

SECTION 4

Transportation

PREFACE

The intent of the Transportation Plan is to identify existing transportation facilities and provide a framework for making the best use of those facilities to further the Comprehensive Planning goals. The Transportation Plan is designed to minimize the impact of through traffic on residential, agricultural, and forestal lands, and to maximize the benefits of safe access for commercial, industrial, and commuter uses through a multi-modal transportation system.

A major component of the Transportation Plan is the Major Thoroughfare Plan, which serves as a complement to the General Land Use Plan. Its purpose is to identify improvements to existing corridors and identify new corridors to accommodate future land development. Each corridor is assigned a functional classification. The importance of the classification is to identify needed right-of-way and provide typical design cross sections for each road classification.

The Hanover County Planning Department is the agency responsible for reviewing applications for rezoning, which often involves negotiating proffers as part of the rezoning process. Proffers may include a cash contribution that will be applied to future off-site improvements to the major thoroughfare road network or may include the actual construction of a portion of such off-site improvements. In addition to cash contributions and road improvements, road proffers often include right-of-way dedications as a means of assembling sufficient right-of-way along the thoroughfares identified in the Major Thoroughfare Plan.

THE PRESENT

ROADS

The existing thoroughfare system consists of approximately 25 miles of interstate, 90 miles of primary roads, and approximately 800 miles of secondary roads. Hanover's proximity to Richmond has resulted in a more extensive major road system than would otherwise be expected in a county with Hanover's population level.

The interstate system is comprised of I-95 and I-295. Interstate 95 is the most heavily traveled road in Hanover County. It is not only the major north-south link that serves the Eastern seaboard, but it is vitally important to Hanover County's economy and transportation service. The capacity of I-95 is generally adequate to serve current and projected needs; however, there are periods of extreme congestion during AM and PM weekday hours and during peak weekend travel times. Several of the interchanges on I-95 need improvement in order to safely and adequately carry current and projected volumes. A major reconstruction of the Atlee-Elmont interchange was completed in 2004.

The Virginia Department of Transportation completed the "I-95 Corridor Study" in 2003 that identified needed improvements to the mainline of I-95 and to the existing interchanges through Hanover. The three unimproved interchanges in Hanover County are functionally deficient and are recommended in the study to be upgraded to full cloverleaf designs.

Interstate 295 is an eight-lane divided highway crossing a part of southern Hanover County. This road is more than adequate to carry its current and projected volumes. With four interchanges allowing east-west traffic to bypass downtown Richmond, consideration needs to be given to the access management of crossroads in the vicinity of the interchanges. The interchange locations have become the focus of high-density development, which will put great pressure on the crossroads. Many of the areas adjacent to these interchanges are designated for commercial and industrial use on the *General Land Use Plan* map.

State and Federal primary roads are the next road category. The following is a brief discussion of the Primary routes within Hanover County:

- Route 360 - U.S. Route 360 is a major route into the City of Richmond from the Mechanicsville area and beyond. It is a four-lane divided highway that carries some of the highest traffic volumes of all primary routes in the County. Because it is a high speed and high capacity facility with an accessible location and interchanges with I-295, U.S. Route 360 will continue to be a focus of development pressure. The strip development along the roadway continues to require frequent access to abutting property and results in a high volume of turning movements into and from the

highway. These conditions create hazardous situations and increase the potential for accidents. The proliferation of access points and strip development also affects the aesthetics of the highway. To promote traffic flow and turning movement safety, development of the road should be in accordance with the design specifications as recommended in a corridor study for US Route 360, from Interstate 295 to Walnut Grove Road (State Route 615) titled *Final Report Route 360 Corridor Study, Hanover County, Virginia*, prepared by Kimley Horn and Associates, Inc., and dated June 1998 (CPA-03-05, adopted 10-22-03).

- Route 156 - Route 156 provides an important route linking the Mechanicsville area to Richmond International Airport (RIC). Several sections of Route 156 have poor vertical and horizontal alignment, with narrow pavement and shoulders. With development occurring in the Mechanicsville area, Route 156 will need to be continuously improved. A high priority project should be to realign Route 156 at the intersection of Routes 636 and 643 to eliminate the route's discontinuity.
- Route 2/301 - This roadway, improved to a four-lane divided highway south of Hanover Wayside, is generally adequate to carry existing traffic loads. Hazardous conditions at intersections with secondary roads are being improved by the addition of traffic signals along this route. U. S. Route 301 is increasingly carrying north/south traffic that would otherwise use I-95.
- Route 54 - State Route 54 provides east-west movement in the County, largely for those using the Ashland I-95 interchange. Like U.S. Route 33, its two-lane width and horizontal alignment limit the areas in which passing can safely occur. Left turn lanes at certain locations and intersections are a major need.
- Route 30 - Route 30 serves as the access route to Paramount's Kings Dominion and connects Doswell with West Point in King William County. As such, it carries high traffic volumes at certain times of the year in the vicinity of the I-95 interchange. The entrance and exits to Paramount's Kings Dominion are immediately adjacent to the C&O Railroad at-grade crossing and the intersection of Route 688. This high traffic volume within a small geographic area creates confusion, particularly when Paramount's Kings Dominion is open. Physical improvements would appear to be a high priority need when additional development occurs in the interchange area.
- Route 1 - U.S. Route 1 provides a four-lane highway parallel to Interstate 95. The four lanes are adequate to accommodate the reduced traffic volumes it has carried since the opening of I-95. The high speed limit on U.S. Route 1 and the frequent vehicle turning movements for access to adjacent developments or secondary roads create hazardous situations along its entire length.

- Route 33 - U.S. Route 33, linking Richmond with Louisa, Gordonsville, and Harrisonburg, carries relatively modest volumes of traffic through the west central part of the County. This road, too, has very poor vertical and horizontal alignment. The roadway is two lanes in width, and much of it is only 20 feet wide. Due to the terrain, it is frequently marked for no passing zones. Queues often build behind slow drivers. Over time, the pavement surface should be widened to a minimum of 22 feet and some of the more difficult curves and hills should be modified to permit easier passing maneuvers. Development of the road should be in accordance with the design specifications as recommended in the corridor study for US Route 33, from the Henrico County Line to the Louisa County Line titled *Final Report, US Route 33 (Mountain Road) Corridor Study, Hanover County Department of Public Works in cooperation with Virginia Department of Transportation (CPA-03-05, adopted 10-22-03)*.
- Route 271 - Route 271 is a three-mile stretch of road connecting Rockville with Richmond by way of U.S. 250 and I-64.

The remaining road network consists of state secondary roads that were not designed to carry heavy traffic loads. There are approximately 800 miles of secondary roads, a majority of which are hard surfaced. Most of these secondary roads originated over the last century as pathways between farms and market areas. The routes and road beds were established long before suburban growth, and therefore, the roads are generally narrow with poor horizontal and vertical alignment. Issues facing many secondary roads include the following:

- Limited right-of-way
- Houses and businesses located close to the right-of-way, making Improvements to the road expensive with numerous design challenges
- Rural secondary roads are increasingly being used to carry extensive subdivision development.

Several Hanover roads have been identified as eligible for “Scenic Road” status due to the scenic nature of the countryside and are reflected on the adopted *Major Thoroughfare Plan* map. The designation of these roads as “Scenic Roads” is intended to encourage property owners and VDOT to better maintain these roads. While these roads have been identified as “Scenic Roads,” based on their scenic and/or historic value, not all eligible roads have been formally evaluated; the advisability of further designations will be considered on a case-by-case basis with the assistance from the State. A corridor design study is recommended for the Ashcake/Ashland Road corridor west of the Town of Ashland extending to the Hanover County/Goochland County boundary. The purpose of the corridor design study would be to develop guidelines that will protect the rural view shed and minimize impacts arising from anticipated suburban development along the corridor.

The highway system within Hanover County is under the jurisdiction of the Virginia Department of Transportation (VDOT) that builds, operates, and maintains all highways. The VDOT highway network consists of several administrative systems (Interstate, Primary and Secondary), each having distinct funding and operating requirements. Funding for state road projects is becoming increasingly scarce, and localities can no longer rely solely on VDOT to provide adequate roads necessary to accommodate growth. It is, therefore, necessary to identify and prioritize the most urgent road needs in order to prepare a rational transportation implementation program.

RAILROADS

The CSX rail line generally runs east-west and north-south through Hanover County. These lines, particularly where they parallel major highways, have already greatly stimulated the economy of Hanover County with industrial development, a potential that will increase in the coming years. The Town of Ashland currently has AMTRAK service, and the rail lines have the future potential to serve as commuter lines.

One of the greatest challenges to coordinating the different transportation modes is the numerous at-grade railroad crossing throughout the county. Such crossings present conflict points between vehicles and trains. CSX and VDOT have recently partnered to modernize several at-grade crossings, thus greatly increasing traffic safety. The Washington to Richmond CSX line has been designated for a study as a high speed commuter corridor. The potential for conflict with existing communities should be avoided.

PUBLIC TRANSPORTATION

Currently, public transportation does not exist in Hanover County. However, increasing densities in the suburban areas of Hanover, as well as increased economic activities, could lead to the development of local and express bus service into downtown Richmond, as well as to other major employment centers in the area, via the major corridors in the County.

GENERAL AVIATION

The Hanover County Airport opened in 1971 and is conveniently located on approximately 200 acres of land east of I-95, between the Atlee-Elmont and Lewistown Road interchanges. As part of the National Transportation System, the airport provides general aviation service to both corporate clientele and the recreational pilot. The airport serves small single-engine and multi-engine aircraft, as well as light business jets.

The airport has been identified by the Federal Aviation Administration National Plan of Integrated Airport Systems (NPIAS) as a vital link to air service in the Richmond Metropolitan area. As such, the airport has been designated as a reliever airport to Richmond International Airport (RIC) in both the National System and the Virginia Air Transportation System. The function of a reliever airport is to reduce the amount of general aviation air traffic at airports such as RIC that receive commercial air service.

As part of the NPIAS, the Airport is required to be safe, convenient and affordable to users, able to meet demand, and available for aeronautical use over the long term. In order to receive Federal and State grant-in-aid support, the airport must maintain a current Airport Layout Plan, showing existing and planned facilities over a 20 year planning period. That plan must be adopted by the local jurisdiction and accepted by the FAA and the Virginia Department of Aviation. To adapt to the changing needs of the region, an Airport Layout Plan is typically updated every 10 years for an airport with the characteristics of the Hanover County Airport. The first Airport Layout Plan for Hanover County was adopted in 1990 and has been updated by a Plan prepared by Campbell & Paris Engineers, dated May 2000 and adopted by the Board of Supervisors on March 27, 2002, and approved by the FAA on May 1, 2002. The latest Update was in May 2006 and included demolishing 2 rows of older T-Hangars along with construction of 3 new rows of T-Hangars plus 2 Corporate/Community Clear Span Hangars and extension of the Maintenance Hangar.

Benefits

The Hanover County Airport has a positive effect on the economic development of Hanover County. Annual economic impact of the airport to the community was estimated in a 1996 American Association of Airport Executives study to be over \$12.5 million. The proximity of the airport to the Hanover Industrial Air Park and Atlee Commerce Center provides convenient air service to the business center of Hanover County. Many businesses in the County use the airport for corporate travel and small product shipping and receiving.

Corporate location decisions are often based on the accessibility of air service in relationship to other modes of transportation. The proximity of the airport to the major interstates of I-95 and I-64 is an attraction for many businesses. This convenient interstate access coupled with the improvements to the Atlee/Elmont Interchange will continue the synergy between economic development and the airport.

Employment and income are generated by the airport facilities and operations. As of 2006, there are ± 100 aircraft based at the airport and $\pm 60,000$ annual aircraft operations (ie: takeoff or landing). There are approximately 25 full-time and part-time personnel providing operation services at the airport. Employment opportunities include supervisory/accounting positions, customer service representatives, and aviation mechanics.

The airport also serves medical and law enforcement agencies. During a disaster or crisis situation, the airport contributes to the relief effort by assisting agencies performing damage assessments, medical evacuations, air ambulance, emergency supplies, search and rescue, and even media coverage.

Funding

Unlike other County capital improvements, most airport facilities are financed with grants totaling up to 98% of the costs from the Federal Aviation Administration (FAA) and Virginia Department of Aviation (VDOA). These grant funds come from aviation user fees and ticket taxes, not federal or state income taxes. Grant funds from the FAA and the VDOA are used for the majority of the capital improvements made to the airport facility. When federal funds are not available, VDOA grant funds can be used in lieu of FAA funding to finance the costs up to 90% for eligible maintenance and other improvements. Many of these VDA grants are retroactively reimbursable for federal grants when federal funds become available.

Lease Management Agreement

The Hanover County Municipal Airport is operated under a Lease and Management Agreement with a private company, commonly referred to as the Fixed Base Operator or FBO. The FBO provides routine facility maintenance, aircraft rental, air charter service, flight training, aircraft repair, and aircraft fueling. The County leases approximately 7 acres of land to the FBO, which includes the terminal building, storage, and hangar buildings. The FBO pays monthly rental and fuel flowage fees to the County on a graduated scale.

The County operates the airport as a public service, not as a profit center. Airport revenues come from ground leases, hangar rentals, fuel sales, aircraft personal property taxes, airport real estate taxes, and State maintenance reimbursements. The County strives to make airport improvements necessary to comply with Federal, State, and County standards, which helps to maintain the airport as a successful operation for the County and the FBO.

THE GOALS

Goal 1: Provide the citizens of Hanover County with the safest and most efficient transportation system that is consistent with environmental protection and sound fiscal policy.

Objective 1: Develop a functional road classification system that identifies the intended purpose of existing and proposed roads.

Objective 2: Provide adequate opportunities to development and utilize modes of transportation appropriate to suburban and rural areas.

Strategy: Increase options for non-motorized methods of transportation, such as sidewalks, walking and biking paths and trails along roadways.

Objective 3: In cooperation with the Virginia Department of Transportation, identify and develop highway improvement projects that are compatible with the growth policies identified in the Comprehensive Plan for Hanover County.

Strategies:

- Prioritize projects designed to address demonstrated safety hazards, with criteria to include capacity, grade, sight distance, and pavement condition. Such projects should be limited to addressing specific known hazards and should not include improvements that increase capacity or allow faster operating speeds unless such improvements are justified under other criteria set forth herein.
- Within the suburban areas of the County, the following should be given priority for road funding:
 - 1) Areas served by a central sewer system and coordinated with phased expansion of this system.
 - 2) Improvements necessary to relieve an existing and significant congestion problem.
 - 3) Improvements necessary to expand capacity in areas planned for immediate development.
- Within rural areas, development would set aside adequate rights-of-way to accommodate future development along major thoroughfares as shown on the adopted Major Thoroughfare Plan and in accordance with the zoning requirements.
- All remaining funds should be allocated to improvements within the planned development areas of the County. Priority should be given to:

- 1) Improvements which would improve flow and relieve a significant existing congestion problem
 - 2) Improvements which improve capacity within an area planned for immediate development
 - 3) Improvements that increase capacity within an area identified or designated for development within the near future.
- Lowest priority should be given to improvements, other than safety improvements, which are made in areas outside of the planned development areas of the County. These improvements should be limited to the elimination of identified maintenance or safety issues.
 - Participate in the development of long-range transportation plans with Regional, State, and Federal agencies that complement the Land Use, Transportation, and Economic Development policies of Hanover County.
 - Heavy trucking operations should be located to minimize truck traffic along secondary roads.
 - Provide adequate transportation service commensurate with the metropolitan area to the extent practical to serve suburban areas of the County.
 - Reduce congestion in built-up areas and prevent congestion in developing areas by controlling the number of access points between highways and adjoining properties and requiring adequate street connections between developments.

Objective 4: Encourage development of the County circulation system that supports the General Land Use Plan.

Strategies:

- Encourage new development to provide right-of-way consistent with the Major Thoroughfare Plan
- Require development to set back from future edge of right-of-way
- Design roads in accordance with the typical cross sections contained herein.

- Implement procedures for objectively establishing primary and secondary highway need priorities based on appropriate technical criteria.
- Improve the capacity and safety of the major radial arterials leading to Richmond and those routes connecting them through local reinforcement of the Long Range Transportation Plan goals adopted by the Richmond Area Metropolitan Transportation Planning Organization. These improvements would facilitate commuting trips, cross-county travel, and circumferential travel around the Richmond Suburban Area.
- Establish and protect future rights-of-way through creation and adoption of an official map in accordance with State enabling statutes.
- Maintain the system of scenic drives designated on the *Major Thoroughfare Plan* map to provide access to the County's historic, cultural and natural resources, without depreciating any of these assets.
- Develop procedures to mitigate anticipated traffic safety and capacity problems along major thoroughfares.

Goal 2: Provide Hanover County Citizens with a comprehensive, multi-modal transportation network.

Objective 1: Design new roads to accommodate both pedestrian and bicycle movement.

Objective 2: Consider appropriate locations for Park and Ride lots, and encourage other methods to promote car/van pooling as a means to reduce vehicle miles and conserve and preserve natural resources.

Objective 3: Cooperate with other local, state, and federal agencies to investigate the feasibility of providing Hanover County residents and businesses with high-speed rail service.

Objective 4: Continue County membership on the Capital Region Airport Commission and continue efforts to fulfill the goals and objectives of the Airport Master Plan.

Goal 3: Provide Hanover County with a road system that complements and highlights the historic and natural resources of the County

Objective 1: Identify scenic corridors on the Major Thoroughfare Plan

Objective 2: Encourage the use of landscaping, low level street lighting, and accommodate non-motorized traffic along new roads at a scale appropriate to the proposed development.

THE MEANS

The primary means to identify future road needs is through the use of traffic modeling. The County's transportation planning consultant, Kimley-Horn and Associates, used the Richmond Travel Demand Model, which models to the year 2027, to assess the impacts from the proposed land use changes on the County's major thoroughfares. The land use and thoroughfare modifications were evaluated for their impacts to the overall regional road network. The model identifies needed additions, modification, and deletion of thoroughfares in the County.

The Hanover County Major Thoroughfare Plan should be consistent with the short term and long-range transportation goals and policies, and must be supportive of, and consistent with, the adopted Land Use Plan. Additionally, the Plan should consider the overall thoroughfare plan for the Richmond Region, as well as those of its neighboring jurisdictions. The Plan must be practical, understandable, and useful as a tool for achieving overall County policy. Finally, the Plan must be feasible from an engineering standpoint and must provide for safe and convenient movement of people and goods within and through Hanover County. These overall factors guide the evaluation of the needs of the interstate, primary, and secondary systems that comprise the County's thoroughfare network so that local priority needs can be determined for inclusion in the State Six Year Construction Program.

AIRPORT FACILITIES

Development plans for the airport are outlined in Airport Layout Plans and supported by a Master Plan document. The Airport Layout Plans are required by the Federal Aviation Administration and the Virginia Department of Aviation to maintain the airports eligibility for federal and state funding. The first Master Plan, which was adopted in 1990, was re-evaluated for the year 2000, and a new Master Plan document was issued titled "Airport Master Plan 2000," dated May 2000 by Campbell & Paris Engineers. The Airport Master Plan document analyzes the trends in demographics and economic development within Hanover County and the trends in aviation activity within Virginia and the nation as a whole. Forecasts of aviation activity are developed to identify the necessary airport facility requirements, and Airport Layout Plans are prepared depicting the development strategy for the airport over the next 20 years. For a capital improvement project to be eligible for FAA and/or VDA funding it must be depicted on the approved/adopted Airport Layout Plan. No federal or state funding is available for capital development not included on the Airport Layout Plan. Prior to any capital development, the airport, as a public facility, is subject to a conditional use permit. The Board of Supervisors grants a conditional use permit after review by the Planning Commission, and after public notice and public hearings, all in accordance with the Zoning Ordinance.

Because there is no control tower, take-off operations and landing operations are not officially recorded at the airport. It is estimated that the airport accommodates ±60,000 total annual operations. The 20 year forecast outlined in the Airport “Master Plan 2000” was prepared based on the moderate annual growth of 1.8% in air operations and 1.6% in based aircraft. The following table indicates the operations forecasts for the Airport as defined in the Airport Master Plan 2000 and approved by the FAA and VDA:

OPERATIONS FORECAST HANOVER COUNTY MUNICIPAL AIRPORT				
	1996	2001	2006	2016
Based Aircraft	77	83	91	105
Operations	59,650	65,100	72,300	85,200
Peak Day	206	225	249	294
Peak Hour	23	25	28	33

Based on this Master Plan, the airport will not expand beyond its role as a general aviation reliever airport, and no improvements are planned which would change that role. All capital development focuses on improving the airport’s public facilities and continued improvement of operational safety in accordance with FAA regulations.

THE FUTURE

ROADS

The Major Thoroughfare Plan uses the existing highway system as its basis. The Major Thoroughfare Plan identifies needed improvements to the existing system to accommodate future anticipated changes to land use as identified in the General Land Use Plan. In general, changes will involve improvements to existing facilities along with selected new roads that complement the network.

The existing and future roads are classified, based on the transportation function they serve. Different classes of roads must meet different standards of design. The following is a description of the road classifications used in the County and any recommendations to re-classify existing roads and identify classification for future roads. The identified road improvements will be necessary to accomplish goals of the Major Thoroughfare Plan during the next 20 years:

- Interstate/Freeway: Generally consists of 350 feet of right-of-way. This classification is intended to carry the largest volume of vehicular traffic over the greatest distances. Access to these roads is limited to minimize the interference of

cross-street traffic, and road crossings are always grade separated. No roads other than Interstate 95 and Interstate 295 are recommended for this classification. It is recommended that a study be conducted for a new interchange in an area between Hickory Hill Road (State Route 646) and Old Ridge Road (State Route 738) at Interstate 95.

- **Major Arterial:** Generally consists of 120 feet of right-of-way. Major arterials are designed to carry vehicular traffic from one area of the County to another. Additionally, these roads carry traffic to other parts of the Richmond region. While access to these facilities is by at-grade intersections, they should be highly controlled to minimize the interference of cross-street traffic to the efficient flow-through traffic. The following roads are classified as major arterials:
 - U.S. Route 360 (development of the road should be in accordance with the design specifications as recommended in a corridor study for US Route 360, from Interstate 295 to Walnut Grove Road (State Route 615) titled *Final Report Route 360 Corridor Study, Hanover County, Virginia*, prepared by Kimley Horn and Associates, Inc., and dated June 1998) (CPA-03-05, adopted 10-22-03)
 - U.S. Route 1
 - State Route 33 (development of the road should be in accordance with the design specifications as recommended in the corridor study for US Route 33, from the Henrico County Line to the Louisa County Line titled *Final Report, US Route 33 (Mountain Road) Corridor Study, Hanover County Department of Public Works in cooperation with Virginia Department of Transportation*) (CPA-03-05, adopted 10-22-03)
 - U.S. Route 30
 - U.S. Route 301

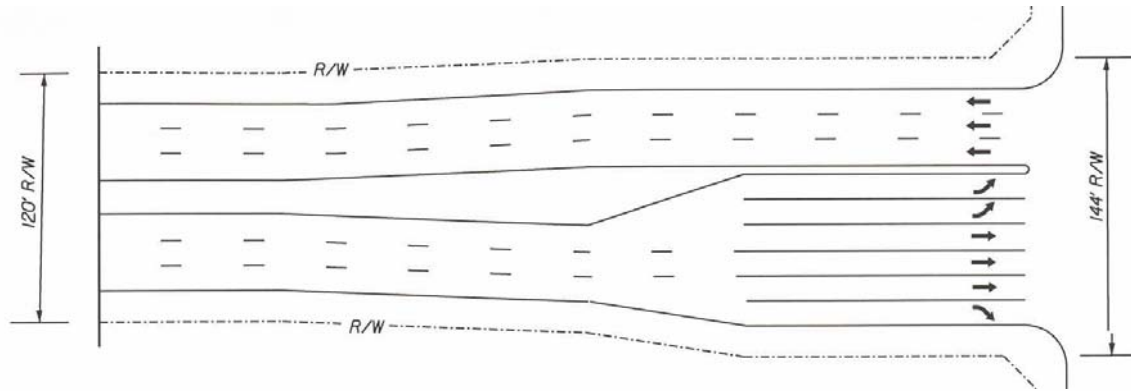
- **Minor Arterial:** Generally consists of 100 feet of right-of-way. This road classification is intended to carry vehicular traffic from one region of the County to another. Access to these facilities is less restrictive than major arterials but still controlled to facilitate the efficient movement of through traffic. **Roads currently classified in this category are recommended to remain. It is recommended that the following roads be reclassified as minor arterials:**
 - Cauthorne Road (State Route 624) from Major Collector (100' ROW)

- **Major Collector.** (100 foot right-of-way) This functional type of road serves to collect vehicular traffic in the region and direct it towards the arterial road network. Access to this classification of road is less restrictive than arterials and functions primarily to serve local traffic. However, major collectors carry a significant volume of traffic so some access control should be maintained. Roads currently classified in this category are recommended to remain. It is recommended that the following roads be reclassified as Major Collector:

- Cedar Lane (State Route 623) between Old Washington Highway (State Route 626) to Blanton Road (State Route 666) from Minor Collector (60' ROW)
- Elmont Road (State Route 626) between West Patrick Henry Road (State Route 54) and Willow Farm Drive (private) from Minor Collector (60' ROW)
- Rural Roads: Generally 50 feet of right-of-way. Rural roads act like collector or arterial roads since there are great distances that must be traveled to reach many destinations. These classifications are not appropriate, given the relatively light volumes of traffic carried by such roads. It is recommended that a new classification be adopted for these roads. The remainder of the current minor collector roads, not yet identified in this report, should be placed in this category. This designation would allow these roads to remain in their rural character without being restricted by classifications that are appropriate for more developed areas of the County.
- New Roads
 - **It is recommended that the following new roads be classified as “Major Arterials”:**
 - U.S. Route 301 bypass east of the Hanover Courthouse complex with limited access.
 - It is recommended that the following new roads be classified as “Minor Arterials”:
 - Creighton Road: from Route 156 to Rural Point Road just south of Totopotomoy Creek.
 - Route 615 Extension: from Route 636 to Route 627.
 - Route 643 Extension: from Route 656 to Route 657.
 - Connector road between Route 643 and Route 627.
 - Proposed intersection improvements at East Patrick Henry Road (State Route 54), Woodside Lane and Providence Church Road (State Route 662).
 - It is recommended that the following new roads be classified as “Major Collector”:
 - Proposed Major Collector (100' ROW) between Washington Highway (U.S. Route 1, north of Jamestown Road) and Hickory Hill Road (State Route 646).
 - Proposed Major Collector (100' ROW) between Hickory Hill Road (State Route 646) and East Patrick Henry Road (State Route 54).

- Proposed Major Collector (100' ROW) between Washington Highway (U.S. Route 1) at Lakeridge Parkway and Cauthorne Road (State Route 624).
 - Proposed Major Collector (100' ROW) for an extension of Verdon Road (State Route 684) east of Interstate 95.
 - Proposed Major Collector (100' ROW) from the proposed extension of Verdon Road (State Route 684) to Kings Dominion Boulevard (State Route 30).
- In an effort to preserve the capacity of the Creighton Road Economic Development Zone (EDZ) and to minimize impacts on the historic and scenic section of Cold Harbor Road, east of its intersection with Creighton Road, the plan recognizes the following future roads, as shown on the adopted major thoroughfare plan:
- Powhite Farm Road: Serving as the principal means of access from Sledds Run Road intersection on Creighton Road east to a connector road which connects to the north and west with the Creighton Road intersection with Tammy Lane (Major Collector – 100 foot right-of-way).
 - Connector Road: Serving as the secondary means of access from the Powhite Farm Road to Route 156, Cold Harbor Road the secondary collector shall not be used as primary means of access for the development of the Brooks Powhite Farm - (Minor Collector – 60 foot right-of-way).
- It is recommended that the following new roads be classified as “Minor Collector”:
- Proposed extension of the Minor Collector (60' ROW) of Winns Church Road (State Route 660) west of Mountain Road (U.S. Route 33).
 - Proposed Minor Collector (60' ROW) from Washington Highway (U.S. Route 1), north of Doswell, to the eastern side of Interstate 95.
- It is recommended that the County coordinate land use and transportation planning efforts surrounding the Town of Ashland with the Town, to assure that County and Town policies and plans are coordinated to the extent practicable

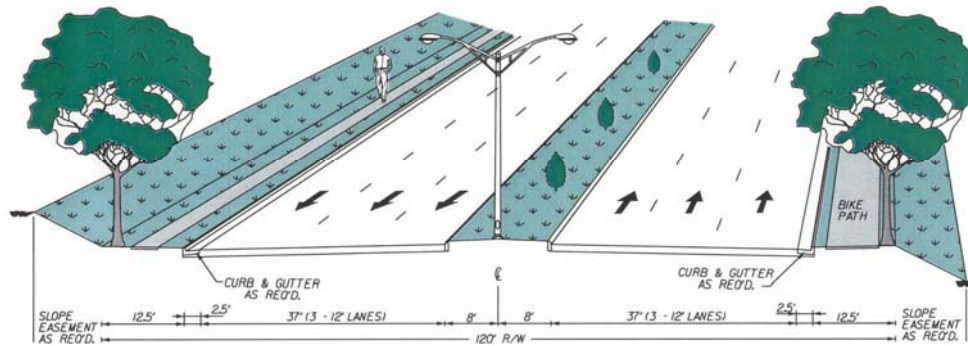
Also essential to the protection and enhancement of the safety and efficiency of the County's road network is the establishment of minimum roadway geometric and access standards. Furthermore, safety and capacity problems can be addressed by establishing access management standards based on roadway designations. The following exhibits reflect the typical cross-sections for the above-identified road classifications. In addition to the identified right-of-way requirements, the exhibits also reflect typical road designs and additional right-of-way requirements at intersections.



MAJOR ARTERIAL - URBAN SECTION
*Intersection Design with
 Dual Left Turn Lanes and
 Single Right Turn Lane*

NOTES:

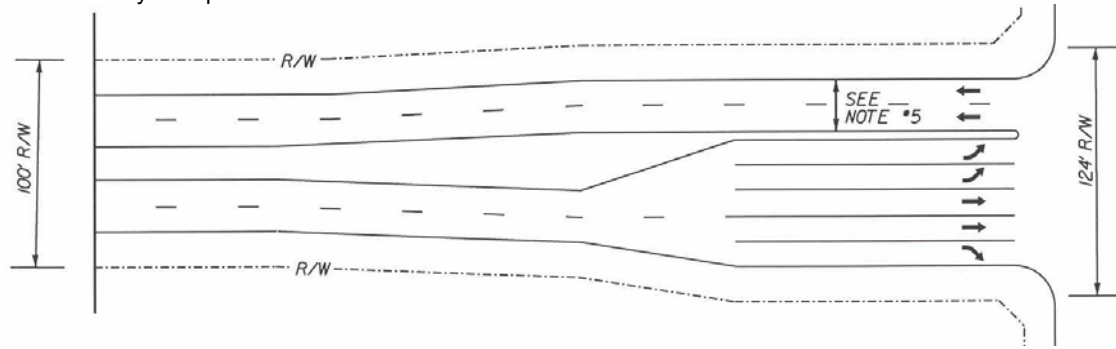
1. TURN LANES SHALL BE IN ACCORDANCE WITH THE VDOT ROAD DESIGN MANUAL.
2. LANE WIDTHS SHALL BE 12' EACH.
3. TRANSITION LENGTHS SHOWN FOR ILLUSTRATIVE PURPOSES ONLY AND SHALL BE IN ACCORDANCE WITH THE VDOT ROAD DESIGN MANUAL.
4. RIGHT OF WAY CHORDS AT THE INTERSECTION CORNERS ARE FOR TRAFFIC CONTROL EASEMENTS.



MAJOR ARTERIAL - URBAN SECTION

NOTES:

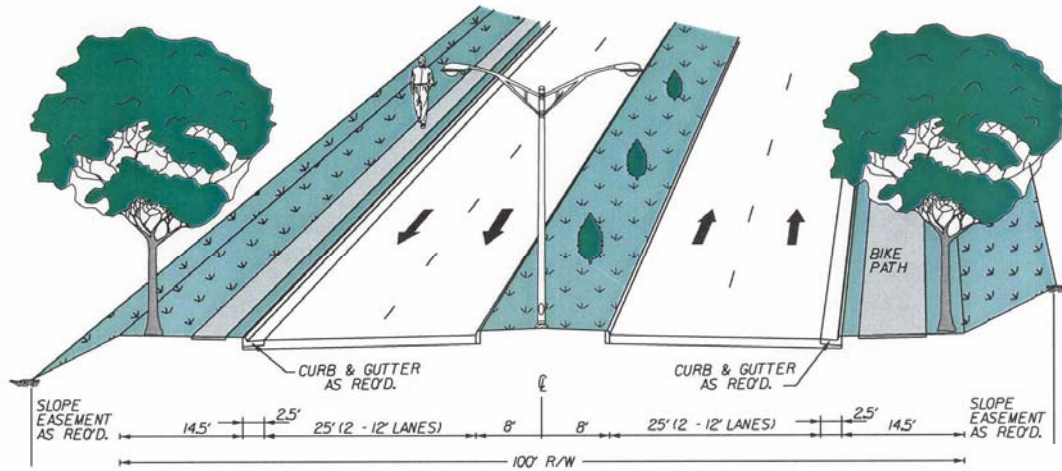
1. MINIMUM ROADWAY DESIGN STANDARDS SHALL BE IN ACCORDANCE WITH THE VDOT ROAD DESIGN MANUAL.
2. RIGHT OF WAY REQUIREMENTS MAY VARY DUE TO SITE SPECIFIC DESIGN ISSUES.
3. RIGHT OF WAY REQUIREMENTS INCREASE AT INTERSECTIONS TO ACCOMMODATE TURN LANES.
4. LANDSCAPING, LIGHTING, SIDEWALKS, AND BIKE PATHS ARE FOR ILLUSTRATIVE PURPOSES ONLY.



MINOR ARTERIAL - URBAN SECTION
*Intersection Design with
 Dual Left Turn Lanes and
 Single Right Turn Lane*

NOTES:

1. TURN LANES SHALL BE IN ACCORDANCE WITH THE VDOT ROAD DESIGN MANUAL.
2. LANE WIDTHS SHALL BE 12' EACH.
3. TRANSITION LENGTHS SHOWN FOR ILLUSTRATIVE PURPOSES ONLY AND SHALL BE IN ACCORDANCE WITH THE VDOT ROAD DESIGN MANUAL.
4. RIGHT OF WAY CHORDS AT THE INTERSECTION CORNERS ARE FOR TRAFFIC CONTROL EASEMENTS.
5. RECEIVING LANES FOR DUAL LEFT TURN LANES SHALL BE 15' IN WIDTH EACH WHICH WILL INCREASE THE RIGHT OF WAY REQUIREMENTS.



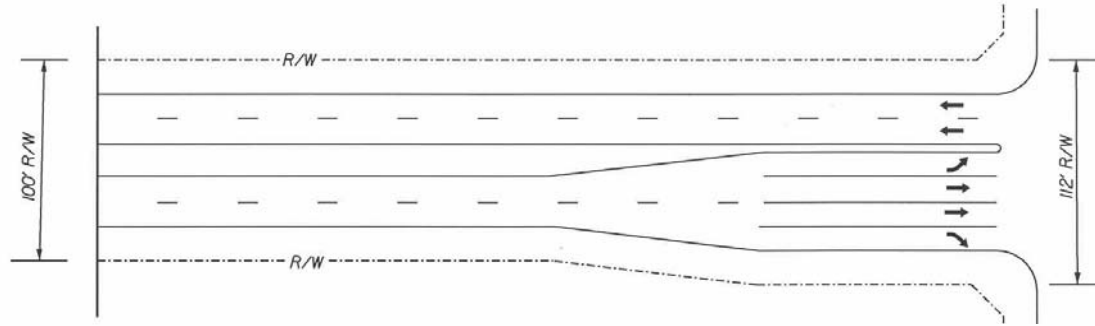
MINOR ARTERIAL - URBAN SECTION

NOTES:

1. MINIMUM ROADWAY DESIGN STANDARDS SHALL BE IN ACCORDANCE WITH THE VDOT ROAD DESIGN MANUAL.
2. RIGHT OF WAY REQUIREMENTS MAY VARY DUE TO SITE SPECIFIC DESIGN ISSUES.
3. RIGHT OF WAY REQUIREMENTS INCREASE AT INTERSECTIONS TO ACCOMMODATE TURN LANES.
4. LANDSCAPING, LIGHTING, SIDEWALKS, AND BIKE PATHS ARE FOR ILLUSTRATIVE PURPOSES ONLY.
5. MAJOR COLLECTORS AND MINOR ARTERIALS HAVE THE SAME TYPICAL SECTION. HOWEVER, THE HORIZONTAL AND VERTICAL DESIGN REQUIREMENTS ARE DIFFERENT.

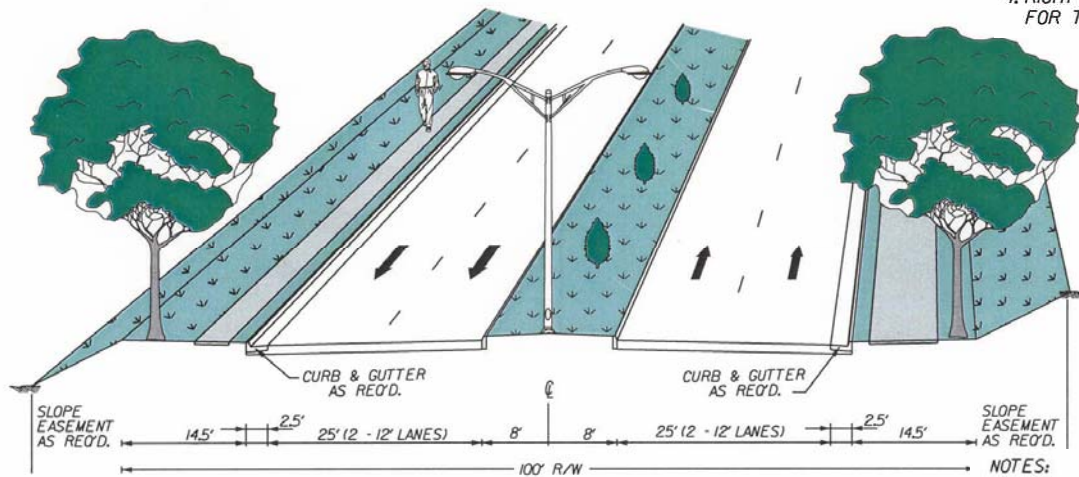
MAJOR COLLECTOR - URBAN SECTION

**Intersection Design with
Single Left Turn Lane and
Single Right Turn Lane**



NOTES:

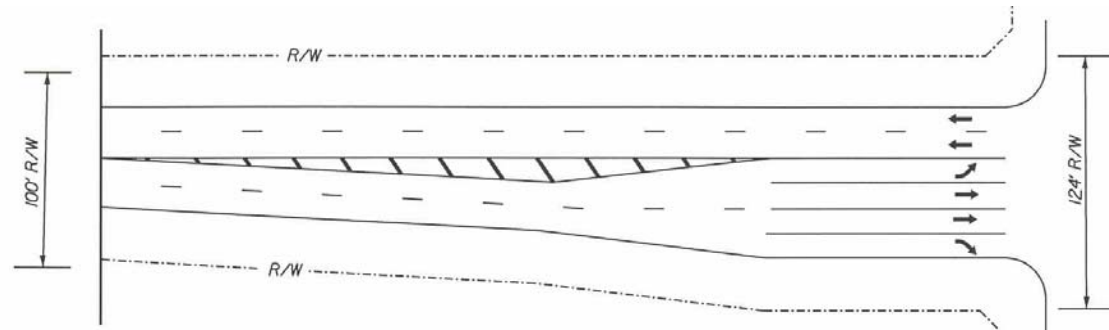
1. TURN LANES SHALL BE IN ACCORDANCE WITH THE VDOT ROAD DESIGN MANUAL.
2. LANE WIDTHS SHALL BE 12' EACH.
3. TRANSITION LENGTHS SHOWN FOR ILLUSTRATIVE PURPOSES ONLY AND SHALL BE IN ACCORDANCE WITH THE VDOT ROAD DESIGN MANUAL.
4. RIGHT OF WAY CHORDS AT THE INTERSECTION CORNERS ARE FOR TRAFFIC CONTROL EASEMENTS.



MAJOR COLLECTOR - URBAN SECTION

NOTES:

1. MINIMUM ROADWAY DESIGN STANDARDS SHALL BE IN ACCORDANCE WITH THE VDOT ROAD DESIGN MANUAL.
2. RIGHT OF WAY REQUIREMENTS MAY VARY DUE TO SITE SPECIFIC DESIGN ISSUES.
3. RIGHT OF WAY REQUIREMENTS INCREASE AT INTERSECTIONS TO ACCOMMODATE TURN LANES.
4. LANDSCAPING, LIGHTING, SIDEWALKS, AND BIKE PATHS ARE FOR ILLUSTRATIVE PURPOSES ONLY.
5. MAJOR COLLECTOR AND MINOR ARTERIAL HAVE THE SAME TYPICAL SECTION. HOWEVER, THE HORIZONTAL AND VERTICAL DESIGN REQUIREMENTS ARE DIFFERENT.

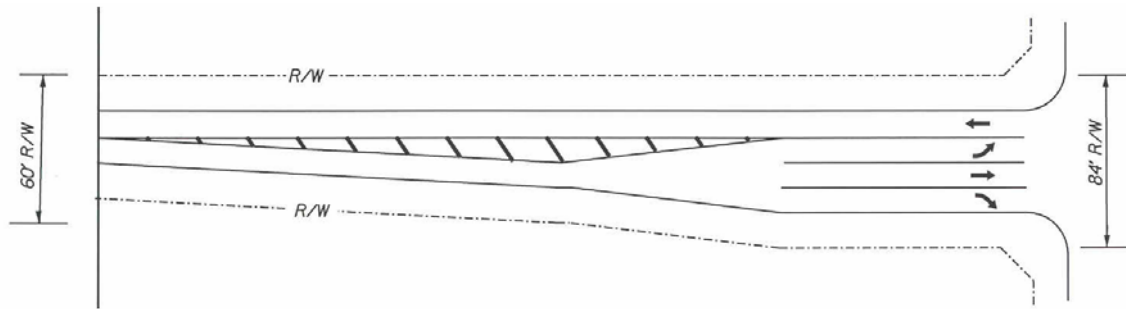


MINOR ARTERIAL - RURAL SECTION (UNDIVIDED)
MAJOR COLLECTOR - RURAL SECTION (UNDIVIDED)

*Intersection Design with
 Single Left Turn Lane and
 Single Right Turn Lane*

NOTES:

1. TURN LANES SHALL BE IN ACCORDANCE WITH THE VDOT ROAD DESIGN MANUAL.
2. LANE WIDTHS SHALL BE 12' EACH.
3. TRANSITION LENGTHS SHOWN FOR ILLUSTRATIVE PURPOSES ONLY AND SHALL BE IN ACCORDANCE WITH THE VDOT ROAD DESIGN MANUAL.
4. RIGHT OF WAY CHORDS AT THE INTERSECTION CORNERS ARE FOR TRAFFIC CONTROL EASEMENTS.

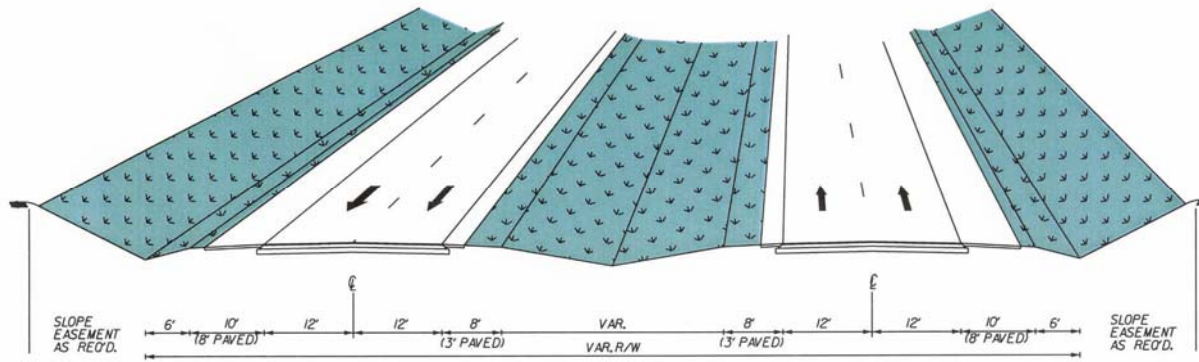


MINOR ARTERIAL - RURAL SECTION (UNDIVIDED)
MAJOR COLLECTOR - RURAL SECTION (UNDIVIDED)

*Intersection Design with
 Single Left Turn Lane and
 Single Right Turn Lane*

NOTES:

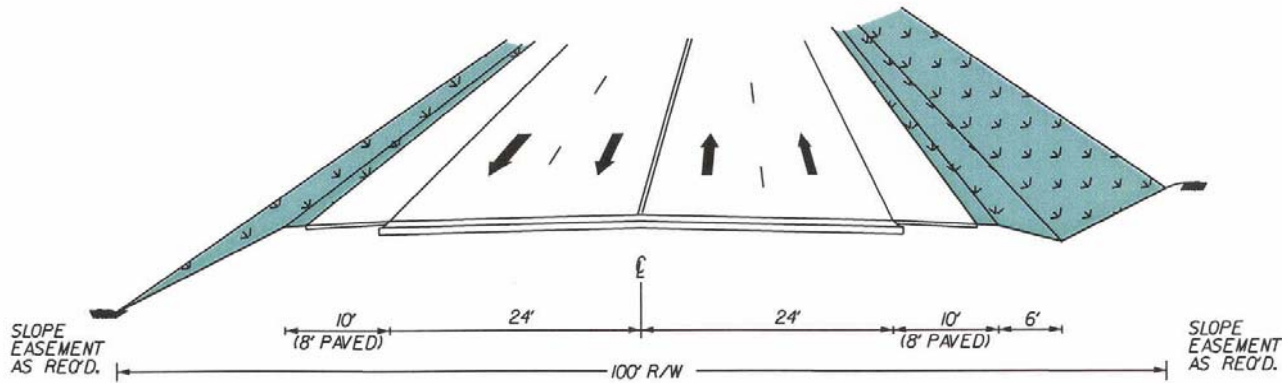
1. TURN LANES SHALL BE IN ACCORDANCE WITH THE VDOT ROAD DESIGN MANUAL.
2. LANE WIDTHS SHALL BE 12' EACH.
3. TRANSITION LENGTHS SHOWN FOR ILLUSTRATIVE PURPOSES ONLY AND SHALL BE IN ACCORDANCE WITH THE VDOT ROAD DESIGN MANUAL.
4. RIGHT OF WAY CHORDS AT THE INTERSECTION CORNERS ARE FOR TRAFFIC CONTROL EASEMENTS.



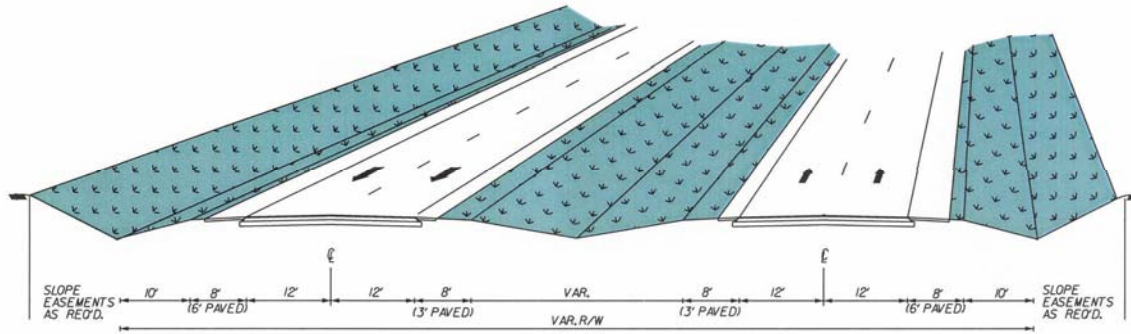
MINOR ARTERIAL - RURAL SECTION (DIVIDED)

NOTES:

1. MINIMUM ROADWAY DESIGN STANDARDS SHALL BE IN ACCORDANCE WITH THE VDOT ROAD DESIGN MANUAL.
2. RIGHT OF WAY REQUIREMENTS MAY VARY DUE TO SITE SPECIFIC DESIGN ISSUES.
3. RIGHT OF WAY REQUIREMENTS INCREASE AT INTERSECTIONS TO ACCOMMODATE TURN LANES.



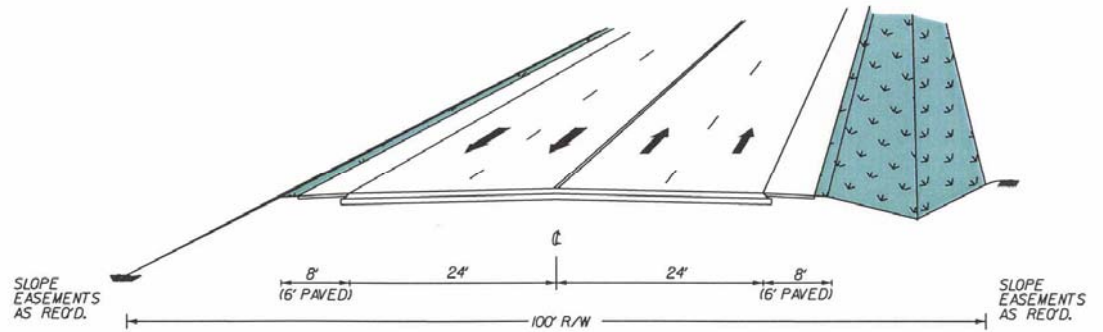
MINOR ARTERIAL - RURAL SECTION (UNDIVIDED)



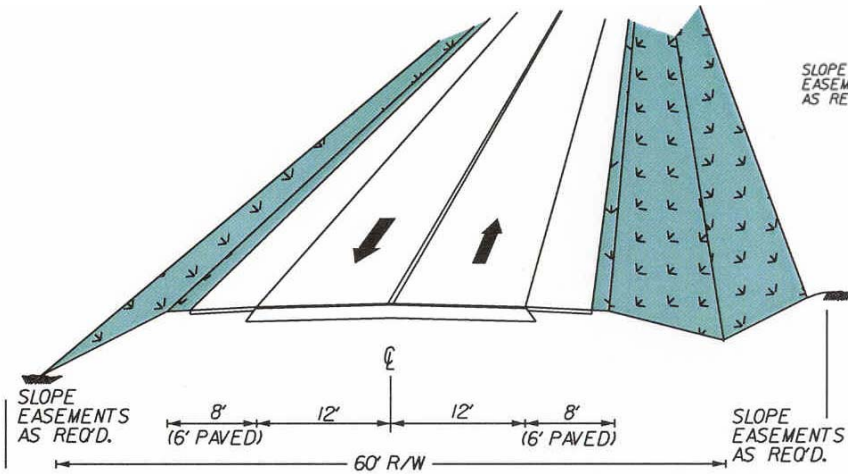
MAJOR COLLECTOR - RURAL SECTION (DIVIDED)

NOTES:

1. MINIMUM ROADWAY DESIGN STANDARDS SHALL BE IN ACCORDANCE WITH THE VDOT ROAD DESIGN MANUAL.
2. RIGHT OF WAY REQUIREMENTS MAY VARY DUE TO SITE SPECIFIC DESIGN ISSUES.
3. RIGHT OF WAY REQUIREMENTS INCREASE AT INTERSECTIONS TO ACCOMMODATE TURN LANES.



MAJOR COLLECTOR - RURAL SECTION (UNDIVIDED)



MINOR COLLECTOR - RURAL SECTION

NOTES:

1. MINIMUM ROADWAY DESIGN STANDARDS SHALL BE IN ACCORDANCE WITH THE VDOT ROAD DESIGN MANUAL.
2. RIGHT OF WAY REQUIREMENTS MAY VARY DUE TO SITE SPECIFIC DESIGN ISSUES.
3. RIGHT OF WAY REQUIREMENTS INCREASE AT INTERSECTIONS TO ACCOMMODATE TURN LANES

In addition to the improvements to the corridors noted above, the County has identified a number of improvements to existing roads. Those improvements are listed in **Appendix T-2** at the end of this section.

RAILWAYS

Of the railways in the County, the CSX Railroad currently provides the most attractive industrial potential where sites are accessible to interstate interchanges with planned public sewer. The former RF&P lines (in the Route 1 Corridor), now CSX, are potentially as significant; these rail lines provide access to future industrial sites which have been, or will be, enhanced by the upgrading of Interstate interchanges (i.e. Atlee/Elmont) and the provision of public sewer and water in this corridor.

Hanover County will coordinate with the Virginia Department of Rail and Public Transportation passenger rail service providers and other stakeholders to identify, and where appropriate and feasible, protect corridors which will be used accommodate high speed and commuter rail services.

AIRPORT FACILITIES

Improvements planned for the Hanover County Airport are intended to maintain its importance in the regional general aviation system. In accordance with the 1990 Airport Master Plan, several capital improvements were made to improve the safety of the airfield, including the widening and pavement strengthening of the runway and taxiway, the addition of apron space for maneuvering of aircraft, improved parking facilities, and the construction of a 750 foot runway extension to improve landing in all weather conditions. All future capital improvements of the airport will be based on the Airport Layout Plan drawings associated with the Airport Master Plan 2000, dated May 2000, prepared by Campbell and Paris Engineers, and adopted by the Board of Supervisors, March 27, 2002. It is the intention of the County to meet aviation demand efficiently and safely. However, the County will not jeopardize economic development within the Hanover County Industrial Air Park for the benefit of the airport. No improvements will be made that will impede parcel development on the west side of the runway beyond what is already restricted by deed. The improvements will be scheduled and budgeted in the County's Capital Improvement Program, with public involvement if amendments to the conditional use permit for the airport are required.

The 2000 Airport Master Plan includes the following recommendations:

1. Improve Instrument Approaches 0-5 years.

As of 2000, the north approach has ≥ 1 -mile visibility minimums, and the south approach has visual minimums. Planned improvements call for improving the north approach visibility minimums to $\geq \frac{3}{4}$ - mile and the south approach minimums to ≥ 1 -mile. Currently, the requirements of these improved minimums include a larger Runway Protection Zone for the north approach and an increase in the FAA Part 77 Primary Surface width from 500 feet to 1,000 feet. It is anticipated, however, that navigational technology will become more accurate once GPS is fully functional in the aviation environment. This may result in the reduction of the required width of the Part 77 surface below 1,000 feet. The $\geq \frac{3}{4}$ -mile visibility will not be enacted until such time as FAA regulations result in no significant impact to the properties west of the runway. The County may require that buildings be marked and lighted to the west of the runway at such time as the $\geq \frac{3}{4}$ mile visibility is implemented. The cost of installation of lighting will be the responsibility of the County. To improve approaches in all weather conditions, additional lighted navigational aids will be installed on airport property, which will further result in safer operations during decreasing weather conditions.

2. Remove Part 77 Obstructions as appropriate 0-15 years.

Recognizing the improved approaches requires the County to continue to remove obstructions in the FAA Part 77 Approach and Transitional surfaces.

3. Development of new East Side Facilities 0-15 years

Improvements to the terminal facilities should focus on the east side of the runway as originally recommended in the 1990 Airport Master Plan. Existing west side facilities are constrained, and development to meet anticipated economic growth is inhibited on the west side. New facilities on the east side of the runway will accommodate demand for the next 20 years with opportunities for expansion beyond 20 years, if necessary.

TRANSPORTATION APPENDICES

		<u>PAGE</u>
APPENDIX T-1	December 17, 1997, Resolution, Airport Runway Extension	129
APPENDIX T-2	Recommended Corridor Studies	131
APPENDIX T-3	New Ashcake Road Extended	135
APPENDIX T-4	Creighton Road Extended Phase I (I-295 to US 360) Phase II (US 360 to Rural Point Road)	138 143
APPENDIX T-5	Elm Drive (Route 1250) Relocation	145
APPENDIX T-6	Bell Creek Road Realignment Options	148
APPENDIX T-7	Lakeridge Parkway Extended	149