CHAPTER 4: GETTING TO THE VISION

The previous chapter outlined the future vision for the Route 29 corridor. This chapter, in turn, describes corridor-wide concepts and strategies that will be needed to get to that vision. The planning concepts described in this chapter were derived from concerns identified in the multi-jurisdictional input process for the project. Through a series of public and stakeholder meetings and work sessions up and down the corridor, common concerns and issues were identified that affected all corridor communities in similar ways. One of the recurring issues was the idea that current safety and congestion problems on Route 29 were in large part a result of poor planning practices in the past. Both citizens and local leaders identified the need for improving the way we do things and coming up with better land use and transportation patterns to avoid repeating some of the mistakes of the past.

This chapter identifies a set of potential new "best practices" for transportation and land use planning on Route 29. Some of these best practices bring order tothe transportation network along the corridor. Others offer suggestions of a context-sensitive approach to protecting the corridor's scenic and historic assets. Still others propose specific examples of crossover and interchange types and access management. While the actual implementation of the Route 29 Corridor Study will require the coordinated efforts of local, regional, state, and federal agencies, as well as local citizens, businesses, and civic organizations, it is important that there be a shared vision for that implementation by all these groups working together. The corridor-wide strategies and tools proposed in this chapter are intended as a general framework of planning principles for implementing the long term recommendations for the corridor.

Small group work session during the April, 2009 Corridor Leadership Forums

Getting to the vision for Route 29 will require a new commitment to better integrate land use and transportation planning in the future. This section will describe best practices for future planning in the corridor through a series of recommendations and diagrams that illustrate these practices.

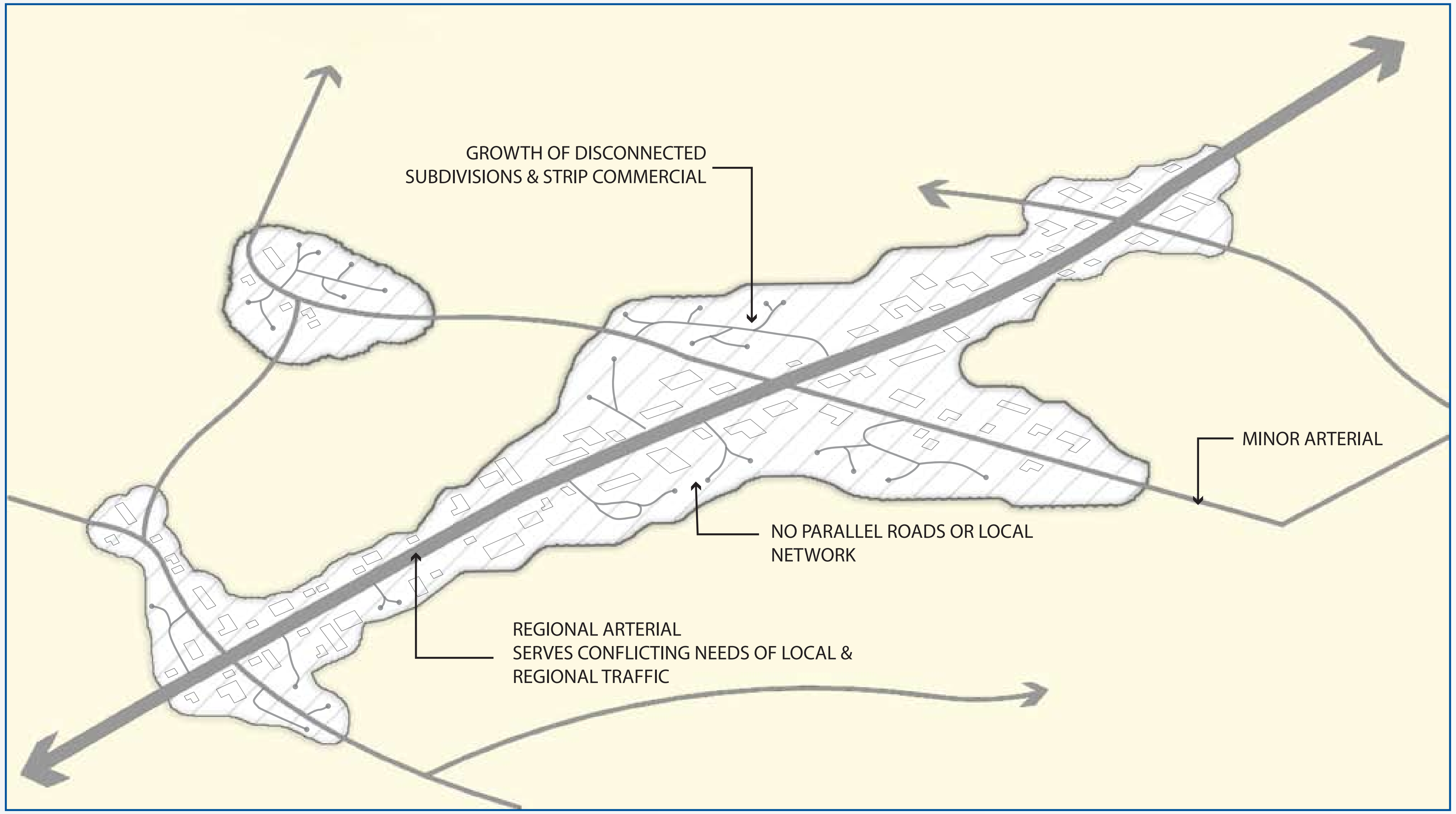
NODAL DEVELOPMENT

Overall travel demand in the Route 29 corridor will be substantially affected by the pattern of future land use. The illustration to the right shows a typical sprawl pattern of growth that has occurred on portions of the corridor. As the illustration shows, the Route 29 corridor has been the focus for much new growth and there is a desire for new development to be located in close proximity to the highway. For many corridor localities, Route 29 is the primary focus for higher density and intensity land uses.

Given the continuing importance of Route 29 in future growth and economic development, it is especially critical that the capacity of the corridor to accommodate this growth be preserved over the long term. Much of the new growth along the corridor in the past two or three decades has been stretched along a rural or suburban strip pattern rather than concentrated in nodes. Strip development consists of a linear pattern of unconnected, generally low density land uses each with separate entrances onto the highway. This type of development typically results in increasing congestion and safety problems as compared to concentrating growth into more compact nodes of development.

> Much of the Route 29 corridor has grown up in a strip pattern of development – low density subdivisions and commercial lots that have direct access onto the highway but are not connected to each other. This pattern is one of the root causes of safety and congestion problems over time.

Existing Sprawl Pattern of Growth



NODAL DEVELOPMENT - CONTINUED

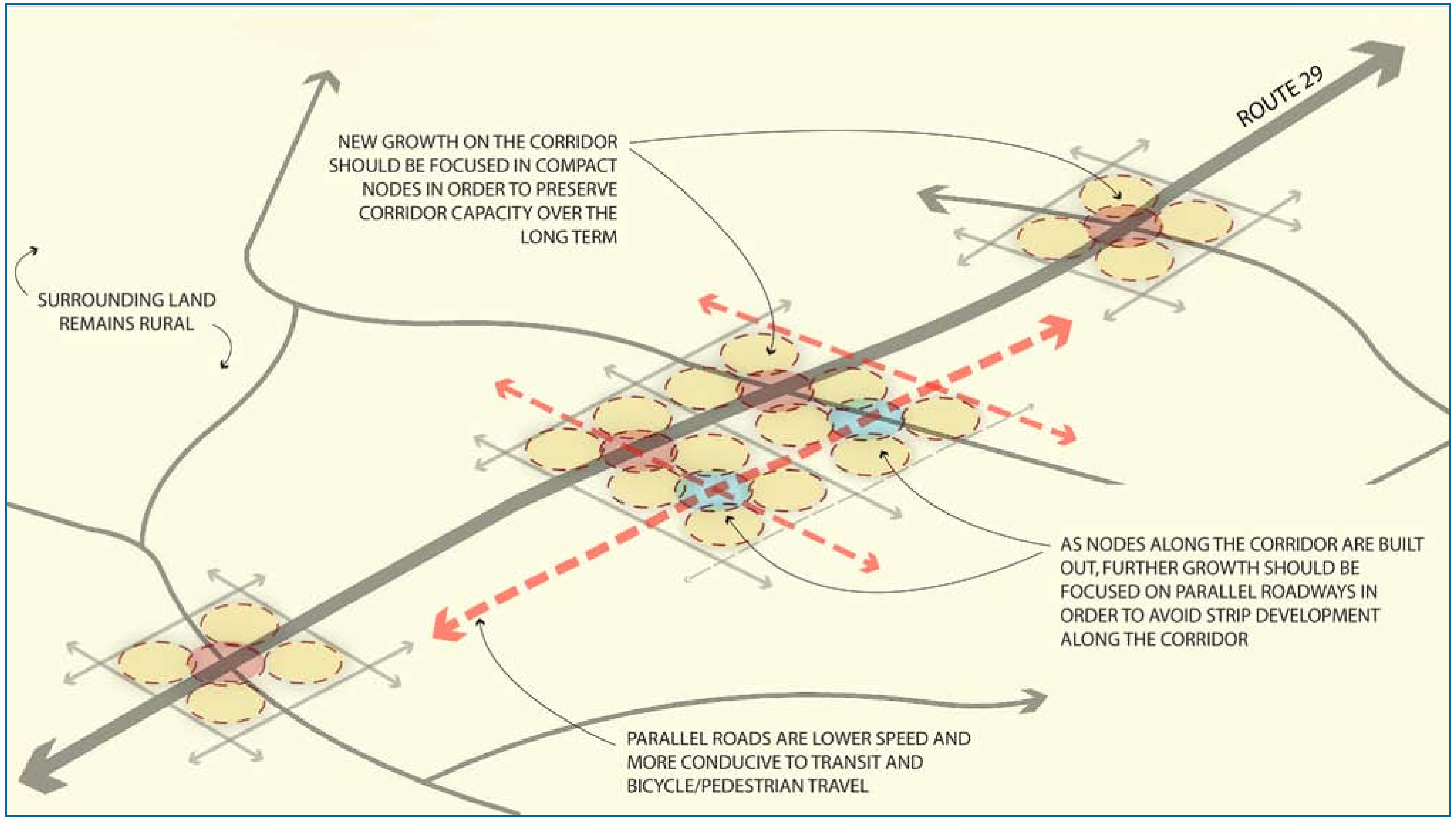
Development in compact nodes, by contrast, concentrates new growth in well connected and compact communities. These are separated by stretches of undeveloped or rural land without direct access onto the highway. The illustration to the right shows how nodal development patterns can improve the corridor function and create better connected and more accessible communities along Route 29.

Compact nodal development along the Route 29 corridor can bring about a more safe, cost effective, and efficient transportation and land use system than strip development. Moreover, the integration of land uses and circulation in this approach can also facilitate a number of the long term goals for Route 29, including:

- Working within existing market forces by locating the highest intensity uses at locations of highest accessibility and land value
- Preserving long term corridor capacity by limiting access to key locations
- Maximizing accessibility, and accommodating all modes of travel and all areas of the community

> Future growth on Route 29 should occur in compact nodes along the corridor. As these nodes build out, further nodes should be developed along a parallel roadway to keep the corridor from being "stripped out" and to preserve its capacity over the long term.

Potential Future Growth Along Nodes



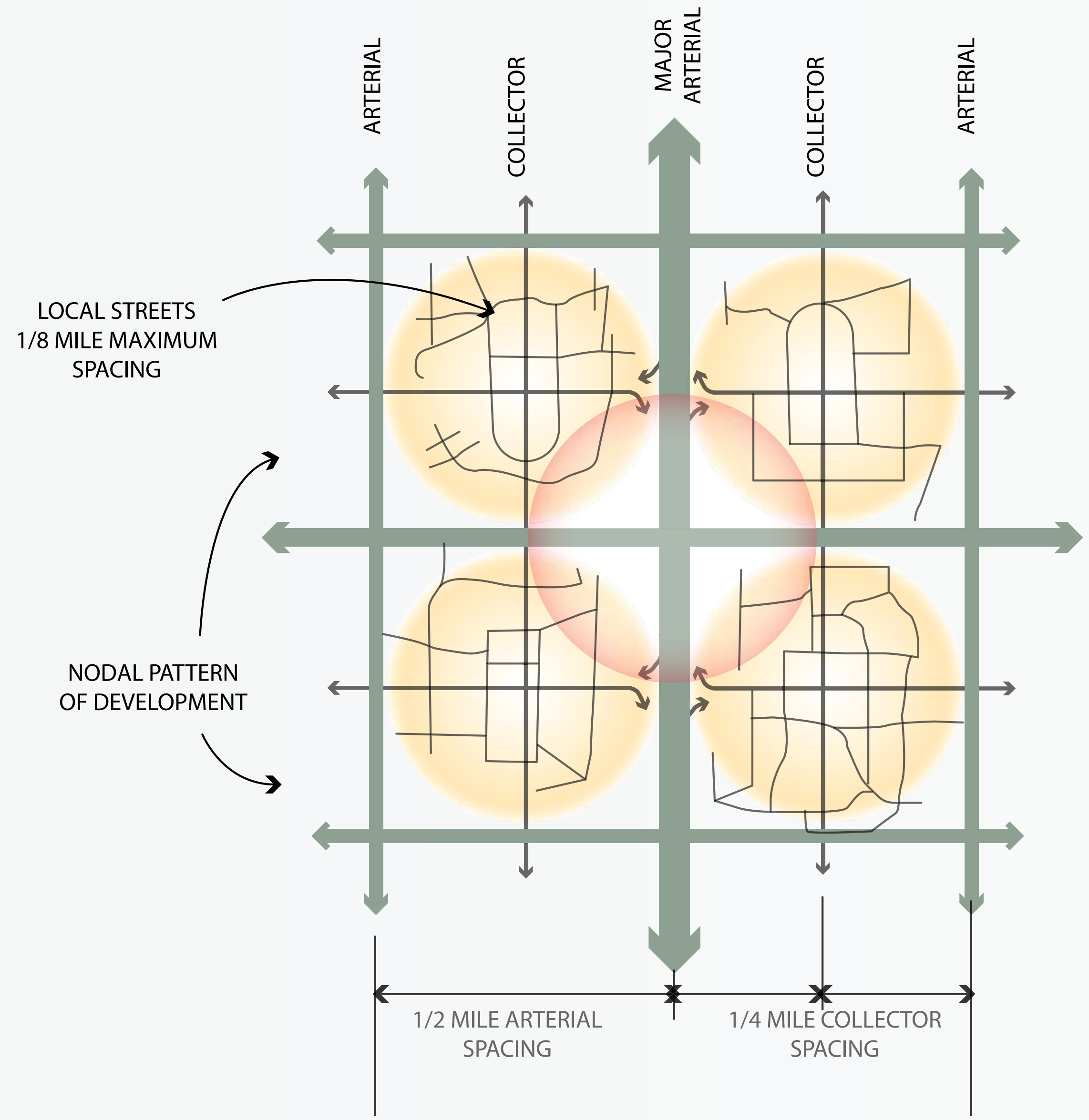
ROADWAY TYPES & ROADWAY SPACING

Highway travel involves movement through a network of roads. To achieve safe and efficient traffic circulation within the network, roadways are classified according to the their function in moving traffic. As traffic capacity and speed increase, typically the access to adjoining development should be more controlled. Access to roads should be managed so they perform the function they were built to serve. The following are basic standards for levels of access on various classes of roadways:

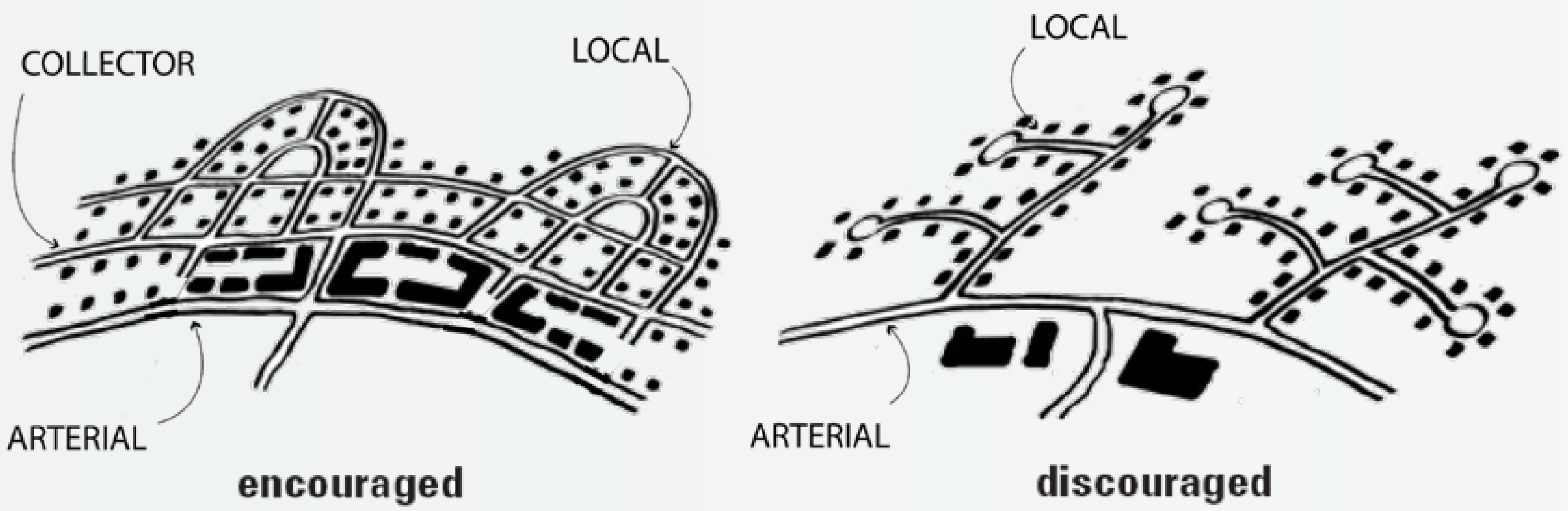
1. **Interstates** offer the highest level of mobility and are intended to carry the greatest amount of traffic at the highest speeds. Accordingly, they provide no direct access to property, allowing access only at interchanges.
2. **Principal Arterials** provide high levels of mobility and convey large amounts of traffic over relatively long distances. Direct property access may be provided but require careful management to preserve arterial mobility and safety.
3. **Minor Arterials** interconnect with and augment the principal arterial system, distributing traffic to smaller geographical areas. Access provisions are similar to principal arterials.
4. **Collectors** provide traffic circulation within residential and business areas. Trips on collectors are shorter distance local trips at lower speeds, so they can safely provide a higher amount of property access.
5. **Local streets** provide the lowest level of mobility and are intended to offer direct access to abutting properties.

Some of the factors in increasing congestion and high traffic crash counts on many principal arterials include the increase in driveway entrances, intersections, and traffic signals installed to serve development. These adversely affect the arterial's function of moving traffic safely. Sections of Route 29 in particular have seen these problems worsen over the years. Maintaining the functional integrity of the highway network over time preserves its overall travel capacity and safety, thus reducing the need to expend highway related revenues to replace lost capacity. By planning for a hierarchy of roadway types designed to serve differing transportation needs and by implementing the access management standards in VDOT's Road Design Manual, the long term capacity of Route 29 can be preserved over time. This capacity can be achieved simultaneously with providing safe access to destinations along the corridor.

Future growth on Route 29 should occur in compact nodes along the corridor. As these nodes build out, further nodes should be developed along a parallel roadway to keep the corridor from being "stripped out" and to preserve its capacity over the long term.



Proposed roadway types and preferred spacing within a corridor "node" of development



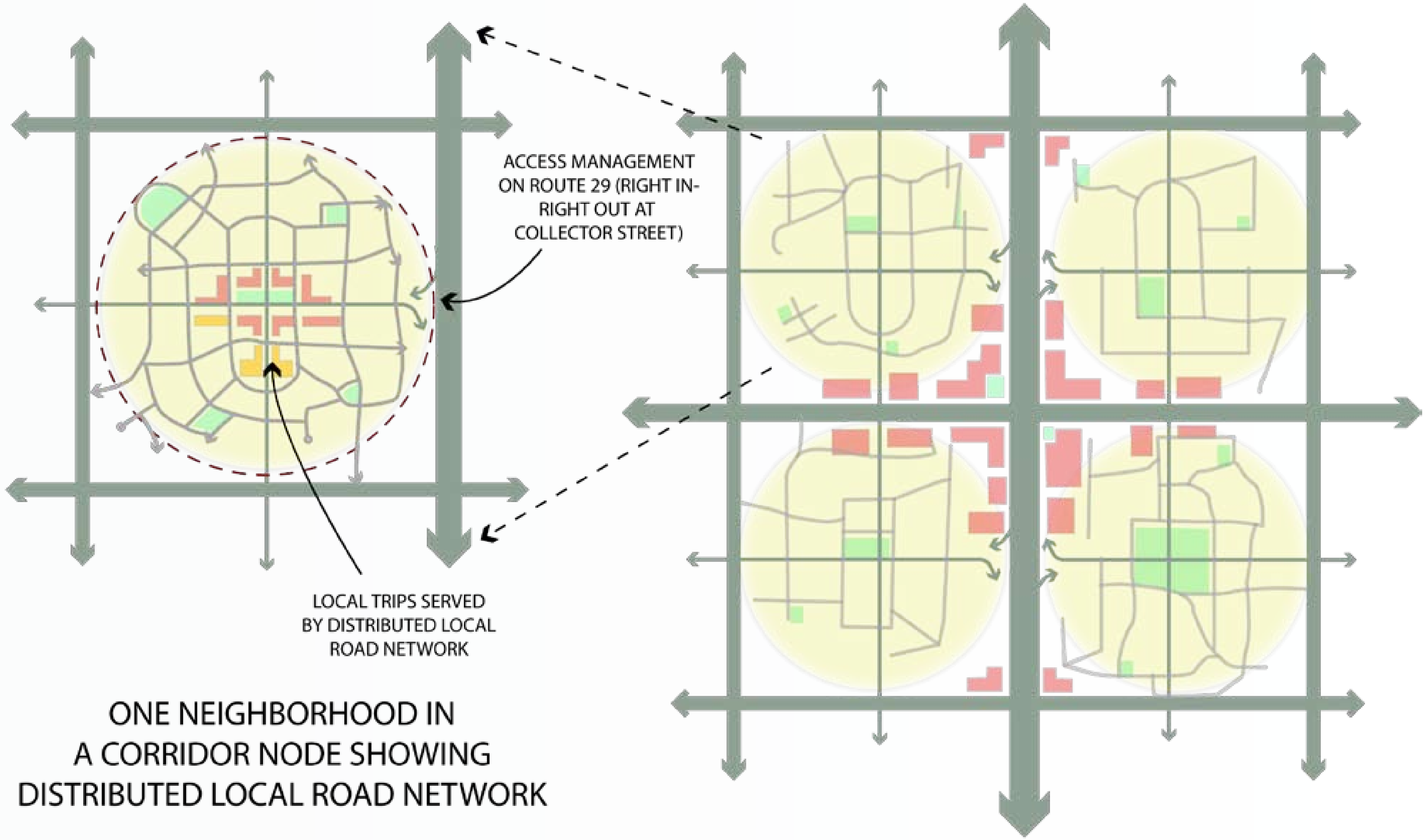
There should be a connected system of roadways organized by functional type to serve the Route 29 corridor

DISTRIBUTED NETWORKS

One of the most fundamental principles for efficient transportation for all modes is the establishment of a well connected and distributed network of streets. Advantages of an interconnected street network include enhanced access, reduced congestion, and more responsive emergency services. Well-connected residential areas promote pedestrian activity and encourage walking in place of driving for local trips. Additionally, this framework promotes mixed-use development patterns with smaller block sizes and a greater diversity of building types within close proximity. A grid of blocks is also an important element in creating a walkable area. Neighborhood blocks help to create a comfortable scale for pedestrians by creating an increased sense of location and direction, breaking down the space between intersections and destinations, and providing increased visibility for businesses and offices.

The recently adopted Secondary Street Acceptance Requirements (SSAR) establishes requirements that newly constructed streets need to meet to be accepted into the secondary system of state highways for perpetual public maintenance. The SSAR as a whole will ensure that new streets added to the state system are part of a network and that the new street network is well connected. Over time, the application of these standards will support the objectives of the Route 29 corridor plan by providing an alternative to using Route 29 for short local trips. Further, in communities and land uses directly fronting the corridor, SSAR standards ensure that new development along the corridor is interconnected and that local trips can be distributed throughout new communities. The diagram to the right shows how the distributed network concepts that are contained in the SSAR can be incorporated into the nodal development pattern for the Route 29 corridor.

The diagram above shows how a distributed network of local streets can help take local trips off Route 29 and can be incorporated into the nodal development pattern for the corridor.



ONE NEIGHBORHOOD IN A CORRIDOR NODE SHOWING DISTRIBUTED LOCAL ROAD NETWORK

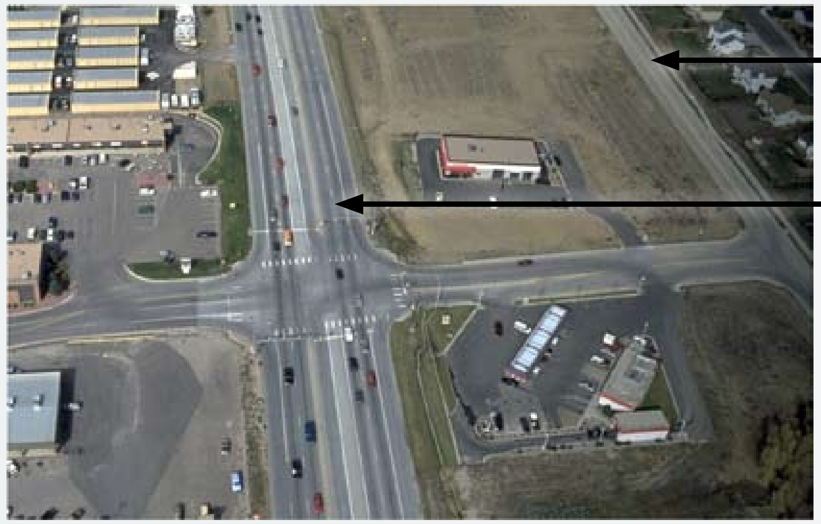
CORRIDOR NODE WITH DISTRIBUTED NETWORK OF ROADWAYS

Aerial photograph showing how distributed networks allow multiple routes for local trips in an urban context

ACCESS MANAGEMENT

Access management is a comprehensive approach for controlling the location, spacing, design and operation of entrances, street intersections, median openings, and traffic signals. Therefore managing access seeks to limit and separate entrances, intersections, median openings, and traffic signals in order to maintain and improve the flow of traffic and enhance public safety. Access management was one of the strongest themes to arise from the public input process for the Route 29 corridor. Currently, Virginia has newly adopted standards to better control access contained in Appendix F of VDOT's Road Design Manual. However, their effectiveness is limited by a site-by-site approach to the approval of connections to the highway. In addition, as parcels are subdivided, new property owners expect access to the highway. In high growth areas, the subdivision of land leads to the potential for more and more new entrances. The cumulative impact of strip development along principal arterials results in a deterioration of their function, creating unsafe and congested traffic operations.

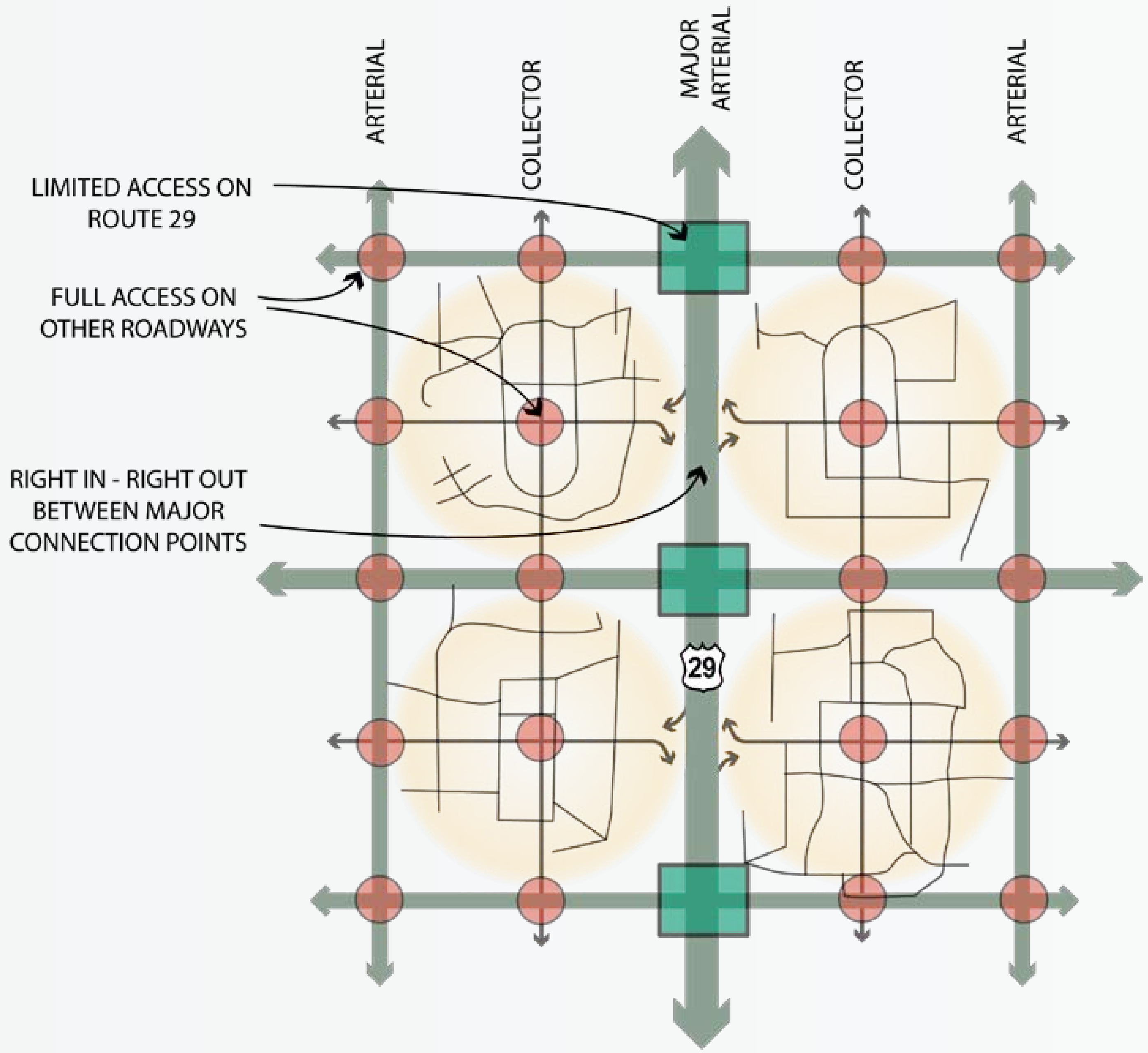
In order to balance the increasing pressure for access onto Route 29 with the long term need for management of the corridor as a statewide transportation resource, it is important to consider new approaches and protocols for planning and approving access points in the future. One concept for future consideration on Route 29 is to establish some form of regulatory requirement for localities to work with VDOT during their comprehensive planning process to designate appropriate locations for entrances to parcels that do not have an existing connection to the highway. The process could include recommendations for legislation for local comprehensive plans that would require the inclusion of all existing and future access points onto Route 29. In addition, such a plan could also suggest alternative access for all parcels that front Route 29 – whether through potential access easements, parallel roads, or connections to secondary roads. The establishment of this type of access management plan within each locality's adopted comprehensive plan could help ensure that future land use approvals take into account the future viability of Route 29 and its regional transportation function. The diagram to the right shows a concept for access management appropriate to the nodal concept of development for the Route 29 corridor.



Backage Road allows access to Residential development without driveways fronting on the main highway

Development is accessed from secondary road but still has visibility from highway

Photograph showing how parcels developing along a major arterial have managed access to preserve capacity of the arterial



ACCESS MANAGEMENT CONCEPT FOR NODES ON THE ROUTE 29 CORRIDOR

CONNECTION TYPES

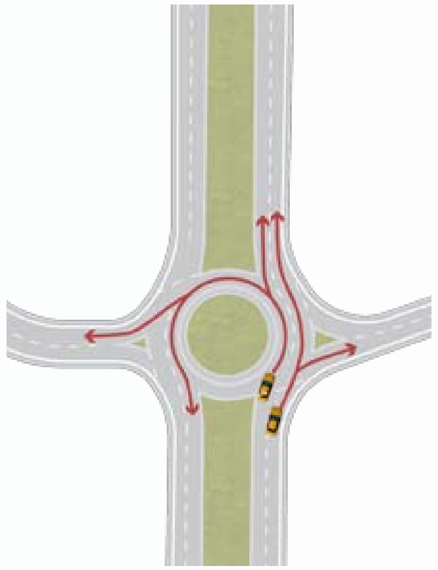
Connections are generally major access points onto a highway such as intersections and interchanges. A goal for the Route 29 corridor is to plan for and manage the development and conversion of connection types over time. Although the specific recommendations for connections will vary, it is useful to establish a general hierarchy and set of recommendations for connection types that could apply corridor-wide.

AT-GRADE INTERSECTIONS

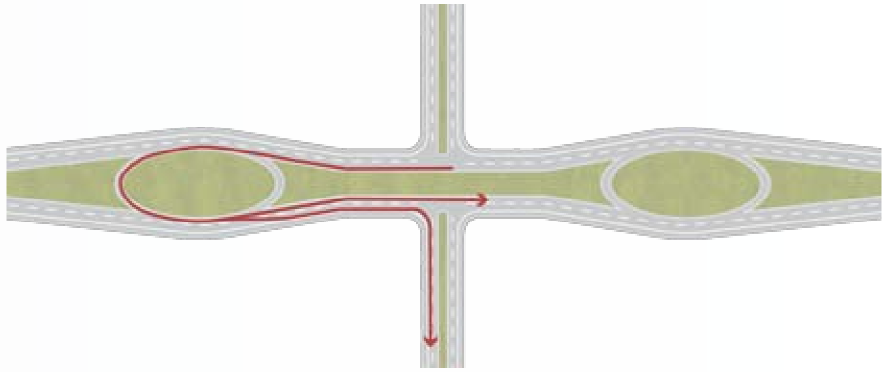
For a principal arterial roadway such as Route 29, the number of at-grade intersections should be minimized in order to preserve the corridor's critical transportation function and improve safety over the long term. Currently, most existing at-grade intersections on the corridor are signalized. Over the long term, these intersections should be converted to safer connection types, especially as traffic volumes increase. For example, installing median u-turn crossovers in place of an existing signalized intersection eliminates unsafe left turn movements at the intersection and moves them to median crossovers beyond the intersection. For median u-turn crossovers located on the major road, drivers turn left off the major road by passing through the intersection, making a u-turn at the crossover, and turning right at the crossroad. Drivers wishing to turn left onto the major road from the cross street turn right onto the major road and make a u-turn at the crossover. Dedicated turn lanes and wider medians improve the safety for this type of turn movement. This design can also be modified to accommodate a narrow median. U-turn crossovers may be appropriate along the Route 29 corridor in situations where a grade separated interchange is not warranted, but there is a need to close existing median breaks and provide an option for u-turn access to properties where the median break has been eliminated. Some sections of the northern portion of the corridor have a significant number of median breaks and at-grade intersections, which create safety problems. By closing these median breaks and providing safe u-turn options, these portions can be made safer and overall corridor performance can be improved.

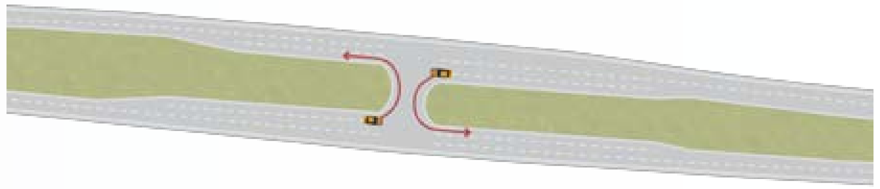
A roundabout on Route 29 may be called for in special situations where there is significant cross traffic to be accommodated and U-turn crossovers are less feasible. A roundabout in place of a traffic signal – when properly located and designed- can achieve significant improvements in safety, while maintaining or even improving travel time during periods of congestion. The roundabout on Route 50 at Gilbert's corner is an example of a roundabout on a well-traveled but rural stretch of a significant corridor in northern Virginia. The illustrations below show a variety of at grade connection design options that could be considered in select locations along the Route 29 corridor.

CONNECTION TYPE	CHARACTERISTICS	POTENTIAL BENEFITS & APPROPRIATE LOCATIONS
AT-GRADE		
Roundabout Crossover	A channelized at-grade intersection around a circular island in the median	Appropriate as a replacement for a traffic signal at existing intersections in rural sections of the corridor with sensitive scenic or environmental resources
U-Turn Crossovers	Widened medians and controlled U-turns with dedicated turn lanes away from major crossovers	Appropriate approach to eliminating left turns at existing at-grade intersections and moving them to median crossovers beyond the intersection (see illustrations below)
Signalized Intersection	A traffic signal at an at-grade intersection	Congestion and safety concerns make this connection generally not appropriate for a regional transportation facility like Route 29, except as an interim solution
GRADE SEPARATED		
Urban Diamond Interchange	Compact diamond interchange – cross street may be over- or underpass	Appropriate for intensely developed areas – accommodates high traffic with minimal intrusion into adjacent areas
Quadrant intersection	A right angle roadway connection providing at-grade connections between two legs of a grade-separated overpass connection (see illustration below)	Appropriate for retrofitting into existing suburban strip-style development or to serve new urbanizing nodes. Allows for all direct access onto the main highway to be right turns. Integrates well into a distributed local street network while allowing for development to be placed directly adjacent to interchanges.



Roundabouts may be considered as a replacement for signalized intersections in some parts of the corridor. Properly designed roundabouts can improve safety and travel time as compared to a signalized intersection





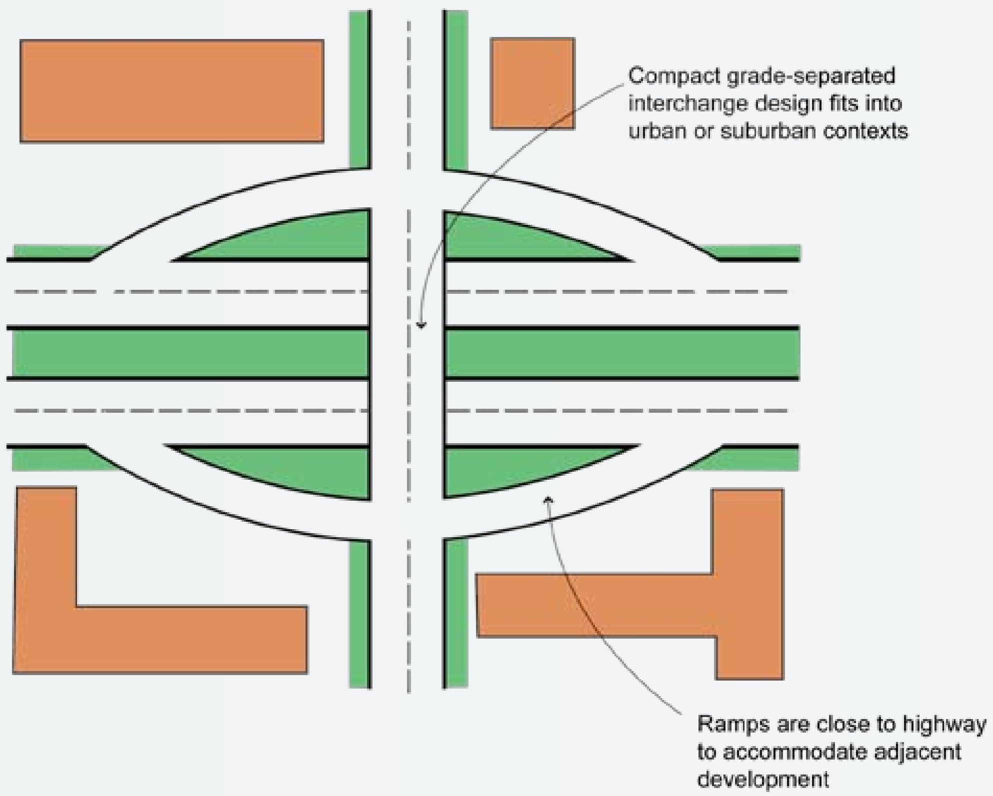
Two concepts for a U-turn on a principal arterial. In the "bowtie" concept above, an existing at grade intersection has been replaced with a widened median accommodating u-turns for indirect access to cross streets. The lower illustration shows a standard u-turn median break with accel and decal lanes added for greater safety

CONNECTION TYPES - CONTINUED

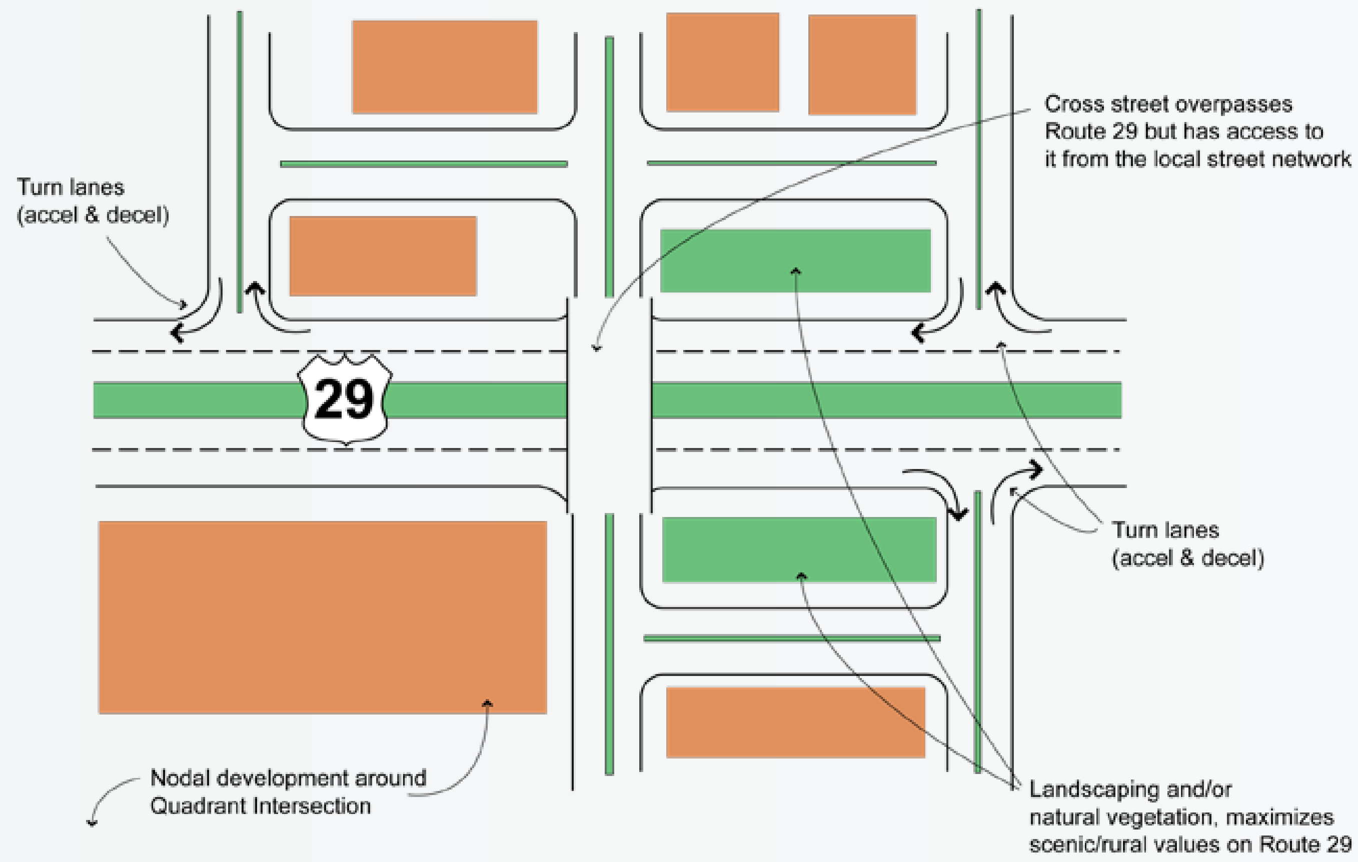
GRADE-SEPARATED INTERCHANGES

There are a number of locations along the corridor that could potentially have existing at-grade intersections converted to grade-separated interchanges. Many of the locations that are most critical for adding grade separations on the Route 29 corridor are in already heavily developed stretches. In these cases, the two grade-separated connection types described below are appropriate (depending on site conditions) to be retrofitted from at-grade connections. The urban diamond interchange, which is a more compact version of the normal grade-separated diamond interchange, is suitable for intensely developed areas on a corridor. There are several variants, depending on site conditions, and ramps can either be separated minimally from the highway, or – if space is severely limited – can be attached to the highway with retaining walls.

A quadrant roadway intersection introduces an extra roadway connection between two legs of an intersection (see illustration to right). This allows for left turns to be taken off the main highway, or even for the intersection to be converted to a grade-separated connection. This type of interchange also integrates well with parallel collectors and a grid of local streets. The most important feature of this type of connection is that it has minimal land acquisition needs and will preserve the opportunities for high visibility private development sites all the way up to the intersection. Both of these features are of critical importance in an already developed urban context. In addition, this type of crossover integrates very well into a distributed network and parallel collector system, since the quadrant roads are not ramps and can become part of the system of blocks in a developed urban setting.



URBAN DIAMOND INTERCHANGE DIAGRAM

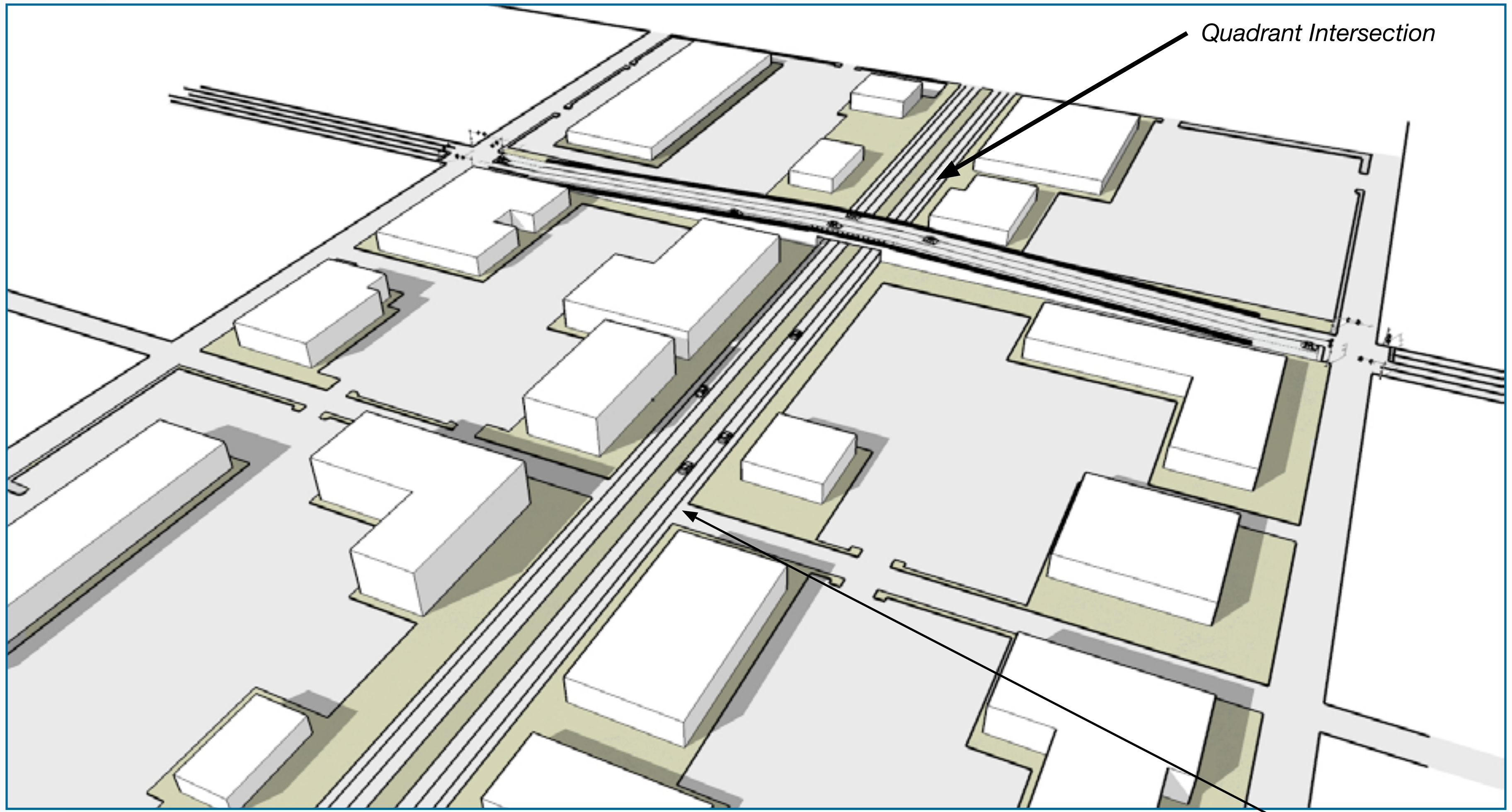


QUADRANT INTERSECTION DIAGRAM

CONNECTION TYPES - CONTINUED

PUTTING IT INTO PRACTICE

Much of the Route 29 corridor traverses already developed areas that will be challenging to convert to safer and more efficient transportation and land use patterns. The illustrations below show some ways of accommodating the recommendations in this study into already developed contexts. In particular, they illustrate how a combination of managed access and the addition of a quadrant intersection can preserve traffic capacity along the corridor while fitting into a local street network. They also show how existing or future development that fronts on the corridor can be accommodated with a minimum of right of way acquisition and a maximum of frontage for businesses that rely on motorist visibility from the roadway. The highway frontage can also be attractively landscaped without losing the visibility of adjacent businesses.



The above illustration shows a quadrant intersection incorporated into an existing developed area with businesses fronting directly on the highway that are accessed from the adjacent secondary road network.

The illustration above shows a quadrant intersection as a concept for future road improvements in Ruckersville in Greene County. In this case, existing and future development have been incorporated into a nodal pattern around a grid of local streets. This illustration is from the Greene County Multi Modal Plan for the Thomas Jefferson Planning District Commission (2009)

APPLYING THE NODAL PATTERN

PUTTING THE CONCEPTS INTO PRACTICE
The above sections described a series of recommendations for developing more efficient land use and transportation patterns for the Route 29 corridor. An obvious question to ask, however, would be – how does this translate into everyday planning practice? The series of illustrations and steps below describe how this system of land use and transportation planning could be translated into actual practice through a hypothetical land use plan for a future node or growth area along the US 29 corridor.

The approach described below for integrated land use and transportation planning could be incorporated into the comprehensive plan update process by communities along the corridor. It is most appropriate for the smaller scale and more detailed treatment of issues that are encountered in an Area or Sector Plan, but could work at the scale of a countywide comprehensive plan as well.

This approach contrasts with the typical land use planning process that has been practiced sometimes in the past, where land use “blobs” are laid out for future growth with little consideration for the future transportation system that will be required to service such a land use pattern. Typically in past practice, transportation decisions were made at the time of property development that were not necessarily considering the transportation system for the whole area in the future. This resulted in a frequently disconnected system of roads that experienced congestion and safety problems as land uses intensified over time.

Using the enhanced approach defined below calls for more up front planning time and effort, and especially for more coordination with the landowners and residents of a future development area. However, the up front investment can be almost negligible in comparison to the future planning, acquisition and transportation investment efforts that may be needed to fix a poorly planned transportation and land use problem.

1. EXISTING CONTEXT - A TYPICAL RURAL CROSSROADS

The illustration above shows a typical rural section of the US 29 corridor. While not a specific place, it illustrates typical existing conditions along the corridor. Characteristics of these rural contexts include a generally disconnected pattern of rural roads and subdivisions, natural features and quite often a crossroads with a rural roadway around which future growth typically centers.


2. LAYING OUT THE SPACING GRID

The first step in planning for future growth is to identify and lay out the basic “spacing grid” of a transportation network. The spacing grid should be based on recommendations and diagrams in the preceding pages, and should be oriented primarily so that the center of the grid is along the US 29 axis.

3. CONNECTING EXISTING ROADS TO COMPLETE THE FUTURE TRANSPORTATION NETW

The next step in the process is to begin to connect the existing pattern of rural roadways to create a future transportation network to serve the future node. This step will require adjustments to avoid sensitive natural, historic or other important areas and to minimize disruption of the existing pattern of land. In addition, existing roads can be connected into the future transportation network.

4. LAY IN FUTURE NEIGHBORHOODS & FUTURE LAND USES

The final stage in the planning process sis that of laying in the basic system of neighborhoods in the node to fill in the shape of the future growth area. the original spacing rid has been considerably adjusted to accommodate local conditions, but, the transportation network still follows the principles of efficient transportation planning and provides a useful context for efficient land use planning.

BICYCLE & PEDESTRIAN TRAVEL

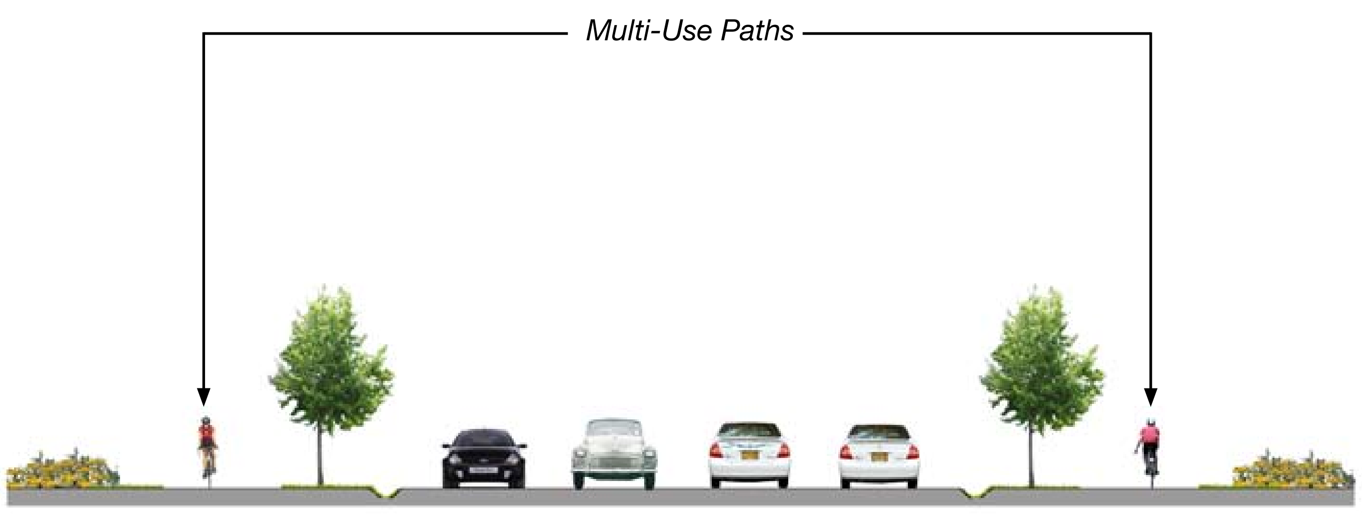
With very few exceptions, current conditions along the Route 29 corridor are not safe or conducive to either pedestrian or bicycle travel. The wide variety of context zones along the corridor – from urban to suburban to rural – necessitate different approaches to accommodating bicycle and pedestrian travel. For bicycle and long-distance walking trips on the rural stretches of the corridor, design accommodations should include multi-use paths adjacent to the corridor with a minimum width of 8-10 ft. This is generally the safest approach to non-vehicular travel in high speed corridors. Where rights of way are limited, however, bicycle travel can be accommodated with 8 foot shoulders within the travelway. This approach is generally consistent with the recommendations for portions of the Route 29 corridor in the 2004 Phase 2-3 Report.

In more heavily developed areas, design solutions should include the provision of wide (10-12 foot) sidewalks or multi-use paths for walkable streetscapes with pedestrian-accessible shopping, and dedicated and signed bicycle lanes. Crossing the roadway should be done either with at-grade crossings specifically designed to safely guide pedestrians and bicycles across the street, where traffic speeds and volumes are conducive to this approach – or bike/ped over- or under-passes where at-grade crossings would be too hazardous. This approach is consistent with the recommendations in the Places 29 report, which specifically located a number of potential locations for these overpasses in the Charlottesville area.

Finally, bike and pedestrian issues need to be addressed off the corridor as well as on. Both existing and proposed on-street bike and pedestrian networks should be closely integrated into a wide network of bicycle and pedestrian infrastructure formed by a combination of low-speed streets, multi-use paths, and trails on the local and parallel collector streets adjacent to Route 29 proper. Within this overall network, bicycle lanes and sidewalks should be installed or retrofitted wherever feasible on adjacent roads, so that the Route 29 corridor is not an isolated transportation resource, but instead is integrated into a multi-modal network that provides better accessibility and more choice to residents and visitors in the surrounding area.

In suburban environments, bicycle lanes can provide a designated path beside traffic on an existing roadway.

Pedestrian bridges provide a safe separated path to cross a road without disrupting the flow of traffic. The above illustration shows a potential pedestrian overpass across Route 29. (Places 29)

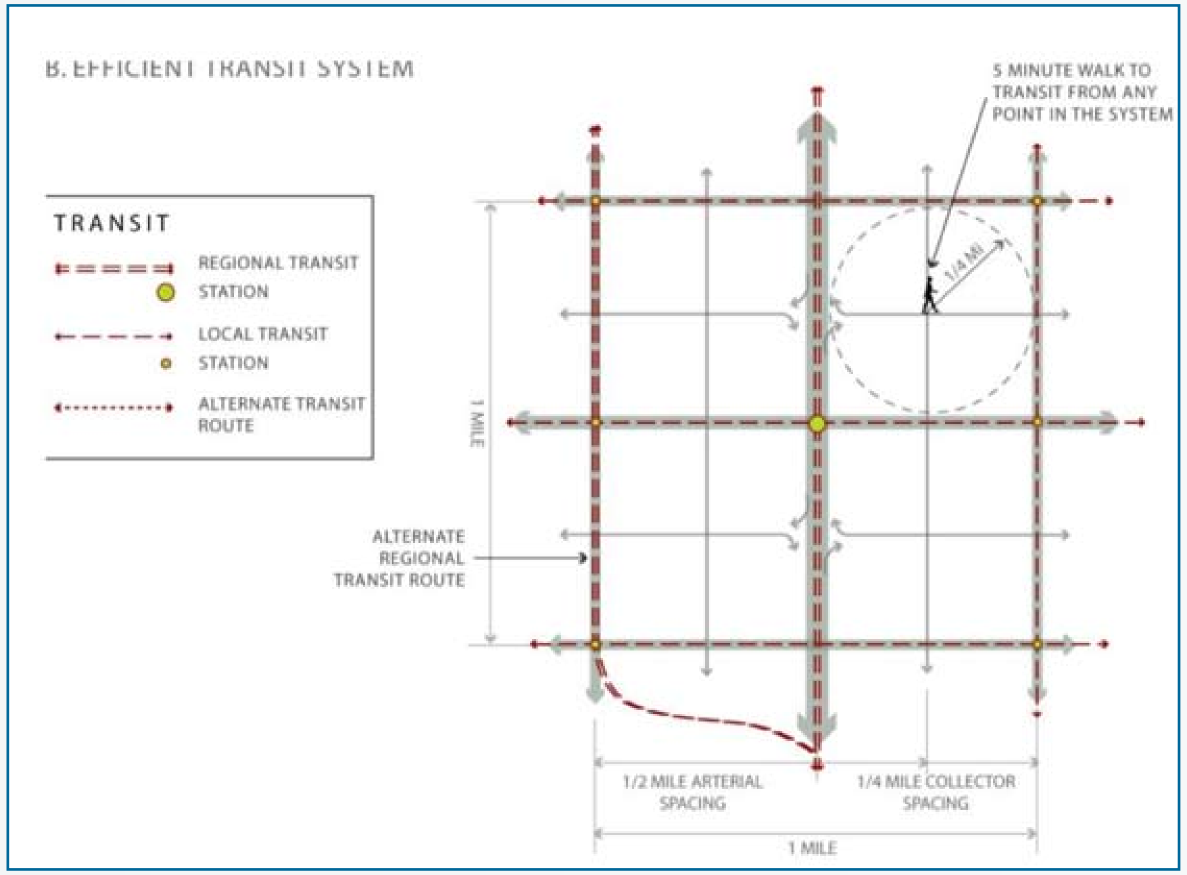


Bicycle and pedestrian travel along higher speed or windy rural roads can be accommodated safely with off-road paths separated from auto traffic.

LOCAL & REGIONAL TRANSIT

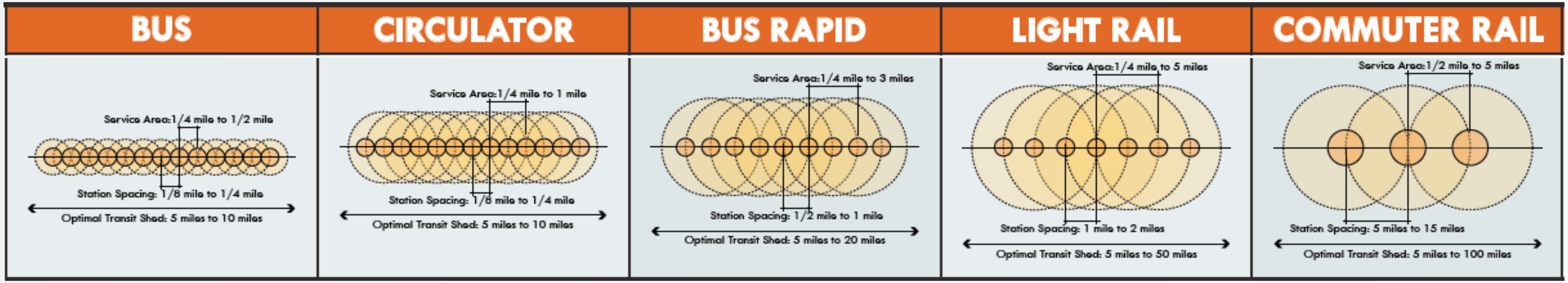
One of the consistent themes heard from localities in the Route 29 corridor planning forums was the need for expanding transit service in the corridor. This was repeatedly brought up as an idea whether in the urbanizing segments close to Northern Virginia or in more small town and rural areas on the corridor. While enhancing transit service is only one aspect of a broad-based strategy that is needed to address the current and future conditions on the corridor, it is nevertheless a strategy that can bring considerable benefit over the long term. It is important to recognize that rail service and transit are critically dependent on other modes for their success.

Transit along the Route 29 corridor can be improved on many scales. Offering increased demand response transit will provide mobility options for local trips within neighborhoods to the grocery store or doctor's office, especially for elderly or disabled persons. Expanding fixed route bus services can decrease automobile dependency for commuters and provide alternate transportation within nodes of development. Passenger rail service will provide more options for long-distance travel between nodes. The spacing of station areas depends on the type of transit service. For example, a local bus service will have transit stops every 1/8 to 1/4 mile which corresponds to a 5 minute walk. Providing connections between local and regional transit systems ensures a seamless transit network and makes transit a viable alternative to the personal automobile.



The diagram above shows the potentials for overlaying a transit network onto the basic roadway network proposed for urbanizing sections of Route 29. Two options of locating regional transit are shown - either on the main regional arterial (for example, within the median), or off the main corridor along a parallel arterial or collector roadway.

The chart below defines ideal station area characteristics based on 3 scales of transit center



TRANSIT SUPPORTIVE AND TRANSIT-ORIENTED DEVELOPMENT

Transit-oriented development (TOD)- Compact, mixed-use development near new or existing public transportation infrastructure that serves housing, transportation, and neighborhood goals. Its pedestrian-oriented design encourages residents and workers to drive their cars less and ride mass transit more. Following are some basic planning principles for making enhanced rail service in the Route 29 corridor a good fit with existing and planned communities. In general, these principles apply for communities around rail stations in general – whether they are transit stations within the Northern Virginia commute-shed or whether they are small towns or cities that are intracity rail stops outside the commute-shed:

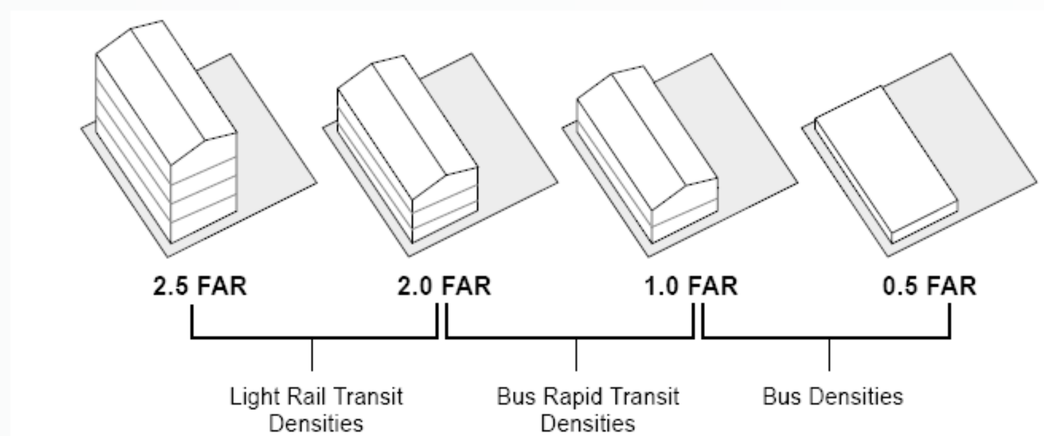
Compact Development & Mixed Use - Transit-oriented design improves mobility and leverages public investment in transit systems by using pedestrian and transit-friendly development patterns. Transit stops should be centrally located within compact, walkable areas to ensure convenient access for pedestrians. A one quarter-mile radius area, or the distance that a pedestrian can comfortably travel in five minutes, is referred to as the pedestrian shed. Transit ridership is directly influenced by the density and diversity of uses within the pedestrian shed. High density, mixed-use development maximizes ridership potential by locating offices, retail, and commercial uses, and residences within walking distance to transit.

Density and Transit - The primary market area for transit-oriented development is within a quarter mile and the secondary area within a half mile of the station. Because the station market area is fixed (roughly 500 acres), density directly influences the number of person trips generated and potential transit ridership. Higher capacity transit systems, such as light rail transit, require higher densities to generate enough ridership to help pay the higher costs. Density is expressed in terms of floor area ratio (FAR), which is the total building area divided by the total lot area. Bus transit is supported with FARs of at least 0.5 and preferably over 1.0. Light rail transit is supported with FARs of 2.0 or greater.

Compatible Street Networks - Streets and corridors provide the framework for Transit-Oriented Development. Effective street design is critical to the success of a mixed-use activity center. To ensure a lively street setting, street networks must avoid concentrating travel on a few large roads. A more diverse roadway fabric provides multiple routes of access and evenly distributes activity to create a more energized urban environment.

Area of compact mixed-use development within ¼ mile of transit station

Transition area - most people will choose not to walk more than a half-mile to a transit stop



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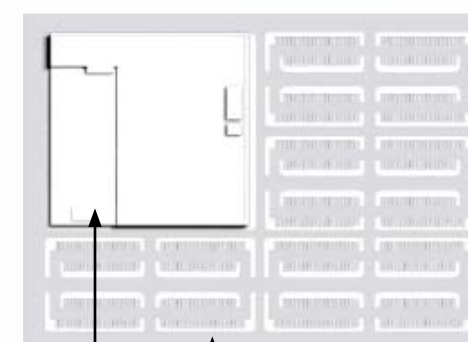
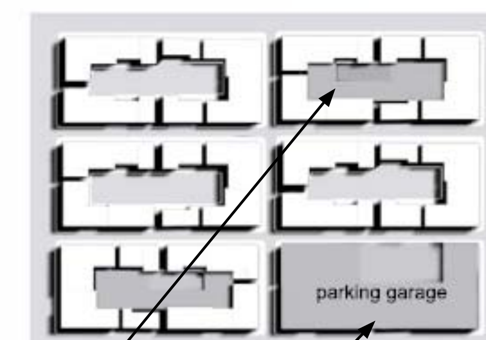


Surface parking

Big box retail store

Auto-Dependent Low Density Development

Structured parking allows sites to redevelop lot-by-lot and block-by-block



Smaller retail stores and businesses

Structured parking takes up less space

Multimodal Transit Supportive Development

> Compact mixed-use development should surround the transit station within ¼ to ½ miles, the distance riders are willing to walk to the station.

TRANSIT SUPPORTIVE AND TRANSIT-ORIENTED DEVELOPMENT - CONTINUED

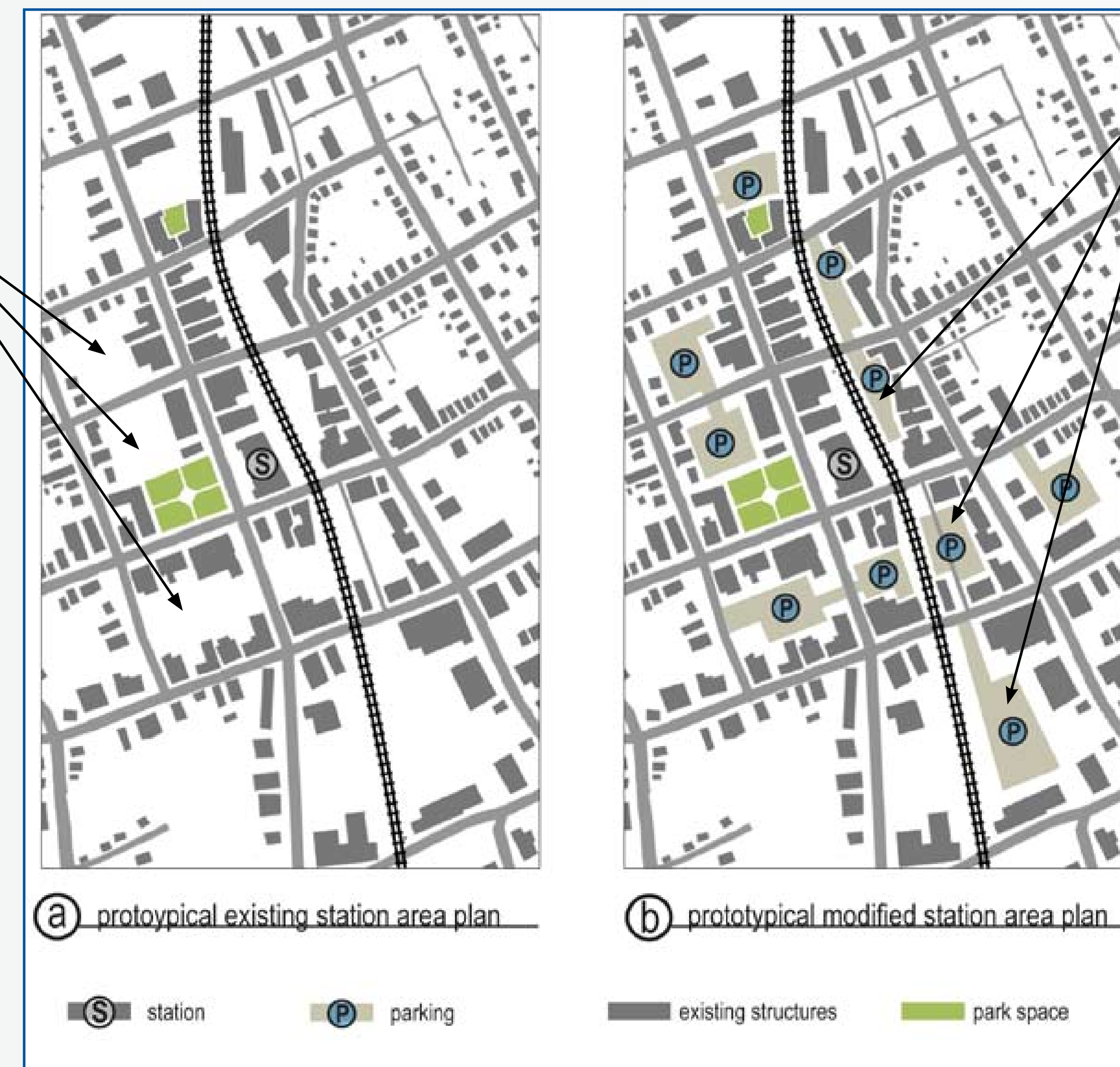
PUTTING IT INTO PRACTICE – PLANNING FOR RAIL SERVICE IN A COMMUNITY

How do general principles for transit-supportive development relate to planning for a typical community? The series of illustrations below describe how these planning principles could be translated into actual practice through a hypothetical plan for accommodating enhanced rail service in a typical small town along the Route 29 corridor. The illustrations below show the evolution of transit and rail station-oriented development in a typical small community near the Route 29 corridor. While not a specific place, it illustrates typical existing conditions in locations such as Remington, Orange, Nokesville, and other small communities that – while they may or may not be directly on the Route 29 corridor – could nevertheless be affected by increased rail service over time as rail travel options are enhanced. Characteristics of these small communities usually include a compact historic core, surrounded by traditional residential neighborhoods – both of which may be sensitive to the impacts of new development and higher density redevelopment resulting over the years from increased rail service. They also typically are poorly adapted to accommodating the increased parking demand put on the station areas – particularly for communities within the commute-shed.

By planning for compatible small-scale infill development and off-street parking so that the basic form and scale of the downtown is maintained over time, the series of illustrations below show how the traditional urban fabric of historic corridor communities could be maintained in the face of new growth from enhanced rail service.

A well distributed roadway network surrounding potential rail transit stations ensures cars and buses can efficiently get to the station area. Traffic on main arterial corridors like Route 29 can access the station areas in strategic locations without disrupting the local character.

Undeveloped vacant land prior to transit service



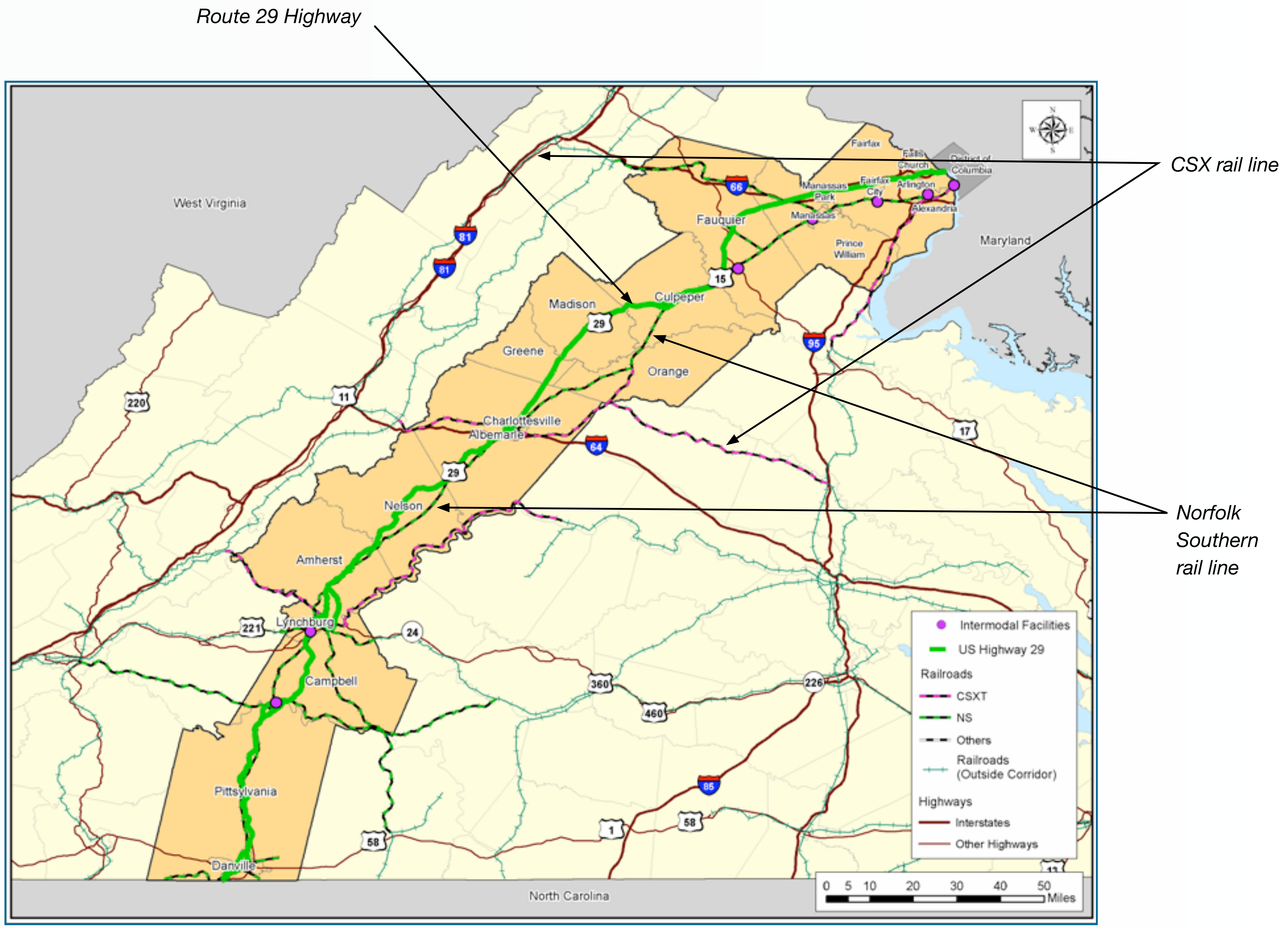
Structured parking for transit riders can strategically fit within existing development. Compatible small scale development can maintain the basic form of the historic downtown.

RAIL FREIGHT

Virginia's rail system is operated by twelve freight railroads and two passenger railroads. Of the twelve freight railroads, two are Class I national railroads and ten are Class III railroads. There are no Class II Railroads in Virginia. The vast majority of Virginia's freight rail track infrastructure is in the possession of the two Class I railroads, Norfolk Southern (approximately 60 percent) and CSX (approximately 30 percent). Five local freight railroads and two switching railroads also operate on the system. Both CSX's and Norfolk Southern's most heavily used lines cross the Route 29 corridor on their way from Hampton Roads in the east to the West Virginia border in central Virginia. Norfolk Southern's Virginia north-south main line runs parallel to Route 29 from Alexandria to Danville. Bottlenecks occur on the railroad lines within the Route 29 corridor near Lynchburg. These are shown in the map below. Virginia has also experienced marked growth in large-scale warehousing development often associated with high-volume, or "big box" importers. These importers' supply chains are highly dependent upon the uninterrupted flow of cargo – primarily containerized – through Virginia's ports, and subsequently through its highways and rail connections. Three major distribution centers are located along the Route 29 corridor. These are KB Toys near Danville (435,000 s.f.), Ericsson, Inc. near Lynchburg (107,000 s.f.), and Bausch & Lomb near Lynchburg (40,000 s.f.).

INTERMODAL CENTERS - Another important aspect of a freight system is its intermodal terminal network. These facilities provide the interface between freight rail and other transportation modes, including highway and water, and permit the transfer of goods from one mode to another. The map below displays the rail-highway intermodal terminals along Route 29, as well as additional system facilities.

RAIL ENHANCEMENTS - The rail corridor adjacent to Route 29 has numerous rail system points where infrastructure provides inadequate freight capacity or dimension, especially where growing freight and passenger needs must be accommodated over shared infrastructure. Ultimately, long-term rail enhancements will be needed along this corridor, such as additional tracks to separate passenger service, as well as additional sidings and bridge and overpass improvements system-wide.



Map of Intermodal Facilities and other facilities along the Route 29 corridor (Cambridge Systematics)

The only freight bottlenecks that affect the Route 29 corridor are on the highway in Northern Virginia, and along the CSX rail line east of Lynchburg.

ENVIRONMENTAL PROTECTION

The environmental setting and natural history of the Route 29 corridor are an important consideration in the ultimate planning design and recommendations over time. The entire corridor traverses the Piedmont and Blue Ridge ecological regions, with the majority of the corridor also passing through the Chesapeake Bay watershed, thereby being subject to the standards of the Chesapeake Bay Protection ordinances, administered in each local jurisdiction. In addition, the majority of the rural portions of the corridor pass through what may be called a “working landscape.” It is the complex interplay of human adaptations to the natural setting throughout history that makes up much of the interpretive richness and legacy of the Piedmont region. Environmental protection should be a key consideration in all management and improvement policies for Route 29 for at least two important reasons – the intrinsic importance of the corridor’s natural resources themselves, and the potential economic benefit to corridor localities deriving from interpreting these resources for visitors and tourists in the area.

Recommendations for environmental protection along the corridor should start with comprehensive mapping and database coordination to identify all natural resources in the area of any anticipated construction or improvements. Further, it is important that natural resource protection strategies be closely coordinated with cultural, historic, and other scenic resource protection strategies and that all of these support the opportunities and plans for interpretive programs along the corridor. The National Environmental Policy Act of 1969 (NEPA) requires agencies to prepare an environmental impact statement (EIS) for all major transportation projects describing any significant affects to the human environment. During the NEPA process, all environmental and historic impacts will be considered. Furthermore, the recommendations for scenic and natural resource protection – as well as the interpretive and marketing programs – outlined in the 2008 Journey Through Hallowed Ground Corridor Management Plan should be applied corridor-wide. In particular, Low Impact Design techniques directly within the right of way, such as bioswales and infiltration trenches to handle stormwater runoff should be considered. Both within and outside the immediate right of way, Context Sensitive Design should be followed as a general practice to ensure that natural qualities and values are being adequately considered and protected in any future corridor planning and design work.

Environmentally sensitive areas and natural resources along the must be protected during future transportation improvements.

Illustrations showing alternate treatments for Low Impact Design on rural roads (2008 Journey Through Hallowed Ground Corridor Management Plan)

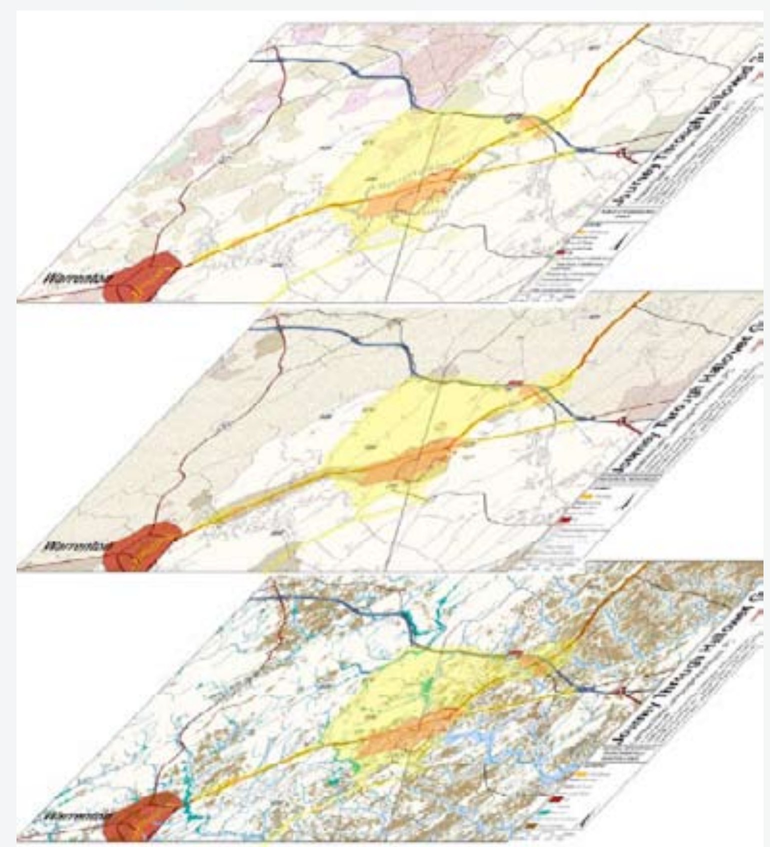


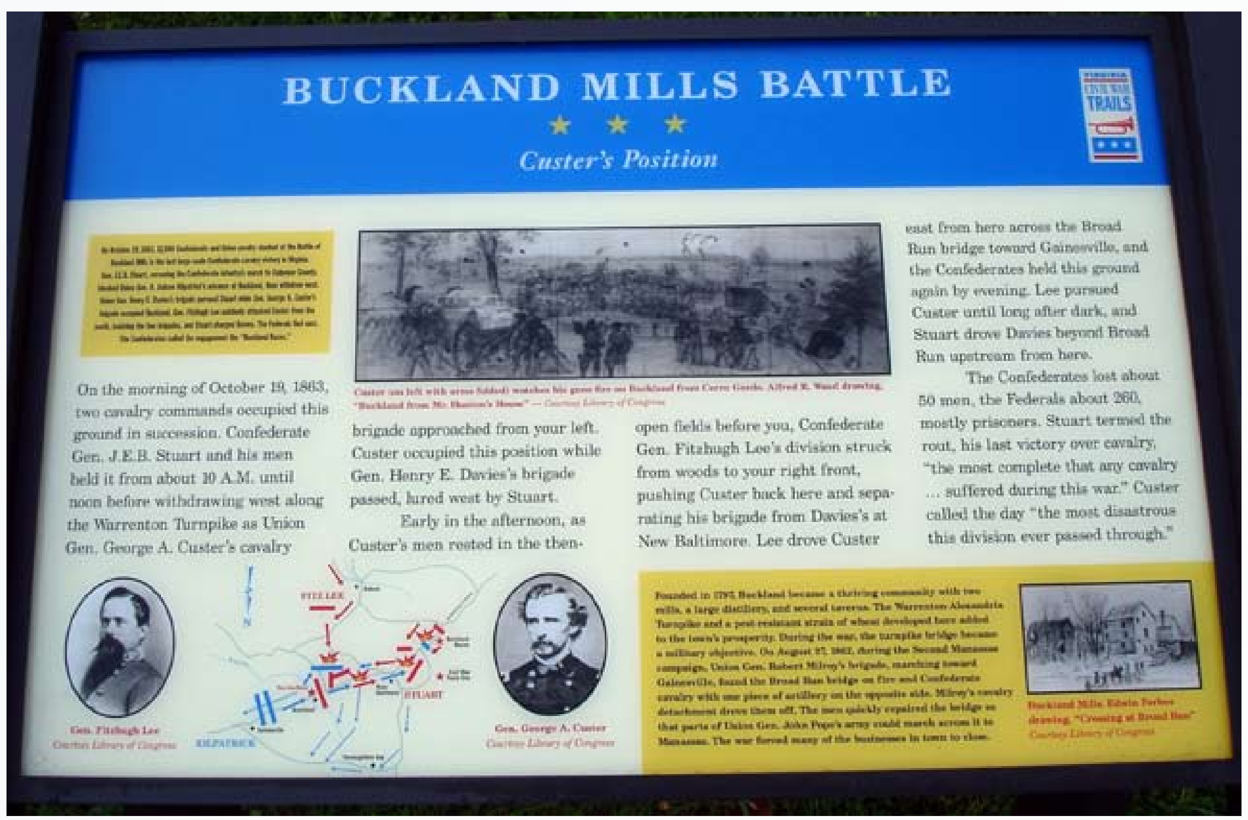
Diagram showing the technique for overlay mapping of scenic, natural, and historic resources in the Buckland area (2008 Journey Through Hallowed Ground Corridor Management Plan)

Innovative roadside storm water infiltration system as part of Portland’s “Green Streets” program – illustration credit EPA’s Smart Growth and Green Building Division

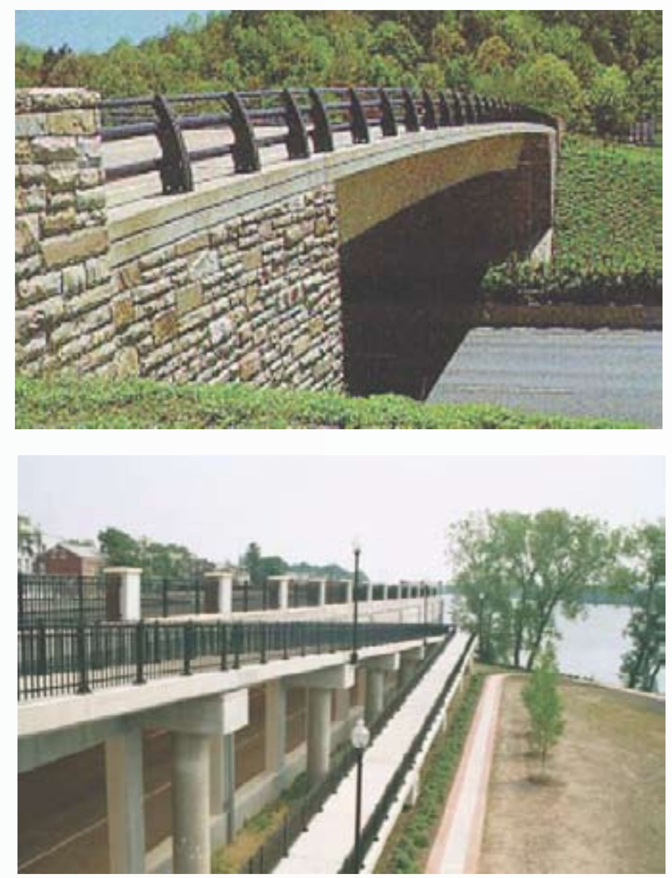
PROTECTION OF SCENIC & HISTRIC RESOURCES

The Route 29 corridor traverses an area that is intimately connected with some of the most significant epochs of the nation's history. In addition, the historic adaptations to the landscape that have been made over centuries of human settlement make areas of the corridor also of unparalleled scenic value. As described in the 2008 Journey Through Hallowed Ground Corridor Management Plan, portions of the immediate corridor and nearby areas have a wealth of scenic and historic resources that should be protected to the greatest extent possible in future planning and improvements along Route 29. Some of the techniques described in this study, as well as reinforced in the policy documents of many of the local jurisdictions along the corridor include conservation strategies such as the following:

- Ensure that comprehensive mapping of natural, historic, and scenic resources along the corridor are available and considered in the design and construction of any future corridor improvements
- Adopt context sensitive solutions as an overall framework for future planning and design projects along the corridor to ensure that the needs and values of stakeholder groups are considered and that scenic, natural and historic resources are protected
- Link planning efforts for corridor improvements with local interpretive efforts for scenic and historic resources, in particular with the Journey Through Hallowed Ground overall interpretive and heritage tourism marketing recommendations
- Coordinate with local programs for landscape conservation and management of scenic resources that are undertaken by local governments and conservation and interpretive groups along the corridor
- Consider the development of model design guidelines for corridor scenic preservation, landscape enhancements, and facility design so that future corridor improvements will be consistent in design theme and overall appearance



The Buckland Battlefield is one of the many historic resources located along the Route 29 corridor. (Historical Marker Database: http://www.hmdb.org/marker.asp?marker=19785)



Images of roadway in the Cumberland Gap and Route 29 in Trenton New Jersey (2008 Journey Through Hallowed Ground Corridor Management Plan)

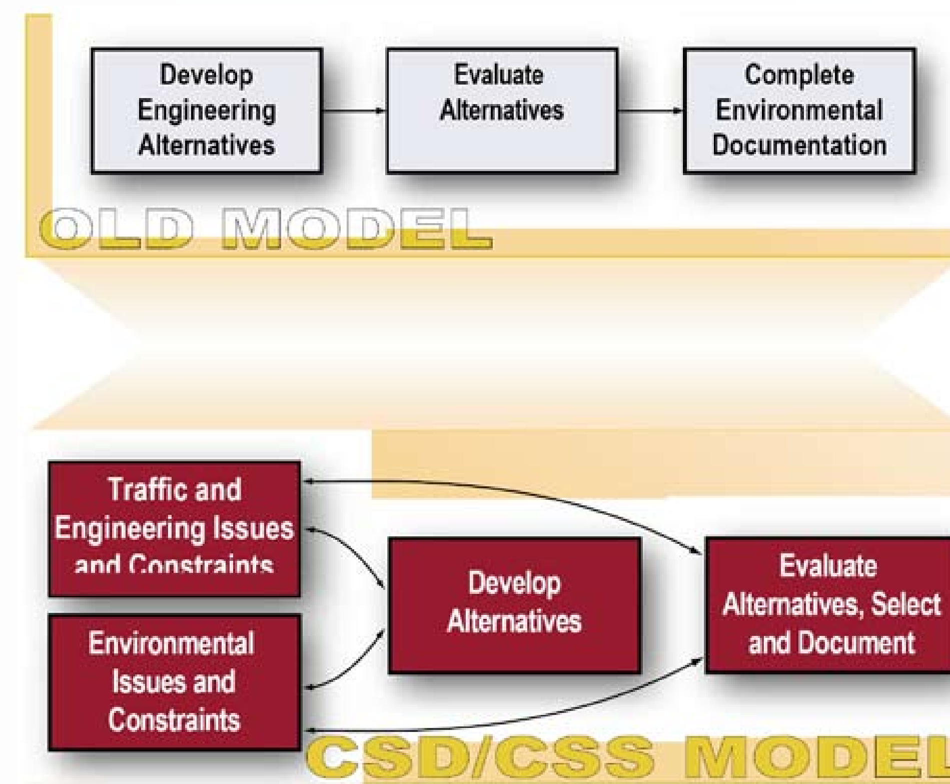


Diagram showing a comparison between the old model for transportation planning and the Context Sensitive model (NCHRP Report 480 on CSS)