoods. Future uses remain smaller scale with higher density, mixed use buildings pulled close to the street edge, an interconnected local street grid and wide sidewalks to facilitate both access and travel choices for drivers, cyclists, pedestrians, and future transit riders.

Edge Context:
Very narrow setbacks and formal landscaping within a tree lawn create a pedestrian friendly environment along the roadway.

Public ROW Context:
An urban section with curb and gutter, a raised, landscaped median, bicycle lanes, potential bus stops and a wide sidewalk facilitate multimodal travel to local businesses.

mixed use high speed type

Description:
The Mixed Use High Speed Type is located in the northern portion of Warren County and generally corresponds to the same area as the 340/522 Corridor Study.



Adjacent Land Use Context:

Future development along the Mixed Use High Speed Corridor includes interstate services, as well as regional commercial/industrial uses. Interstate service and regional retail uses should remain full service offering access both regionally and locally to trucks, cars, pedestrians and bicyclists. A nodal pattern of development with internal street and pedestrian connectivity may help to facilitate improved traffic flow along the corridor.

Edge Context:

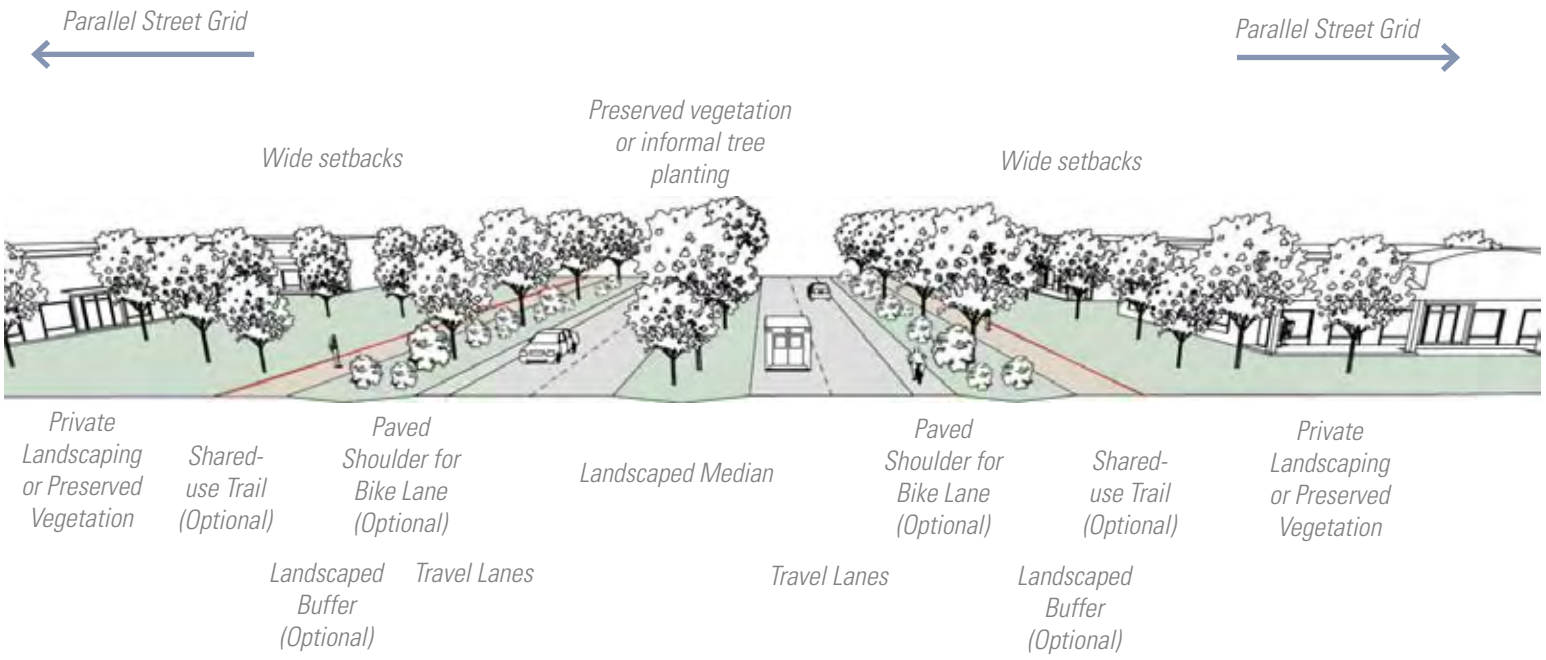
Narrow setbacks and formal landscaping reinforce the high speed character of the roadway. Signage is oriented to the automobile, but is designed so that it does not visually clutter the roadway.

Public ROW Context:

Features within the right-of-way that contribute to this corridor type include an open section with landscaped median and buffers, and a shared use trail set back from the roadway.

rural high speed type

Description:
The Rural High Speed Type is designed to support multimodal transportation in designated rural areas. The corridor type is located in the southern portion of Frederick County, as well as the area south of Double Tollgate in Clarke and Warren Counties.



Adjacent Land Use Context:

Future development along the Rural High Speed Corridor includes commercial business and retail, as well as residential uses generously buffered from the road. Local access is provided via a local street grid to facilitate regional traffic flow along the corridor and provide local access to residents.

Edge Context:

Wide setbacks with private landscaping or preserved vegetation support the rural and natural conditions that currently exist.

Public ROW Context:

Preserved vegetation or informal tree plantings within a wide median reinforce the rural and natural feel of the roadway. Multimodal travel options are provided by a paved shoulder or shared use trail. A landscaped buffer is optional.