

Chapter Seven

TRANSPORTATION

INTRODUCTION

The transportation system is the one element that can be most adversely affected by development, while simultaneously shaping development patterns. There is no greater evidence of poorly planned haphazard development than a congested transportation system. Yet, a far reaching transportation system can open up vast new areas to development which previously had been untouched by growth.

A well planned and designed transportation system which identifies and provides for the required infrastructure improvements commensurate with development, will avoid or address many of the traffic problems attributable to growth. On the other hand, strip development or uncoordinated development without adequate improvements to the transportation system can result in nightmarish traffic problems which may be expensive if not impossible to correct.

The reality of the transportation planning process is somewhere in-between the two extremes above. Local, state, and federal governments do not have the financial resources to correct existing problems or provide additional improvements in anticipation of development. At the same time, developers cannot be expected to bear the burden of all necessary improvements, since many of the problems already exist. The key is to find a balanced solution to the transportation problem.

Transportation planning efforts in rural localities, if any, have historically been limited to the road system. However, with the passage of the Intermodal Surface Transportation Efficiency Act (ISTEA) by Congress in 1991, and its subsequent reauthorization as the Transportation Efficiency Act for the 21st Century (TEA-21) in 1998, the coordination of transportation and land use planning has taken on new importance. The adoption of this legislation requires that transportation improvements take into consideration the effects on a localities land use plans, requires closer coordination by state transportation departments with local governments, encourages regional solutions to transportation problems, and requires alternative modes of transportation to be considered and given greater importance. Thus, the transportation issue which has

been a local or regional issue is now receiving attention and guidance from the federal government.

Caroline County is typical of many rural and suburbanizing jurisdictions. The primary means of transportation is its road system. The low densities cannot support alternative modes of transportation, and for the foreseeable future, the road system will continue to be the primary means of transportation. However, the new emphasis on linking transportation and land use, together with the recognition that planning is a long-term process, necessitate that the County begin to look at all modes of transportation.

PAST TRANSPORTATION PLANNING EFFORTS

The County adopted its first transportation plan with the 1977 Comprehensive Plan. The transportation plan was primarily a survey of the then existing conditions. The 1987 update of the Comprehensive Plan de-emphasized existing conditions and focused on particular transportation improvements. It established goals and objectives by which to evaluate the progress in addressing needed improvements. In 1991, RADCO, with assistance from VDOT and the localities, developed a regional traffic forecasting model to assess current and future traffic conditions in the region.

EXISTING TRANSPORTATION SYSTEM

No transportation plan is complete without an analysis of the current transportation system in terms of the modes of transportation available in Caroline County or in nearby jurisdictions that can be utilized by County residents or businesses. This section briefly describes the transportation services available.

AIR SERVICE

Dulles International Airport in Fairfax and Loudoun Counties and National Airport in Arlington are within a two hour drive of Caroline County. Richmond International Airport is approximately forty-five minutes away. These facilities provide national and international service.

Hanover Municipal Airpark and Shannon Airport are the closest municipal airports, both of which are within twenty minutes of the County. A new regional airport is under construction near I-95 in Stafford County.

RAIL SERVICE

Freight Service

Freight service is provided by the CSX Railroad (formerly Richmond, Fredericksburg, and Potomac Railroad) which has its north-south main line between Boston, Massachusetts and Miami, Florida located within the County (Figure 7-1). This line provides access to the northeast, north central, and southeastern areas of the United States. Presently, twenty-five regularly scheduled freight trains, as well as local switching and extra movements use this line. The Milford Industrial Park has several industries which provide significant traffic for the railroad.

On June 1, 1999 CSX integrated 42% of former Conrail trackage into its rail system, creating a system of over 22,700 miles which serves 23 states, Washington D.C., and 2 Canadian provinces. The integration of the former Conrail trackage provided CSX with direct service to northeast markets, including New York City, Boston, Syracuse, Albany, and Montreal, Canada. The creation of a continuous route from the northeast to Florida has a number of potential benefits, the greatest of which, is the potential to remove vehicles from the road, onto to the rails. CSX competes directly with over the road trucks along the I-95 corridor. The creation of an expanded rail system has the potential to divert approximately 1.5 trucks off of the highways in Virginia alone, at a savings of \$111 million to shippers.

Due to operational problems associated with the merger and weather, the integration of the system has not gone as smoothly as anticipated. However, the effects of the merger should continue to be monitored, both in terms of highway impacts, as well as for increases in rail traffic through the County. Increases in freight traffic may require additional improvements to various grade crossings in the County.

Passenger Service

The Virginia Railway Express (VRE) provides commuter rail service to Northern Virginia and Washington, D.C. from Fredericksburg. The VRE operates six commuter trains from Fredericksburg to Washington in the morning and six trains from Washington to Fredericksburg during the evening. Expansion plans include the possibility of midday trains in each direction as well as the development of stations south of Fredericksburg. In addition to the Fredericksburg to Washington line, the

VRE also offers commuter service between Manassas and Washington.

Intercity passenger service is provided by Amtrak which operates ten passenger trains daily along the line. There are no passenger stations located in Caroline County. However, facilities are available nearby in Ashland, Fredericksburg and Richmond. Although not designed or known for commuter service, commuters do use Amtrak between Richmond and Washington.

The Virginia Department of Rail and Public Transportation recently completed a study of the Richmond to Washington corridor to determine the feasibility of providing additional passenger service along the corridor. As a result of this study, up to four additional passenger trains a day are expected by 2004, with additional service increases as demand warrants. This additional service is expected to provide additional commuting options to both Washington and Richmond, that are not presently available. This expansion of service should be monitored as Caroline County has been evaluated for a potential station site.

Finally, the Commonwealth of Virginia has also participated with the State of North Carolina, and the federal government to study the feasibility of developing high speed passenger service, between Washington D.C. and Charlotte, NC. The extension of high speed rail, defined as speeds of 100 mph or greater, would serve as an extension of the service, presently available between Washington and New York City. Again, this additional service may provide additional commuting options, and should be monitored for potential impacts to the County.

WATER

The Ports in Baltimore and Hampton Roads are both within two and one-half hours of Caroline County. The Deepwater Terminal in Richmond is approximately forty-five minutes away. The Rappahannock River is navigable by barges and shallow boats to a depth of twelve feet. However, no commercial port facilities or marinas exist in the County.

ROADS

Caroline County has 578.62 miles of road. The road system in Caroline, as with most localities, is maintained by the Virginia Department of Transportation with funds allocated by the Commonwealth of Virginia. The road

system is divided into two categories for the purposes of planning, maintenance, replacement, and new construction: the primaries and interstate, and the secondary road system. The breakdown is shown in Table 7-1 and graphically represented in Figure 7-1.

Table 7-1

Interstate	15.54
Primary Mileage	95.87
Secondary Mileage	
Hard Surface	428.67
All-Weather Surface	30.04
Light Surface	8.50
Unsurfaced	0
Total	578.62

*Figures as of December 31, 1995

FUNCTIONAL ROAD CLASSIFICATION

The Virginia Department of Transportation (VDOT), through guidelines established by the Federal Highway Administration, is responsible for establishing functional classifications for the road system within the County. The classification represents a hierarchy of roads within the system as determined by the primary purpose for the roads. This classification system is required to be updated every five years as part of the update of the Statewide Transportation Plan. The Board of Supervisors, with guidance from VDOT, adopted the Functional Road Classification System in November 1992.

The Rural Functional Classification System is divided into five road classifications: Principle Arterials (Interstate and Major Arterials), Minor Arterials, Major Collectors, Minor Collectors, and Local Roads. The definitions and characteristics of these classifications are as follows:

- **Principal Arterial:** Interstate and other limited access highways which are designed to carry interstate and intrastate traffic.
- **Minor Arterial:** The rural minor arterial system, in conjunction with the principal arterial system, forms a network with the following service characteristics: (1) Linkage of cities, larger towns, and major resort areas that are capable of attracting travel over similarly long distance; and (2) integrated interstate and intercounty service. The design of roads in this

system should be expected to provide for relatively high travel speeds and minimum interference to "through" movement.

- **Major Collector:** These routes (1) serve county seats not on arterial routes, larger towns not directly served by the higher systems, and other traffic generators of equivalent intracounty importance, such as consolidating schools, shipping points, county parks, and important mining and agricultural areas; (2) link these places with nearby larger towns or cities. Such roads are important intracounty corridors that provide linkages to the arterial system.
- **Minor Collector:** Provides intra-community access at lower volumes than major collectors. These routes should (1) be spaced at intervals consistent with population density to accumulate traffic from local roads and bring all developed areas within reasonable distances of collector roads; (2) provide service to the remaining small communities; and (3) link the important traffic generators with their rural hinterland.
- **Local Road:** Provides access for land adjacent to collector roads and serves local or short distance travel needs.

Figure 7-3 shows the functional classification system for Caroline County as adopted by the Board of Supervisors. The mileages within the functional system are shown in Table 7-2. Figure 7-4 identifies the minimum right-of-way widths which should be secured for future road improvements. These widths are appropriate and subject to traffic and engineering considerations.

Table 7-2

Road Type	Mileage	Percent of System
Principle Arterial	57.91	10.00
Minor Arterial	37.26	6.40
Major Collector	118.77	20.50
Minor Collector	31.03	5.35
Local Road	334.41	57.72
Total	579.38	100.00%

ISSUES

Transportation planning and the development of a transportation system to meet the future of the County requires the identification of critical issues that must continually be monitored and addressed over time. The following is a list of issues identified that form the basis of the identified transportation improvements that are needed as well as the goals, objectives and strategies for transportation planning in general:

- Increased development along Jefferson Davis Highway (Route 1), Fredericksburg Turnpike (Route 2), Tidewater Trail (Route 17), Dawn Boulevard (Route 30), Rogers Clark Blvd. (Route 207) and Richmond Turnpike (Route 301) must be properly managed to maintain safe and efficient operation. Coordinating transportation improvements between developments and limiting access points along existing roads will help ensure that these roads will continue to facilitate through traffic and will not become "local" streets. Particular attention must be given to the Jefferson Davis Highway and Rogers Clark Boulevard corridors because these roads are located within the Primary Growth Area.
- Most County secondary roads have limited capacity to handle significant increases in traffic volumes. Many secondary roads have rights-of-way which do not meet the minimum standards. Narrow pavement widths, narrow shoulders and ditches, and vertical or horizontal curves which do not meet minimum standards further reduce the capacity of these roads. Land use policies may exacerbate these problems.
- Historical and current development patterns encourage vehicle usage and discourage alternative modes of transportation. While this is due, in part, to the County's rural nature, consideration must be given to future development patterns that will encourage alternative transportation modes. The land use plan must encourage mixed-use development and sufficient densities to support rail, transit, and other forms of transportation.
- Reductions in federal funding may place more responsibility on the state, county and developers for road construction and improvements. With federal monies shrinking, new construction, and improvement projects being proposed, the amount of money needed to finance new construction is

insufficient for the needs. Road construction and improvement projects are likely to be prioritized and phased in order to accomplish such projects. The state and county will have to use the financial resources available wisely. New approaches to public and private funding of transportation improvements should be sought to supplement traditional revenue resources.

PROPOSED TRANSPORTATION IMPROVEMENTS

The 2001 – 2007 Transportation Improvement Plan incorporates two VDOT programs: The Urban, Interstate and Primary Improvements Program and the Secondary Roads Improvement Program. The Urban, Interstate and Primary Improvements Program is adopted by the Commonwealth Transportation Board with input from local governments. Interstate system projects compete statewide for available funding while Primary system projects compete regionally within the 14 County VDOT Fredericksburg District. The Secondary Roads Improvement Program is developed jointly between Caroline County and VDOT. Funding is based on a specific formula based allocation for secondary roads. The proposed improvements within the respective programs are identified as follows:

URBAN, INTERSTATE AND PRIMARY ROAD IMPROVEMENTS PROGRAM

- **Completion of four-lane Bowling Green Bypass** - Complete the construction of the four-lane Bowling Green Bypass from Richmond Turnpike to Rogers Clark Boulevard. Preliminary engineering to begin FY 95/96 with construction to be completed in FY 01/02.
- **I-95/Route 207 Interchange Improvements** – Begin Phase 1 of the Reconstruction of the I-95/Route 207 interchange improvements, to include the relocation of the Route 207/Route 652 intersection, relocation of the Route 207/Comfort Way intersection, and the relocation of the northbound off ramp to westbound Route 207.
- **I-95/Route 639 Interchange Improvements** – Reconstruct the I-95/Route 639 interchange to include widening the Route 639 overpass to accommodate left turn lanes onto north and southbound I-95, and reconstruct northbound and southbound exit ramps to accommodate left and right turn lanes.

SECONDARY ROAD IMPROVEMENTS PROGRAM

- **Macedonia Road (Route 609)** - Reconstruct rural two lane road a distance of 2.7 miles from Macedonia Baptist Church to Long Branch Road (Route 668) including improved vertical and horizontal site distance, wider travel lanes and shoulders.
- **Frog Level Road (Route 600)** - Design and reconstruct Frog Level Road for a distance of 2.1 miles from just east of Mt. Vernon Church Road (Route 601) to King William County line. Reconstruction includes wider travel lanes, wider shoulders, and improving curves.
- **Paige Road (Route 605)** - Design and reconstruct Paige Road from a point 0.96 miles east of South River Road (Route 638) to 0.6 miles west of South River Road. Reconstruction includes wider travel surface, shoulders and improving curves.
- **Ladysmith Road (Route 639)** –Reconstruct Ladysmith Road from 1.2 miles west of Jefferson Davis Highway, a distance of 1.6 miles to the entrance of Lake Land 'Or Subdivision. Reconstruction includes wider travel lanes, wider shoulders, and improving curves.

FUTURE TRANSPORTATION IMPROVEMENTS

In addition to those improvements identified in the primary and secondary six year programs, a number of projects have been identified that are long term projects. These projects need to be identified now in that they can be incorporated into the primary and secondary six year improvement programs as conditions warrant and funding is available.

- **Rogers Clark Boulevard Upgrade** - Additional development along the Rogers Clark Boulevard corridor, especially in the Carmel Church area will affect the level of service of Route 207 and the I-95 interchange. A highway corridor study is presently being jointly conducted by VDOT, RADCO and Caroline County. Recommendations of that study should be incorporated into the plan upon its completion. Additionally, preliminary engineering and right-of-way acquisition to align offset intersections to reduce the number of at grade

intersections elsewhere in the corridor should be initiated. Consideration should be given to future grade separation of the intersections if traffic conditions warrant.

- **Tidewater Trail** - Tidewater Trail (Route 17) has been identified in VDOT's long term transportation plan as a candidate upgrading from two to four lanes. Development along the Route 17 Corridor as well as projected increases in through traffic will necessitate the upgrading of Route 17 from New Post to Port Royal. Funding for an environmental assessment is included in the current Six Year Plan.
- **Ladysmith Road** - Ladysmith Road (Route 639) from Rogers Clark Boulevard (Route 207) to Jefferson Davis Highway (Route 1) should be improved to provide better access between Bowling Green and Ladysmith. Design and improvements to Route 639 should include straightening the road, wider travel lanes, wider shoulders, and deceleration and turn lanes at all intersections with state roads. Right-of-way reservation sufficient for future four lane construction should be initiated.
- **Ladysmith Road from Chilesburg to Jefferson Davis Highway** - Preliminary engineering and right-of-way reservation to four-lane Ladysmith Road from Countyline Church Road (Route 603) to I-95 interchange should be initiated. Through traffic from Hanover and Spotsylvania Counties as well as traffic from Lake Land 'Or and other future developments will continue to increase further taxing the capacity of the existing road.
- **Penola Road** - Penola Road (Route 601) from Richmond Turnpike (Route 301) to Rogers Clark Boulevard (Route 207) should be improved to provide better access between the southern part of the County and the Primary Growth Area. Design and improvements should include improving site distance, wider pavement widths and wider shoulders. Funding for preliminary Engineering is included in the current Six Year Secondary Road Plan.

All of the previously identified improvements are shown in the transportation improvements plan in figure 7-5.

GOALS, OBJECTIVES AND STRATEGIES

Transportation planning touches on many of the previously discussed issues of land use patterns and development. Users of the Comprehensive Plan must remember that the plan is long-term in its vision. Many transportation improvements exceed the funding that is available. However, by identifying needed improvements now, the County can more effectively accomplish the improvements in the long-term. Transportation improvements, more than any other type of public facility, require an extensive design and review process. Frequently, the ability to complete an improvement is foreclosed by development unless lands and rights-of-way are preserved for such improvements.

Goal - Support The Development And Maintain A Safe And Efficient Transportation System.

Objective - Work with the Virginia Department of Transportation to identify, design and implement projects that prevent or relieve congestion in developed areas.

Strategy 1 - Work with Virginia Department of Transportation to complete the Bowling Green Bypass to its ultimate design.

Strategy 2 - Develop a specific plan for the I-95/Rogers Clark Boulevard (Route 207) interchange from Jefferson Davis Highway (Route 1) to Dry Bridge Road (Route 684) to relieve congestion, improve traffic safety, and provide for controlled access.

Strategy 3 - Ladysmith Road (Route 639) from Jefferson Davis Highway (Route 1) to Rogers Clark Boulevard (Route 207) should be redesigned and improved to provide high speed access between Bowling Green and Interstate 95.

Strategy 4 - Work with VDOT and the citizen advisory committees to develop transportation plans to supplement the detailed sub-area plans in the growth areas.

Objective - Work with the Virginia Department of Transportation to preserve and improve access to Interstate 95.

Strategy 1 - Preserve land area in the areas of I-95 and Golansville Road (Route 601) and Paige Road (Route 605) for possible future interchanges if needed.

Strategy 2 - Work with VDOT and RADCO to develop an area management plan for the Ladysmith/I-95 interchange area.

Strategy 3 - Work with VDOT to identify an alternative alignment for the I-95 Ladysmith Road interchange, and secure the necessary right-of-way for the improvement.

Objective - Work with the Virginia Department of Transportation to assure safe and convenient railroad crossings, including signalization and grade separation where warranted.

Strategy 1 - Signalization and constant time warning devices should be installed at all at-grade crossings.

Strategy 2 - Grade separated crossings should be constructed as needed where public safety dictates. Candidates that should be considered include Route 605 (Paige Rd), Route 606 (Stonewall Jackson Rd) and Route 601 (Penola Rd).

Objective - Restrict private road subdivisions

Strategy 1 - The Virginia Department of Transportation's Rural Additions Program should continue to be utilized to admit existing qualifying private road subdivisions into the secondary road system.

Strategy 2 - Prior to approving private road subdivisions, require documentation of adequate financial resources for long term maintenance of such roads.

Strategy 3 - Require language on subdivision plats, in covenants and restrictions, and deeds that identify the roads as private roads with no state or local funds for maintenance or upgrades.

Objective - Continue to assess alternatives to improve travel to and from the County.

Strategy 1 - Continue to monitor the improvements and expansion plans of the Virginia Railway Express and the participation of adjacent jurisdictions in the commuter rail system.

Strategy 2 - Monitor and participate in the high-speed rail study of the I-95 corridor between Washington, D.C. and Raleigh, N.C., as well as the Washington to Richmond Rail Study.

Strategy 3 - Assess the feasibility of developing a public airstrip to serve the residents and businesses of the County.

Strategy 4 - Identify and preserve sites for future commuter/high-speed rail stations within the County.

Objective - Monitor transportation issues outside the County that may affect the County's future development.

Strategy 1 - Continue participation in the Fredericksburg Area Metropolitan Planning Organization (FAMPO). The County should pursue full voting membership in place of the non-voting membership it currently enjoys.

Strategy 2 - Monitor transportation improvements in adjacent jurisdictions and assess the potential impacts on the County. Particular emphasis should be given to the southeast portion of the Fredericksburg Outer Connector, and the potential impacts to northern Caroline County.

Strategy 3 - Monitor the impacts of the Clean Air Act and the possible designation of Caroline County as a non-attainment area for potential impacts to the County.

Objective - Plan and coordinate land use development and transportation improvements at the local level and with other jurisdictions at the regional level.

Strategy 1 - Encourage development to pay its share of costs resulting from increased impacts to the transportation system.

Strategy 2 - Utilize the conditional zoning powers available through the Code of Virginia to negotiate off-site improvements generated in whole or in part by development proposals.

Strategy 3 - Rights-of-way should be reserved and, where possible, dedicated to meet the functional classification requirements identified earlier in this chapter.

Strategy 4 - Require that development proposals maintain a Level of Service (LOS) of C or better on roads in the Primary and Secondary Road System.

Strategy 5 - Develop traffic standards that supplement and improve upon the minimum VDOT traffic standards; thereby improving traffic safety.

Objective - Encourage development patterns which promote and encourage alternative modes of transportation, thereby reducing pollution, traffic congestion, and energy consumption.

Strategy 1 - Reduce trip generations by encouraging mixed use developments.

Strategy 2 - Encourage residential densities sufficient to support mass transit in areas accessible to transit.

Objective - Explore opportunities to expand public and private funding for transportation improvements.

Strategy 1 - Evaluate the creation of or participation in a taxing district that would provide the opportunity for a local gasoline tax to supplement transportation improvement funding.

Strategy 2 - Utilize to the fullest extent possible special VDOT funding programs for revenue sharing, industrial and recreational access, safety improvements and enhancements.