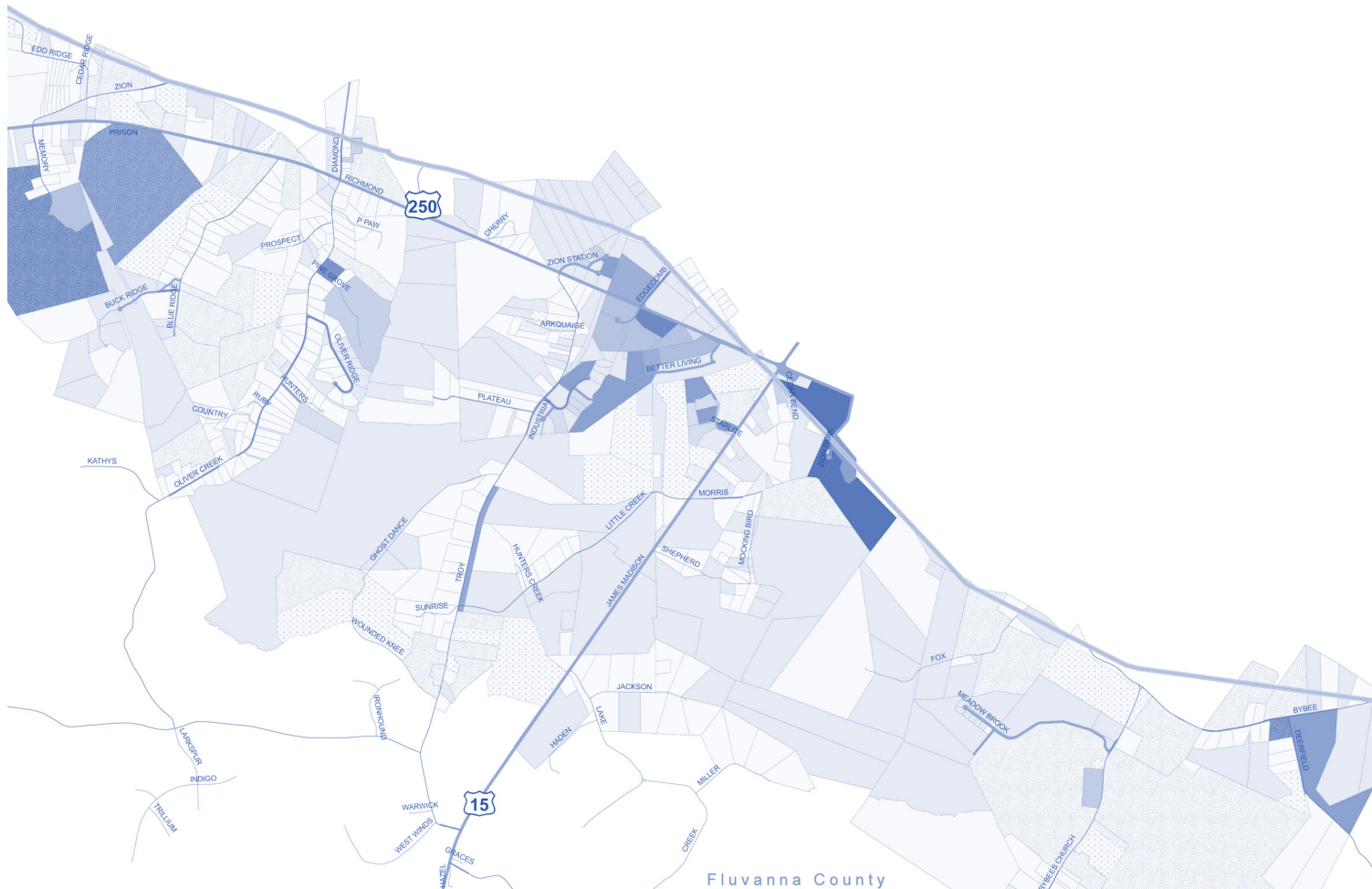




Zion Crossroads Guidebook

Fluvanna County, Virginia
August, 2013



Prepared by the Thomas Jefferson
Planning District Commission



“ Zion Crossroads is the gateway to the heart of Fluvanna County, and should be enhanced to provide a scenic, rural welcome to residents and tourists while at the same time it develops as an employment, retail, commercial, and recreation destination for both county residents and travelers en route to other places along Routes 64, 15, and 250. ”

– Fluvanna Comprehensive Plan 2009

The purpose of the Zion Crossroads Guidebook is to serve as a resource for Fluvanna County citizens, property owners, builders and developers who are involved in planning, designing, and building projects within Zion Crossroads. This area is envisioned as the County's primary regional economic development engine, where regional employment and mixed-use development can occur side by side. This template encourages the efficient use of developable land and provides direction to developers and staff to implement the County's goals in regards to Zion Crossroads.

▶ HOW TO READ THIS PLAN

for Land Developers

Zion Crossroads is brimming with potential for new growth. This template assists developers who are considering projects within Zion Crossroads by communicating Fluvanna County's vision for the area. This establishes expectations before a development review process is initiated, to ensure that any future endeavors are both cost-effective and beneficial to the citizens of Fluvanna County.

for Policy Makers

The Zion Crossroads Guidebook builds upon previous public processes and plans, and it articulates a land use and design vision specific to the Zion Crossroads area. Fluvanna County elected officials and staff may reference this template when deciding upon implementation tools to ensure the health, safety, and welfare of the community.

for Citizens

Successful planning depends upon an active citizenry. By presenting a potential outcome for Zion Crossroads, this template may inspire individual residents of Fluvanna County, and of the Zion Crossroads area in particular, to share their own ideas for their community.

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- 22 | Transect Profile: Mixed Use Neighborhood (T3)

Adopted by:

Fluvanna County Board of Supervisors,
_____ 2013

Guided by:

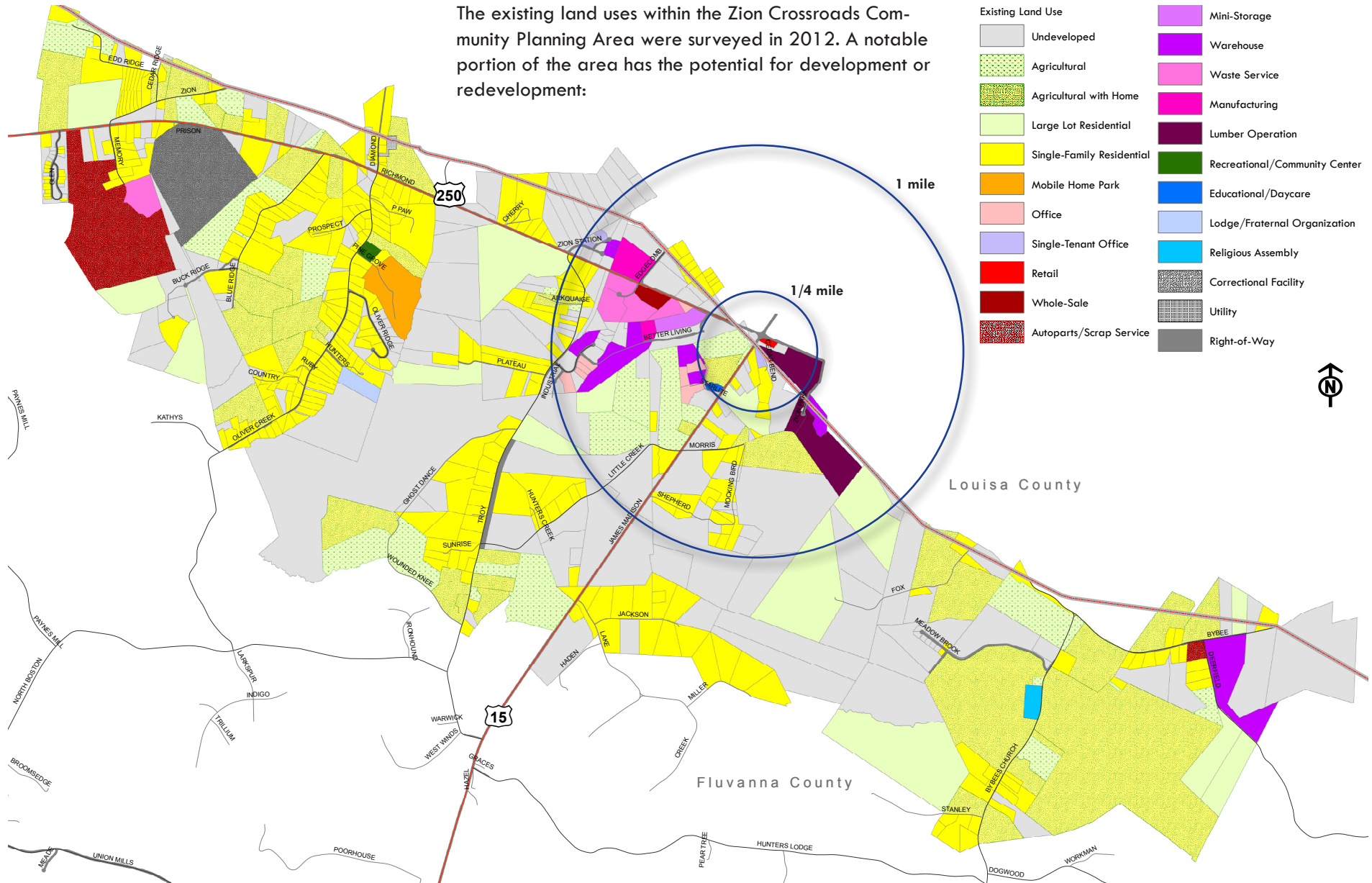
Zion Crossroads Plan Steering Committee

Prepared by:

Thomas Jefferson Planning District Commission
Fluvanna County Planning Department



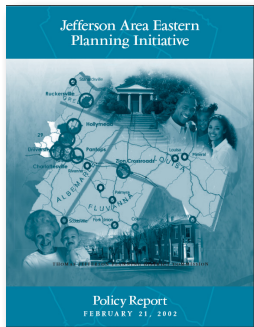
The existing land uses within the Zion Crossroads Community Planning Area were surveyed in 2012. A notable portion of the area has the potential for development or redevelopment:



Any new direction for Zion Crossroads must fully take into account what is already there, what infrastructure is available or planned, how the land is being used, and what trends are currently underway.

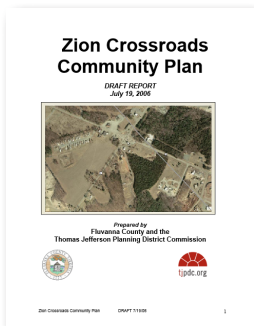
- An interchange of I-64 creates a vital connection for Zion Crossroads to the national **transportation system**, and US routes 15 and 250 both serve the area as well.
- A total of 155 **housing units** were counted in Fluvanna County's portion of the Zion Crossroads area in the 2010 Census. This was only a marginal increase from the 131 units counted in 2000.
- In 2009, Fluvanna County's portion of Zion Crossroads contained approximately 26,300 sq. ft. of **commercial space** and 485,202 sq. ft. of **industrial space**. This represents an estimated 301 jobs in the area. There was substantial growth of industry between 2002 and 2009.
- Approximately 43% of all land in the Zion Crossroads Community Planning Area is identified as **vacant**, and 7% of the land area is identified as **agricultural only**. An additional 26% of the land area has another existing use but may be suitable for **redevelopment** because the land value of the parcel exceeds the improvement value.
- The 2013 **assessed value** of all land and improvements in the area is \$180,994,000. The assessed property values decreased by 15% between 2007 and 2013, although the decline was less extreme than that of the County as a whole.
- The Zion Crossroads area straddles the Fluvanna-Louisa county border. The Louisa side experienced significant commercial and residential growth over the last decade. The area increased from almost no commercial to over a million sq. ft. and almost tripled the number of housing units.
- Most of the land (98%) in the area is **currently zoned** for agricultural use. Based on current residential allowances, a total of 2,977 homes could be built on this land by-right.
- **Public water and sewer capacity** is under consideration for the Fluvanna County portion of Zion Crossroads, and the County is currently weighing options for providing such service to the area.
- The Fluvanna Correctional Center for Women is a significant use within the Community Planning Area. The center has an average daily population of 1,200.

A number of plans and studies have been drafted that support the development of Zion Crossroads in Fluvanna County. This plan draws from each of these previous recommendations.



Jefferson Area Eastern Planning Initiative (2002)

This regional scenario planning exercise involved significant public input and guidance from multiple governing bodies throughout the Thomas Jefferson Planning District. The initiative utilized a computer model to compare transportation and land use impacts of different growth scenarios. The concentration of development into “Town Centers” throughout the region was preferred by the public in Fluvanna County, and Zion Crossroads was selected as the primary area for development for both Fluvanna and Louisa Counties.



Zion Crossroads Community Plan (2006)

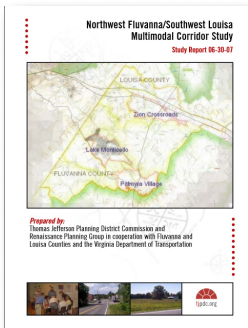
This collaborative effort between Fluvanna County citizens, staff, business owners, and the Thomas Jefferson Planning District Commission envisions Zion Crossroads as a major center of commerce, employment, and higher density residential uses. The plan recommends:

Goal: Create a distinct identity for the Zion Crossroads area which requires the County to:

1. Establish a formal gateway that captures the rural character of the area
2. Define a village-scaled center
3. Support mixed-use development

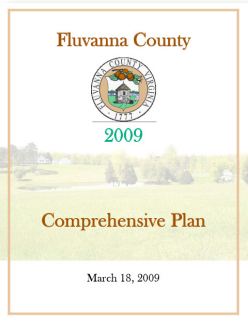
Goal: Support Economic Development and Community Based Services to:

1. Capitalize on location and enhance existing land uses including enhanced tourism, recreation, and educational opportunities
2. Develop a marketing strategy and plan for the area and its businesses
3. Expand and diversify local tax revenue by encouraging higher intensity commercial development, encouraging businesses and retail that are locally-based, and providing additional opportunity to expand light industry development
4. Provide appropriate infrastructure, including water and sewer services, and investigate the demand and cost of providing natural gas to the area



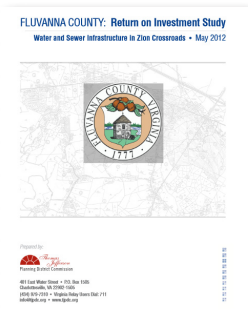
Northwest Fluvanna/Southwest Louisa Multimodal Corridor Study (2006)

Building upon the Eastern Planning Initiative, the corridor study focuses on the two-county area around Zion Crossroads. A preferred scenario generated by the plan envisions Zion Crossroads as a regional mixed-use center slated to absorb most of the area’s growth. The plan includes many design specifications and principles characteristic of a regional center, as well as lower-intensity neighborhoods, including street design, parking, use mixes, signage, open space, transportation connectivity, and transit. Many of these recommendations for Zion Crossroads are incorporated into the Zion Crossroads Guidebook with very few changes.



Fluvanna County Comprehensive Plan (2009)

As the primary guiding document for the County, the Comprehensive Plan influences land use policies and economic development efforts for the whole community. The Zion Crossroads area was identified in this plan as the County’s only Urban Development Area (see next page of this plan), signalling the intent to facilitate commercial and residential growth in the area. The plan also defines principles of *Transect* and *Traditional Neighborhood Development*, both of which are used to organize and inform this guidebook.



Fluvanna County Regional Water Supply Plan (2010) and Fluvanna County Return on Investment Study (2012)

The regional water supply plan evaluates current and future water supply needs for the county, and sets goals for ensuring adequate supply and conservation measures. The plan recommends new public water and sewer service for the Zion Crossroads Area, and implementation of this recommendation functions as an underlying assumption of this guidebook. The Return on Investment Study created several growth scenarios for Zion Crossroads and weighed the return on investment of this infrastructure for Fluvanna County.

Zion Crossroads Urban Development Area

This Guidebook pertains to the Zion Crossroads Urban Development Area, as designated in the 2009 Fluvanna County Comprehensive Plan.

An Urban Development Area (UDA) is defined by the Code of Virginia as an area that is appropriate for higher-density development due to its proximity to transportation facilities, the availability of a public or community water and sewer system, or a developed area wherein redevelopment and infill are feasible. By allowing more intense development in UDAs, Fluvanna County can provide public services more efficiently and preserve its rural and agricultural landscape by reducing development pressures on these areas. UDAs also include design features tailored to compact, mixed-use areas, known broadly as Traditional Neighborhood Development.

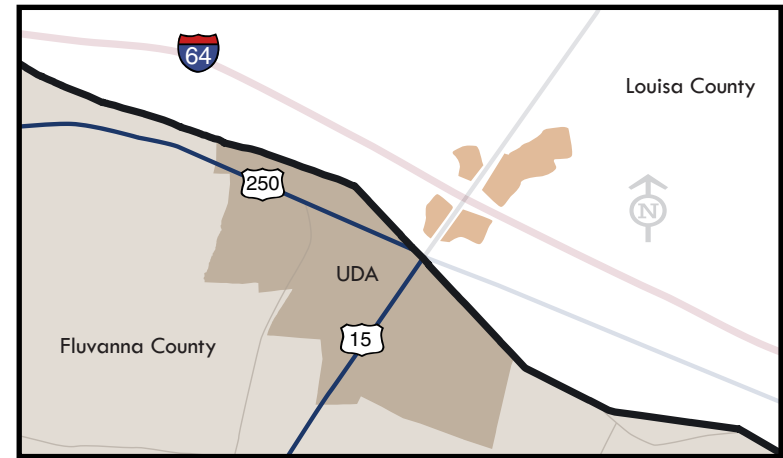
Zion Crossroads is currently designated as the County's only UDA. This area is intended to absorb most of the County's growth over the next ten to twenty years, as intended in the state code. The Zion Crossroads UDA was selected because its proximity to Interstate 64 and Routes 15 and 250, and to Louisa's most intensive growth area.

Zion Crossroads Community Planning Area

The Community Planning Areas (CPA) are defined in the Fluvanna County Comprehensive Plan as areas designated to receive higher densities of residential and commercial growth. The plan sets the goal of dispersing 70% of all new development to the five CPAs of the County. Although the function of CPAs is similar to that of UDAs, they are intended to contain less density and public services.

Zion Crossroads is Fluvanna County's largest CPA, and the County places a special emphasis on commercial and industrial growth in this area.

Zion Crossroads Urban Development Area (UDA)



▶ TRANSECT AREAS

The Urban Development Area is further differentiated into three transects ...

See Fluvanna County Comprehensive Plan, p. 38 for discussion of transects. Zion Crossroads Urban Development Area includes T3 through T5 only.

T5: Town Center

Predominant center of employment and commerce for Fluvanna County

Profiled pages 10 - 15



T4: Mixed Use Village

Vibrant, compact, and walkable village near the center of Zion Crossroads.

Profiled pages 16 - 21

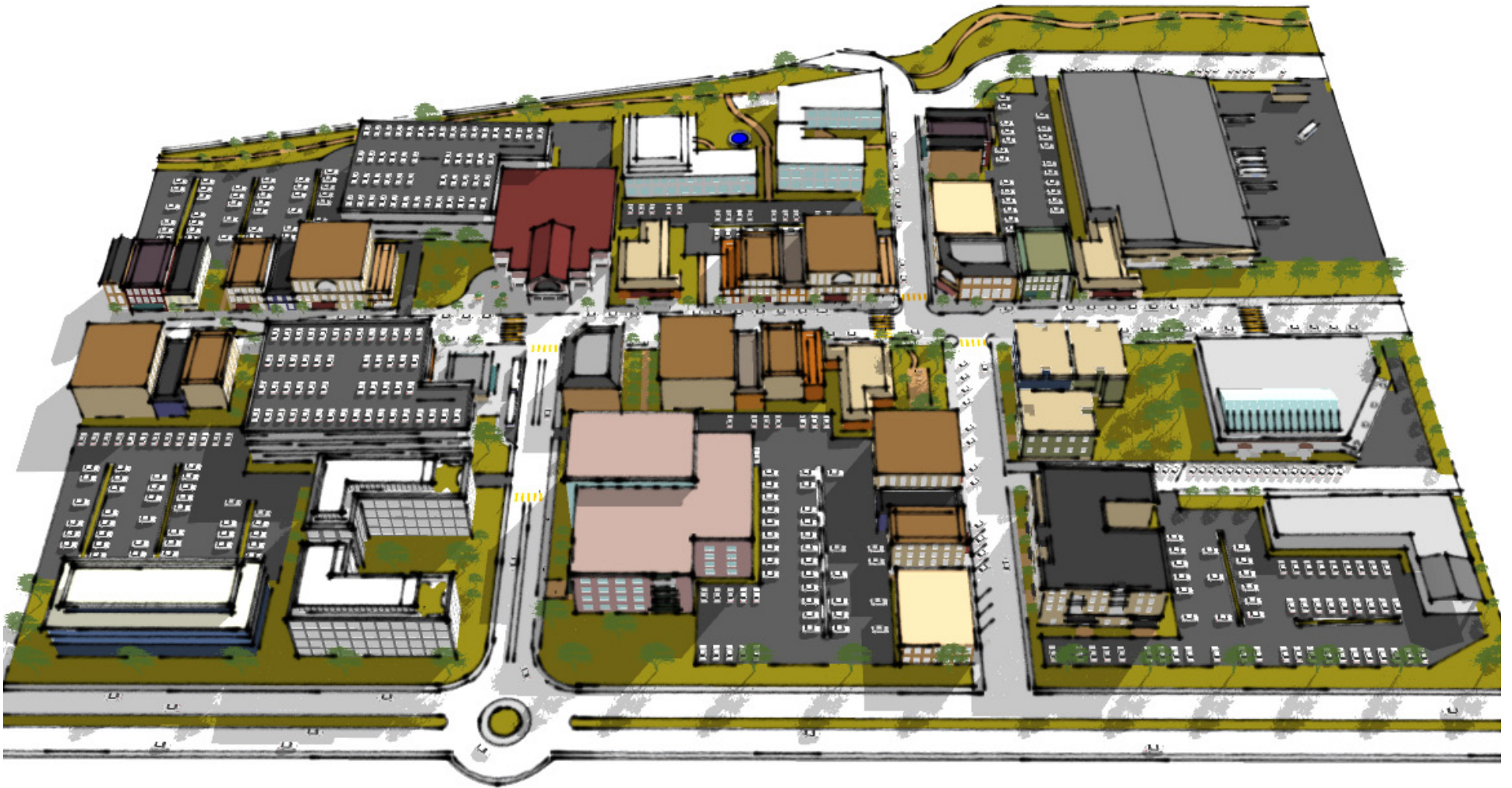


T3: Mixed Use Neighborhood

Traditional neighborhood with small-scale commercial uses nearby.

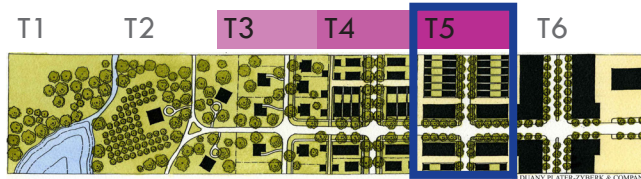
Profiled pages 22 - 27





Transect

Development density and level of activity along rural-to-urban continuum



The *Zion Crossroads Town Center* is the predominant center of employment and commerce for Fluvanna County. This area serves at the regional level, with the expectation that workers, customers, and residents will be traveling to and from Zion Crossroads from throughout the metropolitan area. The commerce, employment, and industry concentrated in this area will be a significant contributor to Fluvanna County's job growth, cultural amenities, and tax base. Traditional Neighborhood Development will be employed throughout, including:

1. Human-scaled streetscapes sized for easy walking distances, with street trees, benches, and other comfortable pedestrian amenities.
2. Diversity of uses and activities in close proximity.
3. Interconnected network or narrow streets, sidewalks, and paths, with safe crossings marked.
4. Transit-oriented, and adaptable to increased service as demand grows.
5. On-street and structured parking, with quantity and impact of surface parking minimized and relegated to spaces behind buildings.
6. Higher-intensity office, research, technology, and light industry on periphery with appropriate buffers, as necessary.
7. Higher-density residential areas within close walking distance of the town center.



Peninsula Town Center *ma architects*
Hampton, VA



Shirlington Village *villageatshirlington.com*
Arlington, VA



Downtown Short Pump *Downtownshortpump.com*
Richmond, VA

► Mix of Uses



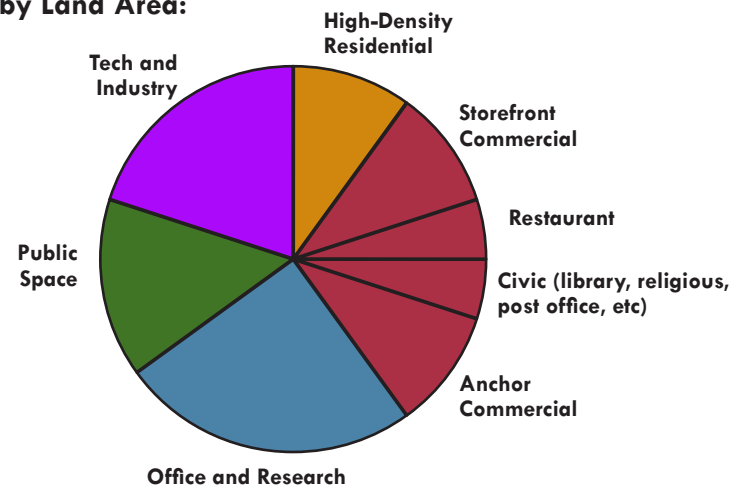
Commercial/Mixed Use



Commercial/mixed use structures are concentrated along the main streets with easy pedestrian access. Retail, restaurants and other uses needing exposure occupy ground floors, while offices and residences are above. At least one, and preferably two, anchor commercial sites attract outside shoppers, while locally-owned and nationally-franchised smaller sites offer variety and uniqueness. General civic uses are appropriate for these locations, although they should ideally be located on the periphery or second floors.

The uses and activities featured in the Zion Crossroads Town Center maximize the benefit of proximity through reciprocal relationships. Office and industry workers have access to nearby restaurants. Residents benefit from an attractive and walkable area, while providing activity and safety. Parking can be shared. Distributors have shorter supply chains. In some cases multiple uses may occur on the same lot, although in many other cases uses will be located nearby on separate sites.

Uses by Land Area:



Office/
Research



Offices and research parks may be of larger scale and set-back from the street, with appropriate landscaping. Mixed use areas nearby allow shared parking, services for workers, and co-location with smaller firms. Ideally, the spaces would attract firms that draw from and build upon existing regional network effects for innovation and efficiency.

Office workers supply a built-in market for restaurants and convenience retail, and the nearby services create an attractive environment for employers.

One potential use is a satellite campus for the Piedmont Valley Community College or a new institution of higher education.

Technology/
Light Industry



Technology and light industry buildings may be located on the periphery of the town center. Front offices/showrooms front a commercial street, while truck access is relegated to the back of properties.

Such uses may include flex buildings, distribution centers, laboratories, maintenance, and small-scale manufacturing. Some industrial sites, as regional distributions centers, may have commercial showrooms for front offices that could have frontage directly on main streets.

Industrial uses with clear environmental impacts, such as noise or smells, on surrounding properties are not appropriate for this area.

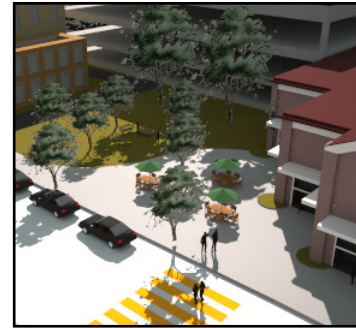
High-Density Residential



High-density apartments (rented) or condominiums (owner-occupied) should directly front streets with minimal setback. Balconies and terraces are encouraged, to provide 24-hour surveillance to enhance security for the town center.

Residences should be within easy walking distance of mixed use centers and public spaces. A small amount of private greenspace is also appropriate. Homes will cater to the niche market that prioritizes maximum proximity to jobs, services, and entertainment.

Public Space



Public spaces include pocket parks or plazas. Plazas, which are mostly hardscaped, should be located in the very heart of activity to maximize their use. Small parks are landscaped with greenery, and should be along the edges of activity, to allow a small refuge from activity. Additionally, greenways along the periphery of the center provide transportation and recreation options.

Except for small buffers between industrial uses, passive open space is discouraged in the town center.

Parking

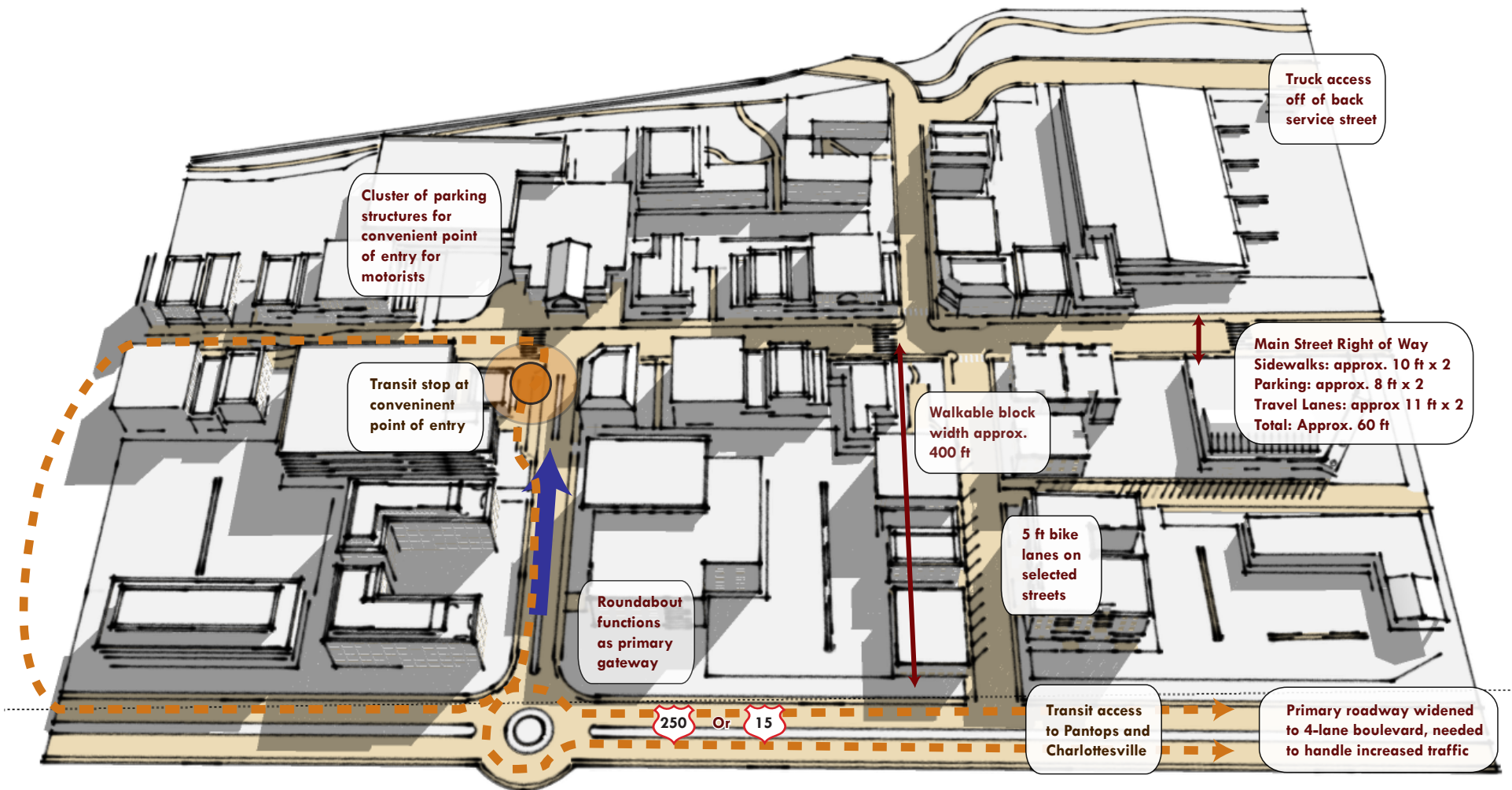


Primary parking is on-street, either parallel or slanted. Off-street parking is structured or on surface lots behind buildings. When fronting a street, all parking structures include ground-floor commercial or civic uses facing the street. Structures are placed near a natural entrance to facilitate one-stop parking for the whole town center.

Surface lots are a lower-cost alternative. They may be placed throughout the center, but only on the interiors of blocks. Surface lots should not be easily visible from streets. Signage is used for navigation.

► Circulation

As a regional destination, the Zion Crossroads Town Center must be easily accessible from other areas of the Charlottesville metropolitan area. At the same time, travel to various uses and activities within the center must be safe and convenient. These two objectives may be characterized as *external* and *internal* circulation.



External Circulation

The proximity to I-64 is a great advantage to Zion Crossroads. Convenient highway access facilitates increased commerce and industry. A main entrance to anchor retail and other high intensity uses is established near the gateway to the town center. To avoid negative impacts, parking once at this location and walking to all uses should be facilitated. An alternative route for trucks serving industry should be provided to enhance safety and minimize noise.

Transit access to Pantops and Charlottesville could start with a JAUNT van, and increase in capacity as demand allows. The town center could function as a transit stop if future transit connections are made between Charlottesville and Richmond metropolitan areas. All design should account for potential adaptations to accommodate future transit service.

Arterial Boulevard

Either US 250 or US 15 may need to be widened to function as a boulevard along the periphery of the Town Center.

Internal Circulation

The entire area can be easily traversed by foot within minutes. Walking should naturally become the dominant form of transportation within the center and into immediately surrounding neighborhoods. Many features of internal streets are designed to privilege pedestrians for local access. This includes sidewalks and off-street paths, as well as narrow streets connected in a fine-grained grid.

Bicycles provide a broader range to the outer areas. All areas of the Zion Crossroads Community Planning Area are within a twenty minute ride, which is acceptable for commuting and daily trips. Off-street paths provide a safe alternative means for traveling throughout the area, and selected streets may include bike paths.

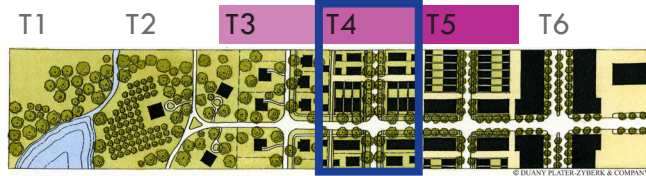
Cars will also be used to travel within the area, especially by people with disabilities. Narrower streets and on-street parking create a natural traffic calming effect.





Transect

Development density and level of activity along rural-to-urban continuum



▶ T4: MIXED USE VILLAGE

The *Zion Crossroads Mixed Use Villages* are vibrant places to live and work within the Zion Crossroads Urban Development Area, as designated by the Comprehensive Plan. The intensity of commercial and cultural activity is less than that of the Town Center, but the neighborhood remains closely tied to the center:

1. A variety of housing types integrated with each other, including multifamily structures, townhomes, duplexes, and single-family homes.
2. Spacious and well-designed public spaces for recreation, aesthetic appeal, and stormwater management.
3. Smaller scale commercial and industrial uses near major roadway corridors, connected to but somewhat removed from residential areas.
4. Complete streets throughout, including sidewalks, landscaping, narrower vehicle lanes, and on-street parking.
5. Residential gross densities of between 8 and 12 dwelling units per acre (as pictured).
6. Neighborhood-serving retail and restaurants within closer proximity to residential areas.



Market Street Condos
Reston, VA

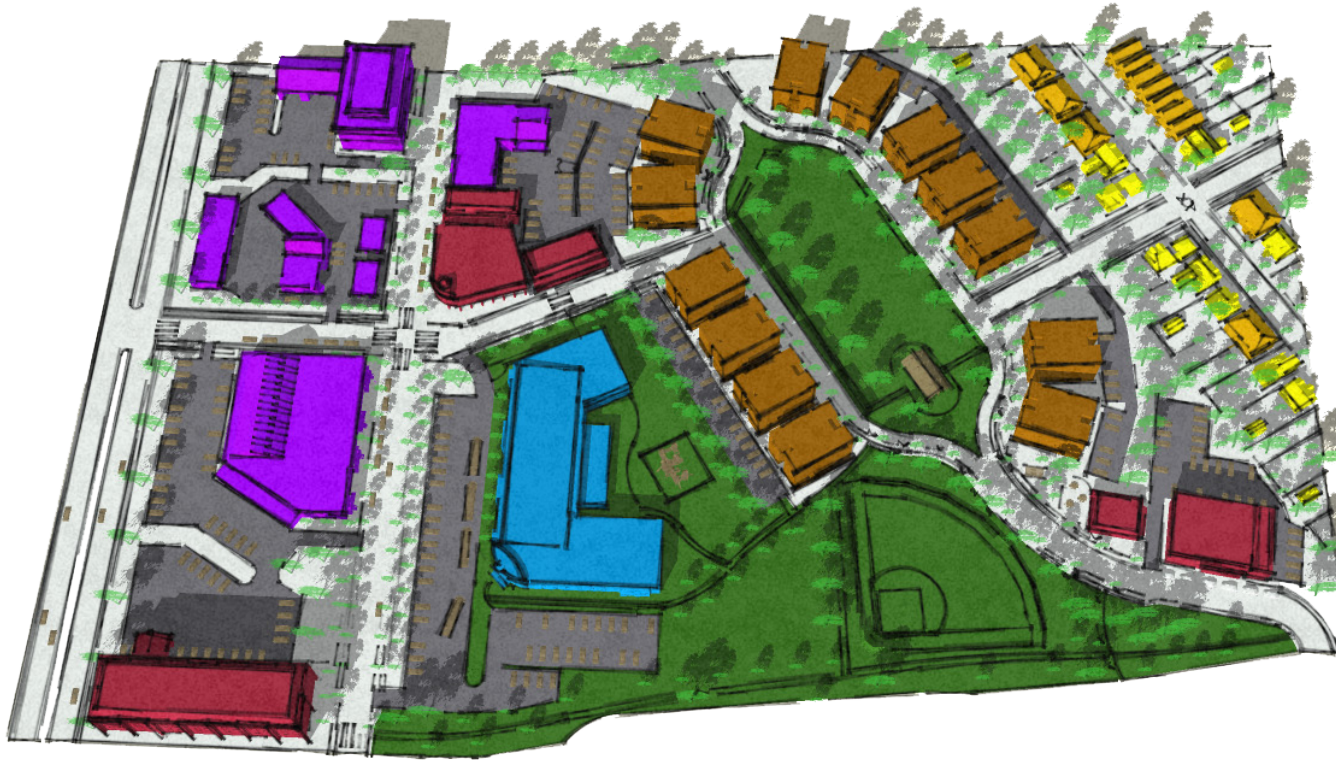
Reston-Condos.com



New Town
Williamsburg, VA

Williamsburg Real Estate

► Mix of Uses



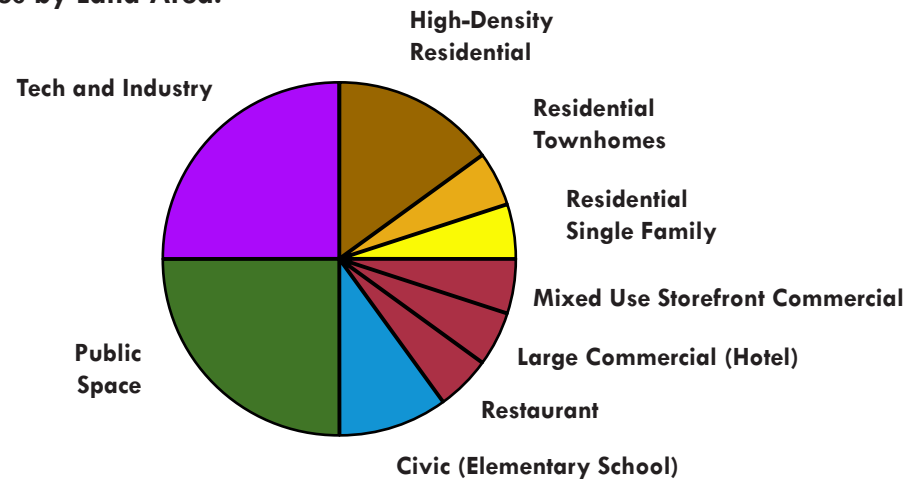
Civic (School)



Commercial/mixed use structures are concentrated along the main streets with easy pedestrian access. Retail, restaurants and other uses needing exposure occupy ground floors, while offices and residences are above. General civic uses are appropriate for these locations as well.

The uses and activities featured in the Zion Crossroads Mixed Use Village both support and benefit from the higher intensities activity that occurs in the Town Center. As the title makes clear, there is an integration of various uses, but this must be carefully planned and tailored to the appropriate transportation infrastructure. With correct proportions, the area can provide a very high quality of life for those who prefer a walkable and green neighborhood, while still supporting the economic engine of the Zion Crossroads area.

Uses by Land Area:



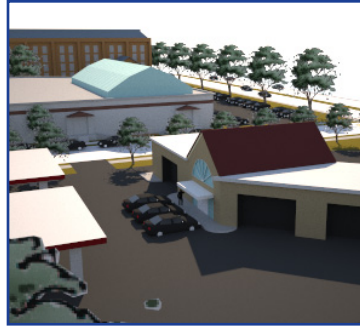
Public Space



The primary public spaces in the Mixed Use Village are parks that serve the local residents and other uses such as schools. Public spaces are especially important for higher-density residential residents, who do not otherwise have private lawns.

Parks could provide such amenities as playgrounds, picnic shelters, dog park fencing, benches, and playing fields. Parks should be connected with a pathway system. Generally, unprogrammed and informal open space is also discouraged in these areas.

Technology/
Light Industry



Technology and light industry buildings may be located in the Mixed Use Village in areas that are removed, to some degree, from residential streets.

The uses and forms of technology and light industry are much the same as described for the Town Center.

High-Density Residential



High-density apartments (rented) or condominiums (owner-occupied) should directly front streets with minimal setbacks. In this illustration, the multifamily buildings are arranged around a common greenspace encircled by a narrow one-way street.

All parking for multifamily residential buildings should be provided behind the building with a few on-street spaces available for guests.

Medium Density
Residential



Medium-density residential areas take the form of the traditional neighborhood commonly built throughout the United States prior to World War II.

Streets are tree-lined with sidewalks. Single-family detached dwellings are integrated with townhomes and duplexes. There are a variety of home styles, with front porches as a dominant feature and front-loaded garages discouraged. Lot sizes are relatively narrow and rectilinear, with private backyard space for each unit. An appropriate density is between 8 and 12 dwelling units per gross acre. Homes are setback a small distance from the streets. Streets are narrow and formed generally into a grid.

Mixed-Use Commercial



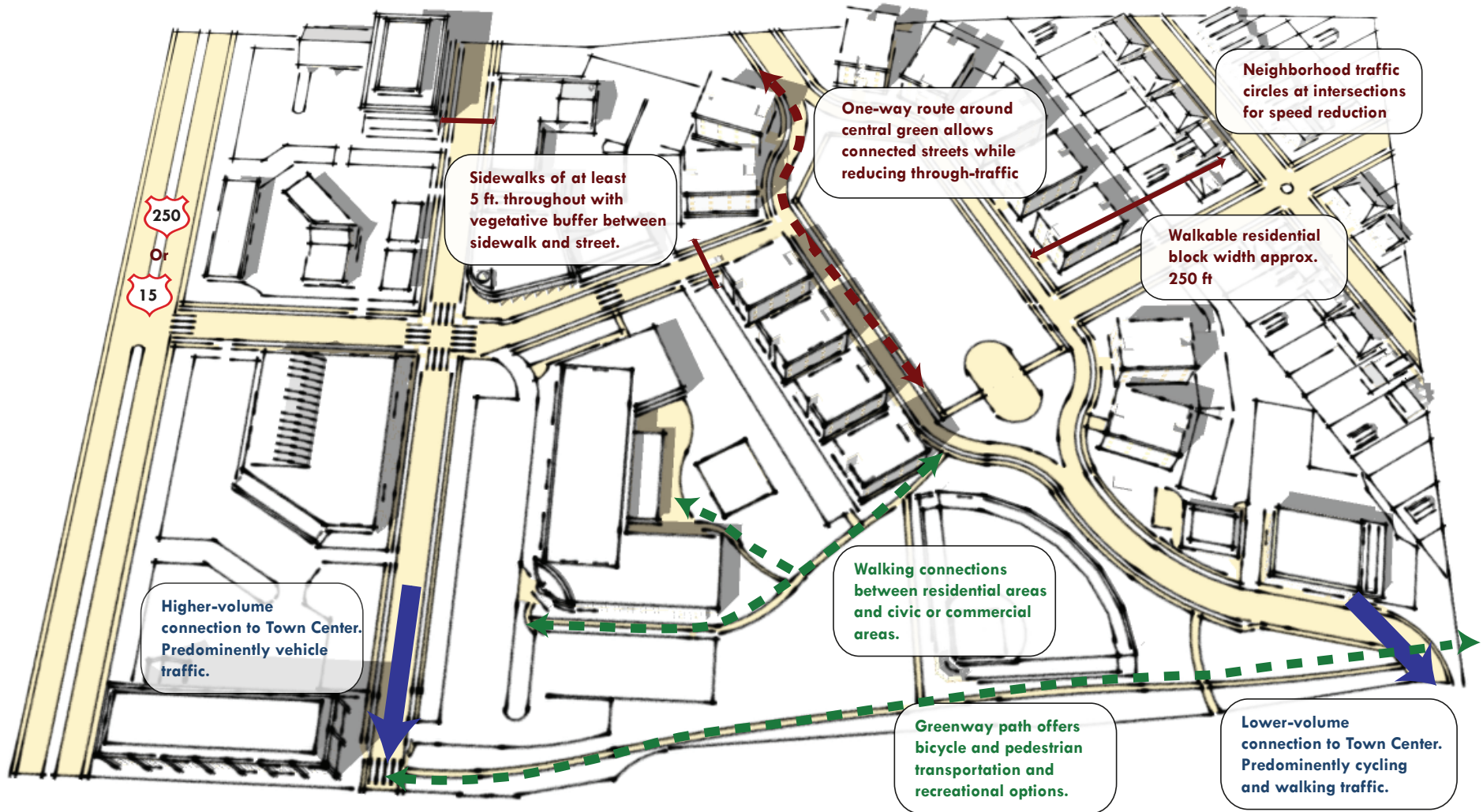
Commercial and mixed use uses may take a similar form to those in the Town Center, although the merchandise should ideally cater to more local clientele in the surrounding area. This includes cafes, small grocers, florists, and retail offer convenience goods. Office space or residences are appropriate for above floors.

These uses should be located on the periphery of residential areas so customers from outside the neighborhood need not travel on residential streets. More intense uses may be appropriate near the gateway from an arterial into the neighborhood.

All parking should be provided behind the building with a few on-street spaces available for guests.

► Circulation

The Mixed Use Village must have transportation infrastructure that balances the provision of access to those uses that require it with protection of predominantly residential areas and parks from excessive traffic and associated safety and environmental impacts. This is the essential transportation challenge of this area, and it can only be met with careful street design and layout.



Balance between Mobility and Access

Roads and streets are organized into what is known as a functional hierarchy between roads that are suited for high and lower volumes. This form of organization is especially important to the success of the Mixed Use Village, as uses with a wide variety of transportation needs and acceptable impacts are intentionally located within close proximity. The broad spectrum of classifications are depicted from left to right in the circulation image. They are as follows:

- 1. Arterial Roadways** are designed to carry high volumes of traffic, and access to individual sites along the roadway is limited. For Zion Crossroads, this would be US Route 250 or US Route 15. Points of entry from arterials to the area are important gateways to the neighborhood. Although it is important to maintain aesthetics with buffers along arterials, no buildings directly front these roadways. Pedestrian or bike access should only be on completely separated pathways.
- 2. Collector Streets** allow access to most commercial and industrial uses. Ideal traffic volumes would be high enough to support such activity, but speeds are generally much lower due to the greater number of access points and intersections. The collector street is also the predominant vehicular access point between the Town Center and Mixed Use Village.
- 3. Residential Streets** are designed to be much lower volume and provide access only to local residents and visitors. Mitigation of through-traffic can be achieved proactively through design, rather than retroactively through traffic calming measures. A different orientation of the street grid can signal entrance into a residential area. One-way streets around a central green and neighborhood traffic circles are pleasant features that deter through-traffic.

Circulation for Multiple Modes

Although the function of the Mixed Use Village is quite different than the Town Center, safe access for pedestrians and cyclists is equally important. Students may walk from nearby residential areas to school. Workers are within convenient commuting distance to the Town Center. Small-scale commercial will be within easy walking distance. Finally, many residents will simply wish to walk their dog or take a stroll around the neighborhood.

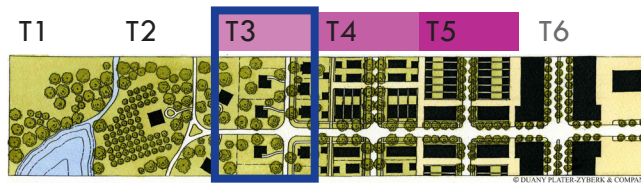
Sidewalks of a standard 5-foot width are provided on all streets (with the potential exception of arterials), and these are separated from the roadway with a vegetative buffer. Streets with storefront commercial are equipped with sidewalks of at least 10-foot width for the segments directly adjacent to the buildings.

A primary feature of these areas is off-street paths. These allow direct connections between residential areas and the Town Center. These are integrated into a park system, allowing paths to provide a dual recreational and transportation function.

Transit service to these areas should be a longer-term objective. This would occur along collector streets with reasonably close stop distances. All transit access would be connected directly into the central hub at the Town Center, where transfers to regional service can be made.



Transect
Development density and level of activity along rural-to-urban continuum



▶ T3: MIXED USE NEIGHBORHOOD

The *Zion Crossroads Mixed Use Neighborhoods* are primarily residential in character, offering a quiet setting for living while maintaining enough space for retail and services needed to meet daily needs. Campus-style office parks are also encouraged within this area, and these sites may be set aside from the rest of the neighborhood to some degree, while remaining connected.

1. A variety of housing types are integrated with each other, with an emphasis on townhomes and small-lot single-family dwellings. Some blocks may feature larger-lot single family homes.
2. Active public spaces are intended to serve neighborhood residents or office employees. A minimal amount of unprogrammed open space is acceptable.
3. A small amount of commercial is intended to serve the neighborhood.
4. Complete streets are present throughout, including sidewalks, landscaping, narrower vehicle lanes, and on-street parking.
5. Residential gross densities of between 6 and 10 dwelling units per acre (as pictured) are appropriate.
6. All Mixed Use Neighborhoods are easily accessible to other sections of the Urban Development Area through multiple means of travel.



Near Hollymead Town Center
Albemarle County, VA *Hasbrouck Management*



Innsbrook Office
Richmond, VA *Richmond Times-Dispatch*

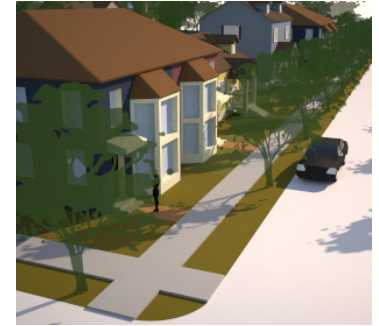


Belvedere
Albemarle County, VA *Charlottesville Tomorrow*

► Mix of Uses



Medium Density Residential

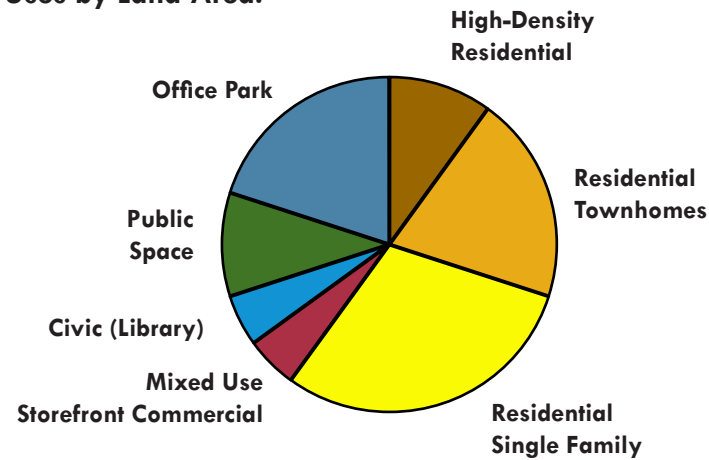


Medium-density residential areas comprise the majority of the Mixed Use Neighborhood. They represent the traditional American residential form.

The characteristics of these areas are described in the previous Mixed Use Village section.

The Zion Crossroads Mixed Use Neighborhood supports residential uses and certain other uses that create amenities for the neighborhood with minimal impacts.

Uses by Land Area:



▶ T3: MIXED USE NEIGHBORHOOD

Estate Residential



There will likely be a market for larger homes in Zion Crossroads, and areas designated for these housing types may be an appropriate component of the Mixed Use Neighborhood.

The character of the streetscape and setbacks is much the same as in other residential areas, although there are a few differences. Estate residential areas are primarily detached single-family houses, although variety may be offered through accessory dwelling units. Lot sizes are larger, with widths between 60 and 100 feet. Estate residential areas should remain well connected to the rest of the neighborhood.

Public Space



Most public spaces are neighborhood parks of immediate local interest. These are all programmed for specific activities, which may include playgrounds, tennis courts, ball fields, dog parks. Neighbors should have discretion over use, and they may be owned by an association.

Some of the land in the Mixed Use Neighborhood may simply be unprogrammed open space, potentially protected under a conservation easement. Because of the close proximity to a population center, the open space should offer public access with nature trails or other amenities. Open space should not comprise a large portion of the overall land area.

Mixed-Use Commercial



Commercial and mixed use uses are a secondary use in the Mixed Use Neighborhood and their scale should be considerably smaller than in the more intensely developed areas.

Many types of retail and services would benefit the neighborhood. For example, a cafe may become a gathering place for neighbors. A market may sell fresh produce or baked goods.

These uses should be located on the periphery of residential areas along the primary street providing access to the neighborhood. Parking should be minimal, and it should be provided behind the building with a few on-street spaces available for guests.

Civic (Library)



Much like the limited commercial uses, certain civic uses may be appropriate for the neighborhood. For example, a library or a church/religious building would be an appropriate use, scaled to the neighborhood. Other beneficial possibilities are community centers, day care facilities, and senior centers.

Civic uses should be located along the primary neighborhood street within an easy walk of residences.

Office Park

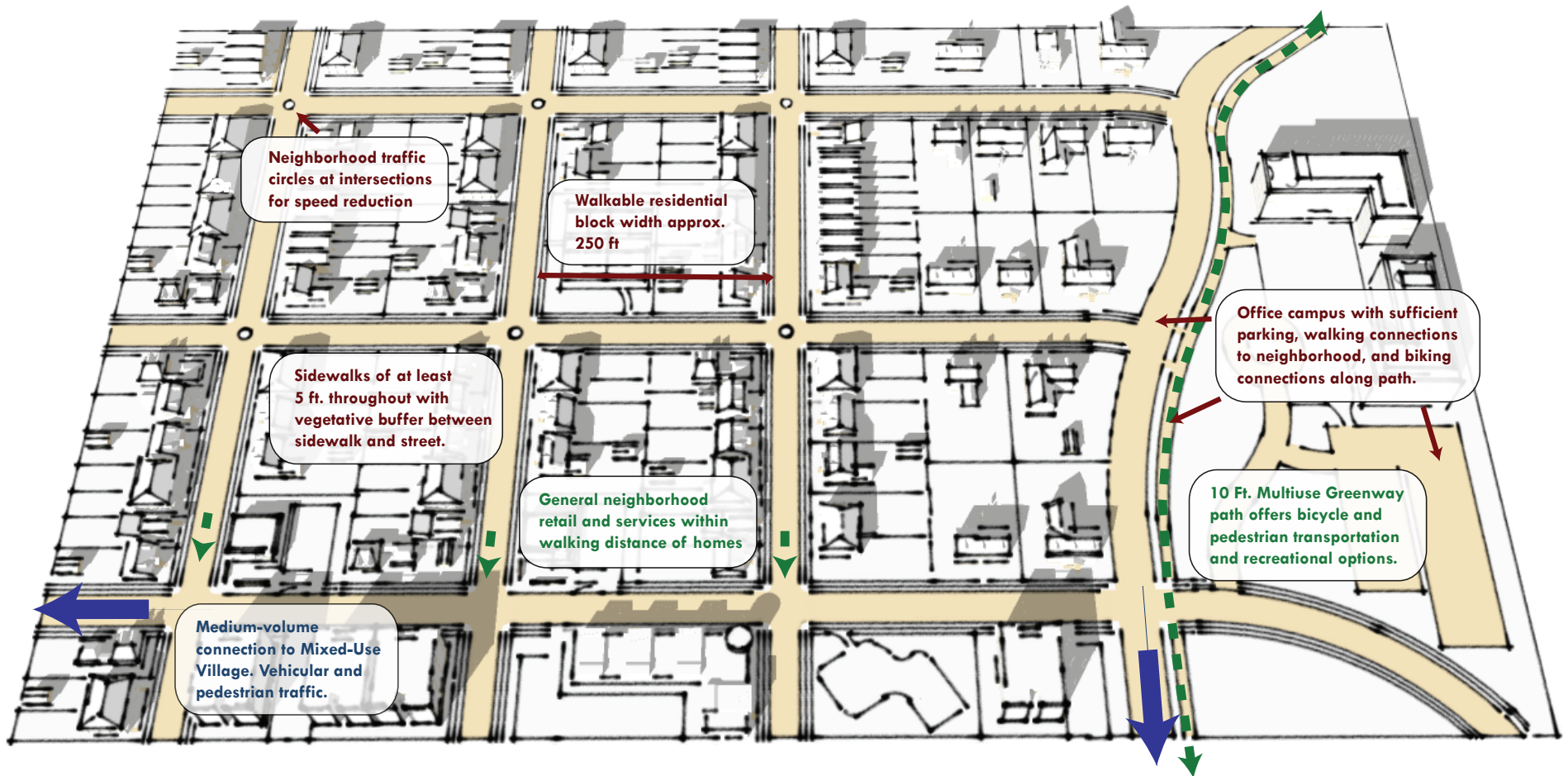


The development of office parks was common throughout the 20th century, and some businesses may still prefer this style of development over the more urban setting offered in the Town Center.

Although office parks are not generally associated with traditional neighborhood development, with careful design they may be attractively incorporated into the neighborhood. The office park should be on the periphery of the neighborhood with parking well shielded by vegetation. A higher-volume roadway should funnel traffic away from the residential portions of the neighborhood. A well-planned campus may benefit the neighborhood by providing greenery and employment within an easy walking distance.

► Circulation

The Mixed Use Neighborhood features a highly connected network of streets, laid out in a traditional grid pattern. Most of the streets are designed for local traffic, although a few collector streets provide access to the neighborhood and any office parks or other employment-generating uses. The area is integrally linked by both roadways and greenways to the rest of Zion Crossroads, although there is less direct access to areas outside of the Zion Crossroads.



Connected Street Grid

The most critical feature of the transportation infrastructure in the Mixed Use Neighborhood is a highly connected street grid, whether laid out in a traditional grid, as shown, or modified with curvilinear alignments. Using a standard measurement of connectivity, the ratio of links (street segments) to nodes (intersections or dead-ends) should be 2:1 or higher. There are many benefits of a traditional connected network:

1. **More efficient use of infrastructure.** A connected network distributes local traffic, rather than funneling all traffic, regardless of distance, onto arterials that become prone to congestion.
2. **Increases transportation choice.** Pedestrians and cyclists are much more likely to make local trips when they are convenient and a high-volume roadway is not necessary.
3. **Faster emergency response.** Routes to homes are more direct and access is less likely to be cut off in the event of a hazard or road closure.
4. **Protection of public investment.** Because a connected street grid is less susceptible to congestion, and less area needs to be paved to provide an equivalent amount of access, costs of creating and maintaining more connected streets is lower. This fact is the impetus behind VDOT's Secondary Street Acceptance Requirements.

Natural Traffic Calming

Maintaining low traffic speeds is very important to the quality of life and safety of residential neighborhoods. Ideally, speeds should never exceed 20 mph on a residential street. This can be much more effectively addressed through the design of the street itself, than it can through relying exclusively on speed limit enforcement or retroactive installations, such as speed bumps. Several features of streets in the Mixed Use Neighborhood encourage drivers to slow down



1. **Narrow Lane Widths.** This template depicts street widths of 26 ft., allowing on-street parking on one side. Drivers naturally slow down when presented with little margin of error.
2. **Street Trees.** Trees spaced evenly along both sides of roads create a frame of reference for drivers, and have been shown to decrease speeds by between 3 and 5 mph.
3. **Traffic Circles.** Small residential traffic circles compel motorists to slow down at intersections where conflicts with other drivers or pedestrians are most common.