REPORT OF THE
VIRGINIA DEPARTMENT OF
TRANSPORTATION ON THE

ROUTE 1 CORRIDOR STUDY
FAIRFAX AND PRINCE WILLIAM COUNTIES

TO THE GOVERNOR AND
THE GENERAL ASSEMBLY OF VIRGINIA

HOUSE DOCUMENT NO. 46

COMMONWEALTH OF VIRGINIA
RICHMOND
1998

DISCLAIMER

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PREFACE

INTRODUCTION

In 1994, the Virginia General Assembly passed House Joint Resolution (HJR) 256, directing the Virginia Department of Transportation (VDOT) to study the Route 1 corridor in Fairfax and Prince William Counties. This resolution was in response to concerns that a complete and comprehensive study of the Route 1 corridor is required to address growing travel demand and to ensure coordinated revitalization efforts in the corridor.

In 1996, Continuing Resolution HJR 21 was passed requesting VDOT to continue its study of the Route 1 corridor in Fairfax and Prince William Counties. HJR 21 requires an interim report to the Governor and 1997 session of the General Assembly and a final report for the 1998 session.

STUDY GROUP MEMBERSHIP

A Steering Committee comprised primarily of State senators, delegates, and county supervisors whose districts are located within the corridor provided policy direction for the study. Representatives from Fort Belvoir and the Town of Dumfries were also on the Steering Committee. The members of the Steering Committee are listed in the table below.

VDOT's Northern Virginia District Transportation Planning Section managed the technical study in coordination with a Technical Committee. The Technical Committee included staff from VDOT, Virginia Department of Rail and Public Transportation (VDRPT), Prince William County, and Fairfax County. Two citizen representatives from each county also served on the Technical Committee. Staff from the Virginia Railway Express (VRE), Potomac and Rappahannock Transportation Commission (PRTC), Washington Metropolitan Area Transportation Authority (WMATA), Fairfax Connector, Southeast Fairfax Development Corporation (SFDC), Fort Belvoir, and Quantico also provided input to the study through the Technical Committee.

A study team led by TransCore (formerly JHK & Associates), a transportation engineering and planning firm, was under contract to VDOT to lead the technical efforts. Other members of the consultant team included Dewberry and Davis, A. Morton Thomas & Associates, Hunter Interests, Lardner-Klein Landscape Architects, and Mary Means & Associates.

STAFF ASSIGNED

The Project Manager for VDOT was Joe Langley of the Northern District Transportation Planning Section. Larry Miller of TransCore was the Project Engineer for the consultant team.

ACKNOWLEDGMENT

This Final Report was prepared in cooperation with the Virginia Department of Transportation.

Route 1 Corridor Study Steering Committee

Chairman	Thomas Farley	VDOT, Northern Virginia District Administrator
Members		
	David B. Albo	Member, Virginia House of Delegates
	Hilda Barg	Prince William County Board of Supervisors
	Samuel Bauckman	Mayor, Town of Dumfries
	Col. Michael Leeper[1]	Garrison Commander, Ft. Belvoir
	Maureen Caddigan	Prince William County Board of Supervisors
	Joseph V. Gartlan, Jr.	Member, Virginia State Senate
	Katherine Hanley	Chair, Fairfax County Board of Supervisors
	Gerald Hyland	Fairfax County Board of Supervisors
	Dana Kauffman	Fairfax County Board of Supervisors
	Gladys B. Keating	Member, Virginia House of Delegate
	Linda Puller	Member, Virginia House of Delegate
	John A. Rollison, III	Member, Virginia House of Delegate
	Kathleen K. Seefeldt	Chair, Prince William County Board of Supervisors

[1] Succeeded Col. Thomas M. Brady due to change in command.

EXECUTIVE SUMMARY

PURPOSE

This report presents the findings and recommendations of the Route 1 Corridor Study. It is intended to help the Virginia Department of Transportation (VDOT), Fairfax County and Prince William County guide project development and implementation efforts in the corridor. The purpose of the study was to identify current and future transportation needs through the year 2020. The study was also to develop a reasonable program of solutions to meet those needs while accommodating county-specific economic development goals.

BACKGROUND

In 1994, the Virginia General Assembly passed House Joint Resolution Number 256 directing VDOT to perform a complete and comprehensive study of the Route 1 corridor. The resolution was in response to concerns about growing travel demand in the corridor and a perceived need to ensure coordinated revitalization efforts in the two counties. The 27-mile study corridor extends from the Prince William/Stafford County Line in the south to the Fairfax County/Alexandria City Line near the Capital Beltway (I-95/I-495) in the north.

A cooperative study effort was managed by the VDOT Northern Virginia District Office Transportation Planning staff in coordination with elected representatives and staff from state, county, and local agencies. A Steering Committee comprised of State senators, delegates, and county supervisors provided policy direction for the study. Citizens directly participated in the study as members of the Technical Committee and via a Citizens Advisory Committee.

The study emphasized public involvement and consensus building. These were part of each of the major project milestones. The project structure provided the general public and interested parties multiple opportunities to interact with members of the study team and make their views known prior to major decision points.

EXISTING PROBLEMS AND FUTURE CHALLENGES

The Route 1 corridor has many positive qualities: proximity to the Potomac and Occoquan Rivers, varied shopping opportunities, unique recreation areas, and attractive historic sites. However, the study team's assessment of existing and future transportation conditions in the corridor revealed a number of issues. Transportation system improvements are needed to address existing capacity and safety problems, meet increasing demand for travel, and help revitalize portions of the corridor. This assessment was based on field reconnaissance, technical analyses, and input from members of the study's Steering, Citizens Advisory, and Technical Committees, state and local transportation officials, business owners, and residents of the corridor.

Today's Route 1

The Route 1 corridor serves large volumes of travelers each day. However, the 27-mile corridor has a significant number of problems due to the manner in which the corridor has evolved over the past decades. Other than the six-lane, divided segment in the northernmost 4.5 miles, the roadway is basically a four-lane undivided facility, often without left turn bays. The roadway has received only spot intersection and bridge improvements, with piecemeal frontage improvements over the last 30 to 40 years.

Generally, Route 1 adequately accommodates existing travel demand, but the experience in many sections is uncomfortable for both motorists and pedestrians. For a signalized arterial, travel speeds are generally reasonable but there are several major traffic bottlenecks and significant potential safety hazards. Route 1 within the study corridor has a higher average accident rate than other similar highways in Virginia. A total of 18 sites are "high accident" locations. On average, over three accidents per day occur on Route 1 in the study corridor.

Transit serves the areas of greatest need, but transit riders must endure poor bus stop conditions. Pedestrians face numerous challenges due to lack of continuous and/or adequate sidewalks. The chaotic

appearance of many sections of Route 1 and abutting properties creates a negative image of the corridor.

These conditions adversely affect not only travelers but also the local communities that Route 1 serves. These problems limit community pride and restrain economic development in portions of the corridor. In general, Route 1 has a negative image in the development community.

Tomorrow's Route 1

Significant growth is expected in the number of people who live and work in the corridor. The Route 1 Corridor in Fairfax and Prince William Counties is now home to 157,000 people and 68,000 jobs. By 2020, the corridor will have over 240,000 residents and 115,000 jobs. Other nearby areas are also expected to grow. This growth in people and jobs will increase traffic by 10 to 60 percent in Fairfax County and by 45 to more than 100 percent in Prince William County.

This growth will contribute to more traffic congestion unless improvements beyond those currently funded are made. The graphic below shows that Route 1 will have more hours of congestion per day in 2020 than in 1995. In this analysis, "hours of congestion" is defined as the number of hours per day that traffic demand exceeds the roadway capacity. Without transportation improvements beyond those currently funded, Route 1 is projected to have 4 to 12 hours of congestion per day in 2020, depending upon the location in the corridor.

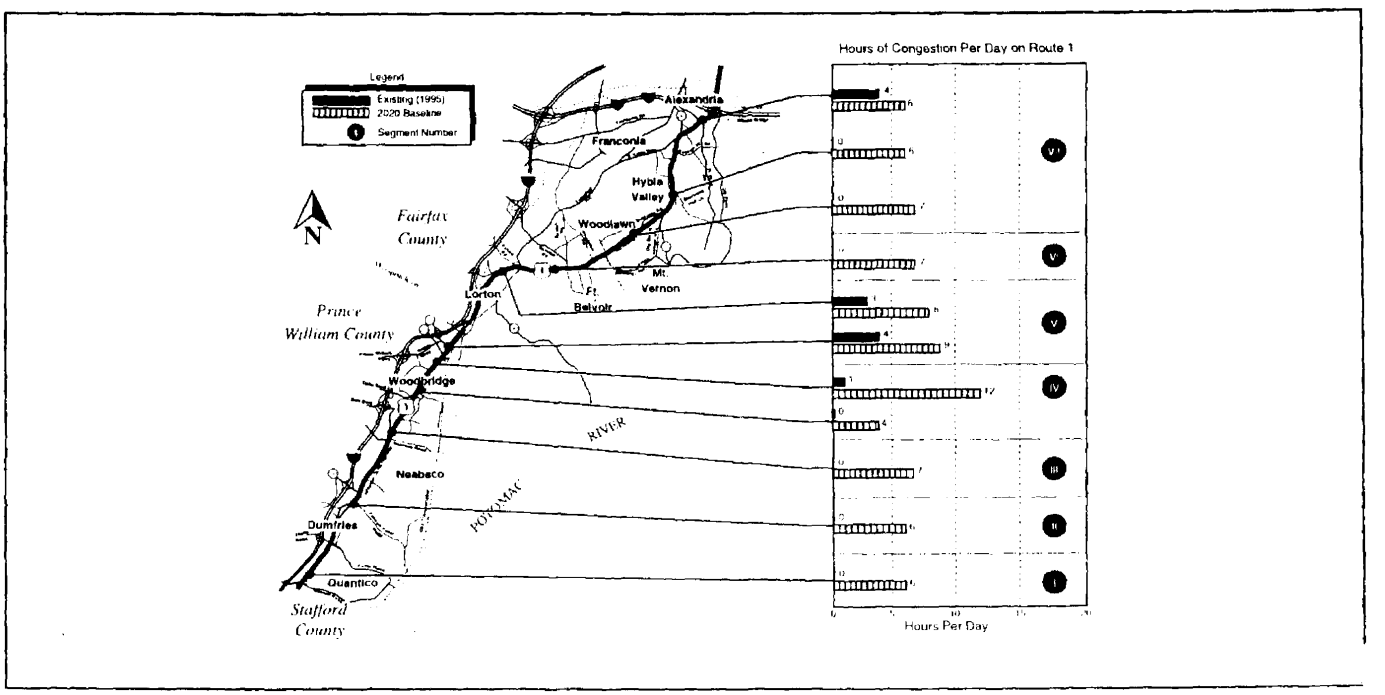
Actions Needed

To improve mobility and accessibility in the corridor, improvements are needed to all aspects of the Route 1 transportation system. The roadway and intersections must be widened and made more efficient. Bus and train service needs to be improved and complemented with improved pedestrian and bicycle facilities. Methods to encourage more ridesharing will also be required.

The study team realizes that the dual role of Route 1 will continue into the future while accommodating expected growth in the corridor. These roles are:

1) To provide access to the residences, businesses, and other development in the corridor.
2) To provide for travel between Route 1 and origins and destinations outside of the corridor.

Any program of improvements must address the transportation needs, help to improve the sense of community, and enhance economic development opportunities within the corridor.



Traffic congestion on Route 1 is projected to increase throughout the corridor by 2020 without transportation improvements beyond those currently funded.

CONCEPTS EVALUATED

The study team used the following four goals to develop an appropriate range of concepts to meet the future (2020) travel demand needs in the corridor:

- Provide a safe and efficient transportation system with an appropriate balance between the needs of the residents, businesses, and other users of the corridor.
- Respect environmental and cultural resources
- Enhance economic vitality
- Be cost effective

The study team developed four alternative Concepts to be compared to the Baseline scenario: Concept A, B, C, and D. A variation on Concept C, Concept C1, was added based on community input. These concepts represent a logical range of potential solutions and are summarized as follows:

- *Baseline.* Assumes regional transportation improvements consistent with Metropolitan Washington Council of Government's (MWCOG) 2020 Constrained Long-Range Plan. On Route 1, however, only currently funded improvements are assumed.

- *Concept A.* Includes major transit service improvements. Roadway improvements are limited to adding left turns throughout the corridor with painted medians. No additional through lanes are constructed.

- *Concepts B, C, and D.* Include moderate to minor transit service improvements. Each concept adds one through lane in each direction and left turn lanes throughout the corridor. Some locations have painted medians in Concept B. Concepts C, C1, and D have raised medians. Concept C1 represents a variation on Concept C in that no additional lanes are added to the existing 6-lane roadway in the northern 4.5 miles of the corridor.

Each Concept was customized for the characteristics and issues in each segment of the corridor. For example, in Segment VII, Woodlawn to Alexandria, the concepts (except C-1) include special lanes for transit and high occupancy vehicles since there is considerable transit usage in this area.

The study team evaluated the concepts to understand the benefits and impacts of each option. The evaluation addressed the impacts on travel in the corridor, environmental/historic resources, economic vitality, and quality of life. Costs associated with each concept were also estimated. From this evaluation and input from the community, the study team developed the Plan summarized on the following pages.

Most of Route 1 has received only spot intersection and frontage improvements over the last 30 to 40 years.

RECOMMENDATIONS

The Plan is a package of improvements that is a combination of the best parts of each of the concepts considered. The Plan balances conflicting objectives to provide an overall positive impact on the corridor.

The purpose of the Plan is to guide transportation improvements through the year 2020 in a corridor where more than just transportation system improvements are needed. Clearly, improvement of many segments of Route 1 presents challenges beyond moving people and goods. Improvements to the transportation system are one important element of making Route 1 a better place. The Plan provides the long-range vision of the transportation system within which projects are developed and implemented.

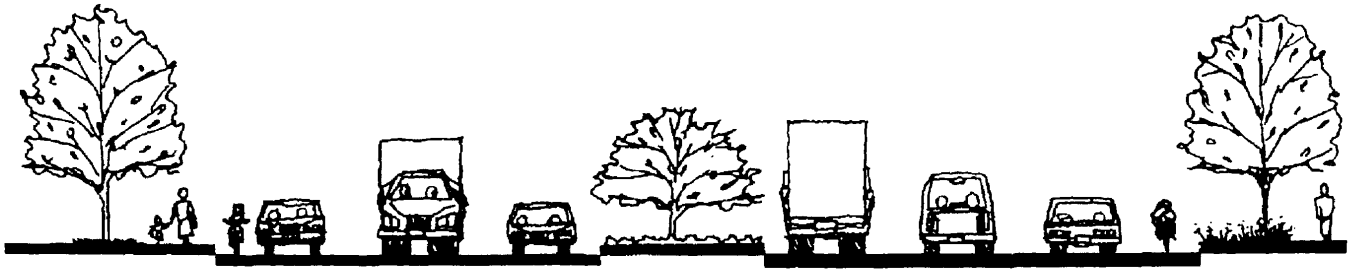
VDOT and the Counties must work closely together throughout the development and implementation of projects to achieve all that is desired and possible for Route 1. Transportation improvements provide substantial opportunities for the Counties to leverage other initiatives in the corridor.

Overview

The following list and adjacent map summarizes the Plan. Recommendations are then described in more detail for roadway design features, transit and ridesharing, land use and urban design, and economic actions.

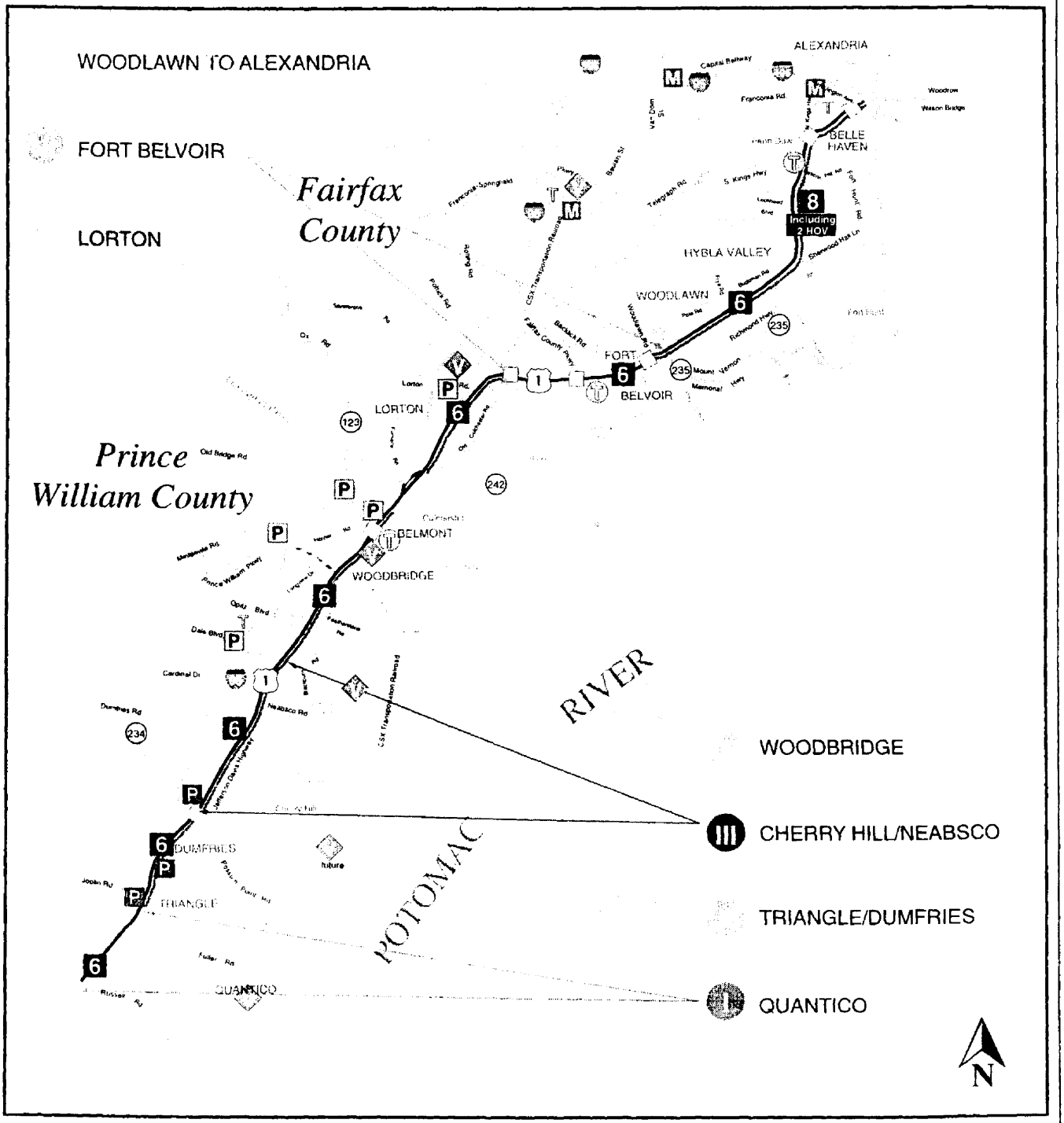
The key features of the Plan are consistent with both Counties' Comprehensive Plans and include:

- A six-lane boulevard with streetscaping throughout the corridor, except:
  - An eight-lane boulevard including two lanes for high occupancy vehicles (HOV) is recommended for the 4.5 miles between Route 235 North/Buckman Road and the Beltway.
  - Prior to final design, a detailed analysis should be conducted to confirm that operating the two additional lanes as HOV lanes is the most effective strategy.
- Raised median for landscaping and left turns (16 feet wide typically) with minimum spacing between median breaks of 700 to 1000 feet.
- Quality inter-parcel access and public access easements, through integrated site plans, between properties are preferred rather than service roads.
- Continuous sidewalks/trail along Route 1 that connect with businesses, neighborhoods, and transit stops.
- Accommodation for on-street bicycle usage.
- Improved roadway lighting and signing.
- "Smart Travel" systems including coordinated traffic signals, variable message signs on Route 1, real time traveler information displays at transit centers, and standard transit fare media for the region.
- Enhanced local and express bus service oriented to existing and new transit centers with coordinated schedules.
- Feeder bus service to commuter rail stations.
- Transit Route maps and timetables at all bus stops.
- Shelters, benches, and electronic displays at more heavily used bus stops.



The Recommended Plan includes an additional through lane in each direction, landscaped medians, and pedestrian/bike facilities throughout the corridor to improve safety and appearance.

Route 1 Corridor Transportation Plan Overview



Roadway Design Features

The roadway improvements are designed to improve traffic operations, safety, and the appearance of the corridor. The improvements include an additional through lane in each direction, provisions for streetscape elements, pedestrian and bicycle accommodations, transit amenities, and utility relocation/burial.

As shown on the previous page, the basic roadway cross section is an urban, or closed, section with curb and gutter and a raised median with a curb. The cross-section includes vehicle lanes nominally 12 feet in width, where feasible, with appropriate offsets to curbs. The outside lanes of Route 1 should be oversized to accommodate on-street bicycle travel.

A continuous path, 10 feet wide, is included throughout the corridor along the west side of Route 1. Sidewalks are included on the east side in all segments except through the Quantico and Fort Belvoir segments.

The standard median width is 16 feet. This width accommodates left turn lanes and provides adequate space for landscaping in median sections without left turn lanes. Wider medians are appropriate in special areas (refer to the Land Use and Urban Design section) or in locations with "back-to-back" left turn lanes. The additional width (typically four feet) provides space for landscaping adjacent to left turn lanes and additional space for pedestrian refuge.

Median break spacing is maintained at a minimum of 700 to 1000 feet, depending upon design speed. Reductions in this spacing should be discouraged to smooth traffic flow, reduce traffic conflicts, and improve appearance.

The right-of-way width for the basic roadway section is approximately 125 feet for the six-lane section and 150 feet for the eight-lane section. Additional right-of-way will be required at selected intersections, driveways, and other locations as warranted by capacity and safety considerations for the following seven items:

- Right-turn lanes
- Multiple left turn lanes
- Bus pull-outs
- Wider medians for additional pedestrian refuge and special landscaping treatments
- Interchanges
- Service roads where adequate interparcel access cannot be provided
- Traffic signal supports and cabinets.

Service roads, while providing beneficial, controlled public access away from the mainline lanes, are not a preferred element of this Plan. This is due to concerns for additional property impacts associated with their width and traffic operational problems which can occur at intersections. Integrated site plans that provide quality interparcel access and public access easements are, in general, preferred over service roads. However, by not providing quality interparcel access, property owners may be required to provide service roads.

The increasing demand for travel in the corridor will likely require the reconstruction or construction of grade separated interchanges at eight locations along Route 1:

- Russell Road - reconstruction
- Route 234 (Dumfries Road/Potomac Parkway)
- Route 123 (Gordon Boulevard)
- Telegraph Road
- Fairfax County Parkway
- Woodlawn Road
- South/North Kings Highway
- Huntington Avenue/Fort Hunt Road.

Transit and Ridesharing

The Plan includes enhanced local and express bus service that is oriented to existing and new transit centers. These services have coordinated schedules to minimize waiting times during transfers. The transit centers provide connections to buses in the Route 1 corridor as well as cross-county bus routes. Transit services in the corridor should be "seamless"—coordinated schedules and fare media among different operators.

The Plan provides new fixed-route bus service between Woodbridge and Hybla Valley to eliminate the existing gap in bus service along Route 1. In the short-term this will require cooperation between Fairfax County and the PRTC. Other locations for new fixed route bus service include Lorton to Huntington and Cherry Hill to Woodbridge.

Bus stops in the corridor require improvements. All bus stops should have route maps and timetables, connecting sidewalks, and handicapped access. The more heavily used stops should have shelters, benches, and eventually, electronic displays with real-time route specific information.

VRE commuter rail service is also improved in the Plan including service, station, and track improvements. In addition, the Plan provides access improvements to the Rippon and new Cherry Hill stations.

Ridesharing is further facilitated in the Plan through expanded/new park-and-ride lots and the HOV lanes in Segment VII. The lots in Triangle and Dumfries help to accommodate the growth expected in the Cherry Hill area.

Land Use and Urban Design

For those sections of the corridor with development adjacent to the roadway, two guidelines are recommended.

- Emphasize nodes of activity.
  Locate buildings close to the street

These guidelines maximize the effectiveness of walking and transit as alternative means of travel in the corridor.

The unique characteristics and needs of these portions of the Route 1 corridor will require special considerations by the Counties. Special incentives and zoning changes are needed to realize the full potential.

The streetscape design intent for the corridor is to provide an underlying continuity of elements, colors, materials, and textures that are enhanced and accentuated within designated special areas.

The special areas – such as development nodes, historic sites, entries, and areas with significant pedestrian activity – should take on their own character and identity that is compatible within the overall design vocabulary found in the corridor. Special areas may be enhanced with additional planting, sidewalks, pedestrian-scaled light fixtures, bus shelters, benches, and trash cans. Additional colors may be used to highlight the special areas.

The Plan includes a raised median (with a curb) planted with trees, shrubs, and groundcovers. Street trees and pedestrian paths, sidewalks, and crosswalks are found throughout the entire corridor. Pedestrian-scaled lighting is located in special areas and the entire corridor is illuminated with road-scaled light fixtures.

Utility lines should be relocated or placed underground in priority areas so as to improve visual aesthetics and eliminate conflicts with the proposed landscape and sidewalk/path improvements. Signs are organized to present a consistent appearance that relieves visual clutter. Traffic signal mast arms are VDOT standard types, painted black.

Economic Actions

Road and transit improvements are just one element of a comprehensive revitalization plan for Route 1. The following represent the key issues and programs recommended to maximize the opportunity provided by the proposed transportation improvements to improve Route 1's economic conditions.

- The unique circumstances of Route 1 require changes to local zoning ordinances and special incentives.
  - The changes could include establishing special zoning districts for revitalization areas and creating mixed use zones. Incentives could include expanded tax abatement programs and expedited approval process for projects consistent with revitalization plans.
  - Businesses that are displaced by transportation improvements should be provided the opportunity to relocate to the envisioned higher quality nodal developments.

- A strong local public redevelopment effort will need to be implemented.
  - An entity should be created or empowered that can acquire and assemble marginal real estate to create development site opportunities, where possible.
  - At a minimum, significant public-private partnership efforts should be undertaken.

- The image of Route 1 needs to be improved.
  - Significant landscape improvement should accompany road improvements.
  - Blight should be reduced and development patterns shifted from strip commercial to mixed use development. The development pattern will shift substantially only if a strong

redevelopment agency exists which can package the available real estate.

- Establish a mechanism for maintenance of streetscaping, and landscaping elements.
  - VDOT recognizes the need for enhancements to the roadway, but it is not the default provider/maintainer.
  - The Counties, VDOT, and property owners need to identify a stable funding source and the party(s) responsible for maintenance.
  - Possible solutions for maintenance include combinations of: "Adopt a highway" programs, Park Authority staff and equipment used for maintenance, and contracted maintenance.

NEXT STEPS

The long-range plan described in the previous sections will not be implemented all at once. Improvements will be made gradually over the next two decades, if not longer. This reflects fiscal realities and the fact that some problems will not emerge until the future. The Plan includes a prioritized program of improvements. This program categorizes projects into short, medium, and long-term priorities. The full program is described in Chapter 6. The following provides a description of the highest priority activities, the short-term projects.

Centerline Refinement Study

The next step toward implementing improvements is for VDOT to conduct a study to refine the roadway design centerline. This will reduce the uncertainty for landowners along Route 1. For purposes of this planning study, the proposed centerline was assumed to be the same as the existing centerline. The new study should identify centerline adjustments that can reduce right-of-way impacts and facilitate redevelopment.

The centerline study will be a cooperative effort led by VDOT and include an active public involvement program. The County Boards of Supervisors, local landowners, those interested in and responsible for revitalization, and others will need to be involved throughout the study to develop consensus. The refined centerline could then be used as a basis for interim widening and final design of sections of Route 1. The Counties and/or redevelopment entities may need to conduct supplemental studies to identify redevelopment opportunity locations in revitalization areas.

Short-term Projects

High priority roadway and transit projects that should be completed in the short-term are listed in the tables to the right. The roadway projects are listed in geographical order with costs for design, construction, and right-of-way. The transit projects show the estimated capital costs of the projects.

TOTAL COST

The total cost for the improvement program described in this Plan is approximately $610 million. Of this total, $330 million is for roadway and right-of-way, $240 million is for interchanges, and over $40 million is for transit.

These costs are order of magnitude and include administration, construction, and right-of-way costs. They do not include costs for landscaping, placement of utilities underground, or payment of damages beyond land values. Funding source and/or responsible agency is not listed or implied.

SHORT-TERM ROADWAY PROJECTS

Segment	Project	Cost	Currently Funded
All Segments	Centerline refinement study	$2.5 M	$0.0 M
Quantico	Reconstruct Russell Road interchange (federally owned bridge and ramps)	$5.0 M	$0.0 M
Triangle/Dumfries	Relocate southbound Route 1 to Fraley Boulevard and widen to 6-lanes divided (*Route 619, Joplin Road, to Route 234*)	$25.0 M	$0.0 M
Triangle/Dumfries	Construct Route 234 interchange	$25.0 M	$5.6 M
Neabsco	Replace bridge over Neabsco Creek and widen to 6-lanes divided (*Cardinal Drive to Neabsco Mills Road*)	$6.5 M	$6.5 M
Woodbridge	Widen to 6-lanes divided (*Opitz Boulevard to Route 253, Occoquan Road*)	$20.0 M	$0.0 M
Woodbridge	Construct interchange at Route 1/Route 123 intersection and widen Route 1 to 6-lanes (*Route 253, Occoquan Road, to Occoquan River*)	$40.0 M	$1.0M
Lorton	Replace/widen CSX railroad bridge over Route 1 at I-95 interchange (CSX owns bridge)	$5.0 M	$0.0 M
Lorton	Improve intersections and widen Route 1 to 6-lanes divided with auxiliary lanes for turns (*Lorton Road to Telegraph Road*)	$10.0 M	$9.1 M
Woodlawn/Hybla Valley	Widen to 6-lanes divided (*Route 235 South/Old Mill Road to Route 235 North/Buckman Road North*)	$40.0 M	$0.0 M
All Segments	Intersection/spot improvements (See Chapter 6)	$17.7 M	$0.0 M
All Segments	Roadside improvements (See Chapter 6)	$16.5 M	$0.0 M
	Subtotal - Short-term projects	***$213.2 M***	***$22.2 M***

SHORT-TERM TRANSIT PROJECTS

Segment	Project	Cost	Currently Funded
Triangle	Construct new/expanded park-and-ride lot	$1.5 M	$0.0 M
Woodbridge	Construct transit center	$1.2 M	$0.0 M
Woodbridge/ Hybla Valley	Implement fixed-route bus service	$1.0 M	$0.0M
Lorton	Relocation of Lorton park-and-ride lot	$0.4 M	$0.0 M
Lorton	Implement feeder bus service to Lorton VRE	$0.6 M	$0.0 M
Lorton/Huntington	Implement/expand fixed route bus service	$1.5 M	$0.0M
All segments	Improve bus stops	$0.2 M	$0.0 M
All segments	VRE track & signal improvements and service increases	$9.0 M	$9.0 M
All segments	Implement VRE bi-level cars	$10.5 M	$10.5 M
	Subtotal - Short-term projects	***$25.9 M***	***$19.5 M***

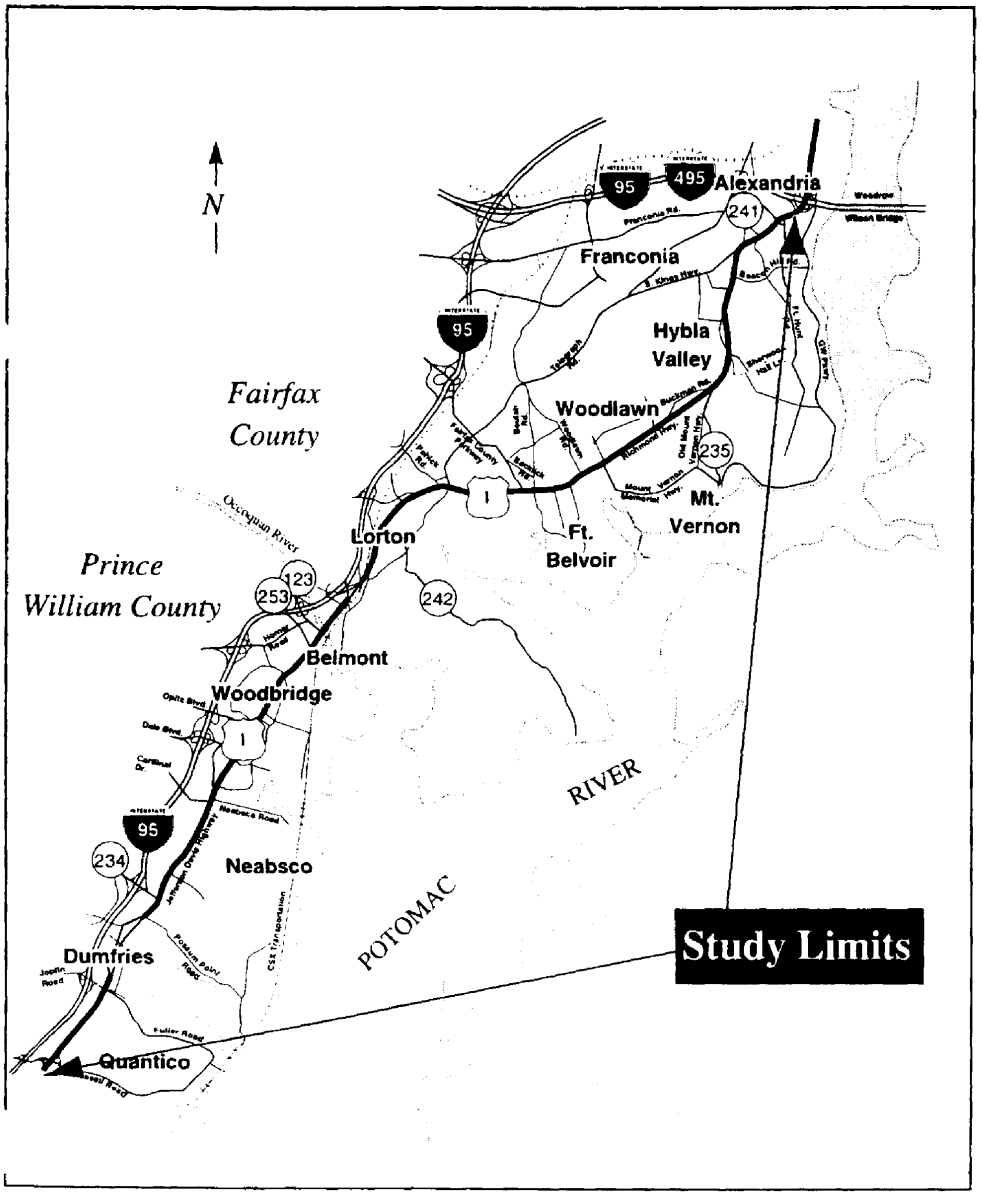
CHAPTER 1. INTRODUCTION

PURPOSE AND ORGANIZATION OF THE REPORT

This report presents the findings and recommendations of the Route 1 Corridor Study. It is intended to help the Virginia Department of Transportation (VDOT), Fairfax County and Prince William County guide project development and implementation efforts in the corridor.

The final report is organized into six chapters. Chapter 1 describes the purpose, background and organization of the study. Chapter 2 describes existing and future (year 2020) baseline conditions for the corridor. Chapter 3 summarizes existing and anticipated problems in the corridor. Chapter 4 describes plan objectives and alternative concepts considered in the study. Chapter 5 summarizes the results of the evaluation. Chapter 6 describes the Recommended Plan.

Exhibit 1-1. Study Area



BACKGROUND OF THE STUDY

In 1994, the Virginia General Assembly passed House Joint Resolution (HJR) 256 directing VDOT to perform a complete and comprehensive study of the Route 1 corridor. The resolution was in response to concerns about growing travel demand in the corridor and a perceived need to ensure coordinated revitalization efforts in the two counties. Copies of HJR Number 256 and a 1996 Continuing Resolution (HJR Number 21) are included in Appendix A.

VDOT contracted with the TransCore Team in 1995 for consulting services supporting the two-year study of the Route 1 corridor in Fairfax and Prince William Counties. As shown in Exhibit 1-1, the 27-mile study corridor extends from the Prince William/Stafford County Line in the south to the Fairfax County/ Alexandria City Line near the Capital Beltway (I-95/I-495) in the north.

The study team identified transportation needs through the year 2020. A reasonable program of solutions that meets those needs and accommodates county-specific economic development goals is recommended.

Specific objectives of the study include the following:

- Inventory and document the existing transportation features (highway, transit, pedestrian, and bicycle) in the corridor.
- Develop and evaluate near-term and long-term alternatives for improved traffic and transit operations through a design year of 2020.
- Recommend a set of improvements prioritized by time frame.

STUDY ORGANIZATION

A cooperative study effort was managed by the VDOT Northern Virginia District Office Transportation Planning Staff in coordination with a Steering Committee, a Technical Committee, a Citizens Advisory Committee, and the general public. Exhibit 1-2 shows the organization of the study. Representatives from state, county, regional, and military agencies were active participants in the study.

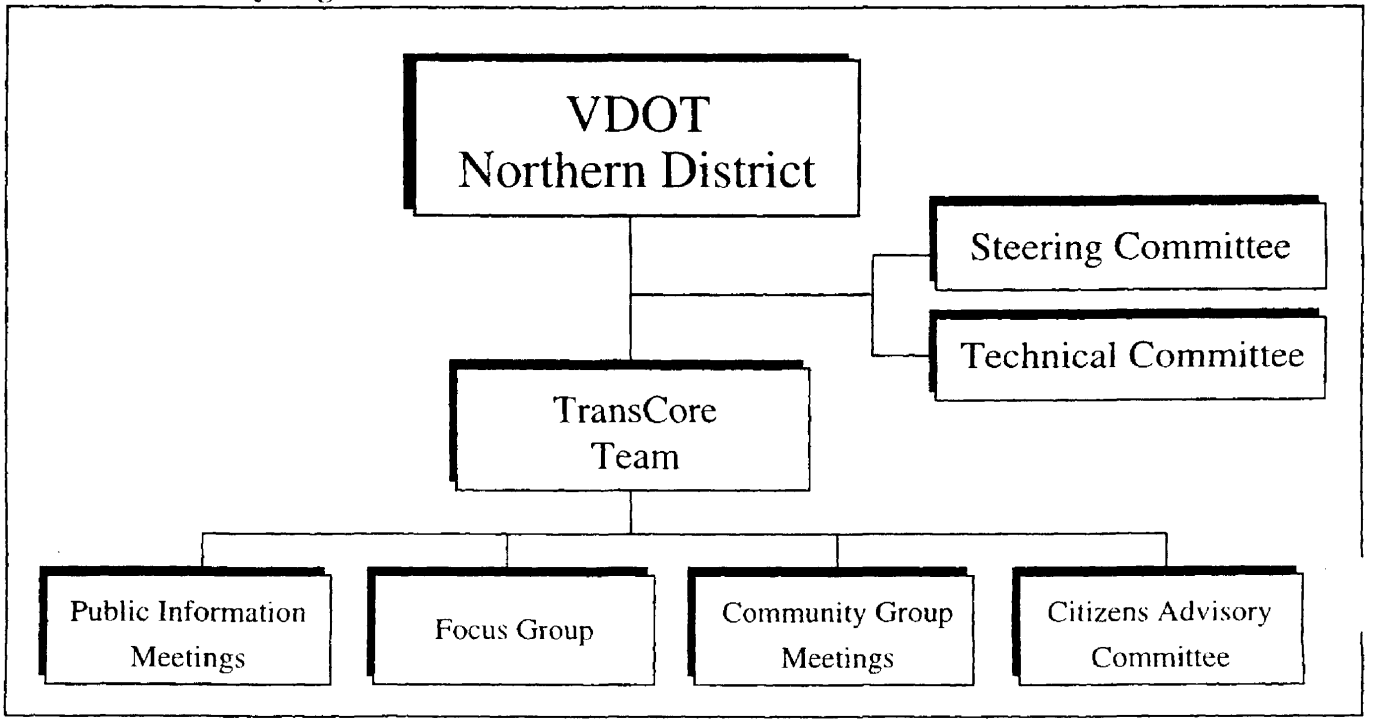
Steering Committee

Policy direction was provided by a Steering Committee comprised primarily of State senators, delegates, and county supervisors whose districts were located in the corridor. A representative from Fort Belvoir also participated. The Steering Committee invited public participation throughout the study process. All Steering Committee meetings were open to the public.

Technical Committee

The Technical Committee guided technical study efforts through VDOT. The committee included staff from VDOT (Northern District and Central offices), Virginia Department of Rail and Public Transportation (VDRPT), Prince William County, and Fairfax County. Two citizen representatives from each county also served on the Technical Committee. Staff from Virginia Railway Express (VRE), Potomac and Rappahannock Transportation Commission (PRTC), Washington Metropolitan Area Transit Authority (WMATA), Fairfax County Connector, Southeast Fairfax Development Corporation (SFDC), Fort Belvoir and Quantico also provided input to the study through the Technical Committee.

Exhibit 1-2. Study Organization



Citizens Advisory Committee

A Citizens Advisory Committee (CAC) appointed by each County's Board of Supervisors also provided input. The CAC was comprised of thirteen members; eight from Fairfax County and five from Prince William County.

Consultant Team

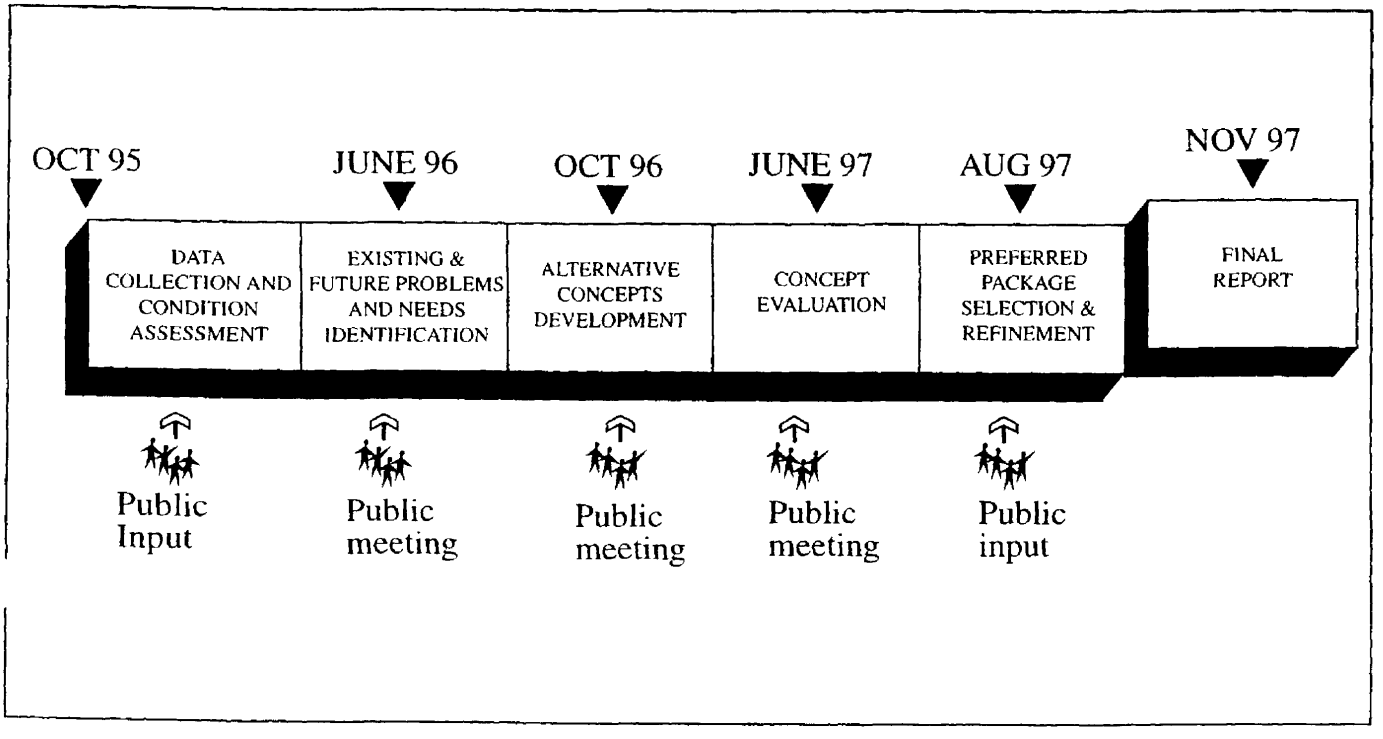
TransCore was the prime consultant on this study and was also responsible for the traffic engineering and transportation planning aspects of the study. TransCore was supported by the consulting firms of Dewberry & Davis (highway engineering and environmental analysis), Lardner/Klein Landscape Architects (landscape architecture and land use), Hunter Interests, Inc. (economic development), A. Morton Thomas & Associates (engineering and environmental support) and Mary Means & Associates (public involvement and historic preservation).

Public Involvement

The Route 1 Corridor Study public involvement process engaged citizens, elected officials, affected individuals and organizations in the study corridor to develop a consensus about the key issues and solutions in the corridor. The study emphasized public involvement and consensus building. These were part of each of the project milestones. The project structure provided the general public and interested parties multiple opportunities to interact and make their views known prior to and following major decision points.

Public input was sought during the data collection and existing conditions assessment stage to establish a common understanding of problems and issues. Public input was also used to help develop and refine the alternative concepts and select the preferred package of improvements. The study provided for three public information meetings as shown in Exhibit 1-3. Key public involvement actions are summarized in the box on the following page.

Exhibit 1-3. Project Schedule



Key Public Involvement Actions

Public involvement actions were aimed at reaching out to all members of the community and obtaining focused feedback on key study issues. Actions such as one-on-one meetings, focus groups, civic group presentations and development of a Route 1 Corridor Study mailing list provided opportunities for outreach and feedback beyond the public information meetings. The mailing list, which began with about 300 entries, eventually grew to over 700 entries and continues to be maintained by the VDOT Northern District Office. The Route 1 Corridor Study was also included on VDOT's website.

For each of the public information meetings, meeting announcements were distributed to those on the mailing list. For some of the meetings, flyers were provided to local chambers of commerce and other organizations for mailings to members and posting in store windows along Route 1. Newsletters were prepared and distributed describing the issues and key findings to be discussed at each of the meetings. Newsletters included comment forms on prepaid postage return mailers.

Each meeting was advertised in local and regional newspapers. Public services announcements were provided to the media prior to each public meeting. The local media provided coverage of the study both in advance of and following key informational meetings. A number of newspaper articles highlighted the issues and findings during the various study phases. The final round of public meetings received television coverage on local news shows.

The meetings were set up to gather feedback in a variety of ways. They featured an open house format with a formal presentation and a question and answer period during the early evening hours. Input was received from citizens from one-on-one interaction with study team staff, the question/comment period, comment forms, and stick-on notes on display materials.

Key actions by the study team through June 1996 to gather input from the community on current issues, problems and assets in the corridor included the following:

- One-on-one interviews with transit agency representatives
- Focus group meeting with those who rely on transit for transportation
- Focus group meeting with small business owners
- Citizens Advisory Committee meeting
- Steering and Technical Committee meetings
- Preparation and mailing of introductory study newsletter
- Preparation of newsletter describing existing problems and future challenges
- Public Information Meeting in each of the two counties

During the development of alternative concepts from July to October 1996, further outreach and feedback efforts included:

- Civic group presentations
- Steering and Technical Committee meetings
- Citizens Advisory Committee meeting
- Preparation and mailing of newsletter describing proposed alternative concepts
- Public Information Meetings in each of the two counties
- Open house at Fort Belvoir on a weekday during working hours

During the evaluation phase of the study, from November 1996 to June 1997, outreach and input actions included:

- Civic group presentations
- Steering and Technical Committee meetings
- Citizens Advisory Committee meeting
- Coordination with Fairfax County Route 1 Revitalization Study
- Preparation of newsletter summarizing findings of evaluation of concepts
- Public Information Meeting in each of the two counties.

During July and August 1997, to resolve outstanding issues, select, and refine the Recommended Plan, the key public involvement actions included:

- Civic group presentations
- Steering and Technical Committee meetings
- Citizens Advisory Committee meeting
- Further coordination with Fairfax County Route 1 Revitalization Study
- Numerous one-on-one meetings with concerned groups and Steering Committee members

STUDY APPROACH

The study was organized under the following basic principles:

- Emphasize a highly inclusive and participatory process
- Seek guidance from multi-jurisdictional leadership
- Address a full range of transportation modes (highway, transit, pedestrian, and bicycle)
- Consider transportation's relationship to land use, economics and other key community concerns.

The study team developed a four step process for this study based on solving existing and future transportation-related problems in the study corridor. The study approach is discussed below.

Establish Existing and Future Conditions

Current conditions were established by field observation of the corridor's characteristics including counting traffic and noting existing features. Team members also developed an inventory of environmental and historical resources and gathered information on ıe current economic and business conditions in the corridor.

The study team established future transportation conditions by forecasting travel demand in the corridor for the year 2020. These forecasts were based on population and employment projections in the corridor and the region developed by the Metropolitan Washington Council of Governments (MWCOG). The MWCOG had worked cooperatively with localities to develop the population and employment projections.

Develop and Evaluate Concepts

During the summer of 1996, the study team developed a range of alternative visions, or concepts, for the corridor. These concepts incorporated ideas from the community and identified possible solutions. These concepts included ideas for:

- Improving the capacity and safety of the roadway
- Enhancing bus and rail service
- Adding carpool facilities
- Improving connectivity for bicycle routes and pedestrian walkways

Each of the concepts included ideas for improving the economic vitality and image of the corridor through transportation and streetscape improvements.

The study team evaluated the alternative concepts using a comprehensive set of objectives (described in Chapter 4). These objectives addressed the potential impacts of the concepts on travel in the corridor, environmental/historic resources, economic vitality, and quality of life. Costs associated with each of these options were also estimated.

Find the Balance - Select Preferred Option

Together with the parties identified in Exhibit 1-2, the study team worked to find the balance among conflicting objectives. The selection process, therefore, involved certain tradeoffs. The final selection by the study team was driven by the underlying goal of trying to maximize the overall positive impact on the corridor.

Prepare an Action Plan

Based on the selected package of improvements, the study team prepared the Recommended Plan. The Plan documents the long-range vision for the corridor.

Recommendations are incorporated into a prioritized timetable for improvements. This timetable identifies actions to be taken by VDOT as early as 1997. The Counties and VDOT will use the study recommendations to facilitate on-going and future improvements in the corridor.

CHAPTER 2. CORRIDOR CONDITIONS

INTRODUCTION

This Chapter describes existing and future baseline conditions of the Route 1 corridor in Fairfax and Prince William Counties. The conditions were assessed through field observations, field data collection, technical analyses, and discussions with local citizens familiar with the corridor. The following sections highlight the major findings of the existing conditions assessment.

CORRIDOR OVERVIEW

The Route 1 Corridor lies in the eastern portions of Fairfax and Prince William Counties. Roadways in the corridor area are oriented in a southwest-to-northeast direction (parallel to the Potomac River).

The primary direction of travel in the study area is north south. There are no major east-west travel corridors across the Route 1 corridor in Fairfax or Prince William Counties. This is due in part because there are no Potomac River crossings linking Maryland and the two counties. Only the Woodrow Wilson Bridge (I-95/I-495) provides a river crossing in close proximity to the study area.

Major transportation facilities serving north-south travel in the area are I-95/I-495, Route 1, Telegraph Road (in Fairfax County), George Washington Memorial Parkway, and the rail line owned by CSX Transportation (used by the VRE commuter rail service). Through the Lorton area, only I-95 and Route 1 provide for significant north-south traffic movement. According to VDOT's classification system, Route 1 north of Route 253 (Occoquan Road) is an urban principal arterial. South of Route 253, Route 1 is classified as a rural minor arterial. The functional classification of roadways in the corridor is shown in Exhibit 2-1.

Within the Route 1 study corridor, the following routes are also on the National Highway System (NHS):

- Interstate 95
- Route 1 from Route 253 (Occoquan Road) to the Capital Beltway
- Route 123 (Gordon Boulevard) north of Route 1
- Route 234 (Dumfries Road) west of I-95
- Route 619 (STRAHNET[1] connector for Quantico)
- Fairfax County Parkway (STRAHNET connector for Fort Belvoir)

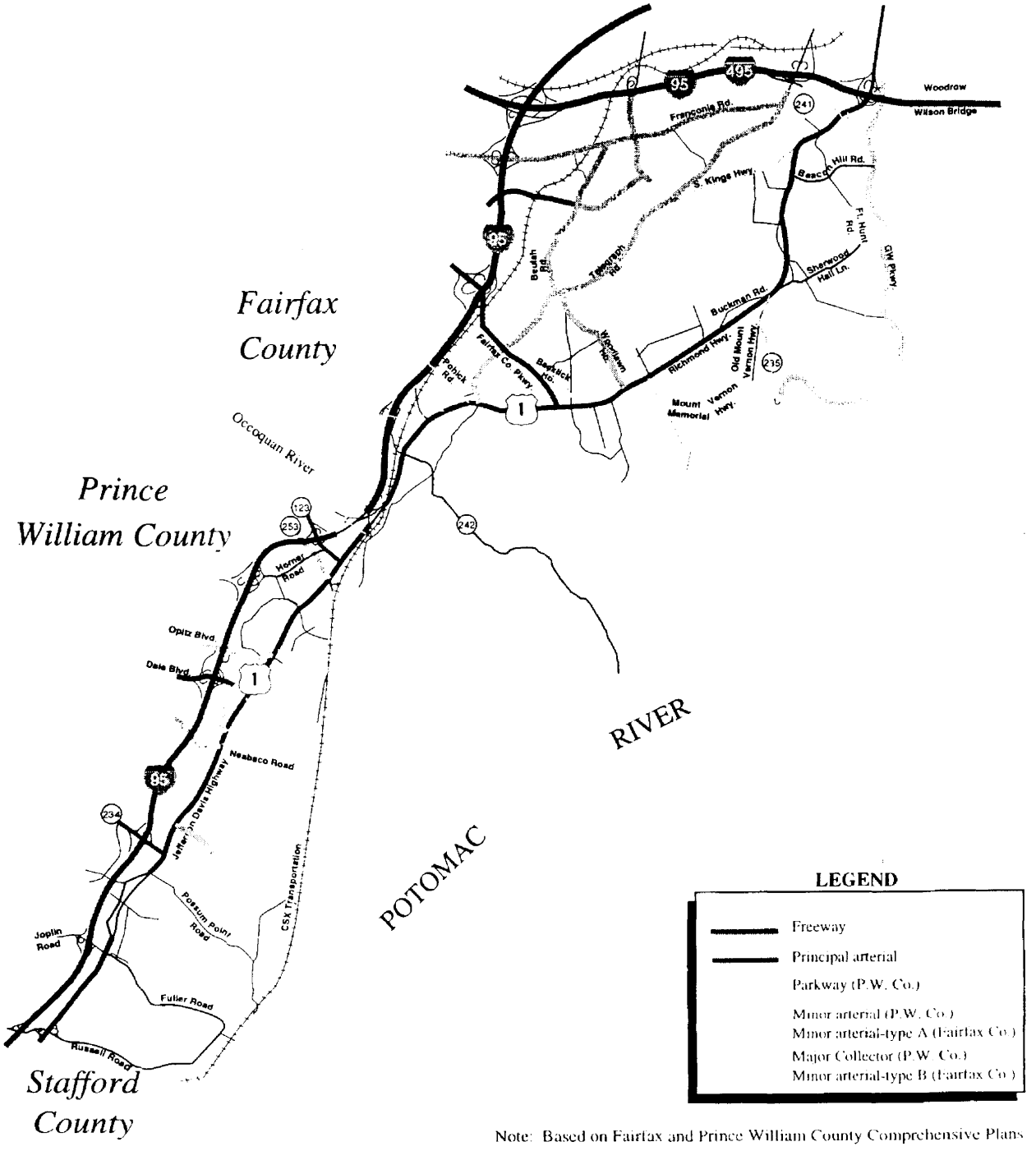
Comparing the northern and southern portions of the corridor from a roadway network perspective, Route 1 is in a different position in each portion. In the southern portion, Route 1 is located near I-95. Route 1 is therefore the second-highest classification roadway in the corridor. Thus, trips to and from locations outside the corridor need only use relatively short sections of Route 1 to access I-95.

Access to I-95 is somewhat hindered by the current nature of two connections: 1) Prince William Parkway/Horner Road, and 2) Dale Boulevard. In both cases, the connection between I-95 and Route 1 is incomplete. Use of other minor arterial or major collectors is required to make the connection. The proximity to I-95 also means that when congestion occurs on I-95, Route 1 is a primary alternate route.

North of Lorton Road, I-95 is separated from Route 1 by five miles. This separation makes Route 1 the highest classification roadway in this portion of the corridor. Trips to and from locations outside the corridor must travel longer distances on Route 1. In addition, Route 1 is not well connected to parallel north-south arterials such as Telegraph Road or the George Washington Memorial Parkway. North of Woodlawn Road, only South Kings Highway, North Kings Highway, Huntington Avenue, and several neighborhood collector streets provide connections between Telegraph Road and Route 1.

[1] STRAHNET is the Strategic Highway Network, roadways which are deemed to be vital to national defense.

Exhibit 2-1. Roadway Functional Classifications



Note: Based on Fairfax and Prince William County Comprehensive Plans

CORRIDOR CHARACTER

The Route 1 Corridor is a diverse area. A mix of residential, commercial, and industrial development combines with recreational opportunities to provide "something for everyone." People living in the corridor cite, in particular, the convenience of the varied shopping opportunities close to home.

The development, which is present today, is a result of the changing land use patterns during the corridor's history. In the northern portion of the corridor, established neighborhoods of single-family homes and vestiges of commercial establishments from the post-World War II suburban boom years are mixed with newer developments such as townhouses and revitalized commercial businesses. In the southern portion of the corridor, new and ongoing residential development in the Cherry Hill area stands in contrast to the older retail areas of Woodbridge.

One problem in many areas of the corridor is that the Route 1 roadway presents an image of disorganized commercial and industrial development. Visual clutter from numerous signs and billboards in retail areas has been cited as an example of a stress-inducing environment. Some of the industrial development also gives the corridor a unique, although not necessarily positive, flavor. This type of development includes junkyards, metal-shredding operations, sewage treatment plants, and landfills.

Major institutional uses such as the military reservations at the Quantico Marine Corps Base and Fort Belvoir contribute to the mix. Along the roadway, their main features are native woodlands, which provide a rural feeling within the surrounding suburbia.

The long history of the corridor is also evident from the historic resources that have been preserved. This history dates to the colonial era and is visible through sites such as Mount Vernon and Pohick Church. Later historical elements in the corridor, icons from the 1950's and 1960's, provide a sense of nostalgia for the "golden age" of the automobile.

The completion of I-95 in the 1950's and 1960's changed the function of Route 1. Prior to I-95, Route 1 served as the primary roadway for long distance travel along the East Coast. The opening of I-95 removed long distance travelers from Route 1. As residential development continued in the corridor, Route 1 travel became oriented to local and commuter travel. This affected traffic on the roadway as well as the types of businesses that could be supported.

Finally, there are many recreational opportunities in and around the corridor. Often these are oriented towards natural areas related to the Potomac River and its associated waterways. These include Leesylvania State Park, Mason Neck State Park and National Wildlife Refuge, Pohick Bay Regional Park, Locust Shade Park, Huntley Meadows Park, and Prince William Forest Park.

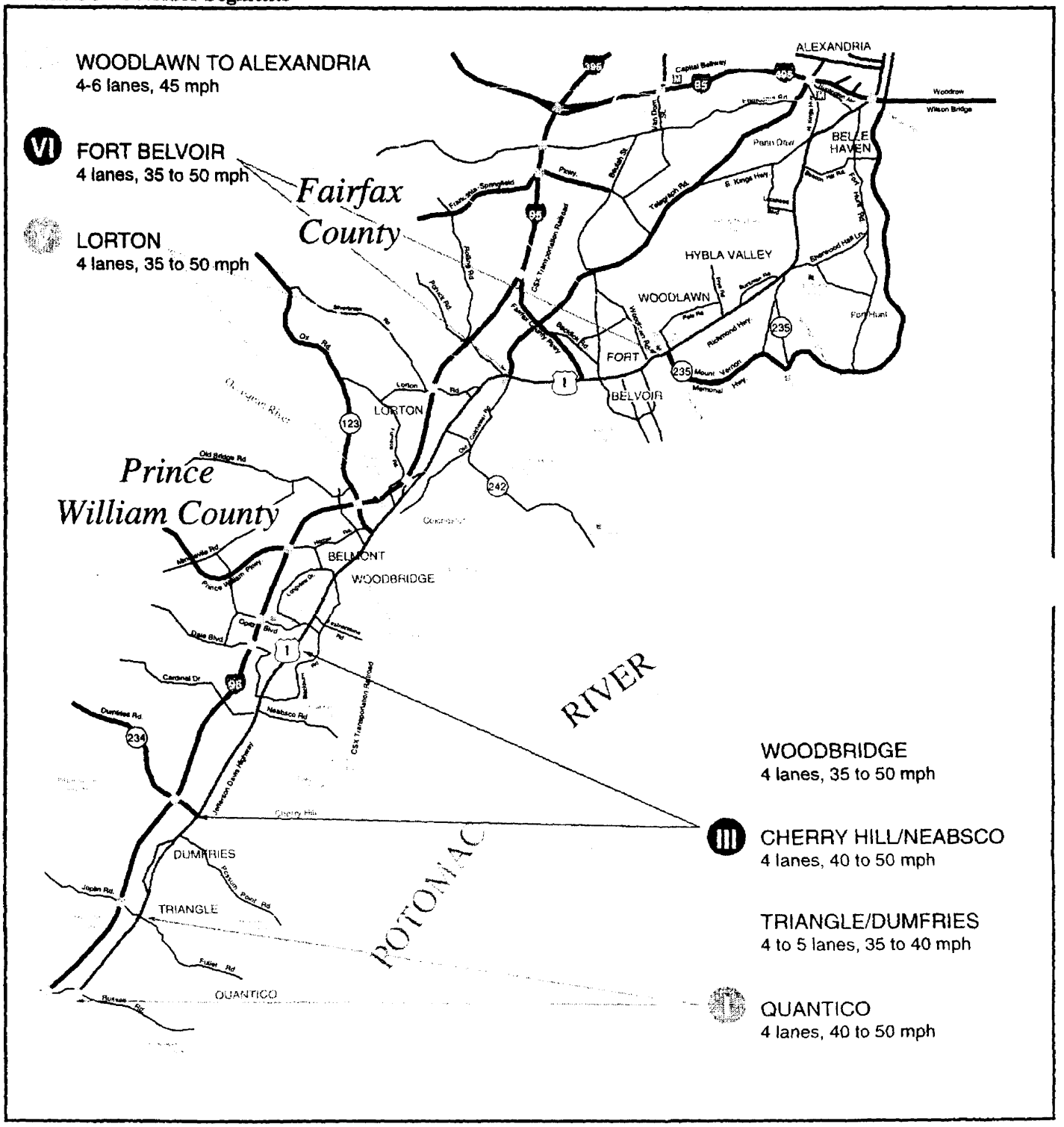
For ease of reference and analysis, the 27-mile corridor was divided into seven segments. Segments were defined based on similarities in adjacent land use, travel demand patterns, and roadway facilities. The seven segments are listed below in Exhibit 2-2 and shown graphically in Exhibit 2-3.

Exhibit 2-2. Length and Limits of Route 1 Corridor Segments

Segment Number	Segment Name	Segment Limits	Length (miles)
I	Quantico	Stafford County Line to Route 619 (Joplin Road/Fuller Road)	2.2
II	Triangle/ Dumfries	Route 619 (Joplin Road/Fuller Road) to Route 234 (Dumfries Road)	2.5
III	Cherry Hill/ Neabsco	Route 234 (Dumfries Road) to Dale Boulevard	3.5
IV	Woodbridge	Dale Boulevard to Occoquan River	4.0
V	Lorton	Occoquan River to Telegraph Road	4.3
VI	Fort Belvoir	Telegraph Road to Route 235 South/Old Mill Road	3.5
VII	Woodlawn to Alexandria	Route 235 South/Old Mill Road to Cameron Run	7.3

Segment VII (Woodlawn to Alexandria) was further subdivided into a southern portion (Route 235 South/Old Mill Road to Route 235 North/Buckman Road) and a northern portion (Route 235 North/Buckman Road to Cameron Run). The southern portion of Segment VII has a 4-lane, undivided cross section; the northern portion has a 6-lane, divided cross section.

Exhibit 2-3. Corridor Segments



The existing number of through lanes and the posted speed limits are shown for each segment.

SEGMENT CHARACTERISTICS & ASSESSMENT OF ROADWAY FACILITIES

The following section provides an assessment of the corridor at the segment level, identifying key features in each segment, including the following:

- *Land use* - including landmarks, public facilities, open space, buffering and screening of commercial activities from adjacent residential and commercial neighborhoods
- *Roadway features* - including roadway cross-section, median and shoulder treatment, intersection and service road definition and curb cuts
- *Gateway markings and signage* - including area "entry signs"
- *Pedestrian accommodation* - including sidewalks, crosswalks and bicycle facilities
- *Landscape* – including road oriented plantings, landscaped medians, and native woodlands
- *Lighting* – including roadway and special pedestrian lighting
- *Utilities* – including poles and overhead wires
- *Identified roadway problems* – including physical problems observed during field inventory and those features that are not in compliance with the roadway sufficiency evaluation cirteria listed in Exhibit 2-4.

The TransCore team developed the sufficiency criteria based on VDOT and Association of American State Highway and Transportation Officials (AASHTO) standards.

Exhibit 2-4. Roadway Sufficiency Evaluation Criteria

Design Speed	50 mph
Maximum Grade	7 percent
Maximum Curvature	6 degrees
Minimum Stopping Sight Distance	400 feet
Minimum Lane Width	11 feet
Minimum Shoulder Width and Type	8 feet, gravel
Minimum Bridge Width	Pavement width plus 2 feet on each side

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SEGMENT I QUANTICO

Stafford County Line to Route 619 (Joplin Road/Fuller Road)

Segment I passes through the Quantico Marine Corps Base and Locust Shade Park. Route 1 is primarily rural in character, consisting of a four-lane undivided roadway with no pedestrian accommodations. Development within Quantico is located approximately fifty yards to the east of the road and is visible from the road in winter. Locust Shade Park, operated by the Prince William County Park Authority, is located on the West Side. Recreational activities within the park are also visible from the road in the winter. The entry to Prince William County is marked by a planting of daffodils in the VDOT right-of-way at the county line.

Land Use and Intensity of Land Use

- Locust Shade Park on west side (50 yards away)
- Quantico military reservation, including base housing (mobile homes, detached), on east side (50 yards away).

Roadway Features

- 4 lanes undivided
- Open roadway section with ditches
- Minimal paved shoulder
- 6- to 10-foot graded shoulder
- Few entrances.

Gateway Markings and Signage

- Daffodil planting in VDOT right-of-way at county line.

Pedestrian Accommodations

- None.

Landscape

- Native woodlands east and west sides.

Lighting

- Roadway lighting only at Route 619 intersection
- No special lighting.

Utilities

- Overhead wires at scattered locations near roadway.

Identified Roadway Problems

- The pavement, shoulder, and pavement markings are in poor condition in most of the segment.
- Few adequate ditches exist. Existing shoulder side treatments show erosion and appear inadequate.
- Many of the existing cross culvert ends are within the clear zone of the roadway and present a potential roadside hazard.
- The Russell Road interchange bridge piers adjacent to the northbound and southbound roadways are near the roadway and are unprotected. The piers close to the roadway present a potential roadside hazard. One fatal crash occurred at this location during the course of this study.

SEGMENT I

Exhibit 2-5. Typical View in Segment I

View looking north on Route 1 toward intersection with Joplin Road (Route 619)

SEGMENT II - TRIANGLE/DUMFRIES

From Route 619 (Joplin Road/Fuller Road) to Route 234 (Dumfries Road)

Segment II traverses a mixture of land uses from the community of Triangle, through the Town of Dumfries, to the rural wooded transition into Cherry Hill. Service oriented uses such as hotels and gas stations are located at Route 619, oriented to I-95 traffic. A small town ambiance and scale characterize the communities of Triangle and Dumfries.

A unique feature of this segment is the separation of the northbound and southbound lanes of Route 1 for 1.6 miles through the town of Dumfries, between Brady's Hill Road and Possum Point Road. After separating from the northbound lanes, the southbound roadway follows Main Street through historic Dumfries with its mix of light commercial and residential land uses, narrowing to one lane at Curtis Street. The area between the northbound and southbound roadways contains businesses, residences, and a park. At its widest point, the separation between the roadways is nearly 1000 feet.

There is some sidewalk along the road within the wn of Dumfries. No crosswalks are located within this segment of Route 1. The Town of Dumfries has marked its gateway with a sign next to the northbound lanes and with ornamental flower plantings next to the southbound lane.

Land Use and Intensity of Land Use

- Service oriented hotels and gas stations at I-95 access and primary gate to Quantico (Route 619)
- Individual commercial parcels with parking abutting Route 1
- Dumfries – small town character
- Mixture of houses in terms of style and density
- In northern portion of Segment II, industrial uses on the east side of the road and scattered development on the west side.

Roadway Features

- Triangle (southern portion of segment) – 4 lanes undivided
- Dumfries – northbound roadway – 2 lanes
  Dumfries – southbound roadway – primarily 3 lanes wide (2 southbound and 1 northbound), narrows to 1 lane each direction at Curtis Street
- Isolated raised medians only at Tripoli Boulevard and Dumfries Road (Route 234) except for roadway separation
- Mixture of open section with shoulder and curb and gutter.

Gateway Markings and Signage

- Entry planting in the VDOT right-of-way
  Daffodils north of Triangle Street
  Entry sign and planting for Town of Dumfries – northbound lanes
  Entry planting for Town of Dumfries – southbound lanes.

Pedestrian Accommodations

- Sidewalk on east side south of Quantico Creek
- Scattered pieces of sidewalk south of Curtis Street
- Sidewalk on west side at Curtis Street
- No sidewalk at northern end of the segment

Landscape

- Native woodlands west side in a few locations.

Lighting

- Widely spaced roadway light fixtures exist throughout the segment
- No special lighting.

Utilities

- Overhead wires consistently throughout the segment
- Majority occur along the southbound roadway.

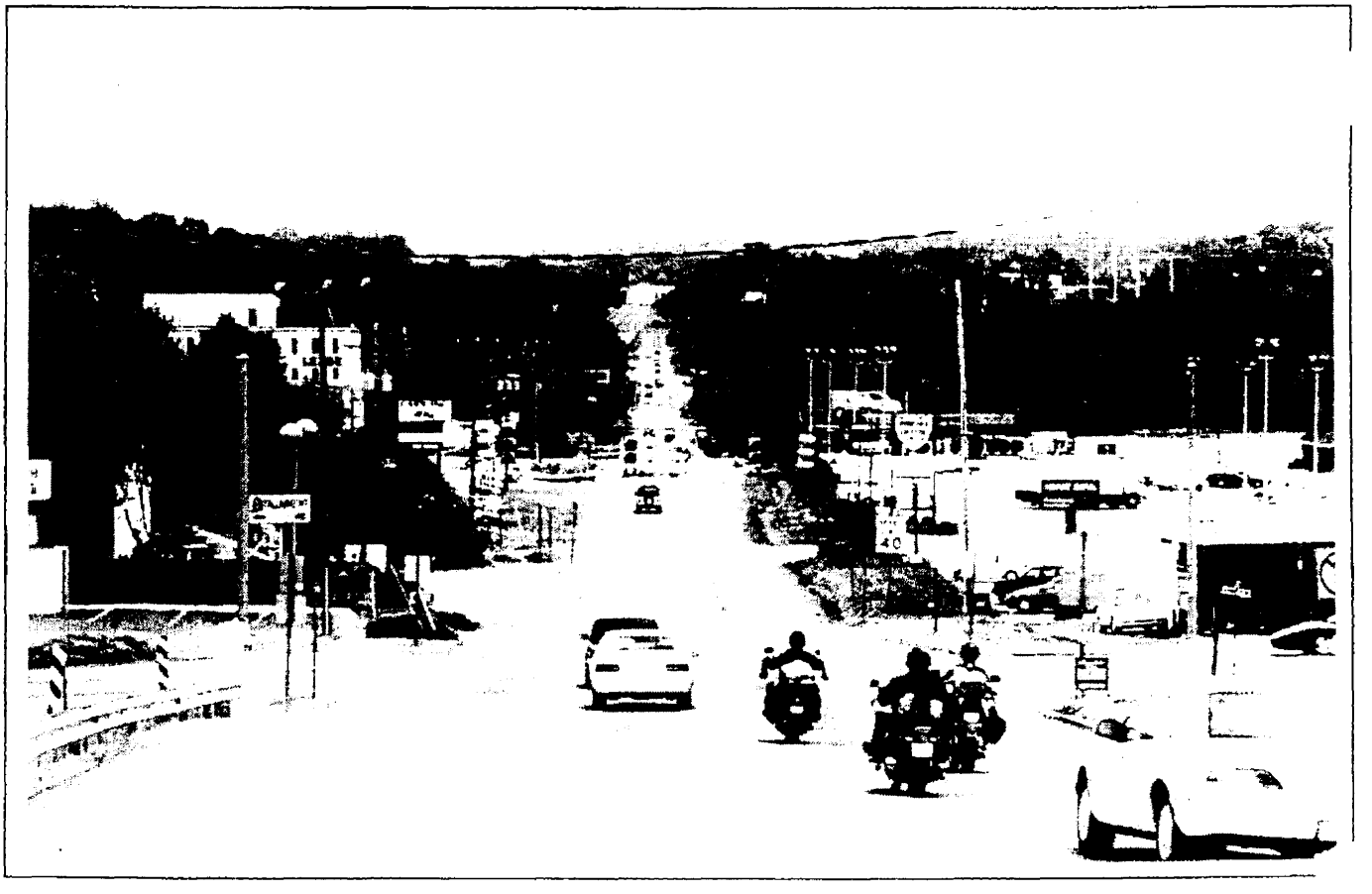
Identified Roadway Problems

- The sight distance onto Route 1 from Old Stage Coach Road at the Dumfries Road intersection creates a hazardous condition.
- The pavement and pavement marking conditions are poor in most of the segment
- A few right-turn lanes appear to have insufficient lengths for deceleration and stopping.

SEGMENT II

- Shoulder conditions are generally poor throughout the segment
- The frequency of driveways creates potential safety problems due to left turn conflicts. Many of these entrances are substandard.
- Large areas of unmarked pavement in poor condition abut the roadway and act as access and frontage for businesses in many locations.
- The southbound roadway through Dumfries changes lane configuration five times in one mile
- Few shouldered areas have adequate, safe ditches.

Exhibit 2-6. Typical View in Segment II



View looking north on Route 1 toward Graham Park Road in Dumfries

SEGMENT III CHERRY HILL/ NEABSCO

Route 234 (Dumfries Road) to Dale Boulevard

Segment III retains many of the qualities of older segments of Route 1, with auto salvage yards, a closed amusement park – Storyland, and clusters of free-standing stores with no connections to each other. The main commercially developed areas are at the south end of the segment bordering Dumfries and between Crest Drive and Neabsco Mills Road. The remainder of the segment is mostly wooded with some connecting roads to residential development.

Some sections of the segment are being developed for primarily residential communities, including River Oaks and Southbridge on the east side. The road is four lanes wide with no median; minimal turn lanes, and no pedestrian accommodations. Any plant materials are vestige pieces of native woodland.

Land Use and Intensity of Land Use

- Primarily rural character
- Auto salvage yard, Storyland
- Cluster of free-standing stores at Neabsco Mills Road
- Townhouses at Foxlair Drive
- River Oaks Shopping Center and housing
- Southbridge on the east – houses and townhouses
- Other townhouses on west side.

Roadway Features

- 4 lanes, undivided except in developed area at Neabsco intersections
- Mostly open sections with shoulders.

Gateway Markings and Signage

- None observed.

Pedestrian Accommodations

- No continuous sections of sidewalk, infrequent sections associated with roadway widening.

Landscape

- Native woodlands east and west sides in patches.

Lighting

- Roadway lighting scattered; one or two lights each at selected intersections
- No special lighting.

Utilities

- Frequent utility poles and overhead wires on west side from Foxlair Drive to Dale Boulevard
- Limited number of poles and overhead wires on east side and south of Foxlair Drive on west side.

Identified Roadway Problems

- Few adequate ditches exist resulting in severe erosion and potentially hazardous conditions.
- The pavement conditions, as well as pavement marking conditions, are poor in most of the segment.
- A few right-turn lanes have insufficient lengths for deceleration and stopping.
- Several utility poles are situated within the clear zone of the roadway.
- Shoulder conditions are generally poor throughout the segment.

SEGMENT III

Exhibit 2-7. Typical View in Segment III

View looking north on Route 1 toward Cardinal Drive

SEGMENT IV WOODBRIDGE

Dale Boulevard to Occoquan River

Segment IV is a suburbanized segment of the corridor with numerous "strip" commercial centers and freestanding, road-oriented businesses. Many of the businesses have been in place for decades. Landscaping bordering the road corridor and sidewalks are located at the more recently developed areas.

Land Use and Intensity of Land Use

- Service facilities throughout segment
- Older, free-standing buildings
- Some renovated shopping centers
- Auto-oriented commercial businesses
- No interconnection between parcels
- Large developed parcels, particularly car dealers and shopping plazas.

Roadway Features

- 4 lanes, primarily undivided
- 16 intersections with turn lanes
- Four separate sections of continuous two-way left-turn lanes totaling 3600 feet
- Several sections of isolated raised medians between Longview Drive and the Occoquan River bridge
- Approximately 80 percent of the segment has curb and gutter although they are not continuous and frequently separated by shoulder sections.

Gateway Markings and Signage

- Signage and plantings on west side, south of Occoquan River - Welcome to Prince William County.

Pedestrian Accommodations

- Sidewalks exist along approximately 60 percent of the segment
- There are numerous discontinuities, many more than one-half mile in length.

Landscape

- Some road-oriented landscaping at Koon's auto dealership
- Road-oriented landscaping at Opitz Crossing Shopping Center; east and west side of road (ornamental pears as street trees).

Lighting

- Roadway lighting is consistent along the segment at varying spacing
- No special lighting.

Utilities

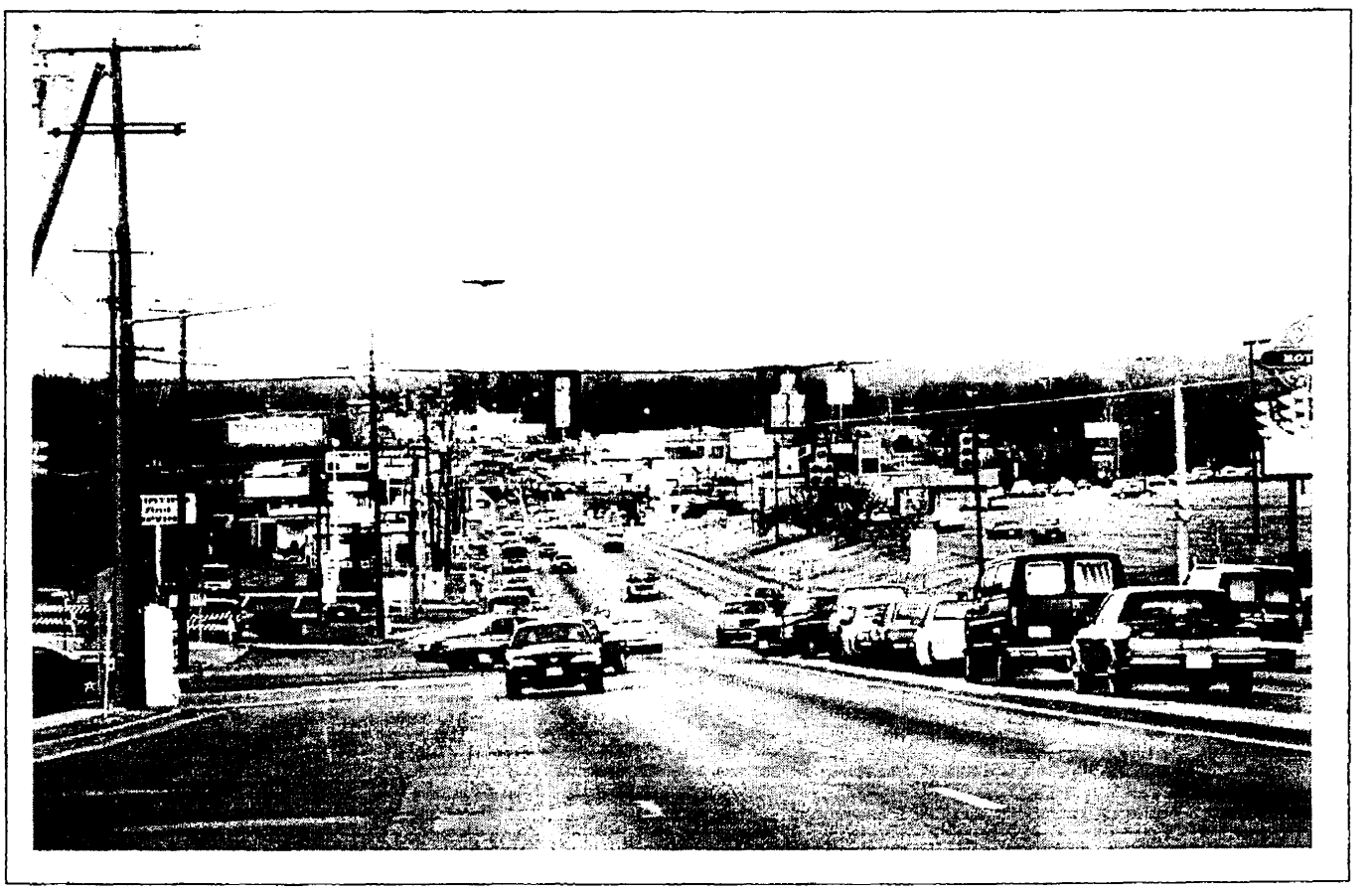
- Hundreds of utility poles exist in addition to the poles supporting roadway lights; primarily on the west side
- Overhead wires are prevalent.

Identified Roadway Problems

- The frequency of driveways creates potential safety problems due to left turn conflicts. Many of these entrances are substandard.
- The two-way left-turn median lanes have numerous traffic conflicts due to the frequency of driveways and the volumes of traffic.
- The sight distance cresting the southbound hill after Longview Drive is substandard.
- Few adequate ditches exist resulting in severe erosion and hazardous conditions.
- The pavement conditions, as well as pavement marking conditions, are poor in most of the segment.
- A few right-turn lanes have insufficient length for deceleration and stopping.
- Several utility poles are situated within the clear zone of the roadway.
- Shoulder conditions are generally poor throughout the segment.

SEGMENT IV

Exhibit 2-8. Typical View in Segment IV



View looking north on Route 1 toward Marumsco Plaza in Woodbridge

SEGMENT V LORTON

Occoquan River to Telegraph Road

Segment V is a developing stretch of the corridor. In general, the western side of the corridor is more developed than the eastern side. Heavy industrial uses are located in the southern portion of the segment. The land use in the northern portion of the segment features wooded areas (particularly on the east side) and light commercial with some multi-family housing.

Institutional uses, such as the Pollution Control plant and the community library, are located in this segment. New development at Gunston Plaza and the Sunrise Retirement Center give definition to the western side of the road in the northern part of this segment. The historic Pohick Church and Cemetery are at the north end of Segment V.

The northbound and southbound lanes of Route 1 are separated at the I-95/Route 1 Interchange.

Land Use and Intensity of Land Use

- Land use character south of Gunston Road is industrial – quarry, landfill, truck storage, lumber yards
- Lorton recreational fields
- Lorton Community Library
- Lorton commercial area with relatively new shopping center – Gunston Plaza
- Lower Potomac Pollution Control Plant
- Townhouses, single family, congregate care
- Pohick Church.

Roadway Features

- 4 lanes, undivided primarily
- 16 intersections with left-turn lanes
- Short portions of raised medians to channelize left turns
- Painted/raised median in area near Gunston Plaza/Armistead Road.

Gateway Markings and Signage

- None observed.

Pedestrian Accommodations

- A relatively continuous sidewalk exists along the west side of the road between Fernedge Lane and Lorton Road (missing portion just south of Armistead Road)
- Asphalt path exists from Lorton Road to Pohick Road
- Crosswalk at library.

Landscape

- Native woodlands in patches
- Ornamental pears on west side, north of library.

Lighting

- Roadway lighting exists between:
  Mims Street and Gunston Road South
  Fernedge Lane and Lorton Road
- Two isolated lights at Furnace Road
- No special lighting.

Utilities

- Utility poles and overhead wires are located primarily along the west side except through the I-95 interchange.

Identified Roadway Problems

- Lane drop on Route 1 at the I-95 interchange, both northbound and southbound.
- Vertical and horizontal clearances at the railroad bridge over Route 1 north of the I-95 interchange are inadequate and potentially hazardous.
- Severely limited sight distance creates a potentially hazardous condition at the northbound approach to Pohick Road.
- Other less severe sight distance problems exist:
  In the northbound lanes at Gunston Road and north of Lorton Road.
  In the southbound direction, horizontal sight distance is deficient at the two bridges over Route 1 north of the I-95 interchange.

SEGMENT V

- All unpaved ditches are in poor condition.
- Unpaved portions of the shoulders in all areas are in poor condition and will continue to deteriorate.
- Two right-turn lanes have inadequate lengths based on stopping distance requirements.

Exhibit 2-9. Typical View in Segment V

View looking north on Route 1 toward Armistead Road in Lorton

SEGMENT VI FORT BELVOIR

Telegraph Road to Route 235 South/Old Mill Road

Segment VI traverses much of the Fort Belvoir Post. The Accotink community has 2000 feet of commercial development on the northwest side of the roadway. The developed areas in the segment are predominantly commercial with freestanding, independent buildings and community and neighborhood retail centers. Much of the landscape is wooded, with the northern portion including open space at Woodlawn Plantation and the Woodlawn Plantation riding stables.

Land Use and Intensity of Land Use

- Fort Belvoir
- Backlick Road/Accotink area, commercial area with free-standing individual buildings on west side of road
- Woodlawn Plantation.

Roadway Features

- 4 lanes, undivided
- Primarily an open section with shoulders and ditches except in Accotink commercial area.

Gateway Markings and Signage

- Fort Belvoir entry signs.

Pedestrian Accommodations

- None.

Landscape

- Native woodlands.

Lighting

- Roadway lighting with inconsistent spacing between the Belvoir Road bridge and Route 235 South/Old Mill Road
- No special lighting.

Utilities

- Utility poles and overhead wires throughout the segment.

Identified Roadway Problems

- Horizontal clearance from edge of pavement to the bridge piers or abutments for the two bridges passing over Route 1 are minimal, creating potential hazards.
- Both paved and unpaved shoulder conditions are consistently poor throughout the segment.
- Several right-turn and left-turn lanes do not have adequate length.
- Through lanes are displaced outward to accommodate the left-turn lanes, creating flow disturbances and potential hazards
- Utility poles are inside the clear zone at some locations.
- The pavement surface shows signs of wear and failure except for the recently resurfaced area.
- Footpaths near the north end of Segment VI indicate a need for a pedestrian facility.
- All existing unpaved ditches are in poor condition.

SEGMENT VI

Exhibit 2-10. Typical View in Segment VI

View looking north on Route 1 toward Backlick Road and Tulley Gate at Fort Belvoir

SEGMENT VII

Identified Roadway Problems

- The limited horizontal and vertical sight distance at the Popkins Lane intersection is a potential hazard, especially in the northbound direction.
- Additional vertical sight distance limitations exist in the northbound direction 0.2 miles south of the Route 235 North/Buckman Road intersection.
- Numerous right- and left-turn lanes have insufficient lengths for deceleration and stopping.
- Many utility poles are within the clear zone.
- Pavement markings are difficult to read at night.
- Pedestrian facilities are inconsistent and discontinuous. Roadside footpaths are evidence of the need for additional sidewalks or trails.
- The frequency of driveways creates potential safety problems due to left turn conflicts. Many of these entrances are substandard.
- In the southern portion of the segment, large, unmarked expanses of pavement along shoulders lack clearly delineated entrances and commercial parking areas. There are many areas where vehicles are parked too close to the roadway.
- Additional right-turn lanes are needed to separate turning movements from through traffic.
- A number of offset and/or closely spaced intersections create added traffic conflicts.

Exhibit 2-11. Typical View in Segment VII

View looking north on Route 1 toward Fordson Road in Hybla Valley

DAILY TRAFFIC VOLUMES

Daily volumes generally increase from south to north in the corridor. The smaller volumes in the southern portion of the study area reflect the less intense development in that area and the effect of I-95 immediately adjacent to Route 1. In the northern portion of the study area, increased volumes reflect a more densely developed corridor and the increased importance of Route 1 as the urban arterial in this area. In this part of the corridor, Route 1 diverges from I-95, increasing Route 1's importance in the transportation network of the area. Average daily traffic (ADT) volumes in the study area are summarized in Exhibit 2-12a and 2-12b.

Exhibit 2-12a. 1995 Daily Traffic Volumes (South)

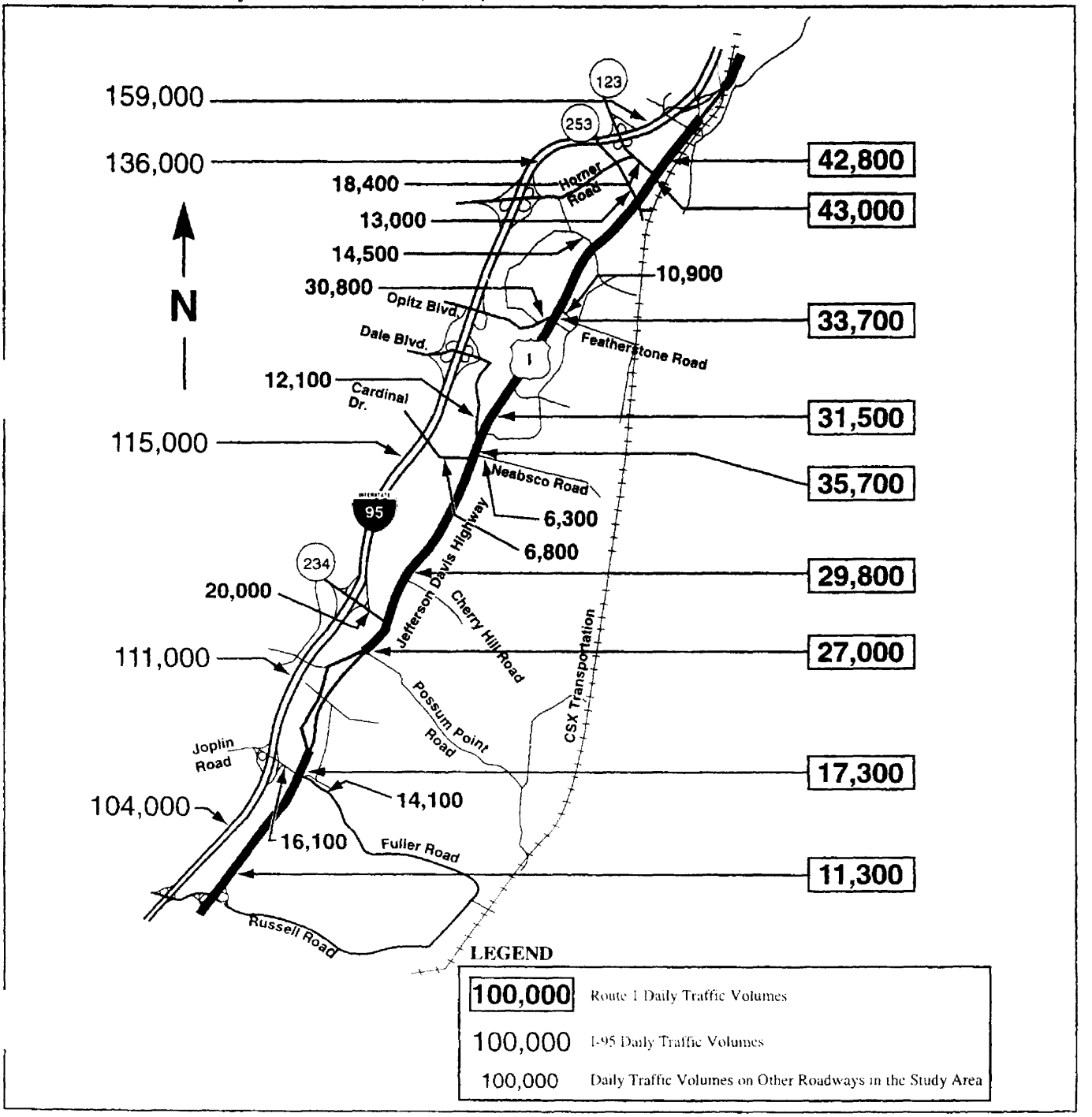
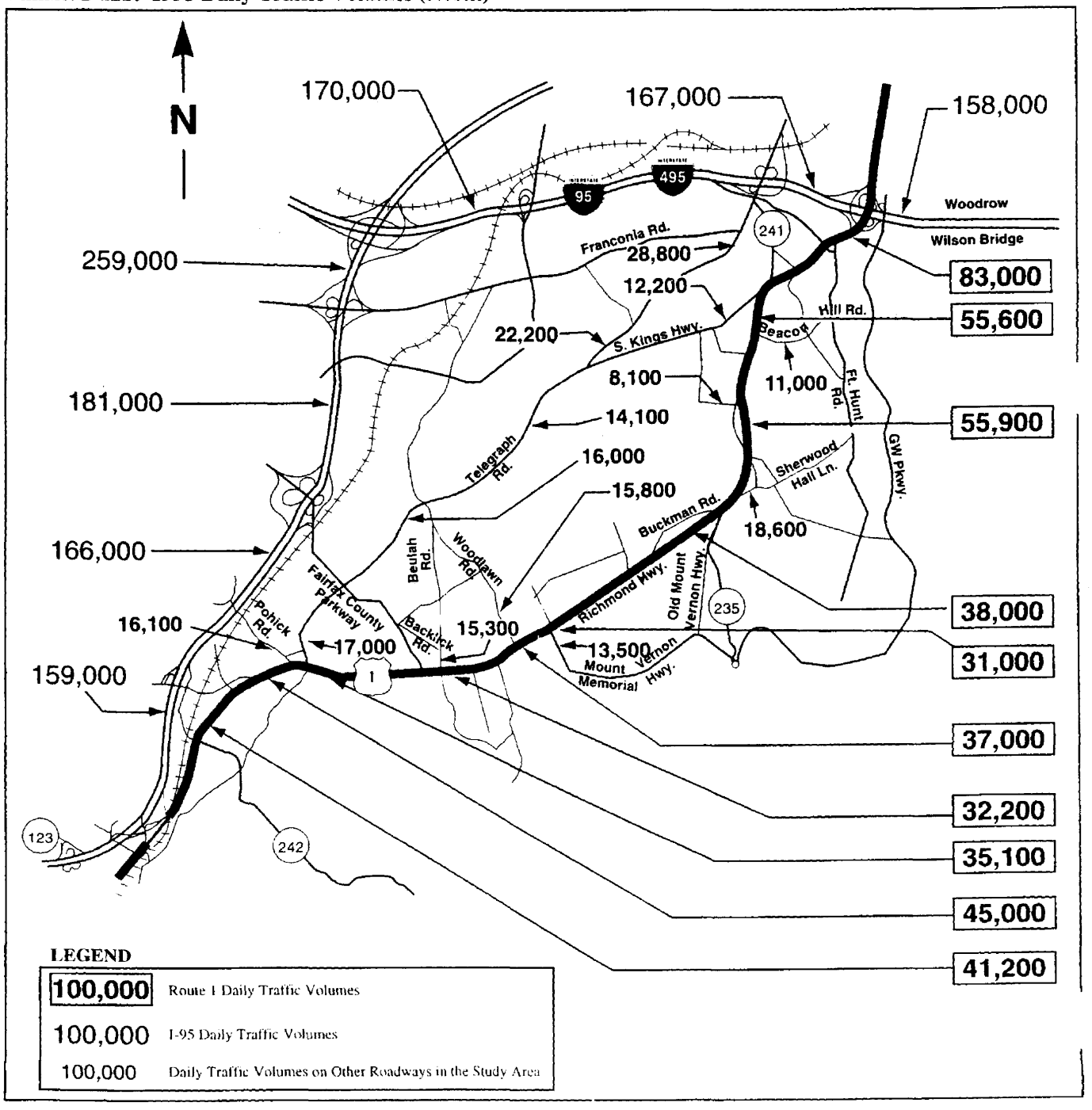


Exhibit 2-12b. 1995 Daily Traffic Volumes (North)



PEAK HOUR VOLUMES

There is generally a heavy directionality of traffic northbound in the morning peak period and, to a lesser extent, southbound in the evening peak period. The increased off-peak directional flow in the evening is due to increased non-commuter trips and increased turning movements to side streets and businesses in the corridor. The peak hour volumes somewhat mirror the ADT's with volume increasing as one progresses north through the study area. Peak hour volumes in the study corridor are summarized in Exhibit 2-13a and 2-13b. The volumes are summarized for both morning and evening peak hours and for both directions of travel.

Exhibit 2-13a. 1995 Peak Hour Traffic Volumes (South)

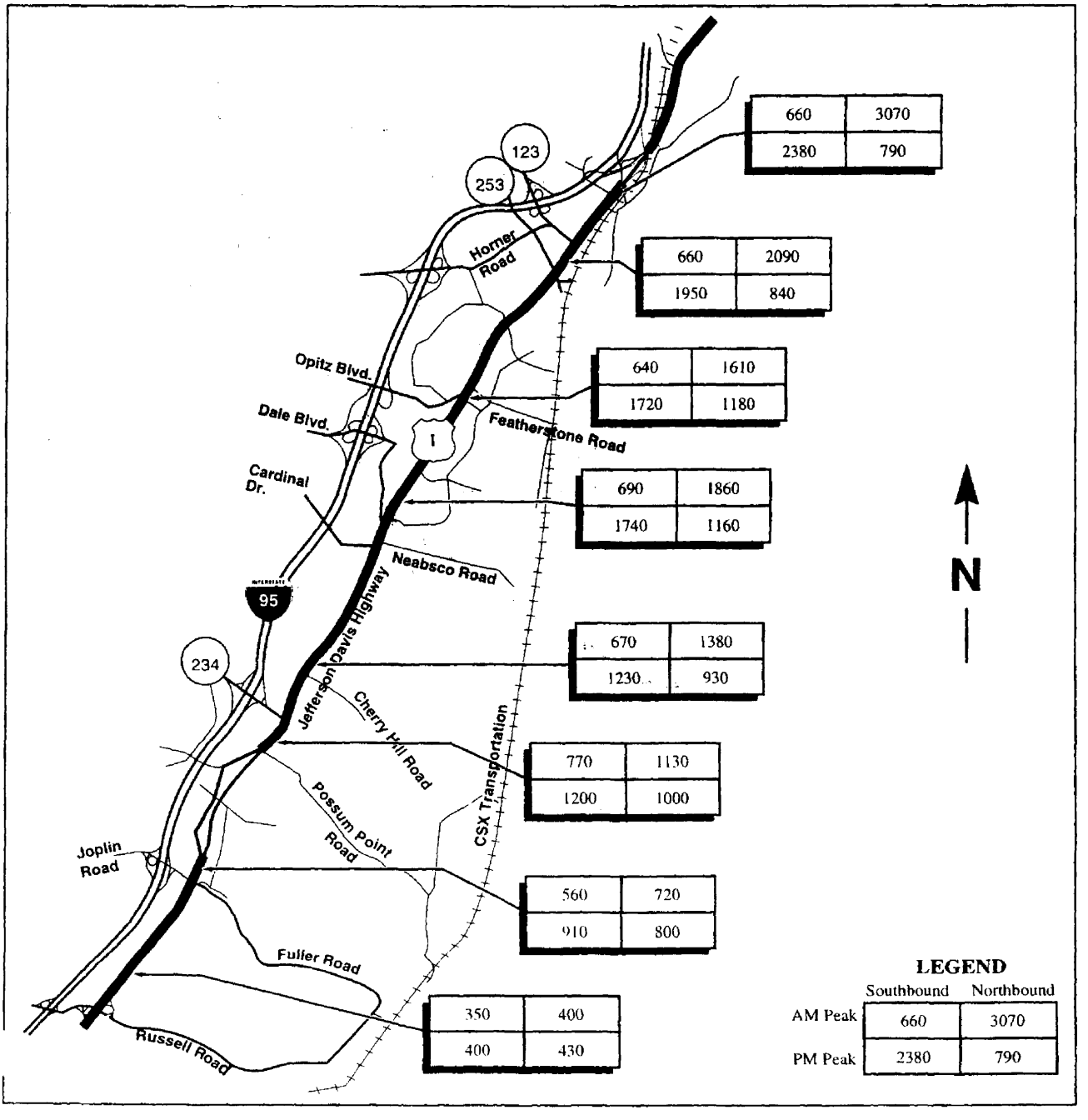
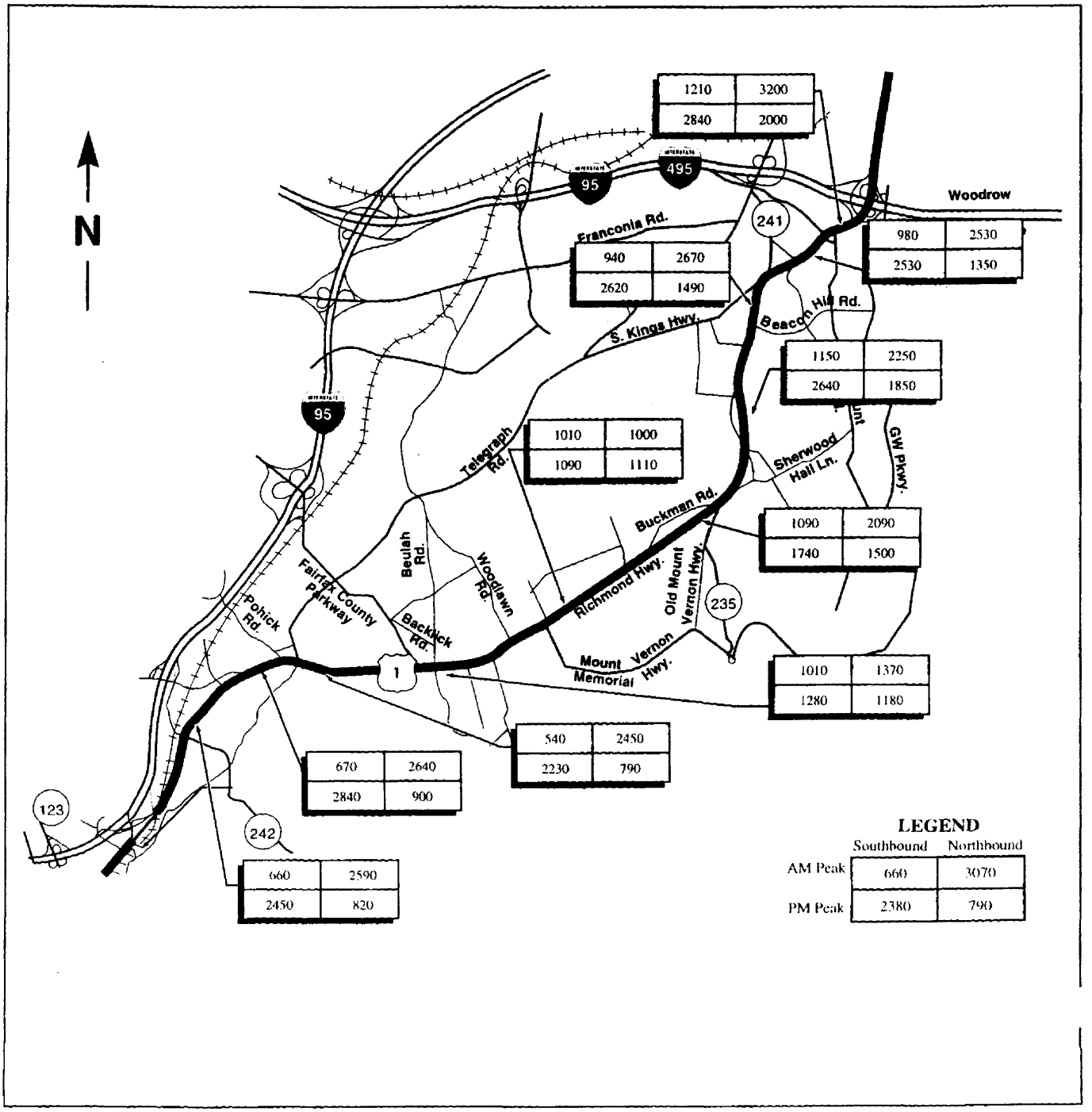


Exhibit 2-13b. 1995 Peak Hour Traffic Volumes (North)



TRAVEL PATTERNS

The Route 1 corridor, under present conditions, is predominantly used for short to medium distance travel, particularly in Prince William County. For longer travel distances, drivers use portions of Route 1 to access faster alternative routes, such as I-95, to reach their destinations.

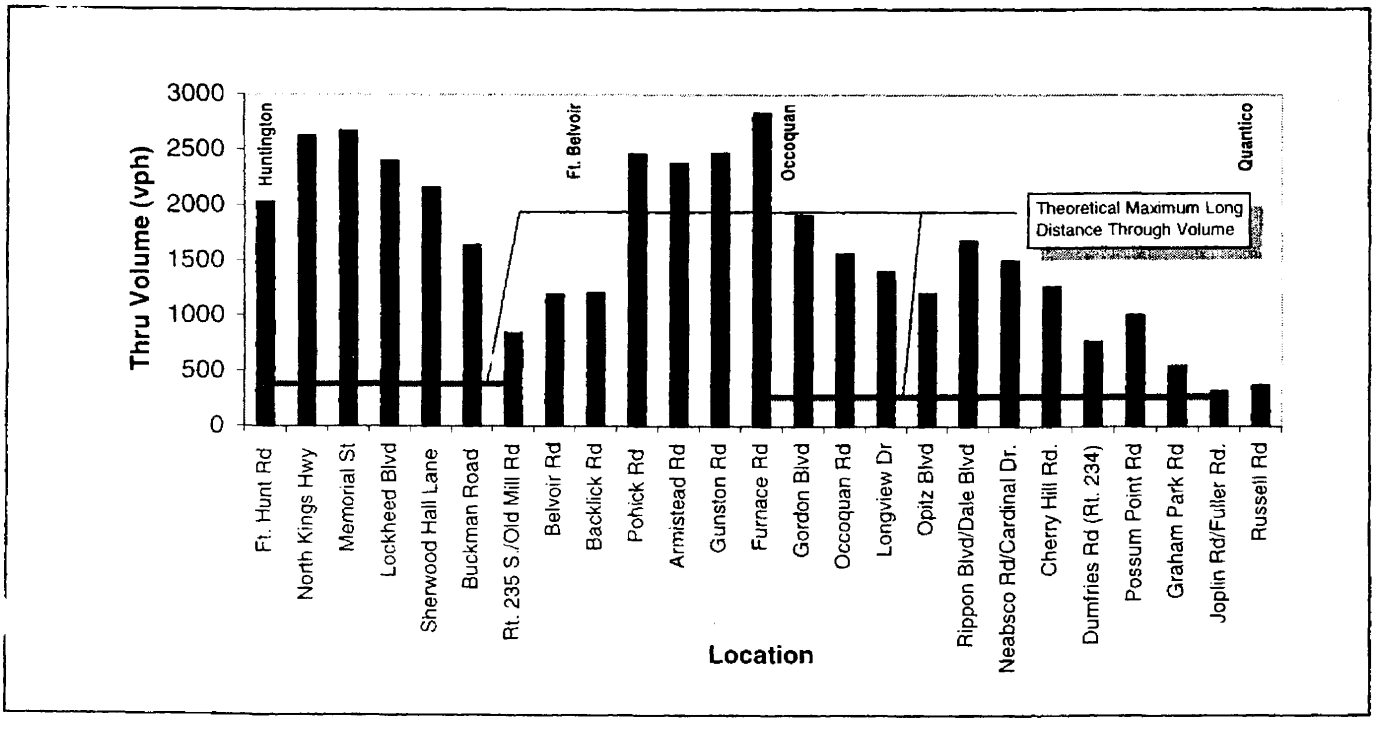
Traffic volumes generally increase from south to north along the corridor. The vertical bars in Exhibit 2-14 denotes the number of northbound vehicles traveling straight thru at each intersection. In Prince William County, particularly, thru traffic volumes at intersections decrease at locations where Route 1 intersects roadways that connect with I-95. In Fairfax County, the exhibit shows relatively large straight thru traffic movements in the section between the I-95/Route 1 interchange and Fort Belvoir entrances. Immediately north of Fort Belvoir, northbound traffic is at its lowest level in Fairfax County. As you travel further north on Route 1, thru traffic volumes again increase as traffic enters Route 1 from adjacent developments.

Further examination of the data in Exhibit 2-14 shows that only a small percentage of traffic on Route 1 is long distance through traffic. The horizontal lines in the graphic illustrate the maximum number of vehicles traveling long distances on northbound Route 1 during a typical morning peak hour.

In Prince William County, the maximum possible long distance through traffic volume on Route 1 is the number of thru vehicles observed at the southern end of the corridor (Joplin Road). This is equivalent to approximately 300 peak hour vehicles, which is less than 15 percent of the traffic in Woodbridge. This is the theoretical maximum. The actual percentage is likely to be substantially smaller. This is because many of those moving straight thru Joplin Road may be bound for destinations in Prince William County along the corridor.

In Fairfax County, the maximum possible long distance through traffic volume is estimated based on field observations of vehicle registrations for vehicles traveling northbound thru the Route 235 South/Old Mill Road intersection. The number of non-Fairfax County vehicles was observed to be approximately 400 vehicles per hour. This represents less than 15 percent of the observed through traffic at Beacon Hill. Again, this is the theoretical maximum. The actual percentage is likely to be much smaller. This is because many of those moving straight thru at Old Mill Road may be bound for destinations in Fairfax County along the corridor.

Exhibit 2-14. 1995 Morning Peak Hour Northbound Thru Movement Volumes at Intersections



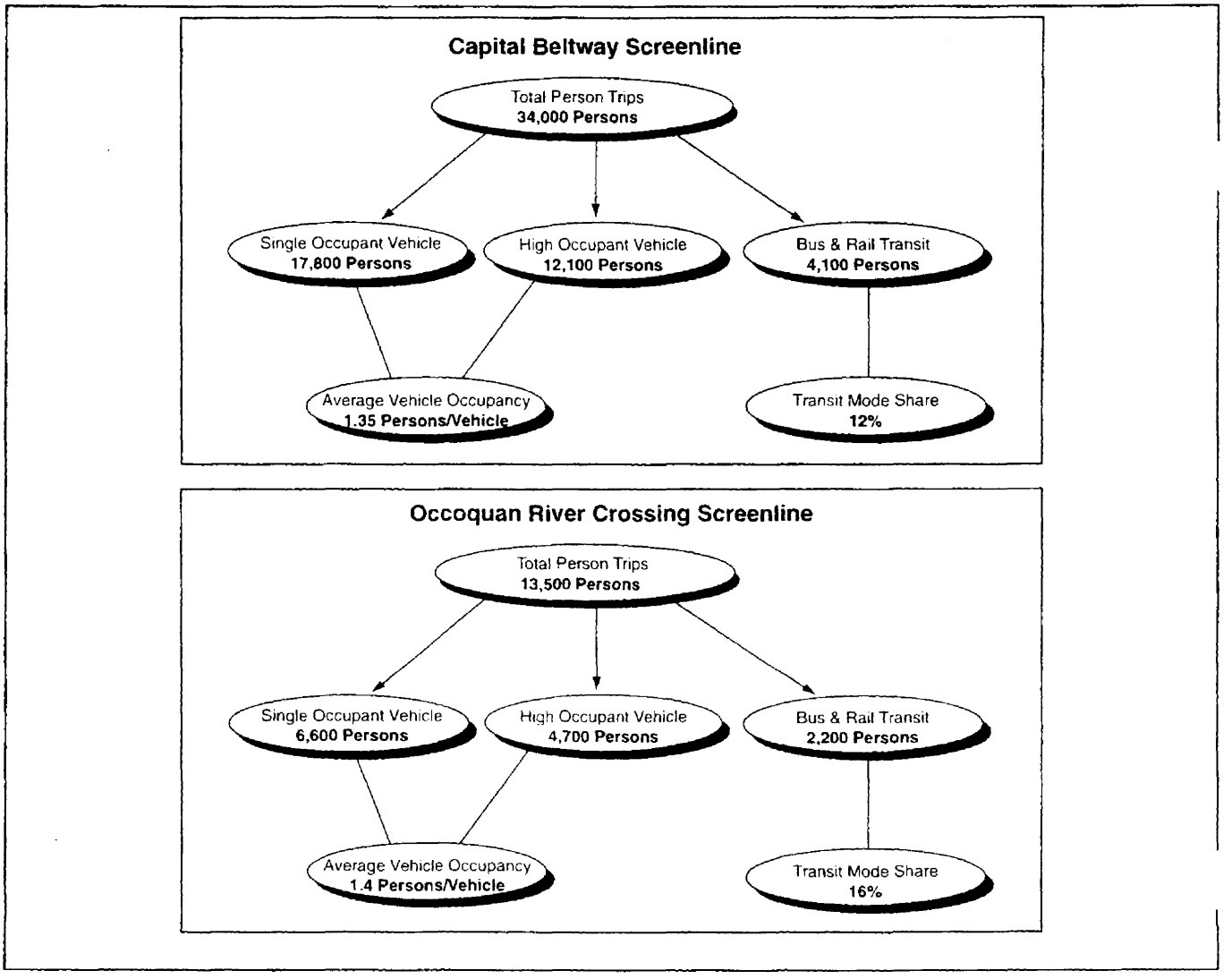
MODE SHARE

Considered together with I-95, the corridor has relatively high transit and high occupant vehicle (HOV) usage. This high rate of non-single occupant auto usage is due to the presence of VRE Commuter Rail service and HOV express lanes on I-95. For the portion of the Route 1 corridor proximate to I-95 (south of Lorton Road), the express lanes provide a significant incentive for transit and rideshare usage because of reduced travel times, increased travel time reliability, and, in some cases, reduced commuting costs. Exhibit 2-15 shows the existing morning peak hour mode share at two locations:

- The Occoquan River crossing, comprised of I-95, Route 1, and the VRE line
- South of the Capital Beltway, comprised of I-95, Telegraph Road, Van Dorn Street, Route 1, George Washington Memorial Parkway, and the VRE line.

Vehicle occupancy on Route 1 during the morning peak hour averages 1.23 persons per vehicle at the northern screenline and 1.14 persons per vehicle at the Occoquan River crossing. Average vehicle occupancy on Route 1 during the PM peak hour increases slightly. This is expected because the evening rush hour on Route 1 includes other trip types (shopping, recreational) aside from commuter traffic.

Exhibit 2-15. 1995 Morning Peak Hour Mode Share



TRAFFIC OPERATIONS

This section describes the assessment of the existing operating conditions on Route 1. This assessment was based on field observations, travel time runs, arterial level of service analyses, and intersection capacity and level of service analyses.

Travel Speeds

Overall, Route 1 is performing fair as an arterial roadway. Reasonable travel speeds in many sections are negatively offset by delays at several bottleneck locations. Travel speeds are generally better in the morning peak hours than the evening peak hours. This is to be expected due to the amount of retail development in the corridor that results in a mix of shopping trips and commuting trips.

In the morning, the slowest speeds in the corridor are in the northbound direction through Woodbridge and in the extreme northern end of the corridor approaching the Capital Beltway. In Woodbridge, the number of signals and congestion at Route 123 Gordon Boulevard) contribute to slow conditions. Near the Capital Beltway, congestion from the Capital Beltway and in Alexandria backs up onto Route 1.

In the afternoon, the main backup is southbound approaching Telegraph Road in Fairfax County, a sever congested intersection.

Typical peak hour travel times to traverse the entire length of the corridor in the peak direction approach or exceed one hour. Off-peak direction travel times are slightly better than the peak direction. The nearly one-hour duration is due to the length of the corridor and the stop-and-go nature of travel on an arterial with numerous traffic signals. Exhibit 2-16 shows observed peak hour travel times in the study corridor to traverse each of the seven segments.

Exhibit 2-16. Route 1 Travel Times (in minutes)

	Segment	AM Peak Hour		PM Peak	
		North-bound	South-bound	North-bound	South-bound
I	Quantico	1.7	1.5	1.7	1.5
II	Triangle/Dumfries	3.8	4.9	4.5	5.1
III	Cherry Hills/Neabsco	6.2	6.0	6.8	7.4
IV	Woodbridge	12.5	3.8	6.3	5.8
V	Lorton	6.8	6.0	5.9	10.5
VI	Ft. Belvoir	6.1	5.5	5.6	14.2
VII	Woodlawn to Alexandria	15.0	14.7	15.4	15.0
	TOTAL	52.1	42.4	46.2	59.5

Level of Service (LOS) estimates were made for the arterial segments on Route 1 based on the observed travel speeds. The LOS estimates were adapted from the Highway Capacity Manual and were adjusted as shown in Exhibit 2-17 to reflect operating conditions in the corridor. The revisions/adjustments involved adjusting the speed thresholds to reflect free-flow speeds greater than 40 miles per hour.

Exhibit 2-17. Arterial Levels of Service Thresholds

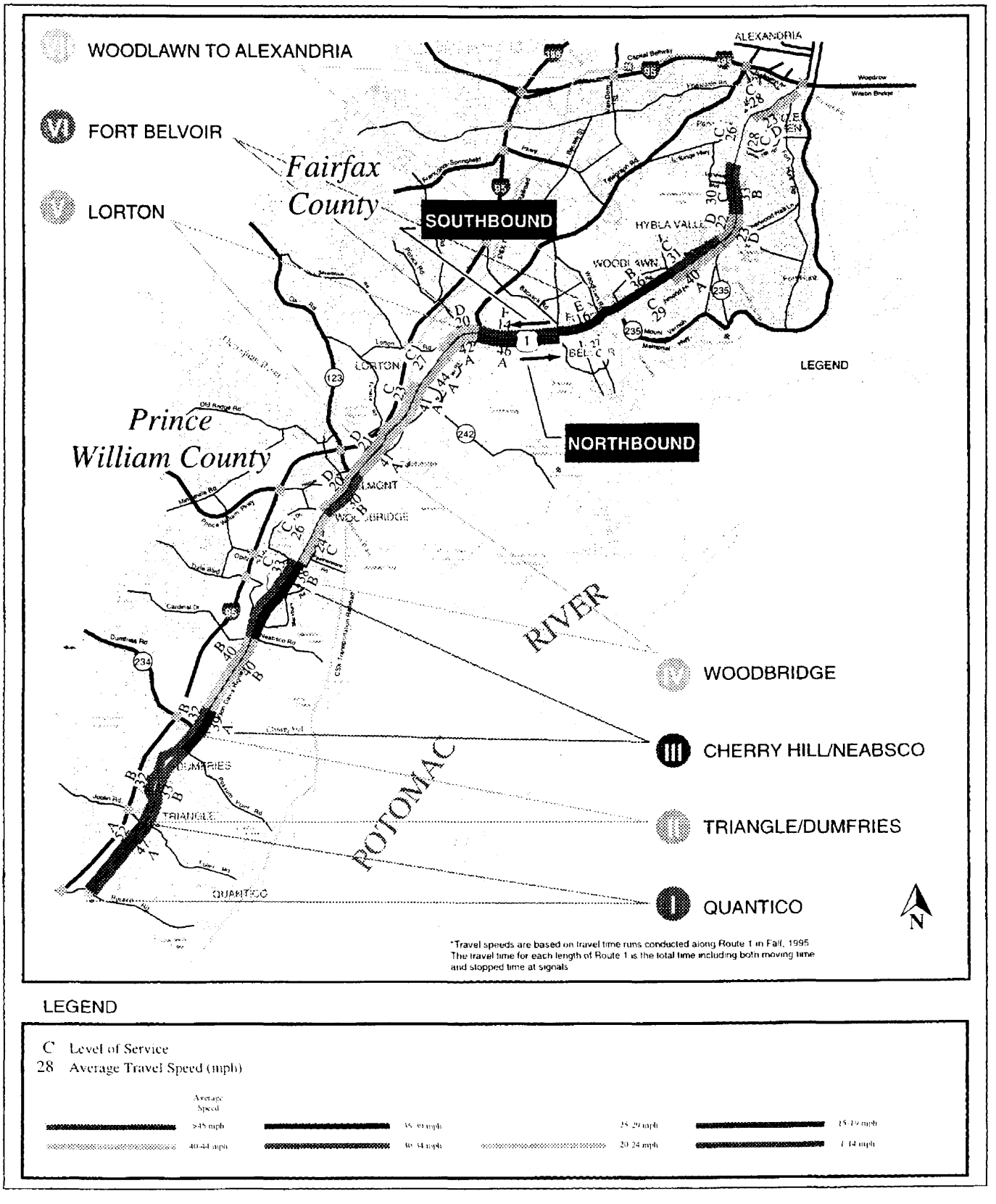
Level of Service	Arterial Classification/Free Flow Speed (mph)			
	I	I	I	II
	40	45	50	40
A	35	39	44	36
B	28	32	35	29
C	22	25	28	22
D	17	19	21	17
E	13	15	16	12
F	13	15	16	12

The corridor classification and free flow speeds are as follows:

South Study Limits to Joplin Road	I (50)
Joplin Road (SB) to Possum Point Road	II (40)
Joplin Road (NB) to Possum Point Road	I (40)
Possum Point Road to Cherry Hill Road	I (45)
Cherry Hill Road to Maryland Avenue	I (50)
Maryland Avenue to Telegraph Road	I (40)
Telegraph Road to Backlick Road	I (50)
Backlick Road to Old Mill Road	I (40)
Old Mill Road to North Study Limits	I (45)

Exhibit 2-18 shows the afternoon peak hour travel speeds and arterial levels of service on Route 1.

Exhibit 2-18. 1995 Evening Peak Hour Travel Speeds on Route 1



Intersection Operational Performance

The operational analyses of key intersections show that many are operating near capacity, particularly during the evening peak hour. As shown in Exhibit 2-19, most signal controlled intersections operate at overall acceptable levels of service due to the use of long cycle lengths (typically 120 to 180 seconds) and signal coordination. This produces better levels of service on the Route 1 approaches than on the side streets. The long cycle lengths tend to increase delays on the side streets while maximizing the throughput of the intersection. The number of intersections with high volume to capacity (v/c) ratios in the evening peak hour indicates that there is limited reserve capacity to absorb traffic increases on the existing facility.

Exhibit 2-19. 1995 Peak Hour Levels of Service for Intersections

Intersection*		Level of Service (LOS) of Approach Legs**				Overall Intersection	
		NB	SB	EB	WB	LOS	V/C
Ft. Hunt Road	AM	D	D	F	F	E	0.95
	PM	C	D	F	F	D	0.88
Huntington Avenue	AM	D	D	E	E	D	0.72
	PM	C	C	E	D	D	0.88
Shields Avenue	AM	B	B	E	E	B	0.67
	PM	C	D	E	E	D	0.86
S. Kings Highway/Old K-Mart	AM	D	C	E	E	D	0.92
	PM	C	C	F	E	C	0.87
Beacon Hill Road	AM	C	B	E	F	C	0.83
	PM	C	C	F	E	D	0.87
Memorial Street	AM	C	B	D	D	B	0.77
	PM	C	E	F	F	D	1.02
Lockheed Boulevard/Dart Ent.	AM	C	B	E	E	C	0.90
	PM	C	D	F	F	D	0.99
Boswell Dr./Plaza Entrance	AM	C	C	E	F	C	0.83
	PM	C	C	F	E	C	0.82
Sherwood Hall Lane	AM	B	A	---	F	B	0.72
	PM	C	C	---	E	D	0.93
Mt. Vernon Hwy/N. Buckman	AM	D	D	F	F	E	1.01
	PM	F	D	F	F	E	1.09
Buckman Rd. S.	AM	A	A	E	D	B	0.62
	PM	A	A	D	D	A	0.55
Mt. Vernon Hwy./Old Mill Rd.	AM	C	C	E	D	C	0.79
	PM	D	D	D	F	E	0.95
Woodlawn Road	AM	B	D	F	---	D	0.95
	PM	F+	F+	F+	---	F+	>1.20
Belvoir Road	AM	C	B	---	D	C	0.51
	PM	C	B	---	C	B	0.51
Backlick Road	AM	B	C	F	---	C	0.90
	PM	C	E	F	F	E	0.96
Telegraph Rd./Old Colchester	AM	C	C	E	E	C	0.91
	PM	B	E	F+	E	F+	>1.20
Pohick Road	AM	B	B	B	---	B	0.83
	PM	A	F	F+	---	F+	>1.20
Armistead Road	AM	C	B	D	E	C	0.89
	PM	C	C	F	E	C	1.00
Gunston Road	AM	D	B	E	F	D	1.00
	PM	B	D	D	F	D	0.97
Furnace Road	AM	D	B	F	E	D	1.03
	PM	B	D	E	F	D	0.91
Annapolis Way	AM	C	A	E	---	B	0.98
	PM	A	A	E	--	A	0.76
Gordon Boulevard	AM	E	C	F	---	E	1.07
	PM	B	B	E	---	B	0.72
Occoquan Rd./Dawson Beach Rd.	AM	C	C	E	E	D	0.87
	PM	C	D	E	F	D	0.96
Longview Drive	AM	C	C	E	E	D	0.86
	PM	D	D	E	F	D	0.91
Featherstone Road	AM	C	B	D	F	C	0.81
	PM	C	C	D	E	C	0.89
Opitz Boulevard	AM	C	C	F	F	D	0.90
	PM	E	E	D	D	E	0.93
Neabsco Mill Road	AM	B	B	F	F	C	0.78
	PM	C	C	E	F	D	0.83
Neabsco Rd./Cardinal Dr.	AM	C	B	F	F	D	0.60
	PM	D	D	F	F	D	0.97
Cherry Hill Road	AM	B	B	D	D	B	0.54
	PM	A	A	D	E	B	0.46
Dumfries Rd./Old Stage Coach	AM	D	D	E	E	D	0.79
	PM	D	D	E	F	D	0.83
Possum Point Road (Unsignalized Intersection)	AM			D	C		
	PM			F	D		
Curtis Drive	AM	---	A	C	D	B	0.45
	PM		B	C	D	B	0.61
Graham Park Road	AM	B	---	D	C	B	0.40
	PM	D	---	A	C	C	0.53
Joplin Road	AM	C	C	C	C	C	0.66
	PM	C	C	C	D	C	0.74

* Route 1 is NB/SB legs for all intersections **F+ = worse than LOS F V/C Volume to Capacity Ratio LOS Level of Service

Safety

Route 1, a busy principal arterial without control of access, has a high number of crashes as shown in Exhibit 2-20. On average, about 3.4 crashes were reported per day in the 27-mile corridor. Within any one segment, frequency of crashes ranged from one every ten days in Quantico to nearly one per day in the northern portion of the Woodlawn to Alexandria segment.

Segments with higher traffic volumes and longer lengths had more crashes due to increased opportunities for crashes. However, the Woodlawn section shows a significantly higher crash rate (crashes per hundred million vehicle miles of travel) than other segments.

The study team performed a more detailed examination of the crash data to better understand the safety performance of the roadway. Segments and intersections along Route 1 were reviewed to select approximately 10 locations for detailed examination. Crash rates were computed for each 0.3-mile section of Route 1 to identify problem areas. Crash rates were also examined for 36 intersections under the traffic operational study.

Based on the segment analysis, the study team identified the area near the intersection of Route 1 with Route 619 (Joplin Road/Fuller Road) as the worst segment in the Corridor. However, a recent project improved this intersection by adding turn lanes, thereby eliminating this intersection from further study. The highest-ranked problem segments are listed in Exhibit 2-21 and the worst 15 intersections in Exhibit 2-22.

In addition to vehicle collisions, the study team examined crashes involving pedestrians. Between January 1992 and July 1995, 61 crashes involving 67 pedestrians—including 6 fatalities—were reported. Of these pedestrians, 23 were in the Hybla Valley to Alexandria section and 9 were in Woodbridge. All but one of the crashes involved pedestrians crossing the Route 1 roadway.

Overall, many of the sections of Route 1 are perceived as hazardous for both motorists and pedestrians. Drivers must always be alert for stopping, turning, or crossing vehicles. Pedestrians must negotiate wide pavement areas with vehicles traveling at substantial speeds. At night, there are many areas with insufficient roadway lighting for pedestrian crossing.

For the sections examined in details, the types of crashes that occur on a recurrent basis confirmed these perceptions. A review of the collision diagrams revealed that the biggest single factor in crashes is turning movements to and from driveways, especially those located near busy intersections. Another frequent crash type is left turn crashes at signal controlled intersections. These tend to occur at locations with higher speeds where vehicles turn left at a signal with no protected left-turn phasing.

Exhibit 2-20. Crash History Summary

Segment		Number of Crashes[1]					Avg. Crashes Per Day	Crash Rate[2]
		Length	Total	Fatal	Injury	Prop. Damage		
I	Quantico	2.2 mi.	100	1	50	49	0.1	354
II	Triangle/Dumfries	2.5 mi.	259	1	120	138	0.2	117
III	Cherry Hills/Neabsco	3.5 mi.	390	3	191	196	0.3	354
IV	Woodbridge	4.0 mi.	869	3	391	475	0.7	354
V	Lorton	4.3 mi.	473	3	194	276	0.4	310
VI	Ft. Belvoir	3.5 mi.	328	0	143	185	0.3	259
VII	South Woodlawn	2.8 mi.	754	5	312	437	0.6	681
VII	North Hybla Valley to Alexandria	4.5 mi.	1,211	6	512	693	0.9	388
TOTAL		27.3 mi.	4,384	22	1,913	2,449	3.4	

[1] Source of data is reported crashes included in VDOT's HTRIS Accident Subsystem for period January 1, 1992 to July 31, 1995.
[2] Crash Rate is crashes per hundred million vehicle miles and is based on traffic volumes included in the HTRIS System.

Exhibit 2-21. Crash Rates at Critical Segments

Section (by Milepost) Start	Stop	Segment	Landmarks	Total Crashes	Crash Rate	Critical Rate	Crash Rate to Critical Rate (Crash/Crit)	Crash/Crit Rank (1=worst)	Crash Rate Rank (1=worst)
166.56	166.85	II	Joplin Rd	143	1408	554	2.54	1	1
184.56	184.85	VII	Cooper Rd/Sacramento Dr/Woodlawn Shopping Ctr	212	1165	554	2.10	2	2
176.16	176.45	IV	Gordon Blvd	121	615	327	1.88	3	15
186.96	187.25	VII	Mt. Vernon Hwy/Rt. 235/Buckman Rd	241	608	500	1.86	4	16
175.26	175.55	IV	Marumsco Shopping Ctr/Mt.Pleasant Dr & Mary's Way	195	977	554	1.76	5	3
174.06	174.35	IV	Featherstone Rd/Prince William Plaza	186	940	554	1.70	6	4
171.96	172.25	III	Neabsco Mill Rd	152	860	554	1.55	7	5
191.16	191.45	VII	Huntington Ave/Ft. Hunt Rd	218	694	500	1.39	8	8
182.46	182.75	VI	Backlick Rd	154	749	554	1.35	9	6
186.06	186.35	VII	Mount Vernon Shopping Ctr	157	704	554	1.27	10	7
190.26	190.55	VII	N. Kings Highway/Shields Ave	190	631	500	1.26	11	13
175.86	176.15	IV	Occoquan Rd	132	681	554	1.23	12	9
174.96	175.25	IV	Longview Dr	132	681	554	1.23	13	10
184.86	185.15	VII	Engleside Plaza	138	675	554	1.22	14	11
173.76	174.05	IV	Opitz Blvd	131	666	554	1.20	15	12
189.36	189.65	VII	Beacon Hill Rd	201	616	513	1.20	16	14
187.86	188.15	VII	Boswell Ave	182	545	500	1.09	17	19
189.06	189.35	VII	Memorial St	190	547	513	1.07	18	18
185.46	185.75	VII	Green Leaf St/Moxley Trailer Park	128	571	554	1.03	19	17

NOTES:

1) Accident information provided by the Virginia Department of Transportation, for the years January 1, 1990 to October 31, 1995.
2) Number of accidents was tabulated every 0.3 mile for the period 1/1/90 to 10/31/95.
3) Crash rates are crashes per 100 million vehicle miles traveled.
4) Volumes used to compute crash rates are a combination of Virginia Department of Transportation and TransCore data.
5) Critical rates provided by the Virginia Department of Transportation are 1993 data segregated by facility type.

Exhibit 2-22. Crash Rates at Selected Signal Controlled Intersections

Segment No.	Intersection	Total Crashes	Annualized Avg. Cr/year	Crash Rate
II	Joplin Road (619)	79	22	2.12
III	Neabsco Mill Road (638)	107	30	2.04
IV	Longview Drive (1279)	113	32	1.96
V	Telegraph Road (611) and Old Colchester Rd. (611)	95	27	1.48
VI	Backlick Road (617)	89	25	1.42
IV	Occoquan Road (253)	79	22	1.40
VII	Buckman Road (S.) (836)	67	19	1.26
III	Neabsco Road (610)	55	15	1.11
II	Dumfries Road (234)	52	15	1.09
VII	Mt. Vernon Highway (235) and Buckman Road (N.) (836)	91	25	1.05
VII	Ft. Hunt Road (629)	96	27	1.03
VII	Boswell Avenue (826)	88	25	1.03
IV	Gordon Boulevard (123)	60	17	1.00
IV	Opitz Boulevard (2000)	66	18	0.96
II	Graham Park Road (1107)	23	6	0.95

NOTES:

1) Crash information provided by the Virginia Department of Transportation, for the years January 1, 1992 to July 31, 1995.
2) Crash rates are crashes per 100 million entering vehicles
3) Volumes used to compute crash rates are a combination of Virginia Department of Transportation and TransCore data.

TRANSIT/RIDESHARING

This section presents an inventory and assessment of the existing transit services in the Route 1 Study Corridor.

Overview of Transit Characteristics

Overall, the Route 1 corridor has a relatively good level of transit coverage. Demand for existing service is below transit capacity. The transit services and programs are radially oriented to the Pentagon and D.C. core areas. Existing and recently added routes serve short commutes and general-purpose non-work trips along sections of the corridor.

Within the corridor, Segment VII has the highest level of transit service. Metrorail, Fairfax Connector and Metrobus service serve this segment. Segment I in Quantico represents the other end of the spectrum; only VRE commuter rail and one bus route serve this area.

Inventory of Existing Services

The Route 1 corridor provides transit services that include fixed-route bus service, route deviation bus service, Metrorail, Virginia Railway Express (VRE) commuter rail , and ridesharing. Commuter express service from park-and-ride-lots and paratransit service is also provided. Exhibit 2-23 provides summary information for each of the transit services within the study area for the entire corridor. Exhibit 2-24 shows the major transit routes and park and ride lots in the study corridor.

Rail

The following section summarizes rail services provided by Metrorail and VRE.

Metrorail

Metrorail provides heavy rapid rail service to/from Huntington and Franconia/Springfield Stations and destinations in the Washington metropolitan area. Huntington Station is the southern terminus of the Yellow Line. The Franconia/Springfield Station opened during the summer of 1997 and is the southern terminus of the Blue Line. Exhibit 2-23 shows the service characteristics of the Metrorail service at Huntington and Franconia/Springfield Stations.

Virginia Railway Express

Virginia Railway Express provides weekday commuter rail service between Fredericksburg and Union Station in the D.C. core. Currently, there are four stations in the Route 1 Corridor from Quantico to Lorton. Daily ridership within the corridor is approximately 2,400 passengers a day. Exhibit 2-24 shows the VRE rail line and the stations in the study area. Service is also provided at the Franconia-Springfield Station.

Bus

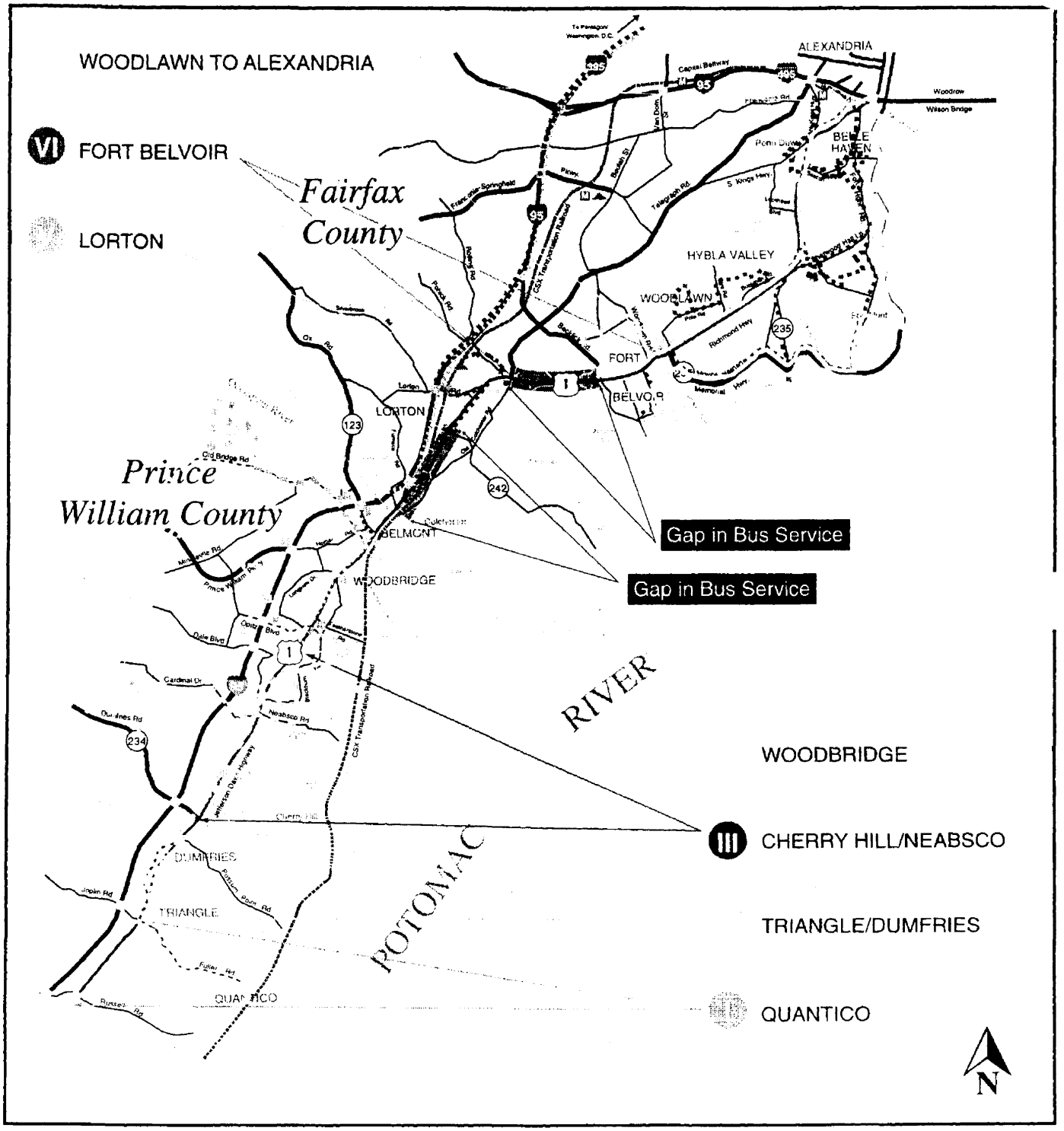
This section provides an overview of the bus service that is provided by Metrobus, Fairfax Connector, and PRTC. These operators provide service on 23 bus routes.

Exhibit 2-23. Summary of Transit Services in the Study Corridor

Operator	Route/Station	General Span of Service	General Headway in minutes	Fare
Metrorail	Huntington, Franconia/Springfield	5:30 AM – Midnight	12 - 16	$1.10 - $3.25
VRE	Quantico, Rippon Woodbridge, Lorton, Franconia/Springfield	5:43 AM - 7:45 PM	Scheduled Trains	$4.75 - $5.55
Metrobus	9 A-G	Varies	30 - 60	$1.10 - $2.15
	11Y	AM & PM Peak Periods	30	$2.20 - $3.25
Fairfax Connector	101 - 107	Varies	30	$0.50
	303	AM & PM Peak Periods	30	$1.00 - $2.05
PRTC OmniRide	Triangle/ Dumfries/ Marumsco	N/A	1 AM trip 1 PM trip	$5.00
PRTC OmniLink	Dumfries Woodbridge	7:30 AM - 6:00 PM	45	$0.75
PRTC OmniLink Feeder	To Woodbridge and Rippon VRE Stations, from Route 1, Lakeridge, Dale City, and Montclair	5:15 - 7:30 AM 4:30 - 8:00 PM	30 30 - 60	$0.75 or free with VRE ticket

Source: Metrorail, VRE, Metrobus, Fairfax Connector & PRTC Timetables.

Exhibit 2-24. Major Transit Routes in the Route 1 Corridor



Metrobus

The Washington Metropolitan Area Transit Authority (WMATA) operates local and express service on two bus lines, #9 and #11, with a total of 8 routes in the corridor. Approximately 3,900 passengers are carried each weekday.

Fairfax Connector

The Fairfax Connector operates eight routes that provide local service within the corridor. Exhibit 2-23 shows the service characteristics for Fairfax Connector routes in the Route 1 Corridor.

PRTC

The Potomac and Rappahannock Transportation Commission (PRTC) serves Prince William County, and several other jurisdictions not in the study area. PRTC provides commuter bus service to downtown Washington, D.C. and the Pentagon along Route 1 and I-95 on OmniRide. PRTC also provides feeder bus service to Rippon and Woodbridge VRE stations on OmniLink. OmniLink Flexible Routes also provide service in the corridor.

OmniRide

PRTC operates one OmniRide route that has one A.M. and P.M. trip to/from Triangle/Dumfries/ Marumsco to the Pentagon, the McPherson Square Metrorail Station and the State Department. One-way fare for the trip is $5.00. Ten tokens can be purchased for $35 representing a $1.50 discount per one-way fare.

OmniLink Feeder Routes

PRTC operates feeder services that provide free service to the Woodbridge and Rippon VRE stations. Service operates in the morning from 5:15 to 7:30 AM and in the evening from 4:30 to 8:00 PM.

OmniLink Flexible Routes

PRTC operates two OmniLink Flex routes in the corridor. The flex routes are designed to improve access for passengers that are not able to access bus stops. Passengers can either board at an existing stop, make a same day two-hour minimum advance reservation with PRTC if they live along a pre-determined corridor, or make a standing order if the trip is made repeatedly. The one-way fare is $0.75.

Bus Stop Inventory

The Route 1 Corridor has approximately 90 bus stops. Each of the bus stops was categorized as either good, fair or poor based on the amenities and conditions of the bus stop. Only nine bus stops have either a bench or a shelter, and nearly 50 percent of the stops were categorized as poor. The following are the criteria for each category:

- Good - concrete pad and a shelter
- Fair - sidewalk and/or concrete pad
- Poor - no sidewalk or pad

Exhibit 2-25 lists bus stops by segment and categorizes them into the three categories. A typical example of each category is shown in Exhibit 2-26.

Exhibit 2-25. Signed Bus Stops Along Route 1 and Ratings by Segment

Segment	Number of Signed Stops by Segment	Percentage for each Segment by Rating			Percentage of Total Stops along Route 1
		Good	Fair	Poor	
I. Stafford/Prince William line to Joplin Rd.	0	0%	0%	0%	0%
II. Joplin Rd. to Dumfries Rd.	7	0	57	43	8%
III. Dumfries Rd. to Dale Blvd.	5	0	60	40	6%
IV. Dale Blvd. to Occoquan River	1	0	0	100	1%
V. Occoquan River to Telegraph Rd.	6	0	33	67	7%
VI. Telegraph Rd. to S. Rt. 235	3	33	33	33	3%
VII. S. Rt. 235 to Cameron Run	68	12	43	45	75%
Total	**90**	**10%**	**43%**	**47%**	**100%**

Source: TransCore field survey March, 1996.

Exhibit 2-26. Graphical Representation of Bus Stop Rating

Picture 1
"Good"

Picture 2
"Fair"

Picture 3
"Poor"

Park-and-Ride Lots

The Route 1 Corridor has 10 park-and-ride lots that provide parking and transit services for commuters. These lots provide nearly 2,600 spaces and have a usage rate of 77 percent. Exhibit 2-27 shows the location and usage rate for the park-and-ride-lots.

In addition to this, VRE and Metrorail also provide five parking lots. These lots have 4,200 spaces with an 86 percent usage rate.

Exhibit 2-27a. Route 1 Corridor Park-and-Ride Lots

Segment	Name	Capacity	Use	Usage Rate	Date Observed	Location
II	Dumfries Shopping Center	55	20	36%	10/31/95	Intersection Rt. 1 & Graham Park Rd.
II	Triangle Commuter Lot	29	36	124%	10/31/95	VA 619 & US 1
III	K-Mart, Dale City	92	47	51%	10/31/95	Intersection Dale Blvd. & Gideon Dr.
IV	Featherstone Square	15	0.00	0.0%	10/31/95	Intersection Rt. 1 & Featherstone Rd.
IV	Hechinger's – Lakeridge	385	384	99%	11/01/95	Intersection Rt. 123 & Davis Ford Rd.
IV	Horner Rd. Commuter Lot	445	546	122%	11/02/95	Horner Rd. (VA 639) at I-95
IV	I-95/123 Interchange	700	95	13%	09/22/95	Intersection I-95 & Rt. 123, Exit 160
IV	Marumsco Plaza	200	92	46%	08/01/94	US 1 & Longview Dr.
IV	Potomac Mills Mall (eastside)	569	660	116%	11/03/95	Potomac Mills Circle
V	Lorton Park & Ride	100	131	131%	05/31/94	Lorton Rd. & Gunston Cove Rd.
	Total	**2,590**	**2,011**	**77%**		

Source: Virginia Department of Transportation

Exhibit 2-27b. Rail Station Park-and-Ride Lots

Operator	Station	Capacity	Use	Usage Rate	Connecting Services
Metrorail	Huntington	3090	2997	97%	Metrobus (9 A-C) Fairfax Connector (101-110)
VRE	Quantico	100	N/A	N/A	PRTC Flex (1 route)
	Rippon	300	209	70%	PRTC Feeder (1 route)
	Woodbridge	558	276	47%	PRTC Feeder (3 routes)
	Lorton	200	66	33%	Fairfax Connector (303)
Total		4248	3548	86%	

Source: Fairfax County Park-and-Ride Inventory, 1995.
Virginia Railway Express Marketing Department, May, 1995.

Ridesharing

PRTC and Fairfax County provide ridesharing services to commuters. Ridesharing includes carpools and vanpools. Fairfax County has four vanpools that travel between Alexandria and D.C. and one to Crystal City. PRTC has vanpools operating from Prince William County to downtown D.C., the Pentagon, and Bolling Air Force Base.

Paratransit Service

Paratransit service is operated for passengers 65 years and older and for those with disabilities. Paratransit service is operated in Prince William County by the Association for Retarded Citizens (ARC), Community Services Board (CSB), Didlake, Inc., Prince William Area Agency on Aging (AAA), and Prince William County Department of Social Services (DSS). MetroAccess and Fastran provide Fairfax County paratransit service.

Assessment of Transit Service

Exhibit 2-28 is a summary of transit coverage for each segment in the corridor.

Exhibit 2-28. Summary of Transit Service Coverage Along Route 1 by Segment

Segment	Transit Service Coverage	Comments
Segment I	Fair	Passengers cannot board or alight on Quantico Marine Base.
Segment II	Good	Additional service is needed on OmniRide and additional P.M. service on Flex route
Segment III	Good	OmniRide only provides one A.M. and one P.M. trip.
Segment IV	Good	No service along Route 1 into Fairfax County.
Segment V	Poor	No connection between PRTC and Fairfax Connector services. No routes from Lorton VRE Station to Ft. Belvoir. No feeder bus service to Lorton VRE Station.
Segment VI	Fair	The southern half of the segment has no transit service due to low population density.
Segment VII	Good	Pedestrian facilities need improving. Limited weekend PM bus service.

The definition of transit service coverage is based on the following:

- Poor - Large parts of the corridor lack transit service;
- Fair - Sections of the corridor lack transit service;
- Good - The corridor has good transit coverage but additional service hours are needed;
- Excellent - The corridor has good transit coverage and service hours meet demand

The following is a summary of existing transit issues along the corridor.

- Signed bus stops, waiting areas need to be improved, and pedestrian access and safety issues need to be addressed.

- Good coverage is provided by bus, heavy rail and commuter rail service. Most major residential areas and activity centers are served.

- Weekend service coverage is inadequate, especially in Prince William County.

- The span of service and frequency of service on the weekends is a problem for the transit dependent.

- Some areas have good seamless transit connections that allow passengers to transfer from one system to another to complete their trip.

- Improved transit connections need to be made between PRTC local service and the Fairfax Connector and Metrobus services in the Ft. Belvoir area and between the Lorton VRE Station and Ft. Belvoir.

- Prince William County segments of the corridor do not have the densities needed to support traditional fixed route transit service.

- PRTC has implemented non-traditional transit service to provide service in areas with low density.

ECONOMIC CONDITIONS

The following sections describe the economic conditions in the Route 1 study corridor.

Overview

Route 1 is a multi-functional, north/south transportation route. It carries commuter traffic and is a local arterial that serves a multitude of commercial and residential uses within the corridor.

Land uses immediately adjacent to Route 1 are predominantly commercial and consist largely of uncoordinated retail serving the local market, with a moderate number of new office buildings in the northern sector. Housing types vary widely and include low density, single family detached units and townhouse neighborhoods, high rise apartment buildings, and mobile home parks.

Before I-95 was constructed in the 1960s, Route 1 was the major north/south transportation route for the entire east coast. Accordingly, relatively large volumes of traffic were handled, and this facilitated the development of strip shopping centers, hotels/motels, and gas stations to serve the long-distance through traveler. Many of these hotels/motels were constructed before 1970. Due to the shift in use from major north/south transportation route to a commuter and local arterial route, demand from through travelers has decreased dramatically.

As a result, establishments along the Route 1 corridor now primarily serve the local community and commuters. Due to the shift in demand characteristics, a number of the hotels/motels located in the Route 1 corridor are no longer operational. These existing buildings generally represent potentially significant development and revitalization opportunities.

The most recent large-scale economic development projects have occurred primarily in the sectors of the Route 1 corridor just south of the Occoquan River. Mixed-use residential developments, such as Belmont Bay in the Woodbridge Area, coupled with other commercial and residential developments such as Southbridge, the Market at Opitz Crossing, Potomac Professional Village, and the 2200 Opitz Boulevard Office Complex, have had a significant impact on the character and the market's perception of these sectors.

Summary of Existing Problems

Due to the diverse nature of the Route 1 corridor, there are both limitations to, and opportunities for, economic development. Generally, the entire corridor has undergone a shift in market orientation to reflect the shift from the primary north/south transportation route for the entire east coast to that of a local and commuter route. This shift has contributed to the presence of a multitude of blighted properties throughout the Route 1 corridor. The prior orientation to serving the long distance through traveler has resulted in obsolete development patterns and overall poor physical appearance.

Quality large scale commercial development in the northern sector has been hindered by difficulties in consolidating small properties; by the limited depth of the properties, which are bounded on the rear by residential properties; and by a number of environmentally sensitive areas.

A second major constraint to economic development is east/west access to the Route 1 corridor. The Potomac River restricts access to the east and only limited access is provided to the west in the northern portion of Fairfax County.

The Route 1 corridor also suffers from a negative image in the development community due to a perceived crime problem, obsolete development patterns, and poor overall physical appearance. This is particularly true in the northern sectors and in the Triangle/Dumfries sector.

The sectors in close proximity to the Potomac Mills Outlet Shopping area have experienced a substantial negative impact in retail demand. The presence of this large-scale shopping center has decreased the likelihood that retail centers located in the Route 1 corridor will appeal to consumers who do not reside in close proximity or use Route 1 for commuting purposes. As a result, the majority of existing uses are oriented to area residents and commuters. This orientation has led to the proliferation of strip retail, fast food restaurants, gas stations, and similar retail services, which typically represent disjointed development. This has contributed to the problem of assembling large tracts of land for development and to the overall perception of the area.

Description of Segment Characteristics

The following is a description of the economic characteristics of each sector of the Route 1 corridor from its southern boundary at Quantico Marine Corps Base to the Capital Beltway in Northern Virginia.

Segment I – Quantico (Stafford County Line to Route 619)

The Quantico Marine Corps Base and Locust Shade Park make up this entire sector. As such, economic development is not possible in this sector because of its use as a military base or recreational facility.

Segment II - Triangle/Dumfries (Route 619)

The Triangle Area, located north of Route 619, generally consists of fast food restaurants, gas stations, strip retail, and other commercial establishments, including used car lots and junkyards, and a moderate amount of low-income housing.

Due to their close proximity to the entrance to Quantico Marine Base and Interstate 95, establishments located in Triangle are largely oriented toward serving military personnel, as well as Interstate 95 travelers and Route 1 commuters.

The Town of Dumfries is located in the northern end of this sector, which includes a split in Route 1. Dumfries primarily consists of strip retail developments, mobile home parks and other low-income housing, used car lots, mobile home sales and service, and a moderate amount of office space. There are tracts of land currently available in the 3–6 acre ranges. The Weems Botts Museum is located in the west side of the split of Route 1.

This area's problems include a confusing traffic pattern and blighted and vacant properties.

Segment III - Cherry Hill/Neabsco (Route 234 to Dale Boulevard)

The area just north of Route 234 consists mostly of large tracts of available land. Included in this area is Southbridge on the Potomac, located on the Cherry Hill Peninsula. This 2,500-acre site includes plans for 7,000 residential units and 4.2 million square feet of non-residential uses. Thirty-nine acres of land zoned B-1 fronts Route 1 at the community entrance. Construction for Phase I of this development is underway.

North of the Southbridge development, the frontage on Route 1 is characterized as primarily wooded and undeveloped. There is a substantial amount of adjacent residential development along the Corridor before the River Oaks Shopping Center.

The River Oaks development includes the River Oaks Shopping Center and single family townhomes. This quality development is fairly representative of the entire segment in terms of the quality and type of recent development, which is primarily residential with a moderate amount of commercial uses.

There is a substantial amount of available, undeveloped land just north of the River Oaks development. There are a number of residential developments in this area, including Fox Run, Village Gate, Georgetown Village, Riverwoods Apartments, and Newport Estates. In addition, Leesylvania State Park is located to the east of Route 1.

The Prince William County Service Building is located on the west side of Route 1.

The area adjacent to Neabsco Mills Road (Route 638) consists largely of car and boat dealerships. Route 638 leads to Interstate 95 and the Northern Virginia Community College and Route 1. North of the intersection of Neabsco Mills Road and Route 1 is a substantial amount of land for sale and other undeveloped tracts of land not currently on the market. This area is generally characterized as rural and hilly

Rippon Landing, a residential development of apartments and townhomes, is the primary development in the northern end of this sector. Rippon Commuter Rail Station is located off of Featherstone Road. This facility's access and visibility are considered poor.

The Cherry Hill area of this segment is experiencing the greatest amount of economic growth in the Route 1 corridor. It offers the greatest potential for sustained growth due to the substantial amount of available land.

Segment IV – Woodbridge (Dale Boulevard to the Occoquan River)

The southern end of this sector is anchored by the Market at Opitz Crossing, located at the intersection of Route 1 and Opitz Boulevard. Phase I of this development consists of approximately 150,000 square feet of retail space anchored by a 54,000 square-foot Safeway. Phase II will consist of an additional 70,000 square feet of retail and 130,000 square feet of office space.

Potomac Mills Outlet Shopping Center is located west of Route 1 via Opitz Boulevard. Potomac Mills has had a substantial impact on retailing in this sector of Route 1 as well as the sectors to the south and north. As a result of this impact and the shift in orientation of Route 1 due to the presence of Interstate 95, the focus of recent retail development has been on local serving establishments such as grocery stores, and video rental establishments. In addition, a proliferation of fast food restaurants and car dealerships has located in this area.

The impact of Potomac Mills is particularly evident in the older retail centers such as the Prince William Plaza, which currently has space available for lease.

Adjacent to Longview Drive is the Marumsco Plaza. The area just north and south of Longview consists of a high concentration of residential and strip retail development.

Recent developments within close proximity to Route 1 in this sector include the Potomac Professional Village located at 1900-2100 Opitz Boulevard. This development is a 100,000 square-foot office complex of 25 office buildings. Suites are currently available for sale or lease. In addition, the 2200 Opitz Boulevard Office Complex has three separate buildings consisting of 45,000 square feet.

Belmont Center is located just east of Route 1 between the Occoquan River and Dawson Beach Road. This 323-acre development is a multi-use project to include up to two million square feet of office and retail space, residential units, 600 senior housing units, a marina, and a hotel.

The Woodbridge Commuter Rail Station is also located at this intersection. There is a high concentration of commercial and residential development in the immediate vicinity. Several marinas operate below the Route 1 bridge.

Similar to the Cherry Hill area, this sector has begun to see quality economic growth. This growth should continue as developments such as Belmont Bay continue to evolve.

Segment V – Lorton (Occoquan River to Telegraph Road)

The southern end of this sector is primarily characterized as industrial. A tract of approximately 100 acres is now for sale on the west side of Route 1. There is currently a golf driving range on a portion of the frontage of this tract. The area also includes the Lorton Industrial Center, low income housing, and a limited amount of commercial development such as junkyards, auto supply and boat sales establishment and a substantial amount of undeveloped land.

At the intersection of Route 1 and Gunston Cove Road is Gunston Square, a relatively new townhouse development. Further north, the Lower Potomac Pollution Control Plant is located on the east side of Route 1.

The northern end of this sector has a substantial amount of residential development and a sizable amount of undeveloped land.

The D.C. Department of Corrections Facility represents a significant redevelopment opportunity if plans go forward to relocate the facility and redevelop the tract of land that it currently occupies.

Segment VI - Fort Belvoir (Telegraph Road to Route 235 South/Old Mill Road)

This segment primarily consists of Fort Belvoir, which includes the Davison Army Airfield. Mount Vernon Lifecare Retirement Community is located on the west side of Route 1 in the southern part of this sector.

In the areas near Backlick Road there is a small amount of strip development and low-income housing. The Fairfax County Parkway connects to I-95.

The northern end of Fort Belvoir primarily consists of open green space. Woodlawn Plantation is located on the west side of Route 1 just past the exit from the

northern end of Fort Belvoir. Because there is limited development along Route 1 due to the presence of Fort Belvoir, the segment receives little spin-off economic impact from Woodlawn Plantation or from nearby Mount Vernon.

Segment VII - Woodlawn to Alexandria (South – Route 235 South/Old Mill Road to Route 235 North/Buckman Road & North – Route 235 North/Buckman Road to Alexandria City Line)

Since 1985, over $380 million in new investment has occurred in this segment of Route 1. Much of this development can be attributed to the efforts of the Southeast Fairfax Development Corporation (SFDC).

According to the Fairfax County Police Department, 23% of all serious crime in Fairfax County occurs within this sector of the Route 1 Corridor.

There is a substantial amount of tourist activity at the southern end of this area since Woodlawn Plantation and Mount Vernon are both located nearby.

The Woodlawn Community Business Center consists primarily of three shopping centers located on the west side of Route 1. These centers include Woodlawn Shopping Center, Engleside Plaza, and Sacramento Center. The east side of Route 1 is primarily strip commercial uses, including fast food restaurants, auto repair establishments, and converted residences. Pear Tree Village is a newer development. Tenants are primarily locally oriented retail and service businesses.

The area between the Woodlawn Community Business Center and Hybla Valley/Gum Springs Community Business Center is characterized as primarily residential.

The southeast portion of this business center includes the Gum Springs Redevelopment Area, which consists of 32 acres planned for residential development, office, and commercial uses.

Hybla Valley/Gum Springs Community Business Center includes the Mount Vernon Plaza and South Valley Shopping Center. Combined, these two shopping centers provide over 550,000 square feet of retail space. The South Valley Center, which was recently renovated, is in better condition than the Mount Vernon Center.

Beacon/Groveton Community Business Center includes the Beacon Mall (an enclosed shopping center), the Service Merchandise Center, the Metrocall office building, and an abundance of strip retail uses, including gas stations, motels, banks, and auto-related business. The shallow depths of the properties limit development on the east side of Route 1. The underutilized Groveton Redevelopment site south of the mall has experienced little commercial development in the last decade.

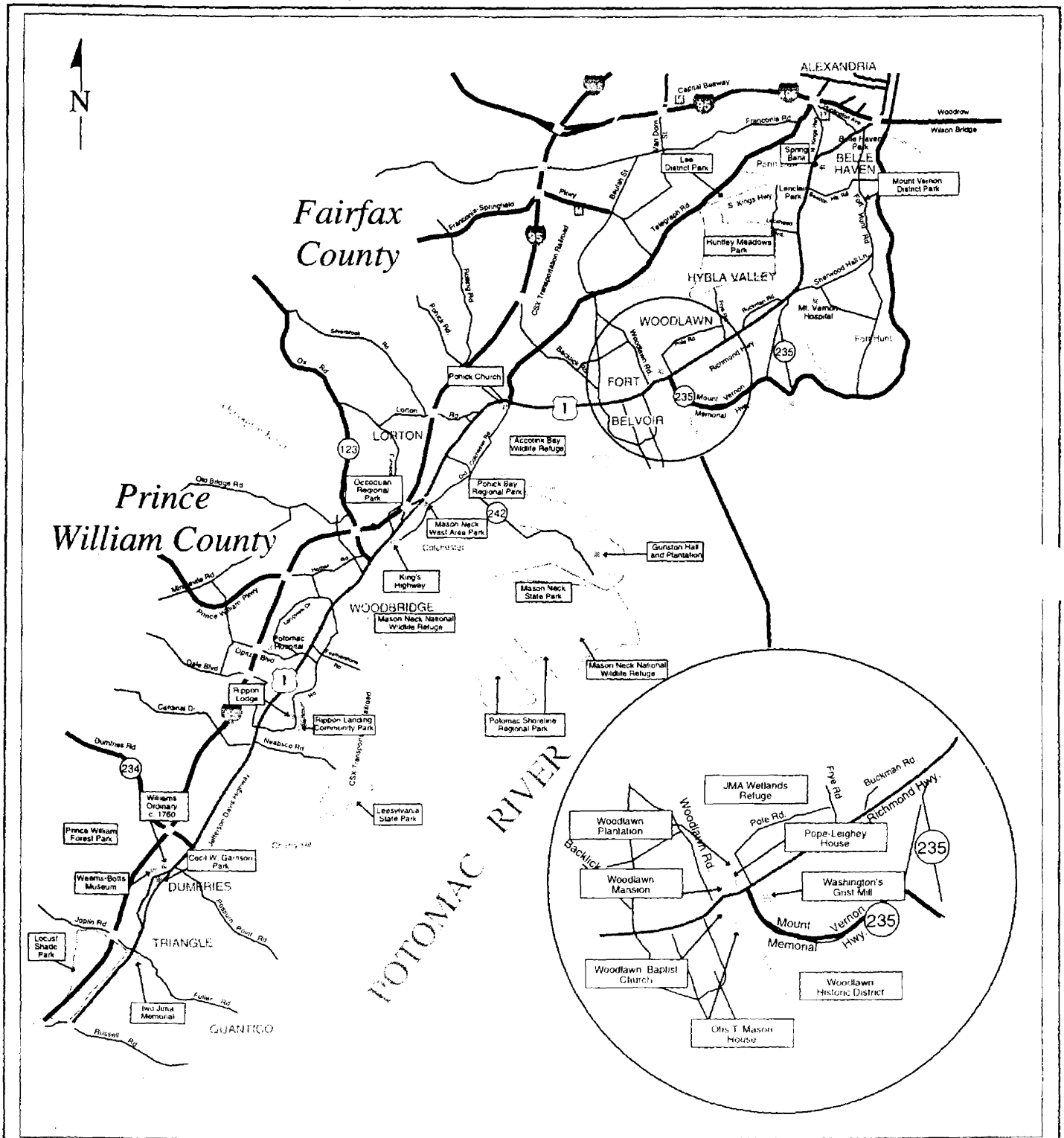
Penn Daw Community Business Center includes the Penn Daw Shopping Center, Builders Square Center, World of Ford auto dealership, and neighborhood and community-serving retail establishments. In addition, there are residential neighborhoods east and northwest of the Penn Daw Community Center. A small number of office buildings are located in this area as is the Huntington Metrorail Station. This area includes a substantial number of high-rise apartment buildings and residential neighborhoods.

The North Gateway Community Business Center is the entry point to Route 1 from point's north including Washington, D.C., the City of Alexandria, and the Capital Beltway. This area is characterized by high-rise residential buildings, office buildings, auto dealerships, gas stations, and hotels.

ENVIRONMENTAL RESOURCES

Exhibit 2-29 highlights the significant cultural, historic and environmental resources in the Route 1 corridor. A detailed inventory is included in Appendix D.

Exhibit 2-29. Environmental Inventory



FUTURE BASELINE CONDITIONS

To provide a mutual understanding of future conditions and a basis for comparison, a Baseline case for 2020 was evaluated. The study team used the Metropolitan Washington Council of Governments (MWCOG) Cooperative Forecasts (Round 5.3) as the source for expected population and employment changes in the corridor.

In addition to the MWCOG forecasts, the study team made certain Baseline roadway network assumptions. Under this scenario, no projects along Route 1 are assumed to be constructed except those already funded. On other facilities in the region, transportation improvements are assumed in accordance with the Constrained Long-Range Plan (CLRP) and the Transportation Improvement Program (TIP).

The projects in the Baseline scenario include widening of Route 1 through the Telegraph Road, Pohick Road, and Lorton Road intersections, and the addition of left-turn lanes at Woodlawn Road and Buckman Road in Fairfax County. Prince William County Baseline improvements include improvement of the vertical alignment of Route 1 between Canal Road and Stage Coach Road, raising and widening the Neabsco Creek Bridge, and widening of the southbound lanes of Route 1 on Main Street in Dumfries.

Other projects which are planned for Route 1 but do not have funding assigned to them were not assumed to be constructed under the Baseline scenario.

All other projects currently listed in the CLRP were assumed to be in place by 2020, regardless of whether or not funding sources for the projects have been identified. These projects include widening of I-95 to four lanes in each direction south to Route 123, addition of a third high occupancy vehicle (HOV) lane on I-95, completion of the Fairfax County Parkway and Prince William Parkway, and enhancements to service offered by Virginia Railway Express (VRE). Exhibit 2-30 shows the locations of projects in the Route 1 corridor area assumed under the Baseline scenario.

Programmed Improvements (Funded)

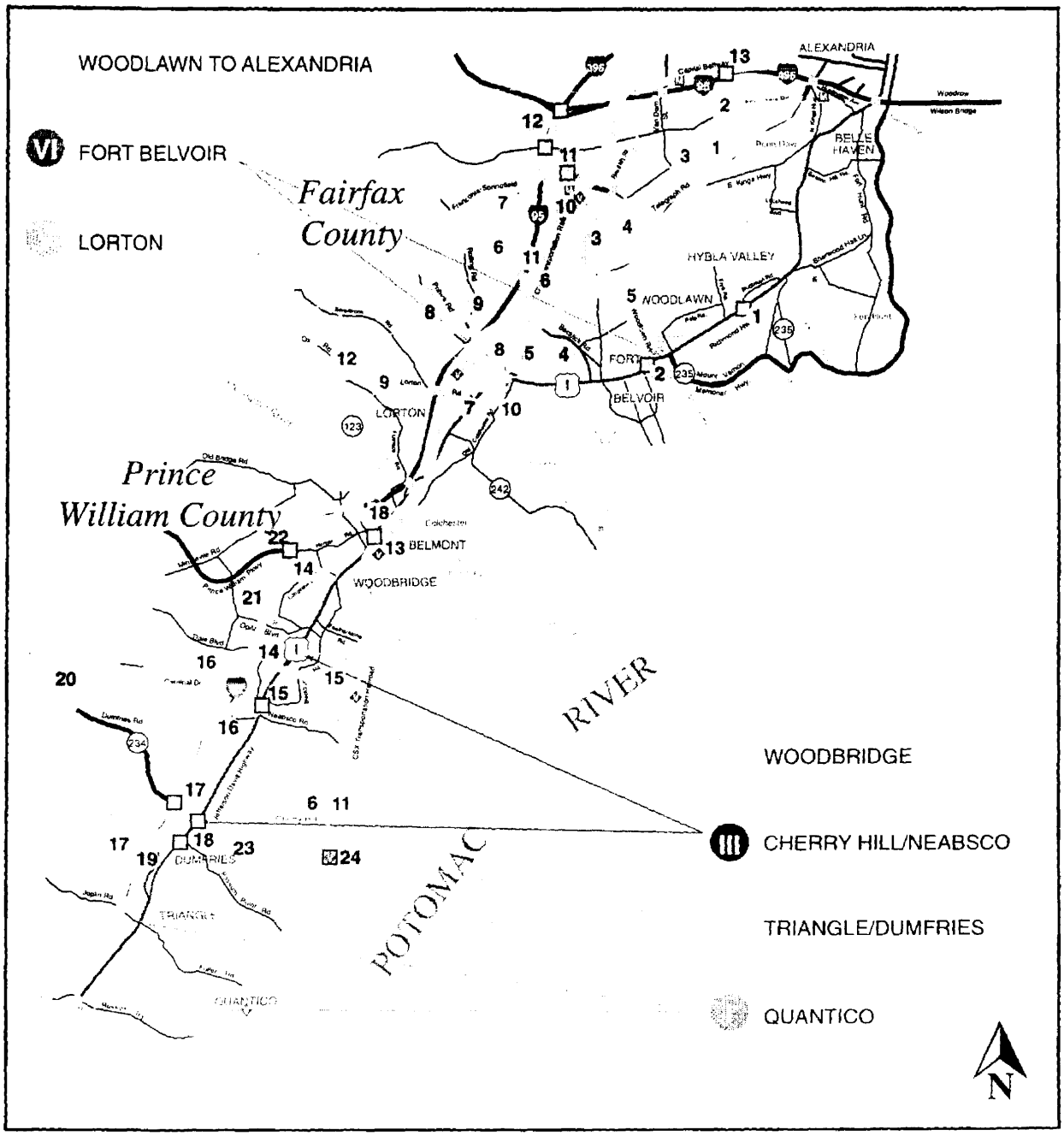
	Facility	Location	Improvement
	FAIRFAX COUNTY		
1	*Route 1*	*At Buckman Road South*	*Add left turn lanes*
2	*Route 1*	*At Woodlawn Road*	*Add left turn lane northbound*
3	Beulah St	Telegraph Road to Franconia Road	Widen to 4 lanes
4	Fairfax County Pkwy.	Route 1 to I-95	Construct 4 lane roadway
5	Telegraph Road	Route 1 to Beulah Street	Widen to 4 lanes
6	VRE Commuter Rail	Fredericksburg to Washington, D.C.	Track and signal improvements
7	Lorton Road	Silverbrook Road to Route 1	Widen to 4 lanes
8	Pohick Road	Rolling Road to South Run Road	Improve 2-lane roadway, partially on new alignment
9	Rolling Road	I-95 to Delong Drive	Widen to 4 lanes
10	*Franconia-Springfield Transportation Center*	*Franconia-Springfield Pkwy. at Frontier Drive*	*Construct Metrorail Station with 4000 parking spaces and construct VRE commuter rail station with 200 parking spaces*
11	*Franconia-Springfield Pkwy.*	*At Frontier Drive*	*Construct interchange (complete)*
12	I-95/I-495/I-395	I-495 to Franconia-Springfield Pkwy.	Reconstruct interchange(s)
13	*I-95/I-495*	*At Clermont Drive*	*Construct interchange*
	PRINCE WILLIAM COUNTY		
6	VRE Commuter Rail	Fredericksburg to Washington, D.C.	Track and signal improvements
14	Dale Blvd.	Neabsco Mills Road to Route 1	Construct 4 lane roadway
15	Route 1	At Neabsco Creek	Replace bridge - 6 lanes
16	Cardinal Dr.	Greenmont Drive to Route 1	Widen to 4-6 lanes, realign to Neabsco Road
17	Route 234	I-95 to Route 1	Widen to 4 lanes, reconstruct interchange at I-95 and construct interchange at Route 1
18	Route 1	Canal Rd. to Old Stage Coach Rd.	Improve vertical alignment
19	Route 1 Southbound (Main Street)	Possum Point Road to Mine Road	Widen to 4 lanes (2 lanes southbound)
20	Route 234	Waterway Dr. to Route 234 Bypass	Widen to 4 lanes
21	*I-95*	*Quantico Creek to Occoquan River*	*Extend HOV lanes*
22	*I-95*	*At Prince William Pkwy.*	*Construct full interchange*
23	Potomac Pkwy. (Route 234 Extended)	Route 1 to Cherry Hill VRE station	Construct 2-lane access road
24	VRE Commuter Rail	Cherry Hill	Construct new station

Other Planned Improvements Assumed in Baseline Scenario (Not Necessarily Funded)

	Facility	Location	Improvement
	FAIRFAX COUNTY		
1	Telegraph Rd.	Beulah St. to Franconia Rd.	Widen to 4 lanes
2	Franconia Rd.	Craft Rd. to Telegraph Rd.	Widen to 4 lanes
3	South Van Dorn St.	Telegraph Rd. to Kingstowne Village Pkwy.	Construct 4-lane roadway
4	Hayfield Rd.	Telegraph Rd. to Manchester Lakes Blvd.	Widen to 4 lanes
5	Woodlawn Road	Route 1 to Telegraph Rd.	Widen to 4 lanes
6	Fairfax County Pkwy.	Fullerton Rd. to Franconia-Springfield Pkwy.	Construct 6 lanes
7	Fairfax County Pkwy./ Franconia-Springfield Pkwy.	Sydenstricker Rd. to Frontier Dr.	Construct HOV lanes
8	Pohick Rd.	I-95 to Route 1	Widen to 4 lanes
9	Lorton Rd.	Furnace Rd. to Silverbrook Rd. Silverbrook Rd. to Route 1	Widen to 4 lanes Widen to 6 lanes
10	Route 1	Lorton Road to Telegraph Rd.	Widen to 4 lanes southbound and 3 lanes northbound
11	VRE Commuter Rail	Fredericksburg to Washington, D.C.	Service increases, track & signal improvements
12	Route 123	Occoquan River to Braddock Rd	Widen to six lanes
	PRINCE WILLIAM COUNTY		
11	VRE Commuter Rail	Fredericksburg to Washington, D.C.	Service increases, track & signal improvements
13	Route 1	At Route 123	Construct interchange
14	Prince William Pkwy.	I-95 to Route 1	Construct 4 lane road
15	Rippon Blvd.	Route 1 to Rippon VRE Station	Construct 2-lane access road
16	Benita Fitzgerald Blvd.	Dale Blvd. to Cardinal Dr.	Construct 4 lanes
17	I-95	Quantico Creek to Prince William/ Stafford County Line	Extend HOV lanes
18	Route 123	Route 1 to Occoquan River	Widen to 6 lanes

Italics indicate projects complete as of 10/1/97

Exhibit 2-30b. Future Baseline Scenario



LEGEND

- Programmed improvement (funded)
- Other planned improvements assumed in Baseline Scenario (not necessarily funded)
- 1 Reference number for programmed improvement
- 1 Reference number for planned improvement
- VRE Commuter Rail Station
- Metrorail Station

PROJECTED BASELINE DAILY TRAFFIC VOLUMES

Increases in population and employment in the Route 1 corridor will fuel an increase in transportation demand in the corridor. MWCOG forecasts indicate that additional development is expected to occur within and adjacent to the corridor, as well as in Stafford County. Population in the corridor is forecast to increase by 86,000 people (from 157,000 to 243,000 people), two-thirds of which occur in Prince William County. Employment in the corridor is forecast to grow by over 46,000 jobs (from 68,000 to 114,000), 70 percent of which will occur in Prince William County.

Daily traffic volumes on Route 1 in 1995 ranged from 11,000 vehicles in 1995 to over 80,000 vehicles per day in Segment VII. The busiest sections are:

- the Occoquan River Bridge
- between Pohick Road and Telegraph Road
- between Sherwood Hall Lane and Lockheed Boulevard
- between Fort Hunt Road and the Capital Beltway

By the year 2020, traffic projections for the Baseline scenario show traffic increasing on Route 1 to a range from 54,000 to over 100,000 vehicles per day. As shown in Exhibit 2-31, the southern segments of the corridor will have the largest increases. In 2020, Route 1 in Prince William County will be as busy as the section of Route 1 in Hybla Valley is today.

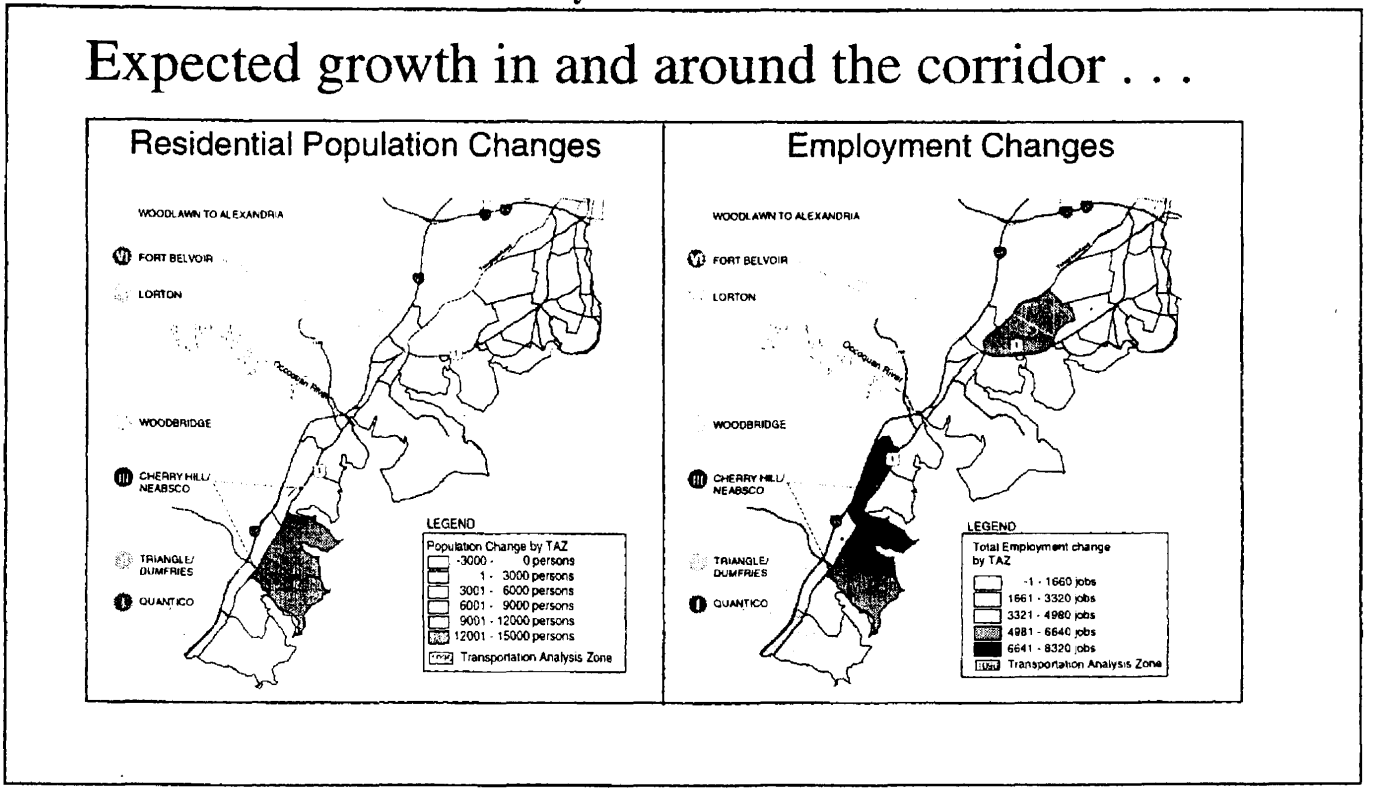
Traffic growth between 1995 and 2020 in southern Prince William County (Segments I and II) is on the order of 260 to 300 percent. In Segments III and IV, the growth is on the order of 80 percent. Traffic growth at the river crossing is approximately 50 percent. Traffic volumes on Route 1 in Fairfax County increase at a much lower rate. The growth is generally 10 to 60 percent with southern Fairfax growing faster than the northern part of the study corridor.

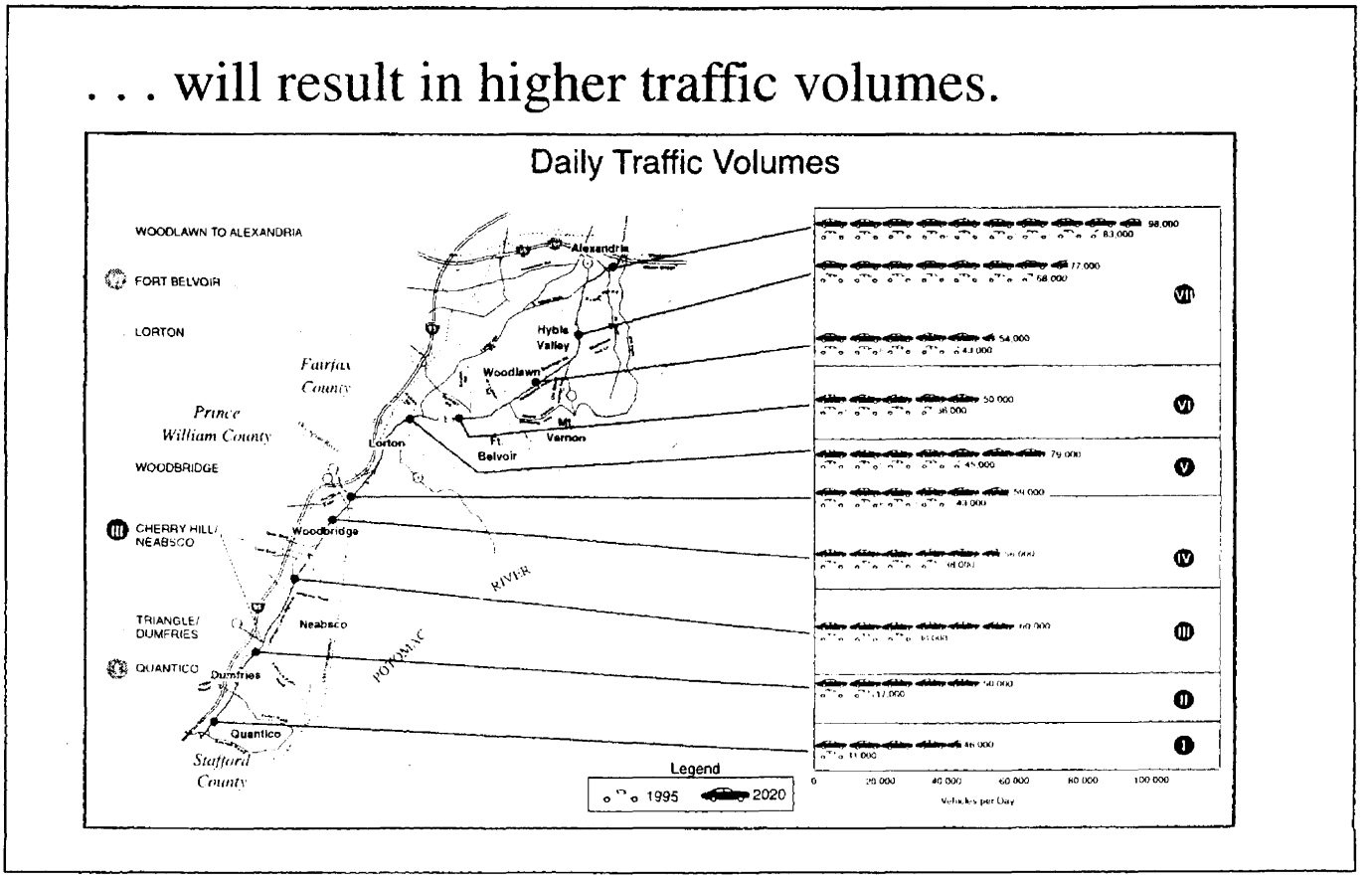
Growth in Route 1 Corridor

Household population	**1990**	**2020**	**Change**
Fairfax	110,000	140,000	+30,000 persons
Prince William	47,000	103,000	+56,000 persons
Total	157,000	243,000	+86,000 persons
Employment			
Fairfax	42,000	57,000	+15,000 jobs
Prince William	26,000	57,000	+31,000 jobs
Total	68,000	114,000	+46,000 jobs

(Based on MWCOG Round 5.3 Cooperative Forecasts)

Exhibit 2-31. 1995 and 2020 Baseline Daily Traffic Volumes





BASELINE YEAR 2020 CONGESTION

Small increases in the capacity of the corridor coupled with traffic volumes that more than double in locations would increase congestion in the corridor—both in time and space. In 1995, only the Occoquan River crossing, the Lorton-Pohick-Telegraph area, and the northernmost portions of Segment VII had congestion lasting three-to-four hours per day. All other locations in the corridor had congestion lasting for an hour per day or less. Under the Baseline scenario, congestion will last for at least 6 hours per day *throughout the corridor*—from the Stafford County Line to the Alexandria City Line. Woodbridge will experience the longest congested period with 12 hours per day.

As a result of this congestion, moving in and around the Route 1 corridor will become more difficult. Turns, especially left turns, to and from Route 1 will be more hazardous with increased opposing traffic. Delays at some signalized intersections will grow to multiple cycle lengths.

Exhibit 2-32 shows changes in congestion levels on Route 1 for the Baseline scenario. For the purposes of this report, hours of congestion are defined as hours of the day when the traffic demand exceeds the capacity of the roadway. Drivers waiting through multiple traffic signal cycles to clear intersections characterize this level of congestion.

Exhibit 2-32. Baseline 2020 Hours of Congestion

Segment	Estimated Hours of Congestion	
	1995	2020 Baseline
I. Quantico	0	6
II. Dumfries/Triangle	0	6
III. Cherry Hill/Neabsco	0	7
IV. Woodbridge		
Occoquan Road	1	12
Opitz Boulevard	0	4
V. Lorton		
Occoquan Crossing	4	9
Lorton	3	8
VI. Fort Belvoir	0	7
VII. Hybla Valley to Alexandria		
South of Route 235	0	7
North of Route 235	0	6
South of I-95/I-495	4	6

CHAPTER 3. SUMMARY OF PROBLEMS

INTRODUCTION

This chapter summarizes the problems in the Route 1 corridor. These were developed based on the analysis results of existing and future baseline conditions, field reconnaissance, input from the study Steering, Technical, and Citizens Advisory Committees, state and local transportation officials, business owners, and residents of the corridor.

OVERVIEW

The Route 1 corridor serves large volumes of travelers each day. However, the 27-mile long corridor has a significant number of problems due to the manner in which the corridor has evolved over the past decades. Other than the six-lane, divided segment in the northernmost 4.5 miles, the roadway is basically a four-lane undivided facility. The roadway has received only spot intersection and bridge improvements with piecemeal frontage improvements over the last 30 to 40 years. Projected increases in travel demand will make it difficult for Route 1 to function effectively and efficiently as a transportation facility.

Generally, Route 1 adequately accommodates existing travel demand, but the experience in many sections is uncomfortable for both motorists and pedestrians. For a signalized arterial, travel speeds are generally reasonable, but there are several major traffic bottlenecks and significant potential safety hazards. Bus and commuter rail transit serves the areas of greatest needs, but transit riders must endure poor bus stop conditions and a lack of continuous local service in the corridor. Pedestrians face numerous challenges due to lack of continuous and/or adequate sidewalks. The chaotic appearance along many sections of Route 1 and abutting properties creates a negative image of the corridor.

These conditions adversely affect not only travelers, but also the local communities that Route 1 serves. These problems limit community pride and restrain economic development in portions of the corridor. In general, Route 1 has a negative image in the development community.

PROBLEM LISTING

The following pages summarize the problems in the Route 1 corridor for these six functional categories:

1. Physical roadway condition
2. Traffic operations and safety
3. Transit/ridesharing
4. Pedestrian accommodations
5. Land use/urban design
6. Economic conditions.

The latter two categories are not strictly transportation issues, but are influenced by and exert influence upon the transportation network. They are also issues that are among the most visible to the users of Route 1.

PHYSICAL ROADWAY CONDITIONS

The physical characteristics of the Route 1 roadway reflect its gradual, often piecemeal, development over a number of decades. Some areas have seen little improvement to the roadway since its construction in the 1950's. Problems with the roadway conditions include:

- Inconsistent roadway cross sections and discontinuous service roads in areas where the roadway has been widened in installments.
- Roadside traffic hazards such as inadequate setback of fixed objects near the roadway, including the piers of four bridges over Route 1 (see photo below) and some utility poles.
- Poor conditions of shoulders and ditches, as shown in the exhibits on the next page.
- Inadequate and inconsistent roadway lighting.
- Sight distance limitations at fifteen locations. The most serious one is on Route 1 at the northbound approach to Pohick Road.
- Lack of lane continuity through Dumfries (southbound) and through the I-95 interchange north of the Occoquan River where Route 1 narrows to one lane.

Fixed objects near the roadway, such as the bridge pier shown here, present potential safety hazards.

Many ditches are eroding to the point of destabilizing shoulders and guardrail posts.

Much of Route 1 has inconsistent cross-sections and lacks left turn lanes.

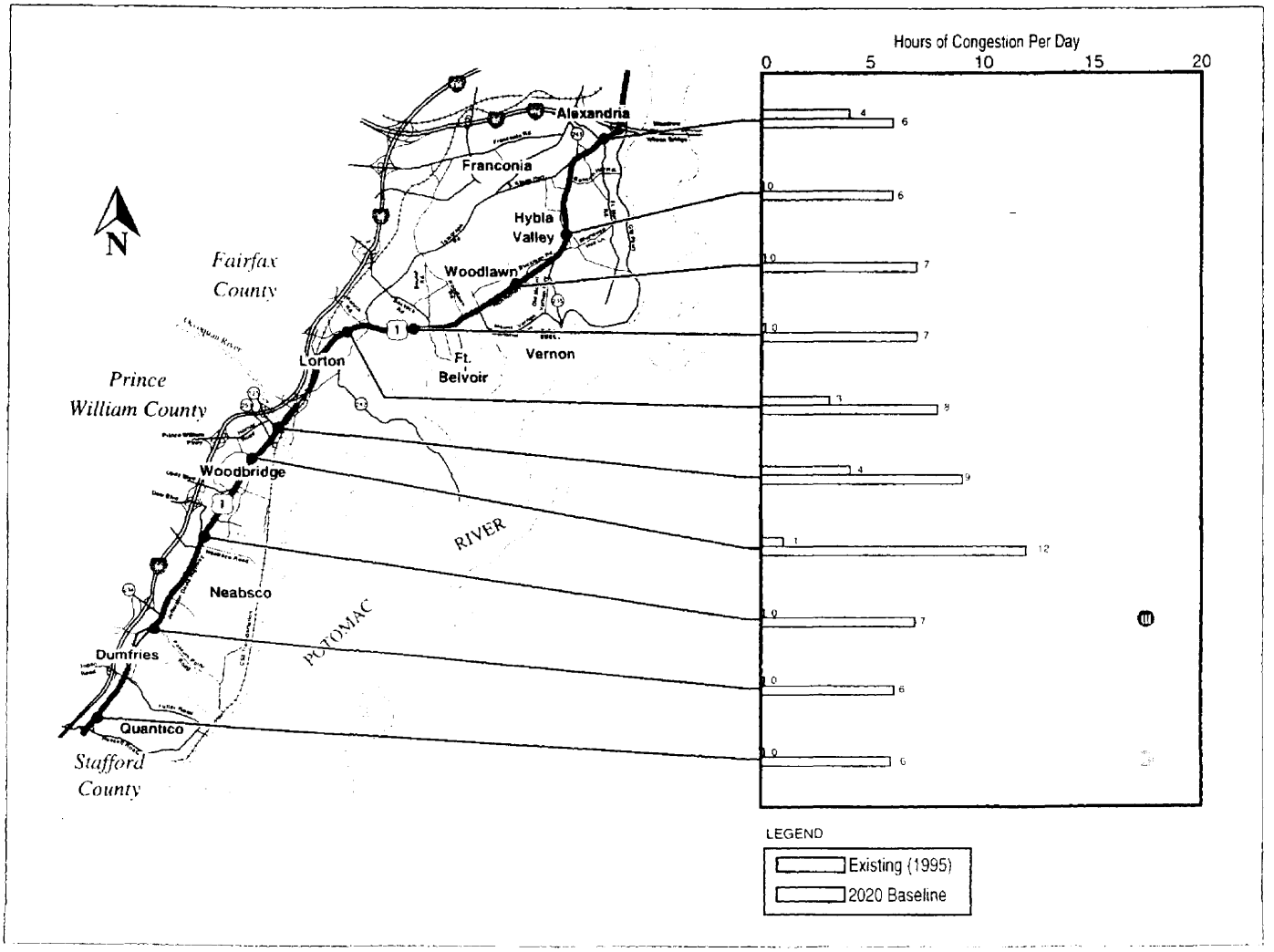
TRAFFIC OPERATIONS AND SAFETY

Currently, reasonable travel speeds in many sections of Route 1 are impeded by delays at several bottleneck locations. Travel speeds are generally better in the morning peak hours than in the afternoon peak hours—due in part to the increased retail center activity in the afternoon peak period. However, by the year 2020 under the Baseline scenario, congestion will grow from a few bottleneck locations to most of the corridor. Exhibit 3-1 shows the hours of congestion for the years 1995 and 2020.

From a safety standpoint, the section of Route 1 under study has a higher accident rate than other similar roadways in Virginia. More than 1200 accidents are reported annually along the 27-mile corridor—an average of 3.4 accidents per day. Within any one segment, accident frequency ranges from one every ten days in Segment I (Quantico) to nearly one per day in Segment VII (Woodlawn to Alexandria). A total of 18 sites were identified by the study team as "high accident" locations; these locations are shown in Exhibit 3-2.

The biggest single factor in accidents on Route 1 is turning movements to and from driveways, especially those located close to busy intersections. Another frequent accident type involves left-turning vehicles at signal controlled intersections without exclusive left turn phases.

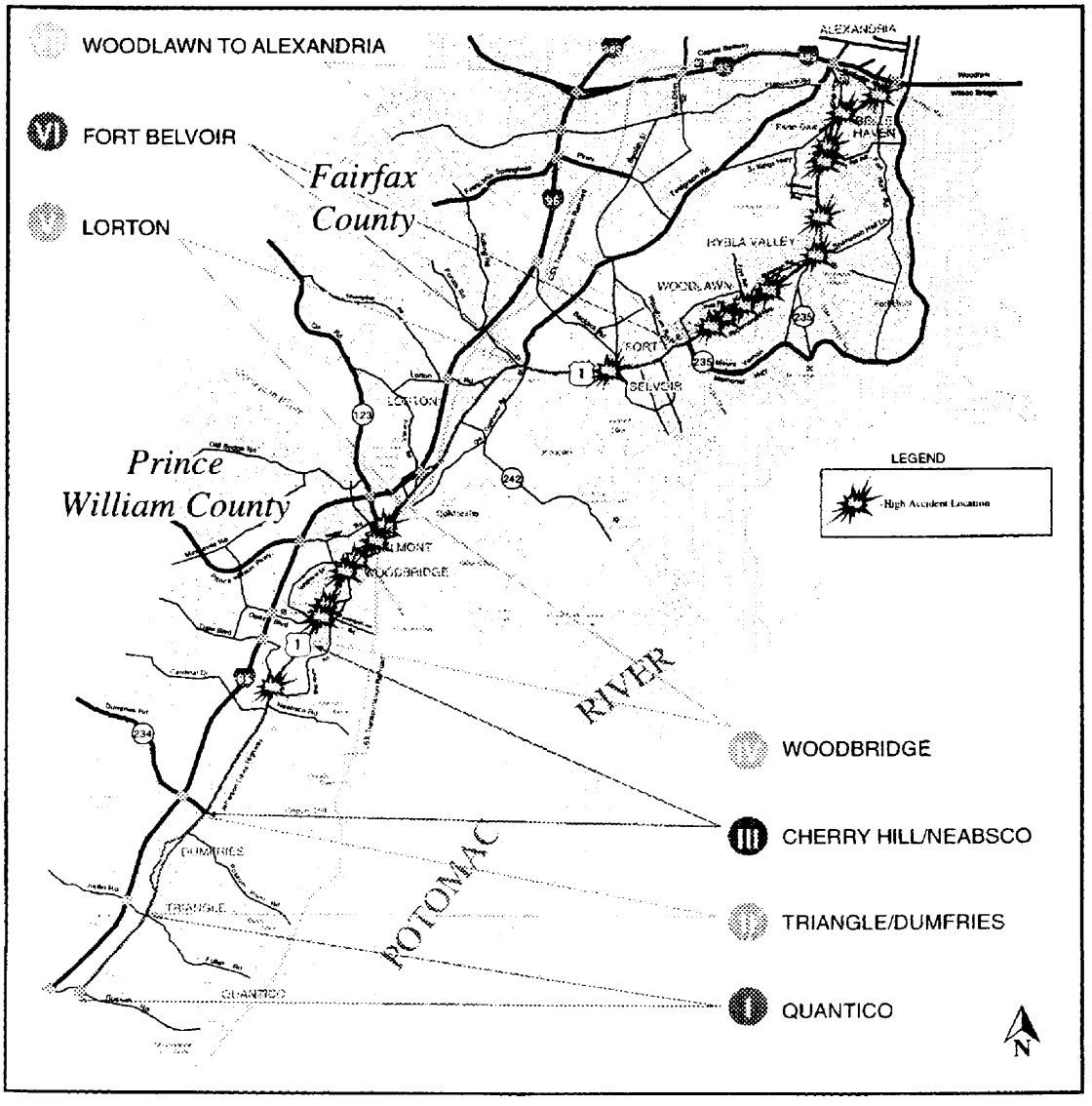
Exhibit 3-1. Estimated Hours of Congestion



Traffic operations and safety problems include:

- In 1995, traffic bottlenecks during peak periods at several intersections with Route 1, including:
  - Telegraph Road/Pohick Road
  - Route 123 (Gordon Boulevard)
  - Fort Hunt Road/Huntington Avenue
  - Woodlawn Road
- By 2020, without transportation improvements to Route 1 beyond those currently funded, Route 1 will have an almost continuous series of congested intersections during peak periods.
- Diversions of traffic from I-95 in Prince William County onto Route 1 slowing traffic and restricting access to transit stations, businesses and neighborhoods.
- Backups onto Route 1 from the Woodrow Wilson Bridge and City of Alexandria restricting access to businesses and the Capital Beltway.
- Operational and safety problems caused by numerous access points, poorly delineated driveways, and uncontrolled parking areas abutting the roadway.

Exhibit 3-2. High Accident Locations In the Route 1 Corridor



TRANSIT/RIDESHARING FACILITIES AND SERVICES

Existing transit services provide good coverage and are located in the areas with the greatest needs. The amount and multiple types of service provide much of the population of the Route 1 corridor with an alternative to the single occupant automobile. However, some aspects of service should be improved. The identified problems include:

- Gaps in transit service north and south of the Lorton area; no connections between Potomac and Rappahannock Transportation Commission (PRTC) services in Prince William County and Fairfax Connector or Metrobus service in Fairfax County.

- Lack of transit service to Fort Belvoir from the Lorton VRE Station or from points further south make transit access to one of the largest employers in the corridor difficult.

- The poor condition of many bus stops in the corridor as shown in Exhibit 3-3. Problems include limited handicapped accessibility of many stops, inconvenient and potentially unsafe locations, unpaved waiting areas, lack of connecting sidewalks, and lack of amenities. The table below shows a summary rating of bus stops.

Bus Stop Ratings

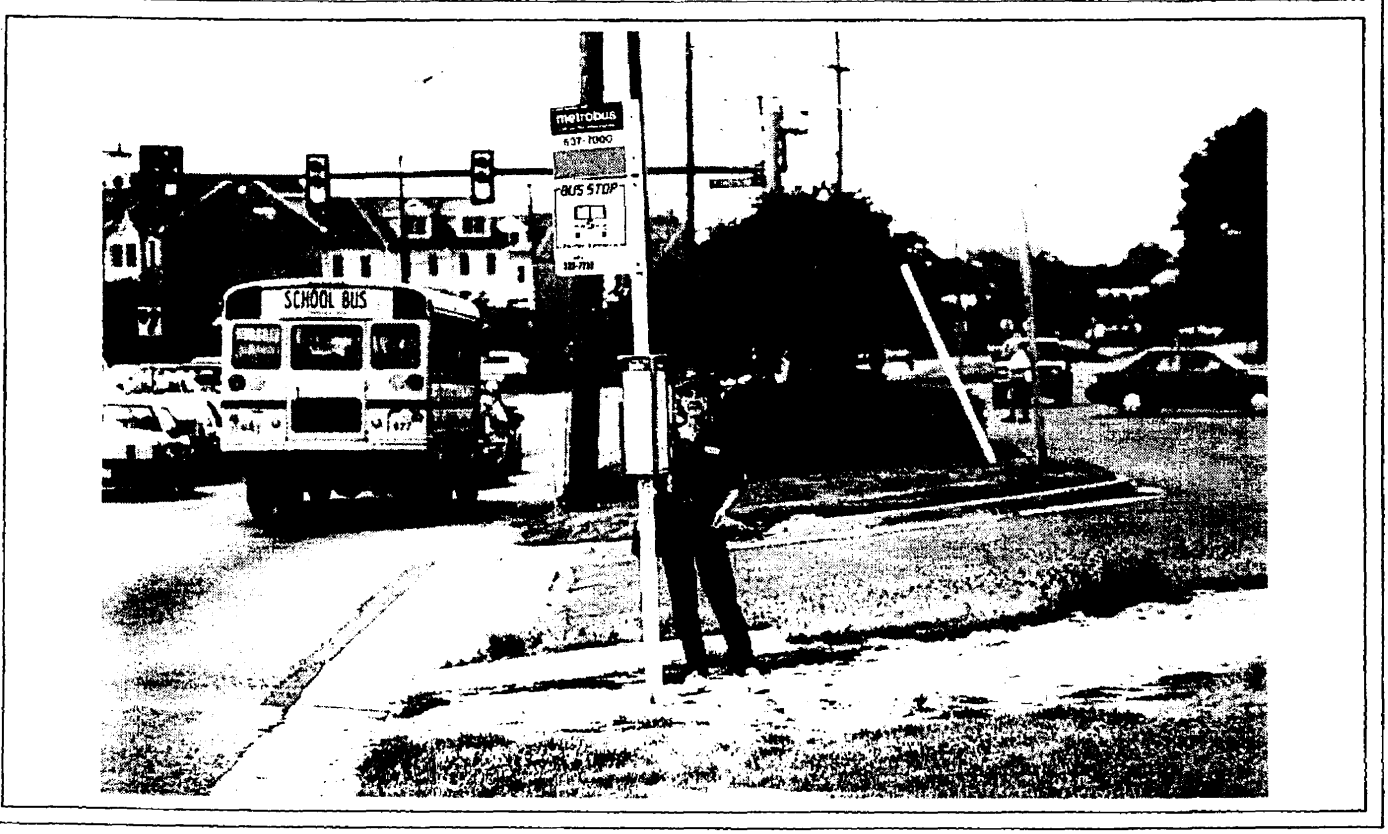
Number of Signed Bus Stops	Good	Fair	Poor
90 Stops (100%)	9 Stops (10%)	39 Stops (43%)	42 Stops (47%)

- Lack of convenient suburb-to-suburb transit services fails to serve a growing regional origin-destination pattern.

- Limited or lack of off-peak and weekend service in many areas, especially Prince William County, leaves many without mobility choices during these times.

- By 2020 without improvements, the congestion on Route 1 will impede the movement of buses and increase transit travel times, reducing transit mode share by making transit a less desirable option compared to the single-occupant automobile.

Exhibit 3-3. Typical Bus Stop Conditions in the Route 1 Corridor



Lack of connecting sidewalks and paved waiting areas make using transit difficult.

PEDESTRIAN/BICYCLE ACCOMMODATIONS

Along an arterial roadway such as Route 1, sidewalks are important to connect adjacent residences, businesses, and institutions. Sidewalks also provide access to bus service along Route 1. However, the current Route 1 corridor is not "pedestrian-friendly." Increasing traffic volumes in the future will exacerbate the problems faced by non-motorized modes of travel in the Route 1 corridor today.

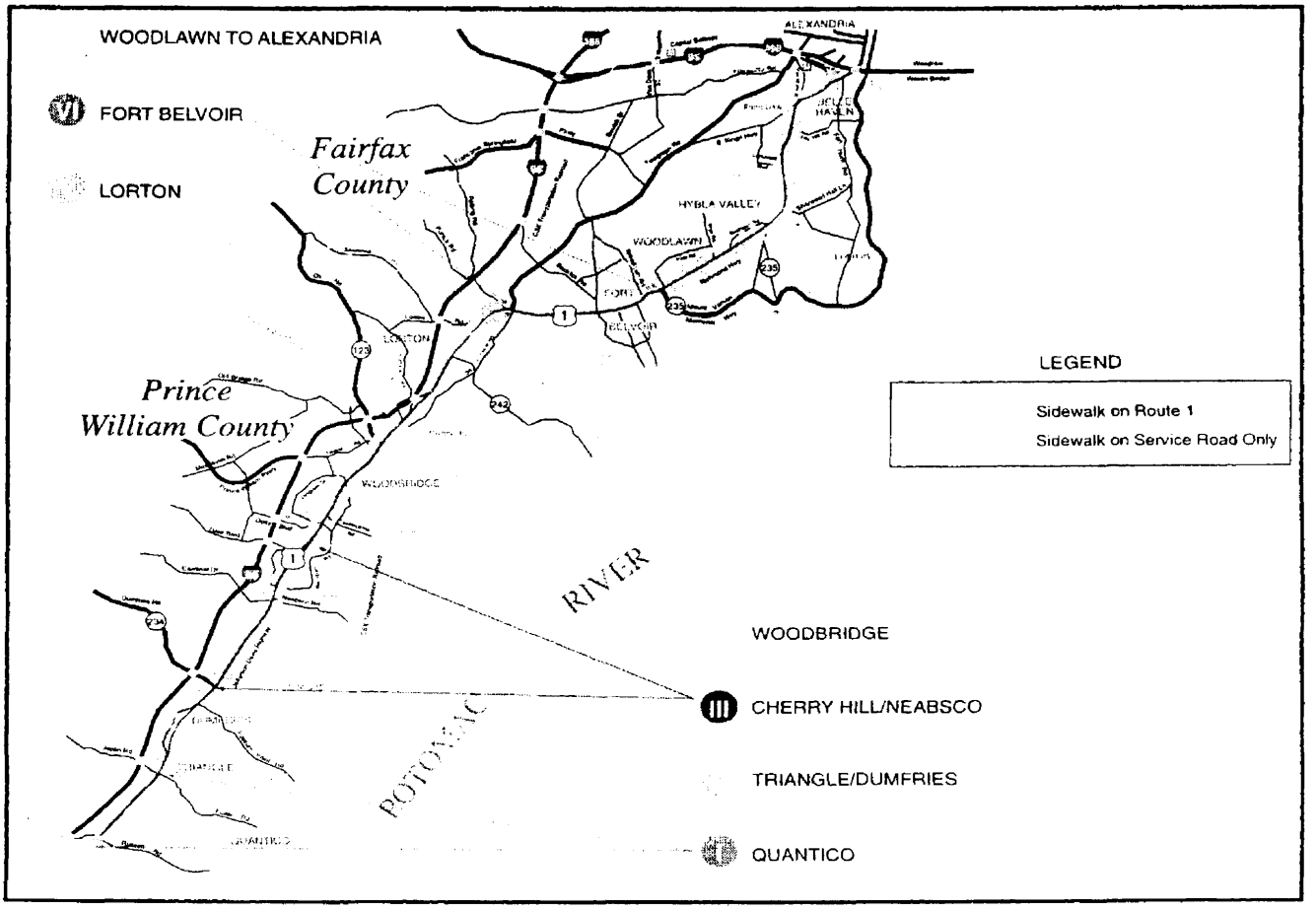
The sidewalk locations are shown in Exhibit 3-4. Pedestrians in the Route 1 corridor face challenges such as:

- Inconsistent and discontinuous sidewalks both along Route 1 and connecting to adjacent neighborhoods and businesses.
- Difficulty in crossing Route 1 as a pedestrian due to the roadway width and high traffic volume, especially at night.

Bicyclists use the corridor in a manner similar to automobile users; as a commuting roadway and as a path to recreational sites in the Route 1 corridor. However, bicyclists face challenges similar to pedestrians:

- Most shoulders unsuitable for safe bicycle use.
- Numerous driveway entrances creating unexpected conflict points.
- Inconsistent or non-existent off-roadway network .

Exhibit 3-4. Location of Sidewalks



Lack of sidewalk forces pedestrian to walk in roadway.

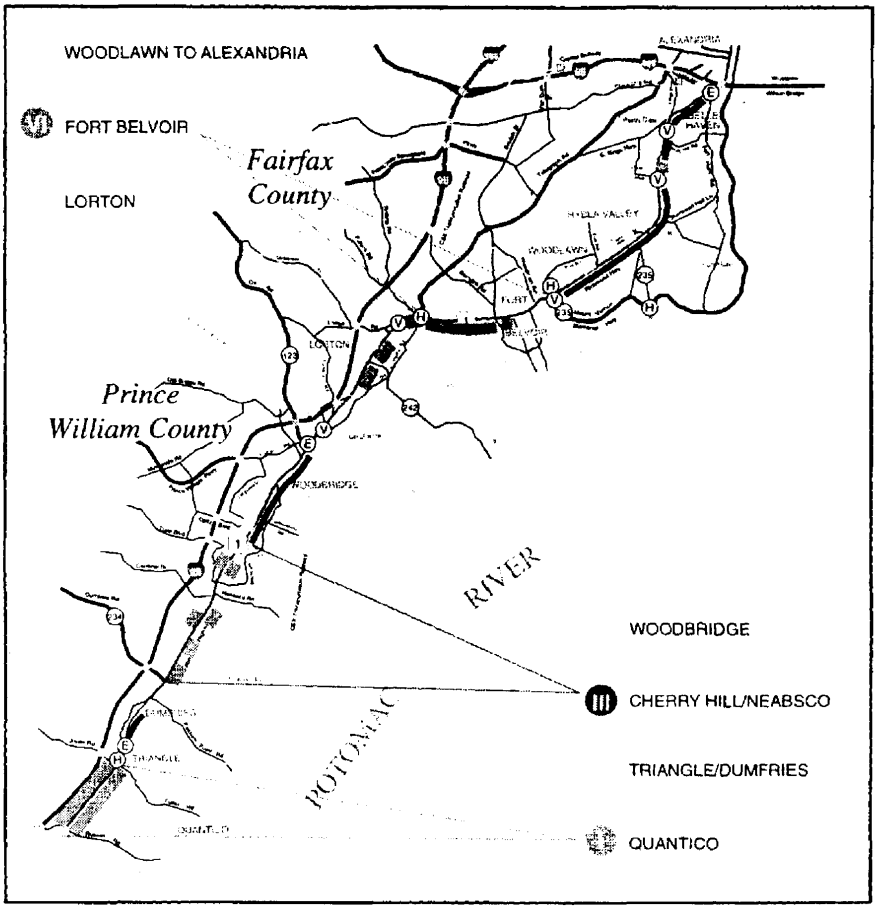
Many of the sidewalks along Route 1 are discontinuous or have obstructions blocking them. Here the sidewalk ends at an obstruction.

LAND USE/URBAN DESIGN

In the corridor there is little recognition of the original settlement patterns, historic structures, or the positive characteristics of the corridor. As a result, few recognizable places or districts exist. In addition, a consistent sense of scale is lacking in relationship to either pedestrians or automobiles. Exhibit 3-5 illustrates urban design features in the Route 1 corridor. Other problems include:

- The poor appearance of Route 1 and adjacent areas due to deteriorated buildings and under-developed parcels.
- Chaotic visual environment resulting from overhead wires and uncoordinated destination and business signage.
- Limited connections for vehicles and pedestrians between adjacent land uses.
- Numerous access points (curb cuts) exist due at least in part to minimal parcel interconnection.
- Large expanses of asphalt parking lots between buildings and Route 1 reduces transit and pedestrian accessibility and detracts from visual appearance.
- Minimal amount of road-oriented landscape in the corridor, except in the northern segment. The presence of overhead wires creates potential conflicts with new tree plantings and with existing native woodlands.

Exhibit 3-5. Urban Design Features



ECONOMIC CONDITIONS

Generally, the entire Route 1 corridor has undergone a shift in market orientation. The market has shifted over the past decades from the primary north-south transportation route to a commuter and local route. While some quality developments have occurred in the corridor, many problems still exist, including:

- Negative image of Route 1 in the development community due to poor physical appearance and obsolete development patterns (illustrated in the picture below).
- Competition for the retail market for Route 1 businesses in portions of Prince William County due to Potomac Mills/Prince William Parkway shopping areas.
- Constrained retail market in northern portions of Fairfax County due to limited east-west connections.
- Restrained opportunities for (re)development caused by difficulties in consolidation of small properties and limited property depths.

Lack of access control and lack of a consistent road edge treatment contribute to a negative image due to poor appearance and numerous traffic conflict points.

CHAPTER 4. PLAN OBJECTIVES AND ALTERNATIVES CONSIDERED

INTRODUCTION

This Chapter describes the alternative concepts developed for the Route 1 corridor and the criteria or measures of effectiveness (MOEs) used for evaluating the concepts.

Based on input received from the public during the initial phases of the study, the study team developed a set of overall goals that defined the vision of the Route 1 corridor in the future. These goals were translated to a set of objective groups (OG). Evaluation criteria were developed to assess how well each concept achieved the goals of each objective group. The study team refined the goals, objectives, and criteria based on feedback from the Steering, Technical, and Citizen Advisory Committees.

Based on the goals and objectives, an overall vision for the future Route 1 corridor was developed. This vision, as well as the need to address existing and anticipated problems in the corridor, guided the development of the alternative concepts. The acceptability and appropriateness of the alternative concepts were considered in light of the following:

- The VDOT mission of providing a safe and efficient transportation system for the movement of people and goods.
- The needs of the traveling public.
- The values and needs of the local communities.

The alternative evaluation process utilized a series of evaluation criteria to measure the extent to which each alternative satisfied each objective.

CORRIDOR GOALS

The recommended program of improvements resulting from the Route 1 Corridor Study was to achieve the following goals:

- Provide a safe and efficient transportation system with an appropriate balance between the needs of residents, pedestrians, businesses and other users of the corridor.
- Respect environmental and cultural resources.
- Enhance economic vitality.
- Be cost effective.

Some of these goals may be conflicting. For example, an improvement aimed at entirely alleviating anticipated congestion may require substantial right-of-way and have direct and indirect effects on other goals and objectives. Thus, the challenge was to find the proper balance between these goals.

Based on the goals of the study, a set of seven objective groups was developed. For each alternative, all objectives were evaluated so as to understand their implications. Each of the objectives and evaluation criteria are discussed in greater detail in the following paragraphs.

OBJECTIVE GROUPS AND MEASURES OF EFFECTIVENESS

Under each of the seven objective groups, a set of MOEs was developed to help quantify the impacts of the alternative concepts. Some of the measures of effectiveness were evaluated at the corridor-wide level. Most of them, however, were considered at the segment level.

The following sections describe the seven objective groups and the MOEs under each objective group.

OG 1. Modal Coverage and Connectivity

This objective group evaluates how the alternative concepts encourage or provide an alternative to the use of modes of travel other than the automobile. The study team assessed how the concepts compared to the Baseline in terms of the following:

- Pedestrian and bicycle facilities.
- Transit service coverage (which was measured as the percentage change in population per revenue mile of transit service).

OG 2. Transportation System Operation

This objective group differentiates between the concepts as far as traffic operations are concerned. The criteria used to measure the extent to which this objective was met included:

- Vehicle miles of travel.
- Vehicle hours of delay.
- Transit service performance - measured as the percentage change in passengers per revenue hour.
- Peak hour peak direction person throughput - measured as the total number of people crossing a specific screenline within a given period of time (in this case, one hour). Person throughput was evaluated at two pre-established screenlines:
  - the Occoquan Crossing
  - the Capital Beltway.
- Hours of congestion - defined as the number of hours during the day in which traffic demand exceeds capacity. During congested hours, traffic on Route 1 experiences slow travel speeds, stop and go conditions, and significant back-ups and delays at intersections. At signal controlled intersections, it takes a few signal cycles to clear the intersection.

The first three criteria were evaluated at the corridor-wide level because it was difficult to quantify these parameters on a segment-by-segment basis.

OG 3. Transportation System Design

The application of fundamentally sound design principles ensures that a safe and effective transportation system is provided. This objective group evaluated (qualitatively and quantitatively) how well each concept incorporated those design principles.

The MOEs for this objective group were:

- Existing safety deficiencies addressed
- Conformance to design standards
- Access management

Addressing existing safety deficiencies and conforming to design standards are qualitative considerations that go hand in hand. Given the nature and age of Route 1, the application of modern design standards to the proposed improvements will greatly enhance the safety of the corridor. This is especially true of those standards addressing geometric design, shoulder/berm design, and clear zone features. For the purposes of this study, final design of the improvements is assumed to apply to current design standards and to address the existing safety problems detailed in the existing conditions assessment.

Access management was considered at two levels: (a) median breaks and (b) private/ commercial driveway access points. With a continuous two-way left-turn median lane, there is essentially unlimited access to roadside developments from either direction. With raised, rather than painted medians, facility access management is measured in terms of median breaks per mile. Commercial and private entrances were not considered individually. However, to consider them as a whole, driveway access management was measured in desired or anticipated entrances per mile adjacent to the mainline through lanes.

OG 4. Environmental Resources

Each concept was evaluated to assess the relative environmental impacts. The following environmental MOEs were considered.

- Wetland - encroachments were assessed based on field reconnaissance and National Wetlands Inventory Maps.
- Floodplain - encroachments were examined based on the FEMA Flood Insurance Maps and field reconnaissance.
- Air Quality - the Metropolitan Washington Council of Governments' (MWCOG) Constrained Long Range Plan (CLRP) assumes a six-lane Route 1. The plan was tested by MWCOG for air quality conformity. The two high occupancy vehicle (HOV) lanes proposed north of Little Hunting Creek will have to be incorporated into the MWCOG CLRP model once the recommendations of this study are approved.

- Water quality - impacts were qualitatively evaluated using general state guidelines. Best management practices (BMP) were assumed for stormwater management. Water quality will be addressed in detail during final design.

- Wildlife - since all future improvements to Route 1 will essentially involve widening the existing roadway within the existing corridor, wildlife impacts were not considered to be a discriminating factor.

- Public Lands and Historic Resources – identified based on various sources including the Fairfax and Prince William Comprehensive Plans, Prince William County Geographical Information System (GIS) Maps and database, the Commonwealth of Virginia Department of Historic Resources, and commercially available maps.

Environmental impacts will be considered in much greater detail during subsequent preliminary engineering and environmental impact studies. Such studies will be required before project implementation. The intent of the environmental assessment for this study was to assess the relative impacts of the alternative concepts for critical parameters.

OG 5. Community Impacts

The measures of effectiveness that were evaluated under community impacts were:

- Displacements - calculated by counting the number of buildings inside the proposed right-of-way for the alternative concepts. Displacements were also assumed when the proposed right-of-way resulted in insufficient area for parking and there was no obvious means of re-orienting or repositioning the parking lots. All displacements were calculated based on expansion about the existing Route 1 centerline.

- Community Character/Structure

- Conformance With Local/Regional Plans

- Visual Character – qualitatively evaluated against the existing appearance of the Route 1 corridor. The underlying question was whether each concept would make the corridor visually worse, better, or keep it at the same level. Factors considered in making the determination included: the width of the proposed pavement, the addition of landscape materials, and pedestrian improvements.

- Visual Consistency – qualitatively evaluated against the desired character of each of the seven segments. The desired character for each segment was established at the beginning of the study. An assessment was made as to whether the concepts would achieve the desired character completely, partially, or not at all. Dependent upon the segment's desired character, factors that were considered included the addition of trees in a raised median, the preservation of native woodlands, and other similar items.

- Conformance with Established Urban Design Guidelines - involved evaluating the concepts for their conformance to established urban design guidelines for communities, facilities, and streetscaping in each of the two counties.

OG 6. Economic Development

This objective group was developed to evaluate the impacts of the alternative concepts on the economic climate of the corridor. The impacts on economic vitality were evaluated using the following factors:

- Accessibility - measured qualitatively for each segment and indicated the ease of access to existing businesses under each of the alternative concepts.

- Economic Image - an indicator of how attractive or conducive the segment was for economic development in terms of its visual image.

- Adjacent Property Impacts - an indicator of the impact the concepts had on property immediately adjacent to the corridor.

- Overall Corridor Impacts - assessed qualitatively and indicated how a specific concept affected the overall economic climate of the entire corridor.

- Conformance With County Economic Revitalization Plan.

OG 7. Cost

A conceptual set of construction and right-of-way costs was developed for each of the concepts. The costs are approximate, given the limited degree of detailed design developed in the planning study. However, they do provide a means of comparing the concepts and give an idea about the level of funding needed to implement the concepts.

The following costs were developed for the alternative concepts.

- Capital Cost - including construction and right-of-way
- Operating Cost
- Incremental Phasing Feasibility.

DESIRED FUTURE CHARACTERISTICS

The study team considered the goals and objectives in light of the identified problems and established desired characteristics for the corridor. The following summarizes characteristics that are assumed to be part of each concept. The different concepts allow for varying degrees of achieving some of these desirable characteristics.

- **Serves Local and Regional Needs Appropriately**
  - Balances the needs of residents, businesses, and other users of the corridor
  - Emphasizes movement of people, not just vehicles, in the corridor
  - An improved Route 1 (not a freeway).
- **Continuity**
  - Consistent, appropriate roadway cross-section within each segment
  - Smooth roadway cross-section transitions between segments
  - Improved appearance and identity.
- **Improved safety**
  - Left-turn lanes
  - Wider shoulders (in appropriate areas)
  - Adequate clearances to bridge piers and utility poles
  - Safer pedestrian crossings and walkways
  - Improved lighting.
- **Improved traffic flow**
  - No major traffic bottlenecks
  - Enhanced access management policies (fewer and better-defined entrances on Route 1).
- **Seamless transit service with coordinated schedules**
  - Local bus service in segments II-VII on Route 1 with no gaps in service and improved travel speeds
  - Other services including "non-traditional" demand responsive transit service
  - Enhanced VRE commuter rail services and capacity.
- **Continuous sidewalks and/or trails**
  - Improved pedestrian access to local commercial, institutional, and residential areas
  - Improved bus stops and access to bus stops.
- **Special treatments for revitalization and historic areas**
  - Landscape materials
  - Benches, bus shelters, trash cans
  - Paving materials.
- **Continuous landscape improvements throughout the corridor**
  - Highlighted commercial areas and key intersections
  - Linked nodes with plantings.
- **Improved signage**
  - Coordinated, adequate destination and directional signs
  - Coordinated resource signs for historic and recreational areas
  - Appearance and size of commercial signs
  - Outdoor advertising signs—amortization program.
- **Respect for environmental and cultural resources**
  - Historic places
  - Environmental and recreational resources.

- **Integrated Intelligent Transportation Systems (ITS)**
  - Variable message signs, overhead cameras, and traffic detectors on Route 1
  - Arterial signal system coordinated with adjacent freeway surveillance on I-95
  - Advanced features potentially including "in-vehicle information" and computerized displays of transit information.

- **Ability to accommodate transportation improvements beyond 2020**
  - Future potential transit facilities
  - Technology changes.

The concepts that were evaluated are described in the following section.

CONCEPT DEVELOPMENT

Based on this overall vision of the Route 1 corridor, the study team developed a range of concepts. The initial screening included eight alternatives, representing varying degrees of roadway and transit improvements. From this list, alternatives were combined and some elements dropped (e.g., one-way service roads) to pare the list of alternatives to four build alternatives. The concepts were then presented to the public at information meetings in October 1996 and subsequently refined based on input received.

GENERAL DESCRIPTION OF ALTERNATIVE CONCEPTS

Four alternative concepts were developed to be compared to the Baseline scenario, and designated A, B, C, and D. A variation of Concept C, Concept C1, was added in Segment VII based on community input. These concepts represent a range of potential solutions.

Exhibit 4-1. Description of Alternative Concepts

	Baseline **Limited Transit Service Improvements** **Limited Roadway Expansion**	**Concept A** **Major Transit Service Improvements** **Minor Roadway Expansion**
TRANSIT		
Service	Limited new transit service	Improve and expand existing service into existing developed areas with little transit coverage and begin new service to support growth
Anticipated Conditions		
Transit Mobility	*Declining transit mobility as new growth areas are not served*	*Largest increase in transit mobility beyond Baseline as additional areas and new growth areas are served and existing service areas are better served*
Percentage Using Transit	*Reduced percentage of people using transit as compared to today*	*Largest increase in percentage of people using transit*
ROADWAY		
Added Thru Lane	No added through lanes	No added through lanes
Median/Left Turn Treatment	Limited added left turn lanes	Add left turn lanes throughout corridor with painted medians (includes continuous two-way left turn lanes)
Access Management (Entrances on Route 1)	More than 50 entrances per mile maximum frequency (No reduction in existing frequency)	10% decrease in maximum frequency of entrances through improved definition of driveways
Anticipated Conditions		
Safety	*Safety problems extend throughout corridor*	*Alleviates some safety problems*
Traffic Congestion	*Congestion problems extend throughout corridor*	*Congestion will remain in many locations in corridor*
Access	*Convenient access to many small businesses but numerous driveways and left turn points*	*Convenient access to many small businesses but numerous driveways and left turn points*
Landscaping	*Limited landscaping opportunities on roadside and median*	*Limited median landscaping opportunities*

In general, Concept A provides the highest level of transit improvements with minimal roadway capacity improvements. At the other end of the spectrum, Concept D has the highest level of roadway capacity improvements and minor transit improvements.

The concepts are summarized in Exhibit 4-1 and are as follows:

Concept A: Includes major transit service improvements. Roadway improvements are limited to adding left turn lanes throughout the corridor with painted medians. No additional through lanes are included.

Concepts B, C, and D: Include moderate to minor transit service improvements. Each concept adds a through lane in each direction and left turns throughout the corridor. Some locations have painted medians in Concept B. Concepts C, C1, and D have raised medians. Concept C1 is a variation of Concept C in which no additional lanes are added to the existing six-lane roadway in the northern portion of Segment VII (north of Route 235 North/Buckman Road).

Concept B **Moderate Transit Service Improvements** **Moderate Roadway Expansion**	**Concept C** **Moderate Transit Service Improvements** **Major Roadway Expansion**	**Concept D** **Minor Transit Service Improvements** **Major Roadway Expansion**
Expand existing service into existing developed areas with little transit coverage and begin new service to support growth	Improve existing service and begin new service to support growth	Maintain existing service and begin new service to support growth
Moderate increase in transit mobility beyond Baseline as additional areas and new growth areas are served *Moderate increase in percentage of people using transit*	*Slight increase in transit mobility beyond Baseline as existing areas are better served and new growth areas are served* *Slight increase in percentage of people using transit*	*Maintain Baseline level of transit mobility for existing service areas and serve new growth areas* *Maintain current percentage of people using transit*
Add a through lane in each direction Add left turn lanes throughout corridor with raised medians at some locations	Add a through lane in each direction Add left turn lanes with raised medians throughout corridor Median breaks at many minor streets and some entrances (minimum spacing of 700 feet)	Add a through lane in each direction Add left turn lanes with raised medians throughout corridor Median breaks at major streets and major entrances only (minimum spacing of 1500 feet)
20% reduction in maximum frequency of entrances through consolidation of driveways	40% reduction in maximum frequency through consolidation of driveways and improved connections between parcels	Few entrances adjacent to thru lanes 20% reduction in driveways adjacent to turning lanes
Alleviates many safety problems in sections with medians *Alleviates much traffic congestion* *Access to some small businesses in sections with medians requires U-turns or access via side streets but traffic flow smoothed* *Landscaping opportunities increased in areas with medians*	*Alleviates safety problems throughout corridor* *Alleviates much traffic congestion* *Access to some small businesses requires U-turns or access via side streets but traffic flow smoothed* *Landscaping potential maximized*	*Alleviates many safety problems throughout corridor* *Alleviates much traffic congestion* *Access to some small businesses requires U-turns or access via side streets but traffic flow smoothed* *Landscaping potential maximized*

Roadway Cross-Section

Each Concept was customized to address the characteristics and issues in each segment of the corridor. This resulted in eleven different roadway cross-sections for the whole corridor as shown in Exhibit 4-2. The numbers in boxes above each plan view corresponds to numbers shown on the segment descriptions that follow the next section of the text.

Exhibit 4-2. Roadway Plan Views

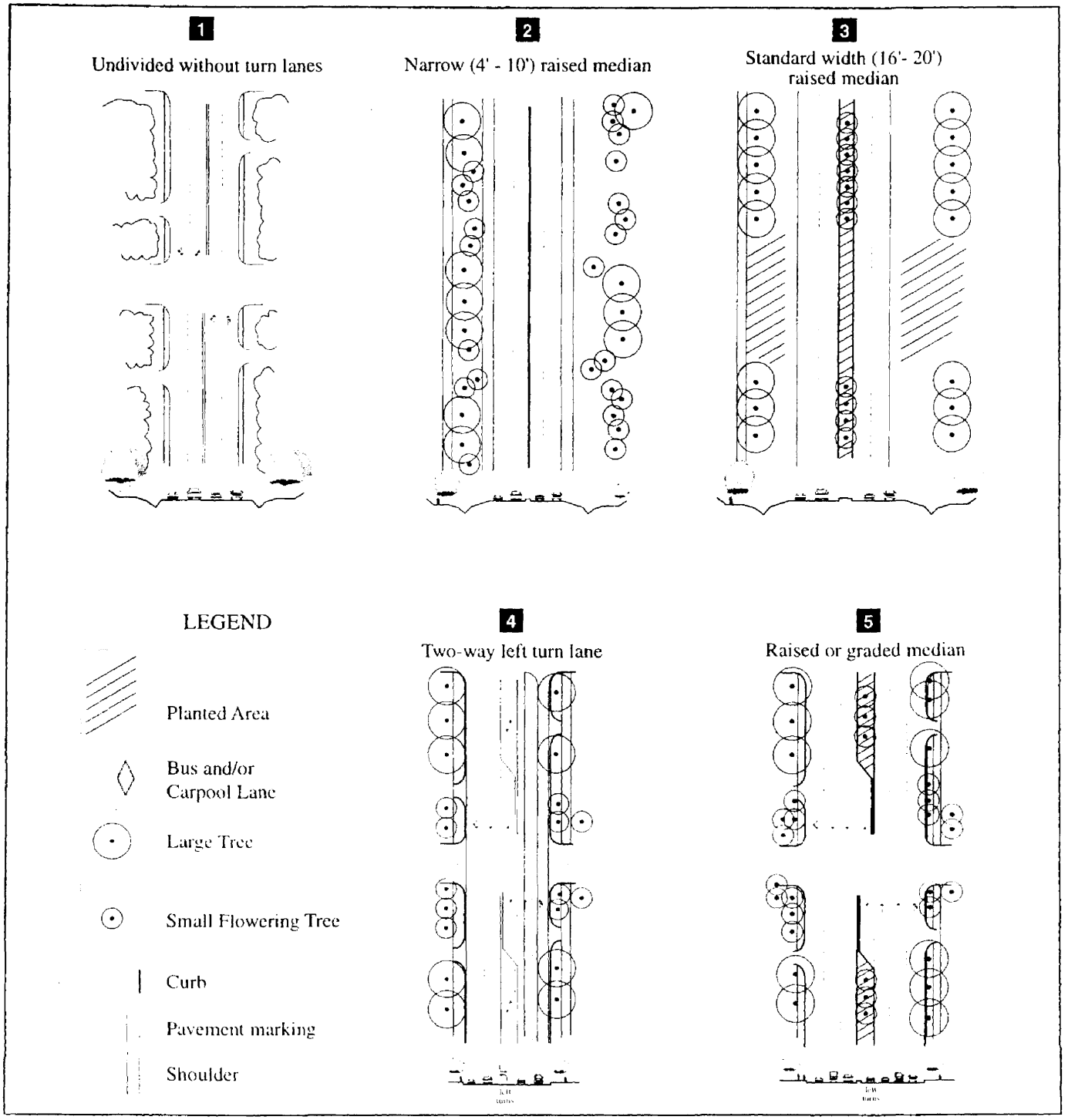
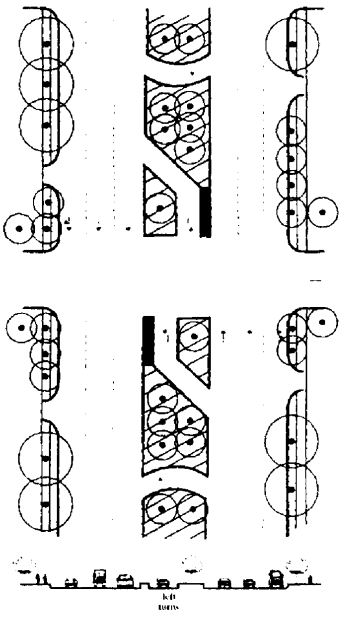
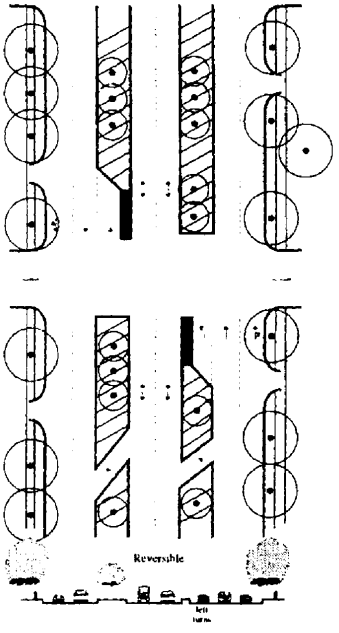


Exhibit 4-2. Roadway Plan Views (continued)

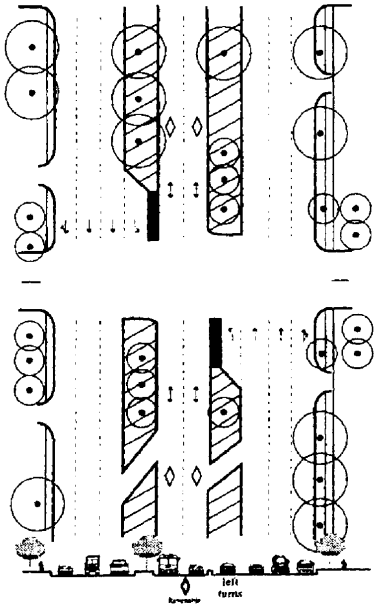
6
Wide (28' - 40') median



7
Reversible median express lanes

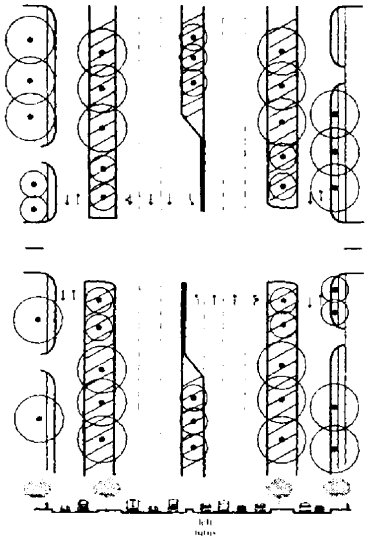


8
Reversible median transit/HOV lanes

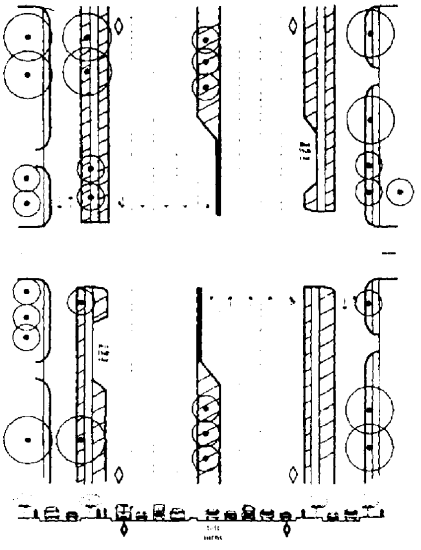


Median may have 1 or 2 transit/HOV lanes.

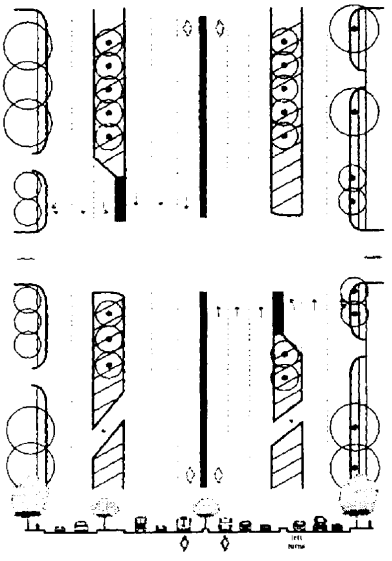
9
Two-way service roads



10
Service roads with Right Lane HOV



11
Separated Thru and Turning Movements

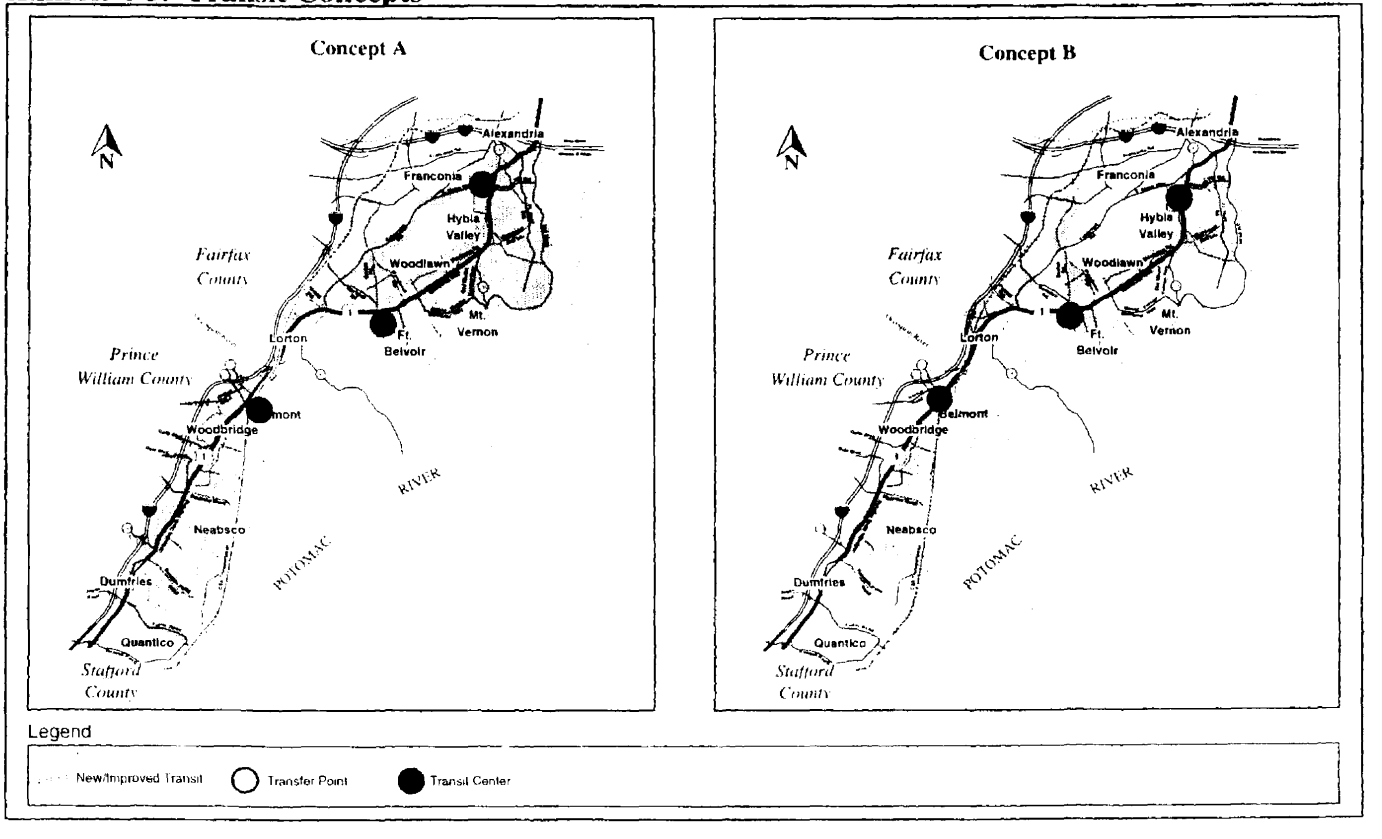


Transit

The Baseline retains the same level of transit service in the corridor as MWCOG's CLRP. Concept A increases train frequencies and adds longer trains with bi-level cars on VRE. Demand-responsive transit is available on a one-hour advance notification basis, and real-time transit information is available at activity and transit centers.

Concept B adds the same service improvements to VRE and demand-responsive service as in Concept A. Transit information is available at activity centers and via a computer connection.

Exhibit 4-3. Transit Concepts

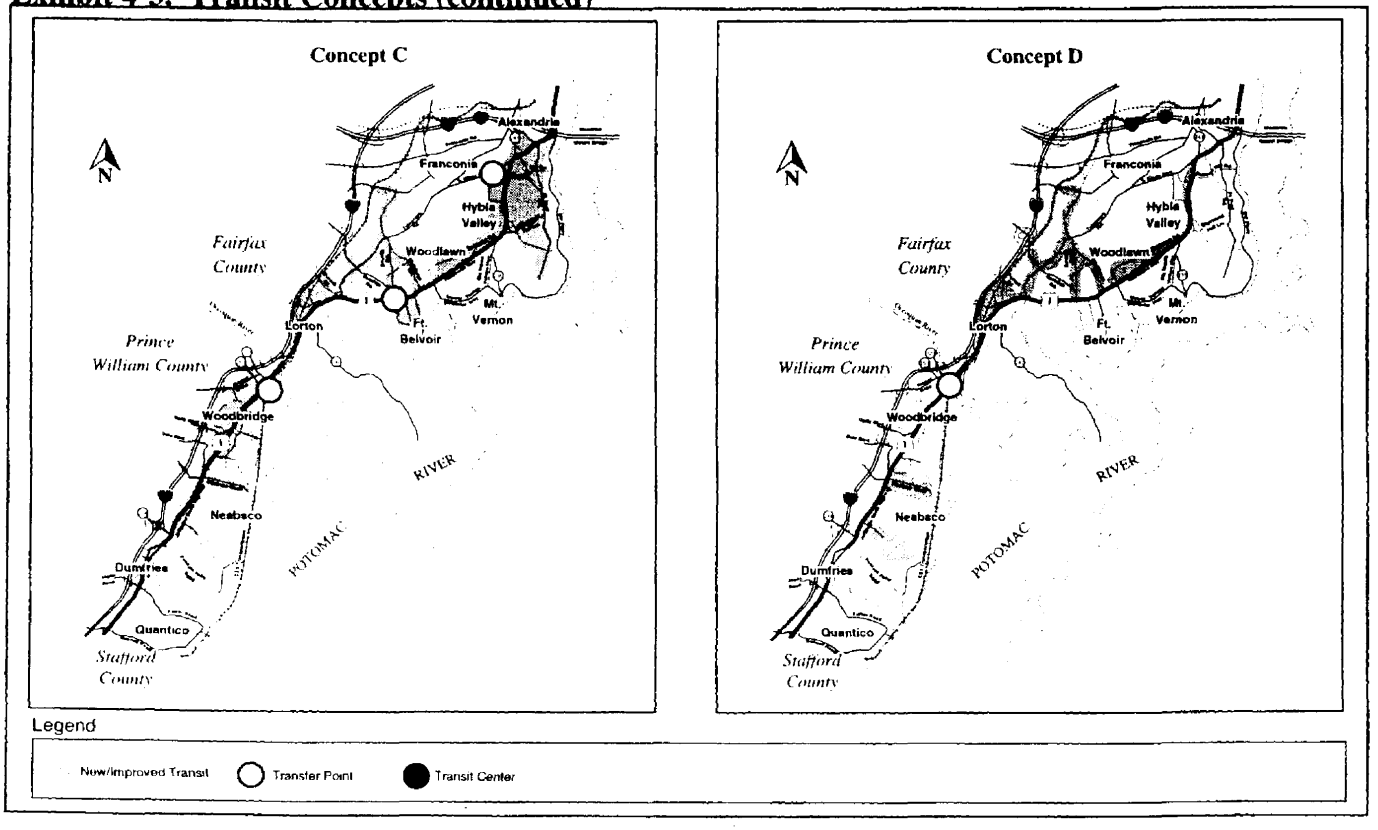


Concepts C and D maintain the existing VRE service headways and have bi-level cars. Concept C has longer trains, but Concept D does not. Both have one-hour demand-responsive transit notification. Concept C has transit information available via a computer connection, and at activity centers, while Concept D has transit information available only via a computer connection.

In addition to the transit service enhancements described here, Segment VII, where transit use is at its highest levels in the corridor, includes accommodations for transit in the median or designated lanes in the roadway.

The transit assumptions made for the corridor are shown in Exhibit 4-3.

Exhibit 4-3. Transit Concepts (continued)



Pedestrian and Bicycle Facilities

All concepts had the same level of pedestrian and bicycle improvements. A path was added along the west side of the roadway throughout the corridor. Sidewalks were added on the east side of the roadway to complement the trail in developed nodes in the areas of Triangle/Dumfries, Woodbridge, Lorton, and Woodlawn to Alexandria. In Cherry Hill, a trail was added to both sides of the roadway, as a trail was more in character with the wooded surroundings in Segment III. Based upon comments from the Technical Committee, the trail on the east side was changed to a sidewalk as this is more consistent with the expected future character.

Consideration was also given to shared use of the Route 1 roadway by bicyclists by widening the outside lanes to 15 feet. Commuters on bicycle are more likely to use the roadway than a separated bicycle trail.

DETAILED DESCRIPTION OF ALTERNATIVE CONCEPTS

The following sections summarize the concept alternatives on a segment-by-segment basis.

SEGMENT I—QUANTICO

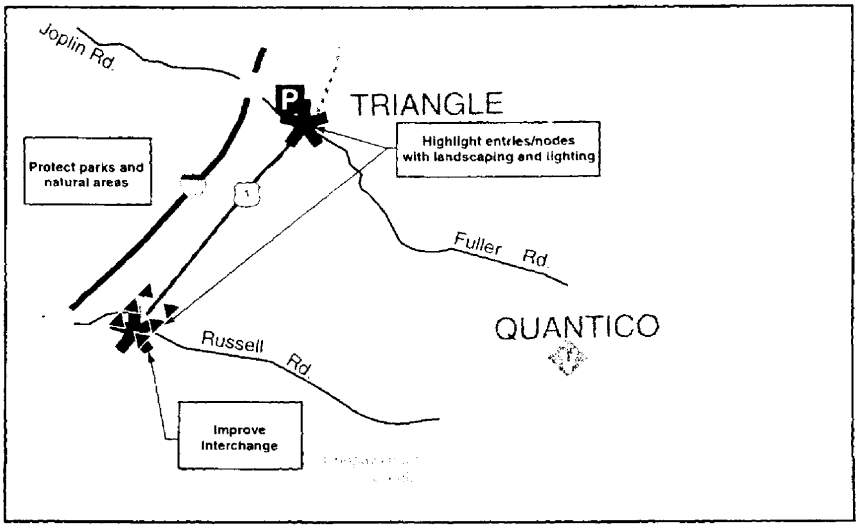
Stafford County Line to Route 619 (Joplin Road/Fuller Road)

This segment of Route 1 is a four-lane undivided highway in a relatively rural setting. This is the baseline for the Segment. Concept A adds a raised median. The other build alternatives (Concepts B, C, and D) add one travel lane in each direction. The difference between the three concepts is in the median treatment and the type of cross section – open (with shoulders and no curbs) versus closed (with curbs). Concept B is an open section. Concept C has an open section and a graded median. Concept D is a closed section.

The desired character for this segment is an arterial roadway through mature woodlands.

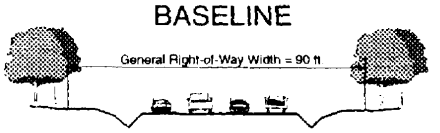
Issues and Ideas

- Maintain native woodlands buffer beyond proposed right-of-way
- Promote military history attractions and nearby parks
- Discourage new entrances on Route 1 for base or park
- Widen shoulders and improve ditches
- Consider paved shoulders
- Consider adding continuous roadway lighting



SEGMENT I

BASELINE



1

- 2 VRE trains per hour
- Existing VRE station at Quantico

1 hour

- 1 hour notification for demand responsive bus service (1 Existing OmniLink bus route)

CONCEPT A

2

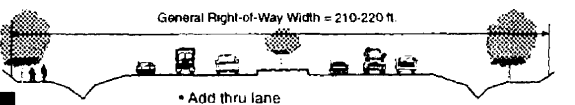
- Add narrow, raised median

- 3 VRE trains per hour
- Bi-level cars, longer trains

1 hour

- 1 hour notification for demand responsive bus service
- Real-time transit information available at activity centers and via computer connection

CONCEPT B



3

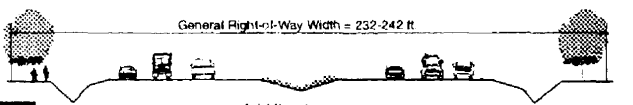
- Add thru lane
- Add standard width raised median

- 3 VRE trains per hour
- Bi-level cars, longer trains

1 hour

- 1 hour notification for demand responsive bus service
- Transit information available at activity centers and via computer connection

CONCEPT C



6

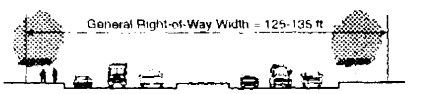
- Add thru lane
- Add wide graded median

- 2 VRE trains per hour
- Bi-level cars, longer trains

1 hour

- 1 hour notification for demand responsive bus service
- Transit information available at activity centers and via computer connection

CONCEPT D



5

- Add thru lane
- Add standard width raised median

- 2 VRE trains per hour
- Bi-level cars

1 hour

- 1 hour notification for demand responsive bus service
- Transit information available via computer connection

Legend

- Node/entry
- Multi purpose trail
- Sidewalk
- V — VRE Station
- P — Park and Ride lot
- Restricted right-of-way locations
- 3 — Overhead View Number (see Sample Overhead Views)
- Number of VRE trains per hour
- 4 hours — Notification time (in hours) for demand responsive bus service
- Transit information availability
- Fixed-route bus service improvements
- Size indicates relative amount of transit service improvements
- Size indicates relative amount of roadway expansion

SEGMENT II—TRIANGLE/DUMFRIES

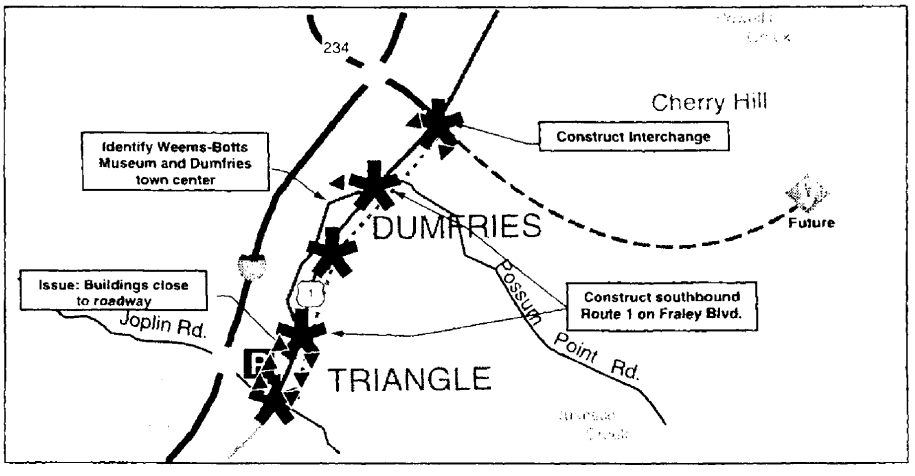
Route 619 (Joplin Road/Fuller Road) to Route 234 (Dumfries Road)

The Baseline for this segment of Route 1 is the existing four-lane cross section. Concepts A and B add a two-way left-turn lane throughout the segment. Concept B has an additional through lane in each direction. Concepts C and D are six-lane sections with raised medians. All of the build concepts include relocating southbound Route 1 to Fraley Boulevard.

The desired character for this segment is a suburban boulevard through a small town setting.

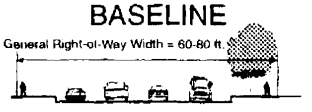
Issues and Ideas

- Continuous roadway lighting
- Consider placing utilities underground in Triangle
- Consolidate driveways through shared access and interparcel access
- Encourage parcel consolidation, especially in Triangle



SEGMENT II

BASELINE



1

- Cross-section in Triangle is shown
- Northbound and southbound roadways are separated in Dumfries

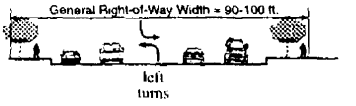
- 2 VRE trains per hour
- VRE station at Cherry Hill and Rippon
- 2 VRE feeeder bus routes

1 hour

- 1 hour notification for demand responsive bus service (OmniLink bus routes)

- Omninde express bus routes
- 2 park and ride lots in Triangle and Dumfries

CONCEPT A



4

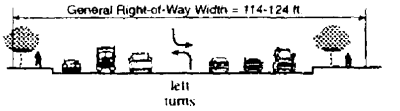
- Add continuous left turn lane in Triangle

- 3 VRE trains per hour
- Bi-level cars, longer trains

1 hour

- 1 hour notification for demand responsive bus service
- Real-time transit information available at activity centers, major bus stops and via computer connection
- Increased bus service on key routes
- New routes in new growth & existing developed areas

CONCEPT B



4

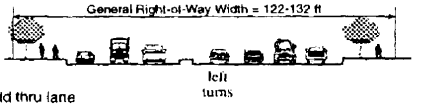
- Add continuous left turn lane in Triangle

- 3 VRE trains per hour
- Bi-level cars, longer trains

1 hour

- 1 hour notification for demand responsive bus service
- Transit information available at activity centers, major bus stops and via computer connection
- New routes in new growth & existing developed areas

CONCEPT C



5

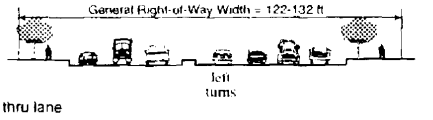
- Add thru lane
- Add raised median with left turn lane

- 2 VRE trains per hour
- Bi-level cars, longer trains

1 hour

- 1 hour notification for demand responsive bus service
- Transit information available at activity centers and via computer connection
- Increased bus service on key routes
- New routes in new growth areas

CONCEPT D



5

- Add thru lane
- Add raised median with left turn lane

- 2 VRE trains per hour
- Bi-level cars, longer trains

1 hour

- 1 hour notification for demand responsive bus service
- Transit information available via computer connection
- New routes in new growth areas

Legend

- Node/entry
- Multi-purpose trail
- Sidewalk
- Funded roadway
- V — VRE Station
- P — Park-and-Ride lot
- Restricted right-of-way locations
- 3 — Overhead View Number (see Sample Overhead Views)
- Number of VRE trains per hour
- 4 hours — Notification time (in hours) for demand responsive bus service
- Transit information availability
- Fixed-route bus service improvements
- Size indicates relative amount of transit service improvements
- Size indicates relative amount of roadway expansion

SEGMENT III—CHERRY HILL/NEABSCO

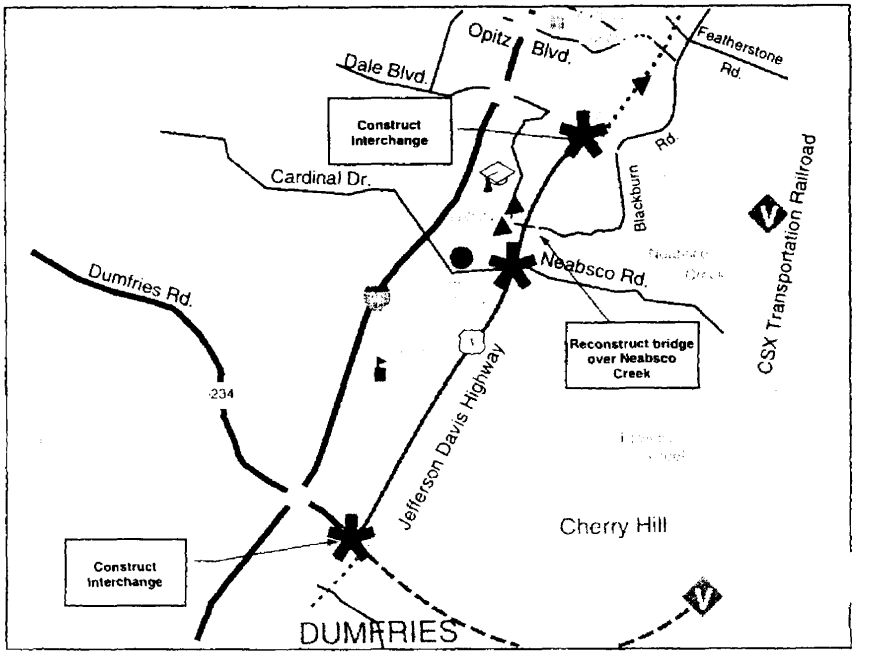
Route 234 (Dumfries Road) to Dale Boulevard

The Baseline for this segment of Route 1 is the existing four-lane cross section. Concept A adds a two-way left-turn lane throughout the segment with a painted median where appropriate. Concepts B, C, and D add a through lane in each direction and raised medians.

The desired character for this segment is a suburban boulevard through a quality residential area.

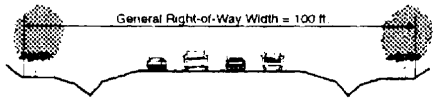
Issues and Ideas

- Add continuous roadway lighting
- Provide access to adjacent parcels via public side streets or interparcel connections between developments
- Install guide signage for historic and recreational opportunities
- Widen shoulders and improve ditches in wooded areas
- Consider paved shoulders in wooded areas
- Install curb and gutter in developed nodes



SEGMENT III

BASELINE



1

- Left turn lanes at a few intersections

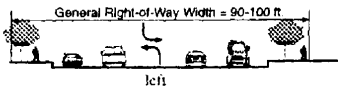
- 2 VRE trains per hour
- VRE station at Cherry Hill and Rippon
- 2 VRE feeeder bus routes

1 hour

- 1 hour notification for demand responsive bus service (1 Existing OmniLink bus route)

- 1 OmniRide express bus route
- 1 park and ride lot at Featherstone Road

CONCEPT A



4

- Add painted median/left turn lanes and widen shoulders

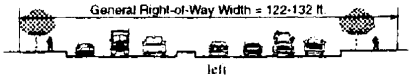
- 3 VRE trains per hour
- Bi-level cars, longer trains

1 hour

- 1 hour notification for demand responsive bus service

- Real-time transit information available at activity centers and via computer connection
- Increased bus service on key routes
- New routes in new growth & existing developed areas

CONCEPT B



5

- Add thru lane
- Add standard width raised median with left turn lane

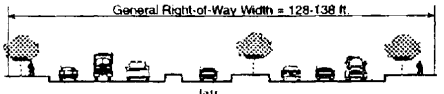
- 3 VRE trains per hour
- Bi-level cars, longer trains

1 hour

- 1 hour notification for demand responsive bus service

- Transit information available at activity centers, major bus stops, and via computer connection
- New routes in new growth & existing developed areas

CONCEPT C



6

- Add thru lane
- Add wide raised median and curb and gutter throughout

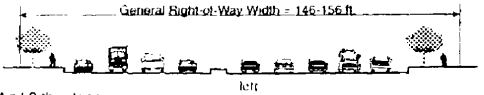
- 2 VRE trains per hour
- Bi-level cars, longer trains

1 hour

- 1 hour notification for demand responsive bus service

- Transit information available at activity centers and via computer connection
- Increased bus service on key routes
- New routes in new growth areas

CONCEPT D



5

- Add 2 thru lanes
- Add standard width raised median and curb and gutter

- 2 VRE trains per hour
- Bi-level cars

1 hour

- 1 hour notification for demand responsive bus service

- Transit information available via computer connection

- New routes in new growth areas

Legend

- Node/entry
- Multi purpose trail
- Sidewalk
- Funded roadway
- Planned roadway
- VRE Station
- Park-and Ride lot
- Restricted right-of-way locations
- 3 — Overhead View Number (see Sample Overhead Views)
- Number of VRE trains per hour
- 4 hours — Notification time (in hours) for demand responsive bus service
- Transit information availability
- Fixed-route bus service improvements
- Size indicates relative amount of transit service improvements
- Size indicates relative amount of roadway expansion

SEGMENT IV—WOODBRIDGE

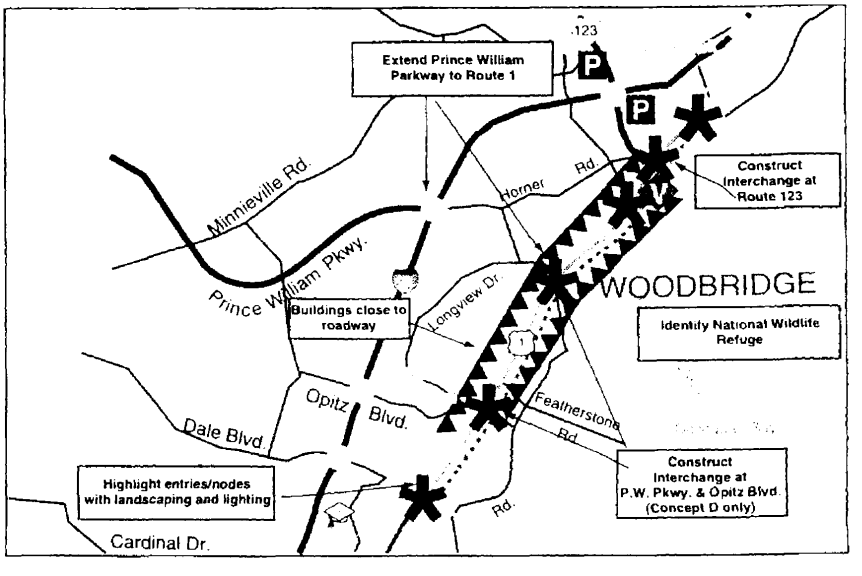
Dale Boulevard to the Occoquan River

This segment is defined by its commercial development, much of it close to the roadway. The Baseline in Woodbridge is the existing four-lane cross section which includes left-turn lanes at some intersections and driveways. Concept A keeps this basic cross section, adding a two-way left-turn lane for continuity throughout the segment. Concepts B and C add a through lane in each direction with a raised median. Concept D adds two reversible median lanes which would be open to all traffic in the peak direction.

The desired character for this segment is a suburban boulevard through a quality commercial area.

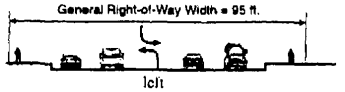
Issues and Ideas

- Place utilities underground or at rear of properties
- Encourage parcel consolidation
- Consolidate driveways through shared access and interparcel access
- Install curb and gutter
- Eliminate billboards



SEGMENT IV

BASELINE



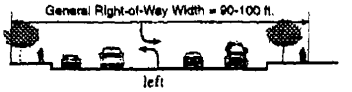
4

- Left turn lanes at some intersections and driveways only

1 hour

- 2 VRE trains per hour
- VRE station at Woodbridge
- 3 VRE feeeder bus routes
- 1 hour notification for demand responsive bus service (2 OmniLink bus routes)
- 1 OmniRide bus route
- Multiple park and ride lots (largest at I-95 / Rt. 123 interchange)

CONCEPT A



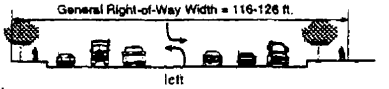
4

- Add painted median/left turn lanes including continuous left turn lane

1 hour

- 3 VRE trains per hour
- Bi-level cars, longer trains
- 1 hour notification for demand responsive bus service
- Real-time transit information available at activity centers, major bus stops and via computer connection
- Transit center at VRE station or I-95 park & ride
- Increased bus service on key routes
- New routes in new growth & existing developed areas

CONCEPT B



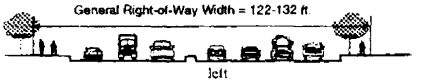
4

- Add thru lane
- Add painted median/left turn lanes and continuous left turn lane

1 hour

- 3 VRE trains per hour
- Bi-level cars, longer trains
- 1 hour notification for demand responsive bus service
- Transit information available at activity centers, major bus stops and via computer connection
- Transit center at VRE station or I-95 park & ride
- New routes in new growth & existing developed areas

CONCEPT C



5

- Add thru lane
- Add standard width, raised median with left turn lane

1 hour

- 2 VRE trains per hour
- Bi-level cars, longer trains
- 1 hour notification for demand responsive bus service
- Transit information available at activity centers and via computer connection
- Transit center at VRE station or I-95 park & ride
- Increased bus service on key routes
- New routes in new growth areas

CONCEPT D

7

- Add raised medians with left turn lane
- Add reversible lanes (open to all traffic in peak direction)

1 hour

- 2 VRE trains per hour
- Bi-level cars
- 1 hour notification for demand responsive bus service
- Transit information available via computer connection
- New routes in new growth areas

Legend

- Node/entry
- Multi purpose trail
- Sidewalk
- Funded roadway
- Planned roadway
- VRE Station
- P — Park-and-Ride lot
- Restricted right-of-way locations
- 3 — Overhead View Number (see Sample Overhead Views)
- Number of VRE trains per hour
- 4 hours — Notification time (in hours) for demand responsive bus service
- Transit information availability
- Fixed-route bus service improvements
- Size indicates relative amount of transit service improvements
- Size indicates relative amount of roadway expansion

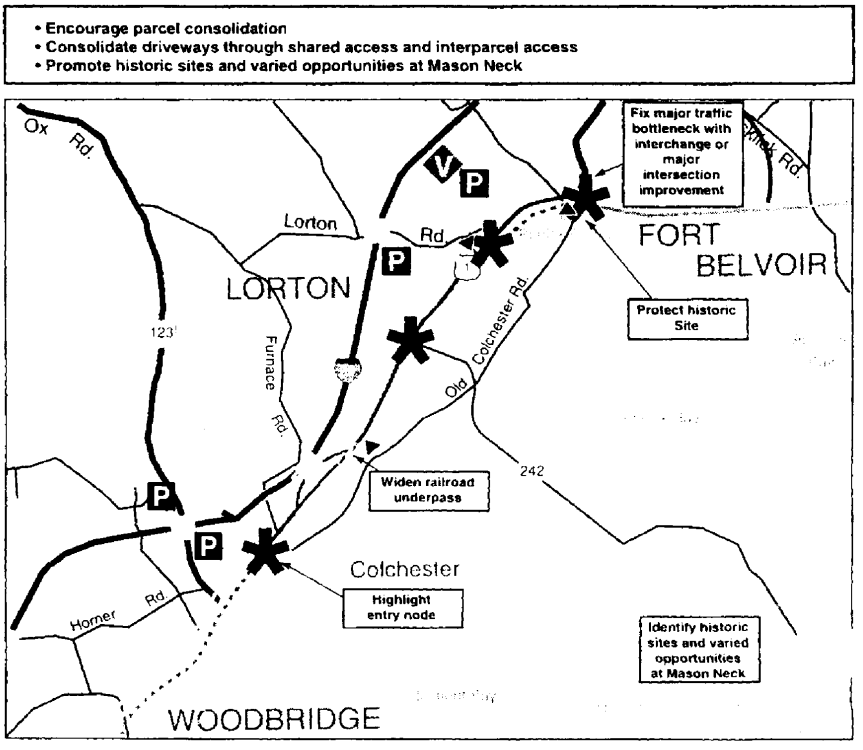
SEGMENT V—LORTON

Occoquan River to Telegraph Road

The existing roadway in this segment is four lanes with left-turn lanes at isolated intersections and driveways. Concept A adds a continuous two-way left-turn lane throughout the segment with a painted median where appropriate. Concepts B and C add a through lane in each direction with a raised median. Concept D continues the two reversible median lanes from Woodbridge (Segment IV).

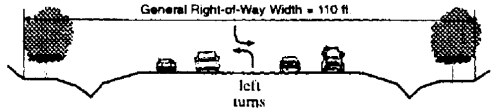
The desired character for this segment is an arterial roadway through mature woodlands between planned development nodes.

Issues and Ideas



SEGMENT V

BASELINE

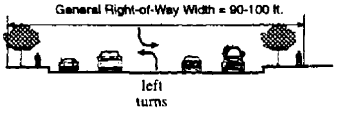


4

- Left turn lanes at some intersections and driveways only

- 2 VRE trains per hour
- Existing VRE station at Lorton
- 1 Fairfax Connector express bus route

CONCEPT A



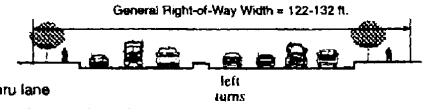
4

- Add painted median/left turn lanes
- Construct curb & gutter in developed nodes only

1 hour

- 3 VRE trains per hour
- Bi-level cars, longer trains
- Less than 1 hour notification for demand responsive bus service
- Real-time transit information available at activity centers, major bus stops and via computer connection
- Increased bus service on key routes
- New routes in new growth & existing developed areas

CONCEPT B



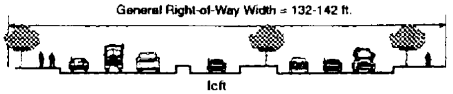
5

- Add thru lane
- Add curb & gutter throughout
- Add standard width raised median with left turn lane

4 hours

- 3 VRE trains per hour
- Bi-level cars, longer trains
- Less than 4 hour notification for demand responsive bus service
- Transit information available at activity centers, major bus stops and via computer connection
- New routes in new growth & existing developed areas

CONCEPT C



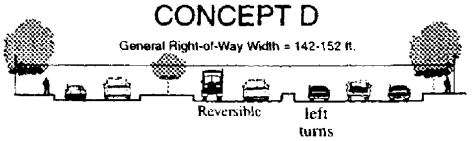
6

- Add thru lane
- Add wide raised median and curb, gutter throughout

12 hours

- 2 VRE trains per hour
- Bi-level cars, longer trains
- 12 hour notification for demand responsive bus service
- Transit information available at activity centers and via computer connection
- Increased bus service on key routes
- New routes in new growth areas

CONCEPT D



7

- Add raised medians with left turn lane
- Add reversible lanes (open to all traffic in peak direction)

12-24 hours

- 2 VRE trains per hour
- Bi-level cars
- 12-24 hour notification for demand responsive bus service
- Transit information available via computer connection
- New routes in new growth areas

Legend

- Node/entry
- Multi purpose trail
- Sidewalk
- Funded roadway
- V — VRE Station
- P — Park-and-Ride lot
- Restricted right-of-way locations
- 3 — Overhead View Number (see Sample Overhead Views)
- Number of VRE trains per hour
- 4 hours — Notification time (in hours) for demand responsive bus service
- Transit information availability
- Fixed-route bus service improvements
- Size indicates relative amount of transit service improvements
- Size indicates relative amount of roadway expansion

SEGMENT VI—FORT BELVOIR

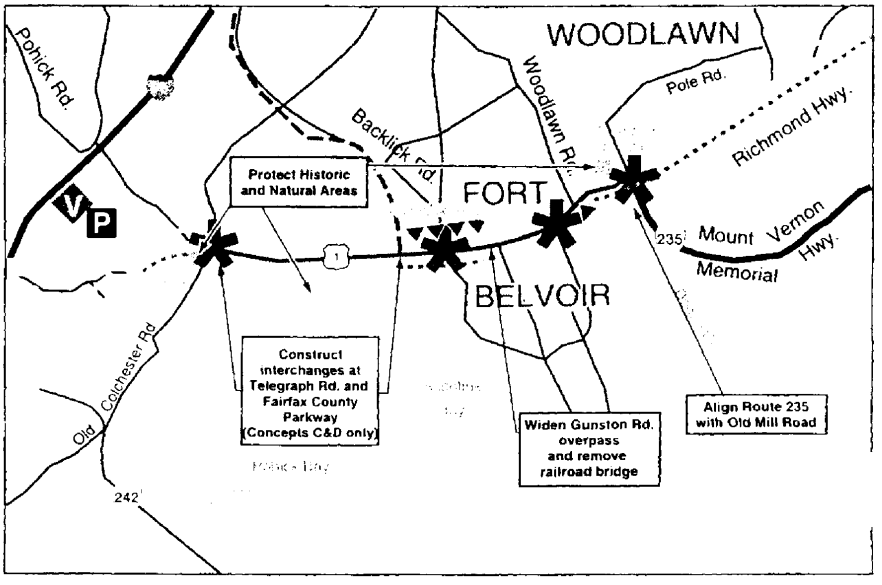
Telegraph Road to Route 235 South/Old Mill Road

This is a segment dominated by woodlands through Fort Belvoir and interrupted only by the developed area at Accotink. All four concepts add a median. Concepts B, C, and D add a through lane in each direction. In Concept D, the southern part of the segment (south of the Fairfax County Parkway) includes a median with reversible lanes to match the cross section for this concept in Lorton.

The desired character for this segment is an arterial roadway through mature woodlands between nodes.

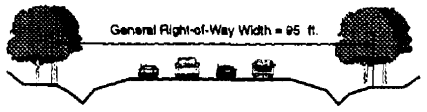
Issues and Ideas

- Place utilities underground or at rear of properties in developed nodes
- Install curb and gutter in developed nodes only
- Widen shoulders and improve ditches in wooded areas
- Add continuous roadway lighting
- Provide Transit Center
- Identify Woodlawn, Pohick Church and Mount Vernon
- Restrict new entrances on Route 1



SEGMENT VI

BASELINE

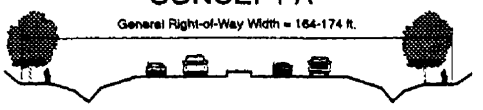


1

- Left turn lanes at a few intersections

- 6 branches of Metrobus Route 9
- 1 Metrobus express bus

CONCEPT A



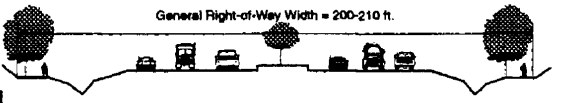
2

- Add narrow, raised median and widen shoulders

1 hour

- Less than 1 hour notification for demand responsive bus service
- Real-time transit information available at activity centers, major bus stops and via computer connection
- Transit center at VRE station or I-95 park & ride
- Transit center at edge of Ft. Belvoir
- Consider bus lane with signal priority treatment
- Increased bus service on key routes
- New routes in new growth & existing developed areas

CONCEPT B



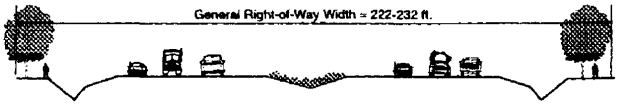
3

- Add thru lane
- Add standard width, raised median

4 hours

- Less than 4 hour notification for demand responsive bus service
- Transit information available at activity centers, major bus stops and via computer connection
- Transit center at edge of Ft. Belvoir
- Consider bus lane with signal priority treatment
- New routes in new growth & existing developed areas

CONCEPT C



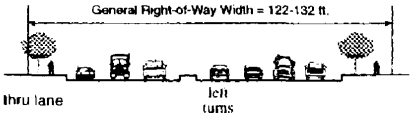
6

- Add thru lane
- Add wide, graded median

12 hours

- 12 hour notification for demand responsive bus service
- Transit information available at activity centers and via computer connection
- Transit center at edge of Ft. Belvoir
- Increased bus service on key routes
- New routes in new growth areas

CONCEPT D



5

- Add thru lane
- Add standard width, raised median
- South of Fairfax County Parkway, use the Reversible Median cross-section (overhead view 7)

12-24 hours

- 12-24 hour notification for demand responsive bus service
- Transit information available via computer connection
- Transit center at edge of Ft. Belvoir
- New routes in new growth areas

Legend

- Node/entry
- Multi purpose trail
- Sidewalk
- Funded roadway
- V — VRE Station
- P — Park-and-Ride lot
- Restricted right-of-way locations
- 3 — Overhead View Number (see Sample Overhead Views)
- Number of VRE trains per hour
- 4 hours — Notification time (in hours) for demand responsive bus service
- Transit information availability
- Fixed-route bus service improvements
- Size indicates relative amount of transit service improvements
- Size indicates relative amount of roadway expansion

SEGMENT VII—WOODLAWN TO ALEXANDRIA

South - Route 235 South/Old Mill Road to Route 235 North/Buckman Road
North - Route 235 North/Buckman Road to Cameron Run

This northern and southern portions of this segment have different cross-sections for some of the concepts.

For the Baseline, the southern section has a four-lane cross section with left-turn lanes at isolated intersections. The northern section has a six-lane cross section with a median and turn lanes.

Concept A adds a raised median with a transit facility of the highest feasible design type throughout the segment. This was subsequently determined to be a transitway for buses.

Concept B adds a raised median with two reversible high occupancy vehicle (HOV) lanes throughout the segment. Concept B also adds a through lane in each direction in the southern portion, resulting in a consistent cross-section throughout Segment VII.

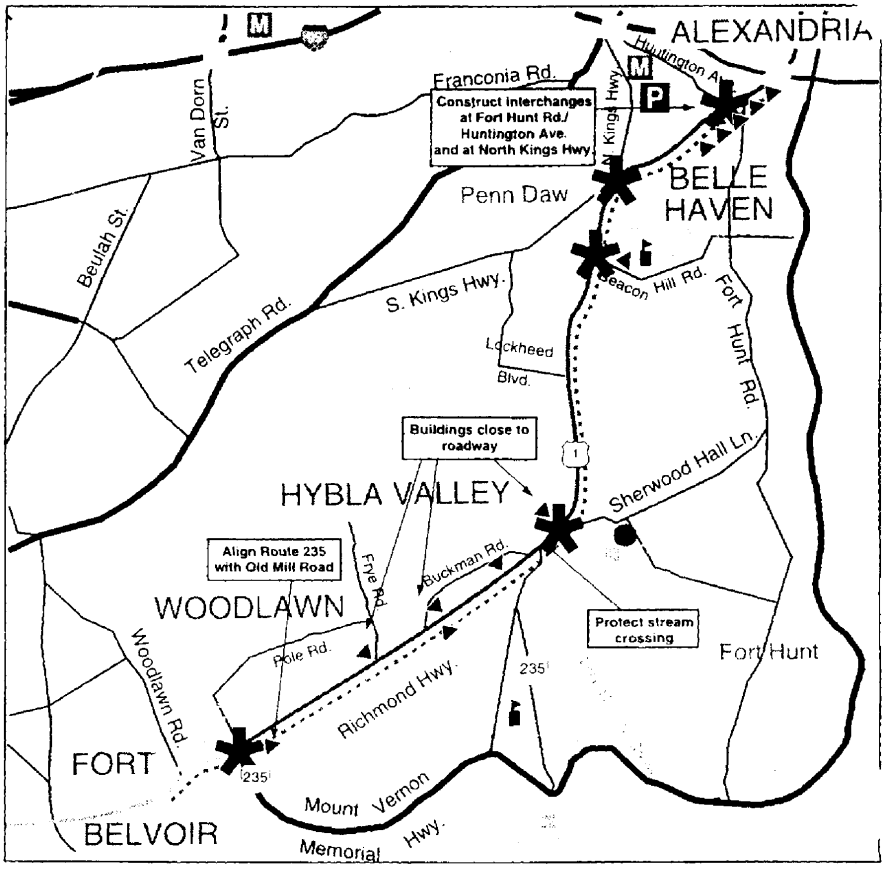
Concept C adds a raised median and through lane in each direction. The added through lanes in the northern section are designated as HOV only in the peak periods in the peak direction. A variation of Concept C, Concept C1, which includes no HOV lanes, was also examined. Concept C1 adds a raised median and an additional through lane in each direction in the southern section only.

Concept D adds medians to separate through and local traffic. The number of through lanes varies; with two lanes in each direction in the southern part of the segment and three in each direction in the northern part. The number of through lanes in local lanes is constant throughout the segment with two in each direction.

The desired character for this segment is a suburban boulevard through a residential and commercial area.

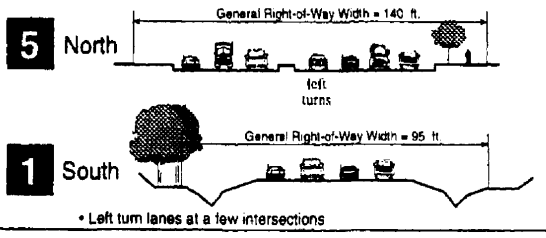
Issues and Ideas

- Incorporate economic study findings into Route 1 preferred package
- Place utilities underground or at rear of properties
- Encourage parcel consolidation
- Consolidate driveways through shared access and interparcel access
- Install curb and gutter throughout
- Promote historic heritage and other opportunities in the corridor
- Eliminate billboards in Woodlawn and Hybla Valley



SEGMENT VII

BASELINE



- Left turn lanes at a few intersections

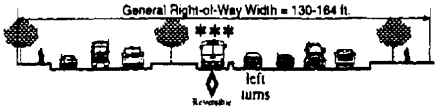
- Transit center at Huntington Metrorail station
- 7 branches of Metrobus Route 9
- 1 Metrobus express bus
- 6 Fairfax Connector routes

** For this concept, the southern section of the segment from the Route 235 south intersection to the Route 235 north/Buckman Road intersection has 1 fewer thru lane in each direction.

*** The transit facility in this concept will be of the highest design type feasible. This will be a transitway or fixed guideway system.

*** A variation on Concept C that includes no HOV lanes will also be examined.

CONCEPT A**



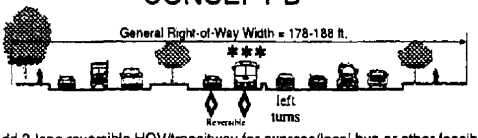
8

- Add 1-lane reversible transitway for express bus or other feasible fixed guideway system
- Improve/add two-way service roads in commercial areas

1 hour

- Less than 1 hour notification for demand responsive bus service
- Real-time transit information available at activity centers, major bus stops and via computer connection
- Increased bus service on key routes
- New routes in new growth & existing developed areas

CONCEPT B



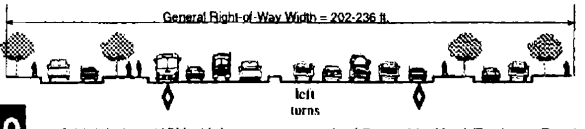
8
9

- Add 2-lane reversible HOV/transitway for express/local bus or other feasible fixed guideway system
- Remove service roads

4 hours

- Less than 4 hour notification for demand responsive bus service
- Transit information available at activity centers, major bus stops and via computer connection
- New routes in new growth & existing developed areas

CONCEPT C**, ****



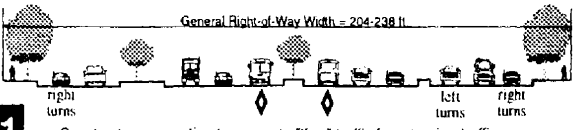
10

- Add right lane HOV with bus turnouts north of Route 235 North/Buckman Road
- Construct two-way service roads; use one-way service roads and other strategies in selected locations to reduce traffic conflicts

12 hours

- 12 hour notification for demand responsive bus service
- Transit information available at activity centers and via computer connection
- Full transit center at Huntington Metrorail station
- Increased bus service on key routes
- New routes in new growth areas

CONCEPT D**



11

- Construct cross-section to separate "thru" traffic from turning traffic
- Add left lane HOV for express bus and car pools
- Add thru lane

12-24 hours

- 12-24 hour notification for demand responsive bus service
- Transit information available via computer connection
- New routes in new growth areas

Legend

- Node/entry
- Multi-purpose trail
- Sidewalk
- V VRE Station
- P Park-and-Ride lot
- M Metro
- Restricted right-of-way locations
- 3 Overhead View Number (see Sample Overhead Views)
- Number of VRE trains per hour
- 4 hours — Notification time (in hours) for demand responsive bus service
- Transit information availability
- Fixed route bus service improvements
- Size indicates relative amount of roadway expansion
- Size indicates relative amount of transit service improvements

CHAPTER 5. EVALUATION FINDINGS

INTRODUCTION

This Chapter summarizes the results of the evaluation process. The study team evaluated the alternative concepts against each of the objective groups described in the previous chapter. The evaluation process estimated the degree to which the concepts met the goals and objectives by comparing the measures of effectiveness developed for each objective group. This generated information necessary for decisions regarding tradeoffs between the benefits and impacts of the concepts. The evaluation process focused on "discriminating factors." Discriminating factors are those that helped differentiate between alternative concepts. These discriminating factors are highlighted in the discussion of findings.

CONCEPTS EVALUATED

As discussed in detail in the previous Chapter, four alternative concepts were developed and compared to the Baseline scenario: Concepts A, B, C, and D. A variation on Concept C, Concept C1, was added in Segment VII based on community input. These concepts represent a range of potential solutions and were described in the previous chapter. The Concepts can be summarized as follows:

- *Baseline:* Assumes regional transportation improvements consistent with MWCOG's 2020 Constrained Long-Range Plan. On Route 1, however, only currently funded improvements are assumed.

- *Concept A:* Includes major transit service improvements. Roadway improvements are limited to adding left turns throughout the corridor with painted medians. No additional through lanes are considered.

- *Concepts B, C, and D:* Include moderate to minor transit service improvements. Each concept adds a through lane in each direction and left turn lanes throughout the corridor. Some locations have painted medians in Concept B. Concepts C, C1, and D have raised medians. Concept C1 represents a variation on Concept C in which no additional lanes are added to the existing 6-lane roadway in the northern four miles of the corridor.

Each Concept was customized for the characteristics and issues in each segment of the corridor. For example, in Segment VII, Woodlawn to Alexandria, the concepts include special lanes for transit and high occupancy vehicles (HOV) since transit usage in this segment is the highest in the corridor.

EVALUATION RESULTS

The study team evaluated the concepts to quantify the benefits and impacts of each option. In general, the evaluation was done individually for each of the seven segments of the study corridor. However, some aspects of the evaluation, such as the impact of the alternative concepts on transit ridership in the corridor, was at the corridor-wide level. The following sections describe the major findings of the evaluation process. Key corridor-wide findings are first discussed followed by the findings for each segment.

The recommended concept for each segment is listed below.

Segment Number	Segment Name	Recommended Concept
I	Quantico	D
II	Dumfries/Triangle	C
III	Cherry Hill/Neabsco	B
IV	Woodbridge	C
V	Lorton	B
VI	Ft. Belvoir	D
VII	Woodlawn/Alexandria	C

For transit elements, the recommended concept is similar to the level of transit service improvements associated with Concept C.

CORRIDOR-WIDE FINDINGS

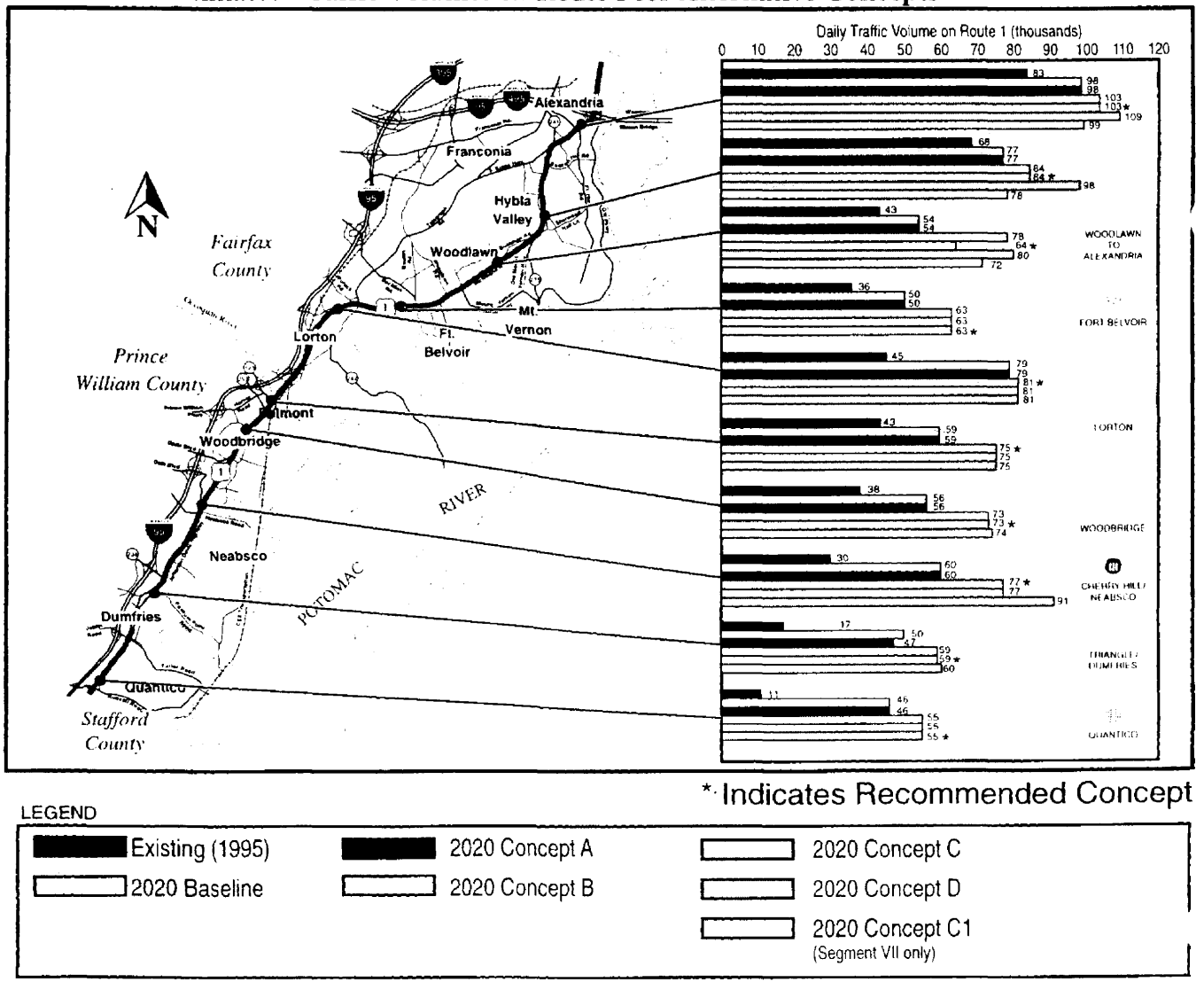
The analyses and findings related to traffic volumes, congestion, and transit were conducted at the corridor-wide level and are discussed below.

Daily Traffic Volumes

Traffic volumes on Route 1 are projected to increase significantly by the year 2020 under any of the scenarios considered. Exhibit 5-1 shows that the largest increases are in Prince William County. In this southern portion of the corridor, traffic volumes increase by 60 to over 160 percent largely due to growth and development in the area. In Fairfax County, the growth ranges from 25 to 100 percent.

The Baseline and Concept A, show lower traffic growth on Route 1 than other concepts. This is due to most of Route 1 remaining a four-lane roadway in these concepts. As shown in Exhibit 5-2, traffic growth in the overall I-95/Route 1 corridor is consistent among the concepts considered. While traffic volumes on Route 1 vary for each of the concepts, the traffic demand in the overall corridor remains relatively constant among the concepts in 2020. This indicates that motorists adjust their travel paths among the facilities in the corridor.

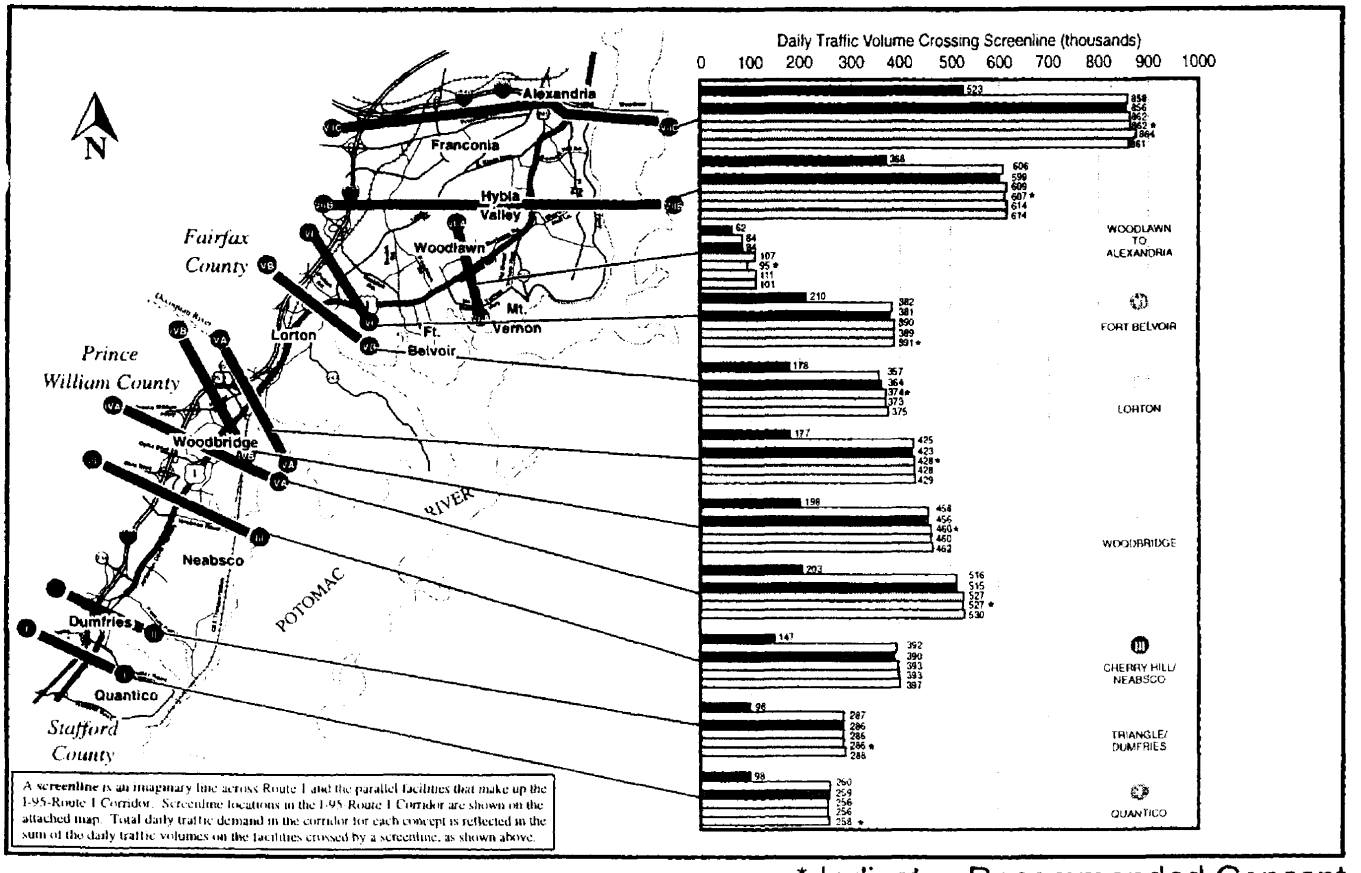
Exhibit 5-1. Estimated Traffic Volumes on Route 1 for Alternative Concepts



Differences in the Route 1 daily traffic volumes for the concepts typically vary between 20 and 30 percent. The daily traffic volumes show logical trends. For the build concepts, the volumes have the following order. Concept A usually has the lowest daily volumes similar to Baseline volumes. Traffic volumes for Concepts B and C are almost the same. Concept D has the highest projected traffic volumes because it includes the highest roadway capacities of the concepts.

These volumes were generated through a travel demand forecasting process consistent with procedures used by VDOT and MWCOG. The forecasting process utilized Round 5.3 Cooperative Forecasts developed by the MWCOG, which was summarized near the end of Chapter 2. The travel demand forecasting model developed for the Route 1 Corridor Study was based on the MWCOG regional model and had additional zone and network detail in the corridor.

Exhibit 5-2. Estimated Traffic Volumes on Route 1/I-95 Corridor for Alternative Concepts



* Indicates Recommended Concept

LEGEND

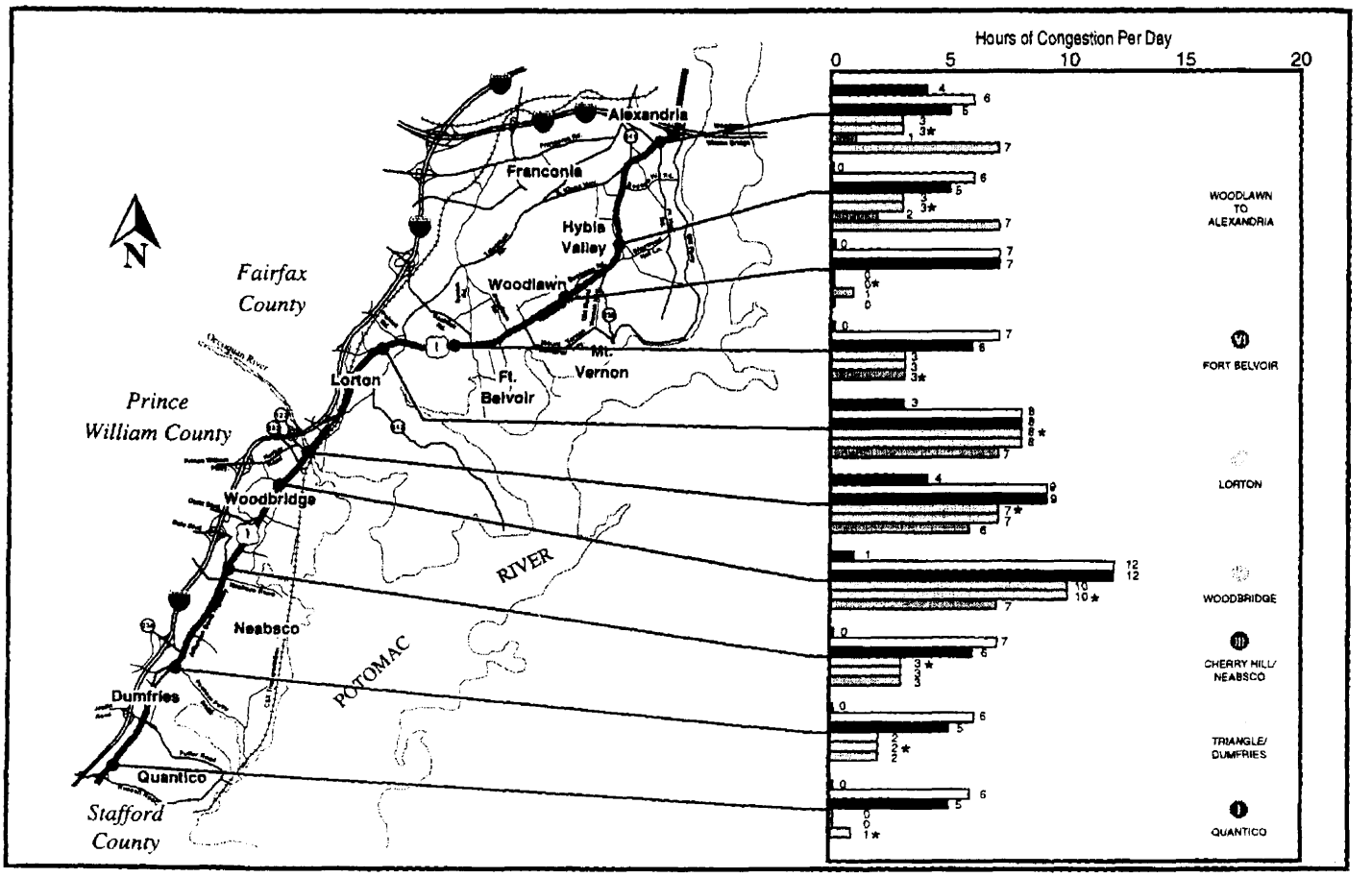
- Existing (1995)
- 2020 Baseline
- 2020 Concept A
- 2020 Concept B
- 2020 Concept C
- 2020 Concept D
- 2020 Concept C1 (Segment VII only)

Hours of Congestion

Exhibit 5-3 shows the estimated hours of congestion for each of the concepts in the year 2020. Hours of congestion is defined as the number of hours for which the projected traffic demand exceeds the capacity of the roadway.

The general trend is that the Baseline has the highest level of congestion. Levels of congestion for Concept A are slightly lower than the Baseline due to the effect of substantial transit service improvements. In Segments I to III, congestion levels for Concepts B, C and D are similar and lower than the Baseline and Concept A. The fewer hours of congestion are due to the added roadway capacity and improved transit services. In Segment VII, similar trends are evident. Concepts B, C, and D show fewer hours of congestion because they include both roadway capacity and transit improvements. Baseline, Concept A, and Concept C1 have similar congestion levels in locations where enhanced transit service without significant roadway capacity improvements is assumed.

Exhibit 5-3. Estimated Hours of Congestion for Alternative Concepts



* Indicates Recommended Concept

LEGEND

- Existing (1995)
- 2020 Baseline
- 2020 Concept A
- 2020 Concept B
- 2020 Concept C
- 2020 Concept D
- 2020 Concept C1 (Segment VII only)

Transit

As shown in Exhibit 5-4, each of the concepts is estimated to have increased transit usage over Baseline. Concept A increases transit ridership in the corridor by 40 percent from 33,000 riders per day to 46,000 riders per day. Increases in transit ridership for Concepts B, C and D were estimated at 8,500 (25 %), 5,600 (17 %) and 1,000 (3%), respectively.

The assumed transit improvements do not significantly lower daily traffic volumes in the corridor. This is because transit represents only a small percentage of the total daily trips as shown in Exhibit 5-5. However, since transit trips are peak period oriented, they do represent a sizable portion of the daily work trips as shown in Exhibit 5-6. Thus, transit will have a more noticeable effect on reducing total peak period traffic volumes.

Exhibit 5-4. Transit Ridership for Alternative Concepts

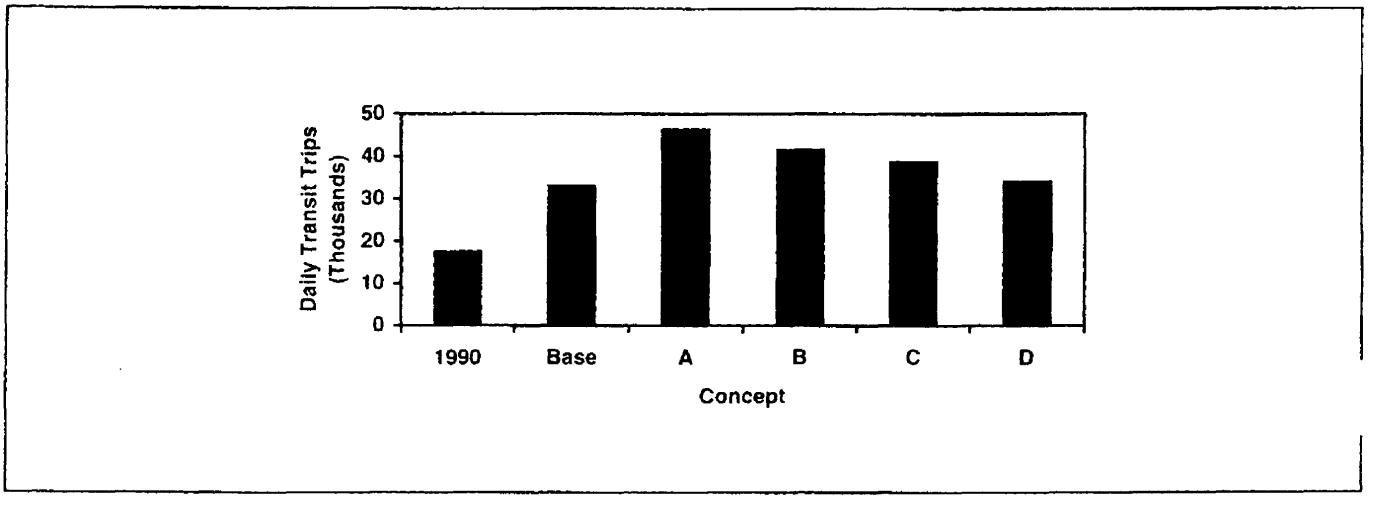
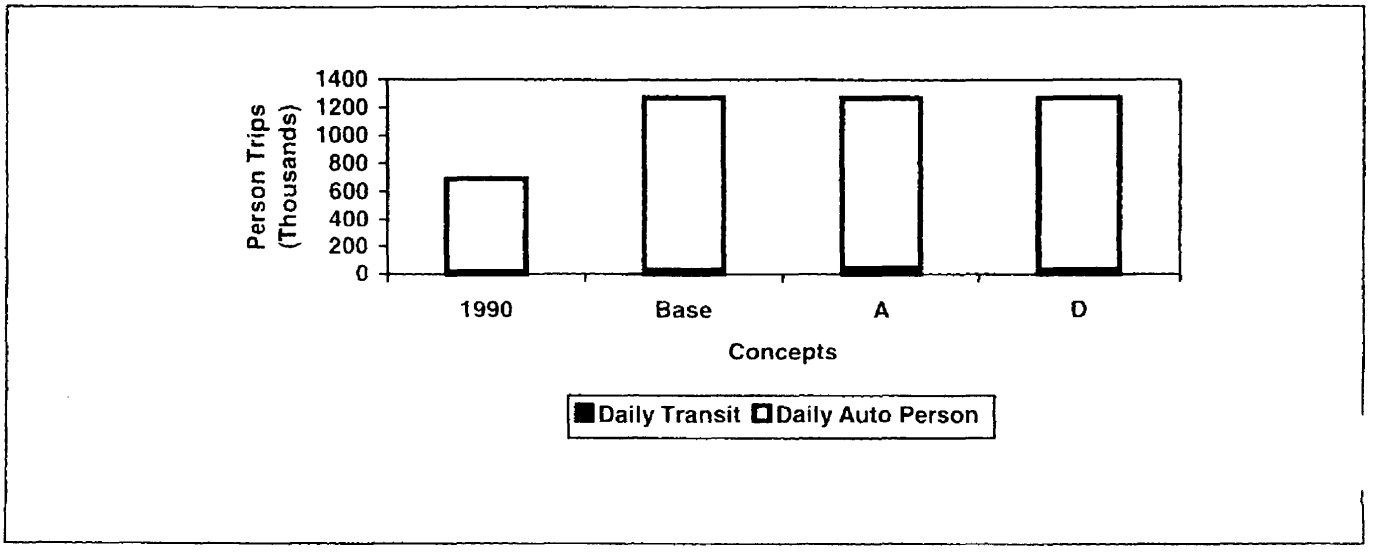


Exhibit 5-5. Transit Trips as a Proportion of Total Daily Person Trips



This reduction in peak period traffic volumes will result in fewer hours of congestion rather than in improved peak hour conditions. This is because the corridor operates in a capacity constrained mode. Under such a scenario, because of latent demand, automobile drivers diverted from the roadway to transit are replaced with autos originally traveling in the outer hours of the peak period. The lower total peak period traffic volumes, however, result in a peak period that is shorter in duration. This concept is illustrated schematically in Exhibit 5-7.

Beyond the hours of congestion reduction, transit also provides people with an alternative to the single occupant vehicle. By providing travel choices, transit enhances accessibility, mobility, air quality and other "quality of life" aspects.

In Segment VII, projected population densities for 2020 are insufficient to support fixed-rail transit along Route 1. However, future technology changes and/or additional growth beyond 2020 are possible that would make some type of fixed-guideway system feasible. So, this possibility should not be precluded.

Exhibit 5-6. Transit Trips as a Proportion of Total Daily Work Trips

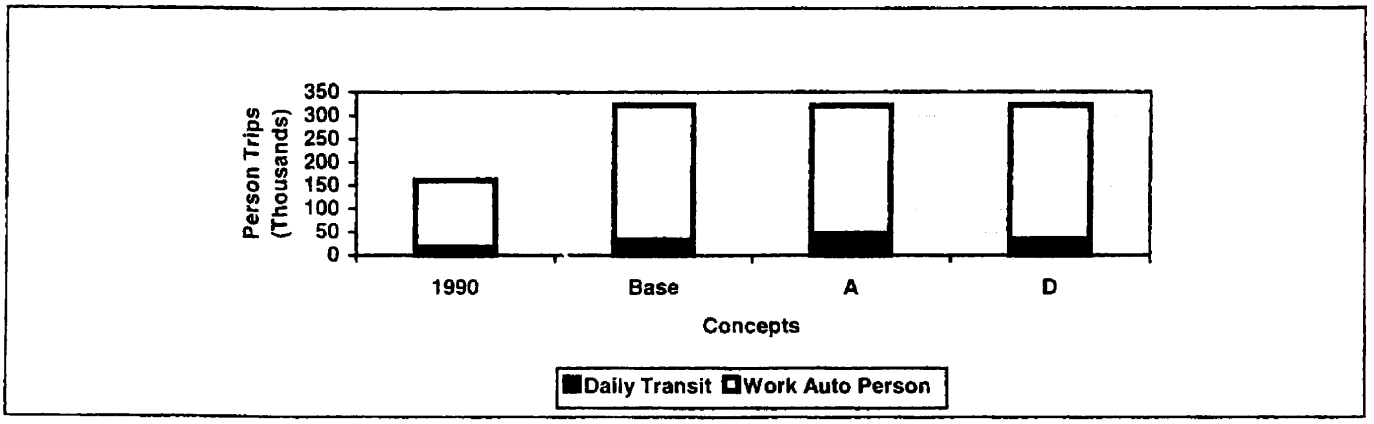
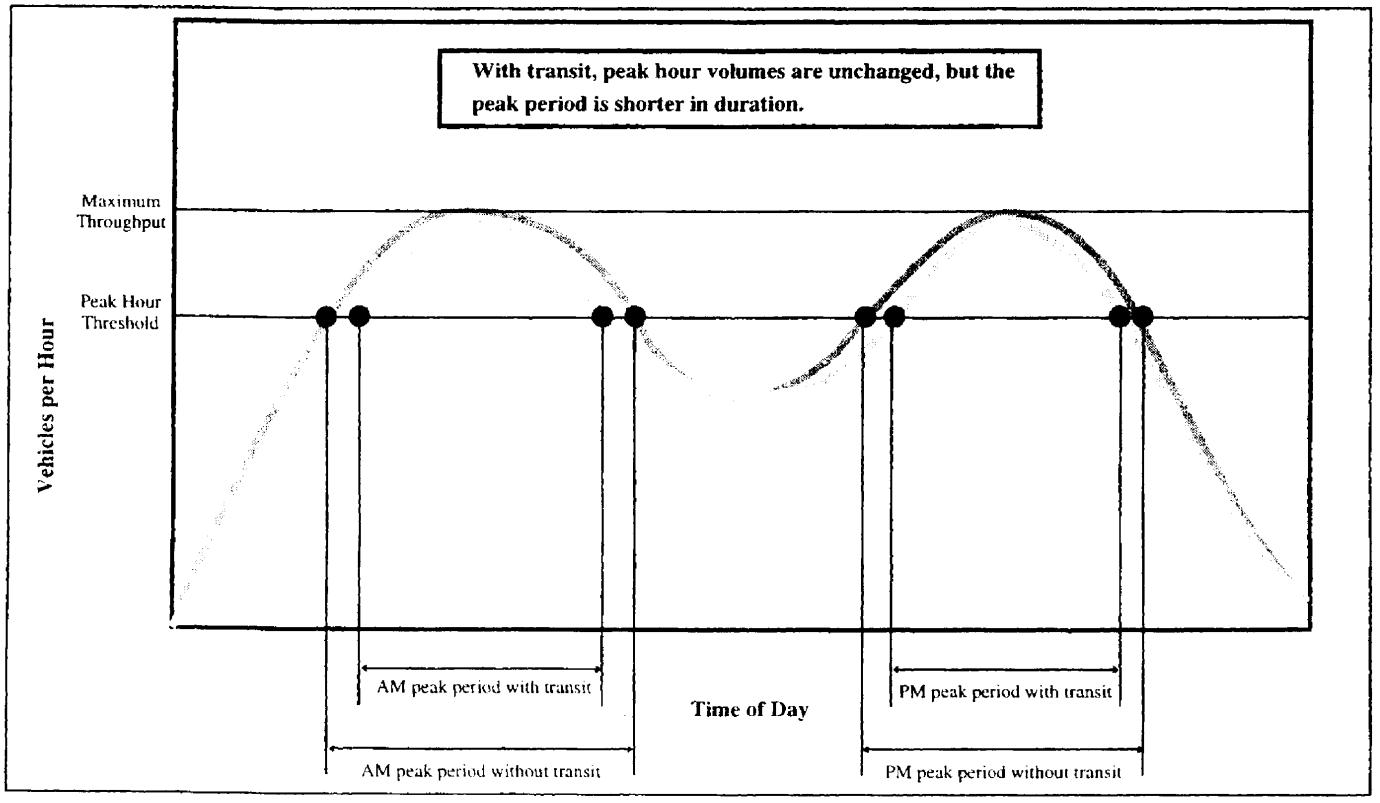


Exhibit 5-7. Effect of Transit on the Duration of Peak Period



Economics

Key issues considered in evaluating these concepts that play a role in strengthening the economic conditions in the Route 1 corridor are as follows:

- Maintain accessibility
- Address adjacent property impacts including opportunities for relocation
- Improve the image
- Recognize the role transportation improvements could play as part of a comprehensive revitalization plan
- Accommodate job growth.

As a result of transportation improvements, it is clear that there will be some negative as well as positive impacts on the economic conditions of the Route 1 corridor. The key is to maximize the opportunity created by transportation improvements for the overall well being of the Route 1 corridor. The following addresses each of these key issues.

The impact of adding a raised median is frequently a major issue when transportation improvements are proposed in corridors similar to Route 1. Findings of studies on adding a raised median have been mixed and widely varied because transportation access is only one of a number of factors that affects the viability of a business. The type of business, its location, the nature of competition, and the overall economic climate, as well as the sensitivity to price and quality that the consumer has for the product, all contribute to the viability of a business.

One trend that is clear is that how a business is impacted by the addition of a raised median depends on the type of establishment. Destination-oriented establishments such as grocery stores and restaurants typically experience no negative impact. On the other hand, convenience businesses such as service stations and convenience marts are affected when products and services are easily replaced and access is inconvenient.

However, convenience businesses tend to be able to relocate from one location to another, which can often lead to a larger customer base and profitability. In addition, there is evidence that negative impacts are often temporary and that demand levels return to normal a few months after implementation.

It is difficult to compare the impacts realized in other corridors similar to Route 1 as a result of the addition of a raised median due to the many factors th affect the viability of a business and in turn the economic conditions of an area. However, the following profile of similar projects provides information to provide a frame of reference when evaluating the overall economic impact on Route 1.

1. Jimmy Carter Blvd., Gwinett County, Georgia

- A 2.3-mile site in a suburban location. This corridor contains fast food restaurants, hotels, and retail strip malls. There is also office activity and some residential development in the corridor.
- Project implemented to reduce accidents and reduce congestion. Raised median installed and one lane added in each direction.
- After implementation some businesses reported sales losses which eventually were regained.
- Project began in 1987, completed in 1992.

2. U.S. Route 9, Monmouth County, New Jersey

- A 5.0-mile suburban site that includes varied retail activity.
- Project implemented to relieve traffic congestion and safety problems. Two lanes added in each direction. Left hand turns controlled by jughandles with traffic signals. The before condition had no left-turn restrictions.
- Project started in 1984, completed in 1987.

3. Route 9, Dutchess County, New York

- Site is a 3.8-mile stretch in a suburban setting that includes retail activity and a shopping mall.
- The transportation improvements were undertaken to reduce congestion and improve safety.
- Widened from four- to six-lanes, installed left turn lanes, and raised median.
- Improvements began April 1984, completed in 1990.

From the following data, we conclude that the addition of the raised median has not decimated the economy of the area. While a number of positive impacts are noticeable, the lack of substantial negative impacts is more important. Since there are many factors that contribute to the economic viability of an area, we believe it is not possible to draw a definitive conclusion from comparable projects on the likely impact of the addition of a raised median on business along Route 1. However the data does indicate that similar projects have not harmed the economy.

Accessibility of an area is also affected by the amount of congestion. The more hours that are congested, the more potential patrons will avoid traveling to businesses in the congested area. Instead, they will choose to travel to businesses in less congested areas. Therefore, the concepts that have fewer hours of congestion have better accessibility. The ratings for each concept for each of the economic objectives are shown in Appendix B.

Summary of Trends by Site – Sales

Site	Construction Period	% Change in Total Sales		% Change in Sales for Businesses Existing Before & After	
		'80-'86	'86-'93	'80-'86	'86-'93
1. Jimmy Carter Blvd.	'87-'92				
Within Site		-31%	134%	103%	54%
Rest of Area		76%	303%	63%	279%
2. Rt. 9 NJ	'84-'87				
Within Site			119%		52%
Rest of Area			62%		32%
3. Rt. 9 NY	'84-'90				
Within Site		102%	98%	21%	24%
Rest of Area		-69%	285%	-0.6%	-9%

Summary of Trends by Site – Employment

Site	Construction Period	% Change in Total Employment		% Change in Employment for Businesses Existing Before & After	
		'80-'86	'86-'93	'80-'86	'86-'93
1. Jimmy Carter Blvd.	'87-'92				
Within Site		-20%	91%	7%	-13%
Rest of Area		14%	337%	25%	316%
2. Rt. 9 NJ	'84-'87				
Within Site			44%		18%
Rest of Area			71%		19%
3. Rt. 9 NY	'84-'90				
Within Site		75%	132%	-8%	57%
Rest of Area		-70%	421%	-7%	-10%

Source: "Economic Impacts of Restricting Left Turns," National Cooperative Highway Research Program, Feb. 1995.

SUMMARY OF FINDINGS BY SEGMENT

The following section summarizes the results of the evaluation for each segment. The detailed results are shown in the evaluation matrix attached in Appendix B.

Costs are listed for each concept. The costs shown are order of magnitude and include administration, construction, and right-of-way costs. They do not include costs for landscaping, placement of utilities underground, or payment of damages beyond land values. Funding source and/or responsible agency is not listed or implied.

SEGMENT I – QUANTICO

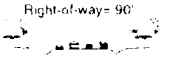
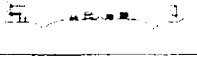
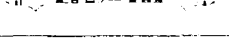
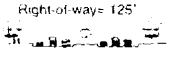
Stafford County Line to Route 619 (Joplin Road/Fuller Road)

This segment of Route 1 is a four-lane undivided highway in a relatively rural setting. This was the Baseline for the segment. Concept A adds a narrow raised median. The build alternatives (Concepts B, C and D) also add one travel lane in each direction. The difference between the three concepts is in the width and type of median treatment and the inclusion of shoulders/ditches versus a curb and gutter section.

Concept D is the recommended concept for this section since it reduces congestion, requires the least right-of-way, minimizes environmental and community impacts, enhances economic image, and has the lowest cost.

The following are the key results of the evaluation for Segment I.

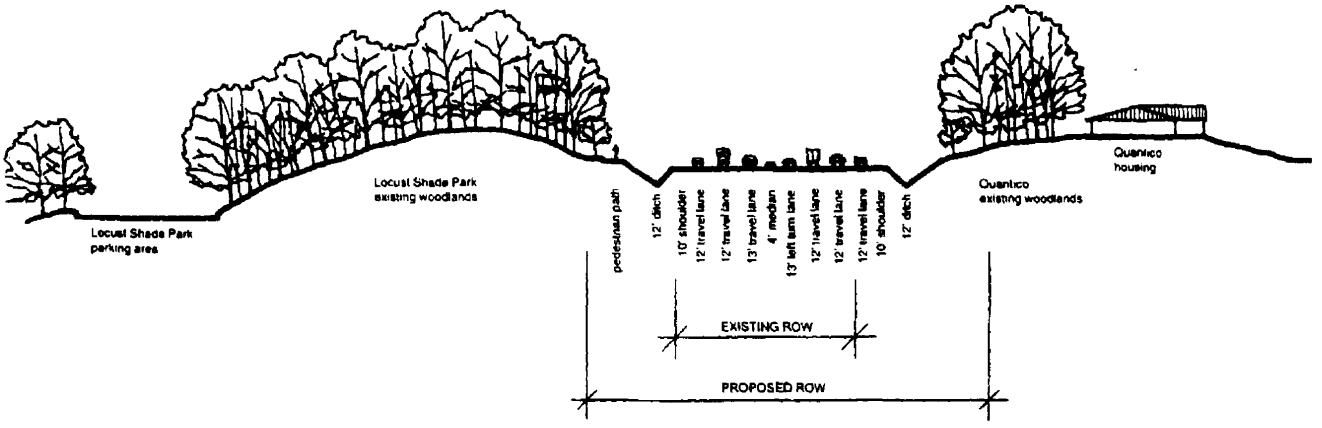
- The year 2020 traffic operational conditions for Segment I improves under the build concepts. The hours of congestion decrease from an estimated 6 hours per day for the Baseline to 0 to 1 hour of congestion per day for the build concepts.
- The federally-owned interchange at Russell Road should be reconstructed to improve operations and safety.
- Of the build alternatives, Concept D has the minimum right-of-way requirement (125 feet) because of the curb and gutter section.
- The environmental impacts for the build alternatives are similar. Concept D has minimum impact on flood plains and wetlands. Concept C has maximum impact due to the wide median and shoulder/ditch section.
- Concept D minimizes adverse community impacts because of minimal removal of native woodlands. It enhances visual character and maintains the best visual consistency with the desired character.
- Concept D is also best from an economic development standpoint because it enhances accessibility, improves economic image by adding landscaping and results in minimal removal of woodlands.
- Concept D has the minimum roadway constructior and right-of-way cost and also the minimum right of-way requirement.

	Cross-Section	Median Treatment	Displacements	Hours of Congestion	Economics	Roadway & R.O.W. / Interchange(s) Cost (millions)
Baseline		**None**	**0**	**6**		
Concept A		**Raised**	**0**	**5**	**Same**	**$20 / $5**
Concept B		**Raised**	**0**	**0**	**Better**	**$25 / $5**
Concept C		**Graded**	**0**	**0**	**Same**	**$30 / $5**
* **Concept D**		**Raised**	**0**	**1**	**Much Better**	**$20 / $5**

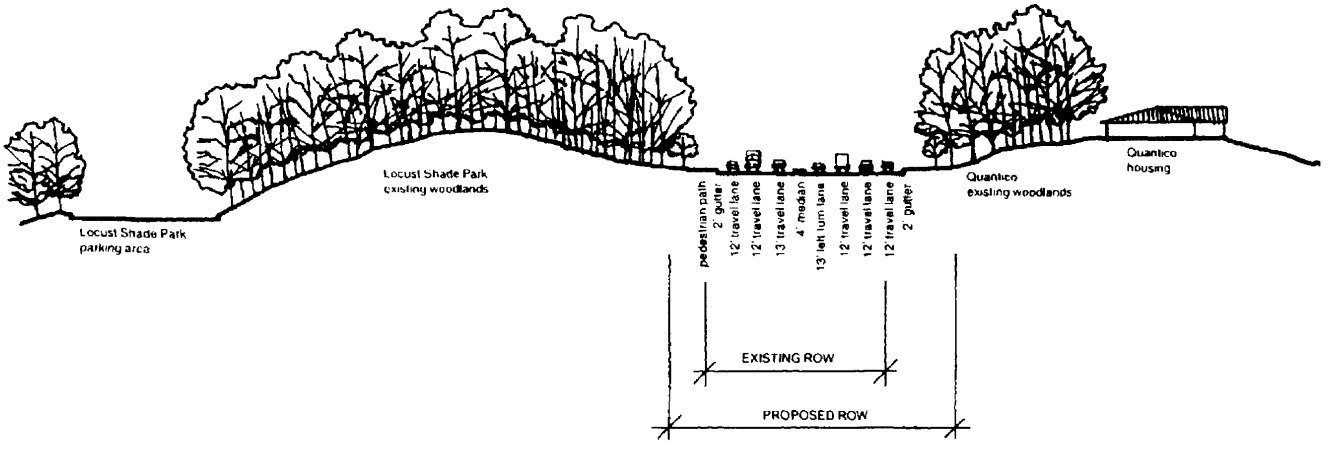
R.O.W. = Right-of-way
* Indicates Recommended Concept

SEGMENT I

CONCEPT B



Concept D – Recommended Concept



Illustrative section looking north at Quantico and Locust Shade Park

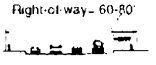
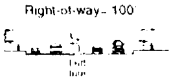
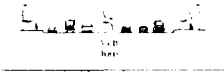
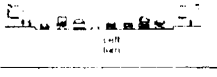
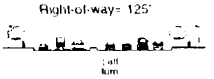
SEGMENT II - TRIANGLE/DUMFRIES

Route 619 (Joplin Road/Fuller Road) to Route 234 (Dumfries Road)

The Baseline for this segment of Route 1 is the existing four-lane cross-section with the split roadway through Dumfries. Each of the build concepts relocates southbound Route 1 from Main Street to Fraley Boulevard in Dumfries. Concept A adds a two-way left-turn lane (TWLTL). Concept B adds a travel lane in each direction and a TWLTL. Concepts C and D are six-lane curb and gutter sections with raised medians.

Concept C is the recommended concept in Segment II because it enhances traffic operations, community character, and provides a significant catalyst for higher quality development in Triangle.

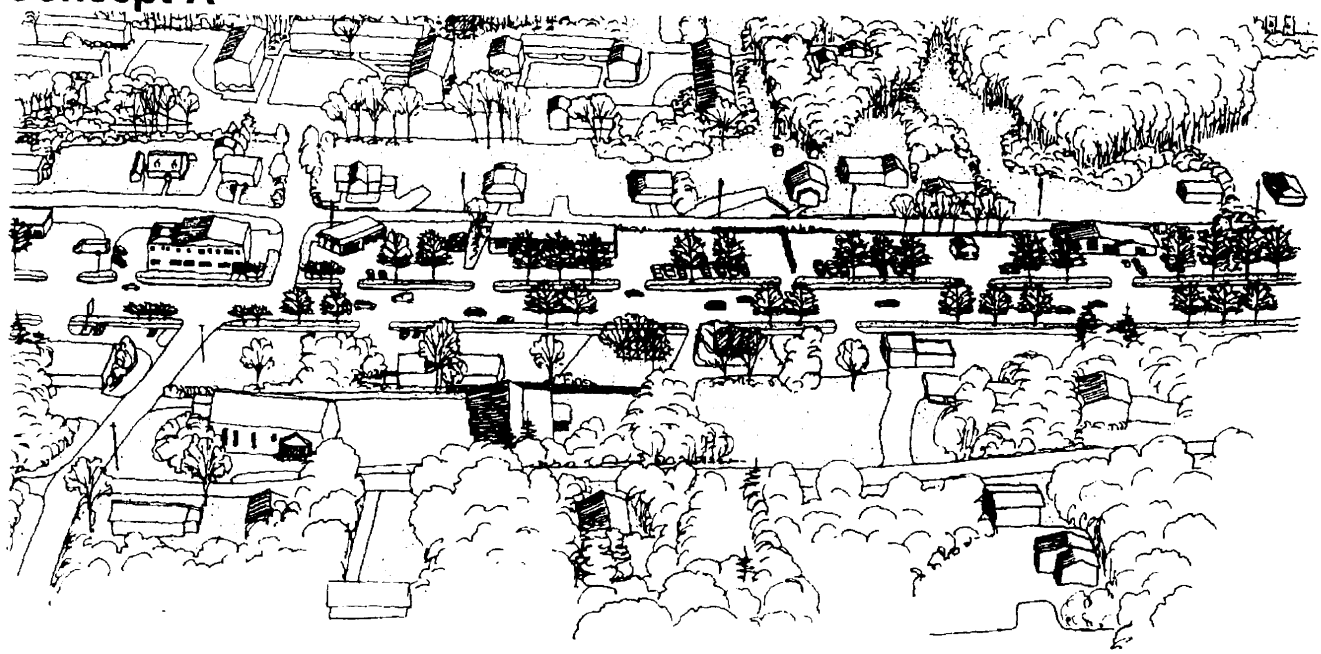
- The hours of congestion decrease from 6 hours per day for the Baseline to 2 hours per day for the build concepts.
- An interchange should be provided at Route 234, Dumfries Road.
- From a transportation system design standpoint Concepts C and D are the best because of the safety benefits of the raised median. The right-of-way requirements for the Concepts B, C, and D are similar.
- Concepts B, C, and D also have similar environmental impacts.
- Concepts C and D are the best from community impact standpoint because they enhance the visual character and consistency due to increased areas for landscaping in the median.
- From an economic standpoint, Concepts C and D are best in spite of having 41-50 displacements (30 of these displacements are in Triangle). The displacements provide opportunities for parcel consolidation, and the enhanced image will attract higher quality businesses.
- The relocation of southbound Route 1 from Main Street will have a positive impact on most Main Street businesses.
- The costs for the concepts are similar at $45 to $50 million.

	Cross-Section	Median Treatment	Displacements	Hours of Congestion	Economics	Roadway & R.O.W. / Interchange(s) / Cost (millions)
Baseline		**None**	**0**	**6**		
Concept A		**Painted**	**11-20**	**5**	**Same**	**$20 / $25**
Concept B		**Painted**	**21-30**	**2**	**Same**	**$25 / $25**
* **Concept C**		**Raised**	**41-50**	**2**	**Much Better**	**$25 / $25**
Concept D		**Raised**	**41-50**	**2**	**Much Better**	**$25 / $25**

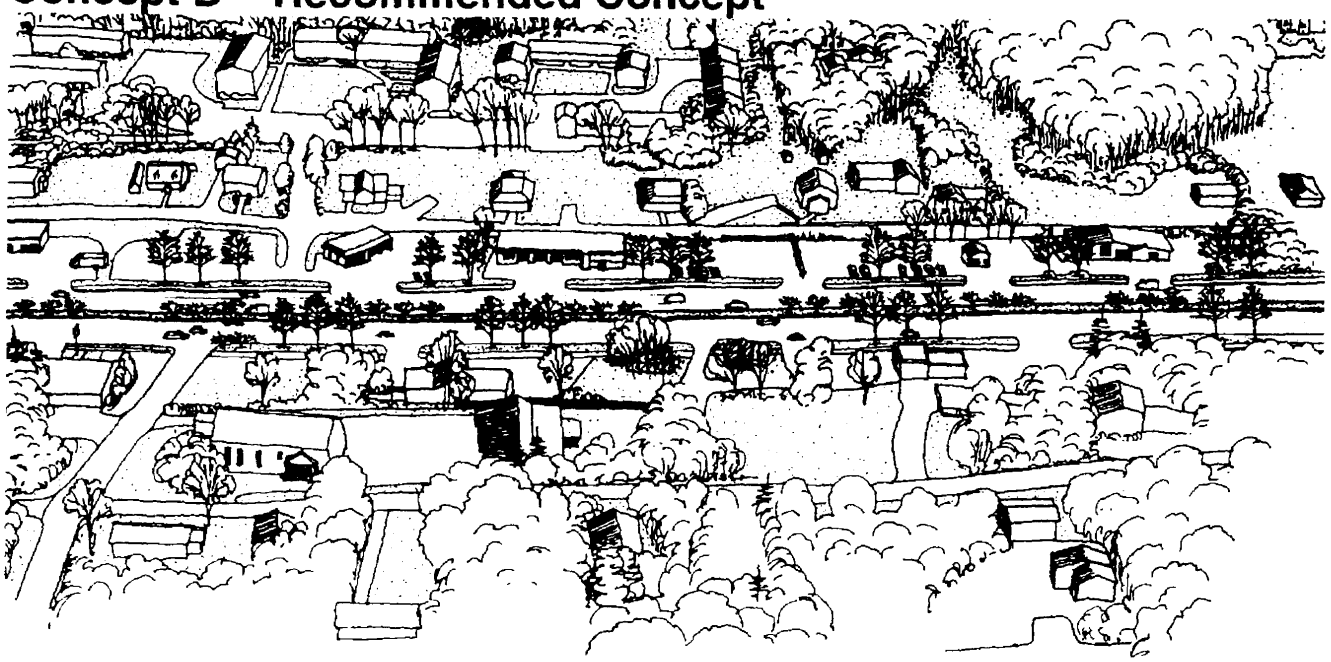
R.O.W. = Right-of-way
* Indicates Recommended Concept

SEGMENT II

Concept A



Concept D – Recommended Concept



Illustrative sketch looking west at the intersection of Route 1 and Square Lane

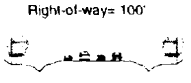
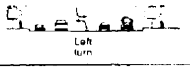
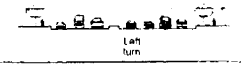
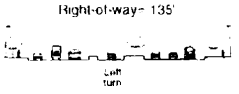
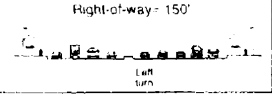
SEGMENT III - CHERRY HILL/NEABSCO

Route 234 (Dumfries Road) to Dale Boulevard

The Baseline for this section is the existing four-lane undivided cross-section. Concept A adds a two-way left-turn lane. Concepts B and C add one travel lane in each direction with left turn lanes. Concept C incorporates an extra wide median. Concept D provides an 8-lane cross-section with raised medians.

Concept B is the recommended concept for Segment III because it reduces estimated hours of congestion, causes minimal displacements, and enhances the economic climate and visual character of the corridor.

- The hours of congestion decrease from 7 per day for the Baseline to 6 for Concept A and to 3 hours per day for Concepts B, C and D.
- An interchange is not required by 2020 at Dale Boulevard.
- Right-of-way requirements increase incrementally from Concept A (100 feet) to Concept D (150 feet).
- Of the build concepts, Concept D has the greastest impact on wetlands and flood plains. Concept B has the smallest impact.
- Concept B requires 6 to 10 displacements. Concepts C and D will cause approximately 11 to 15 displacements.
- Concept C is the best from visual impact standpoint because of the wide medians permitting a double row of trees. However, the high number of displacements are not required to achieve the desired visual character. Concept B enhances the visual character sufficiently with its 16-foot wide planted median.
- The cost of Concept B is the least of the concepts that reduce congestion.

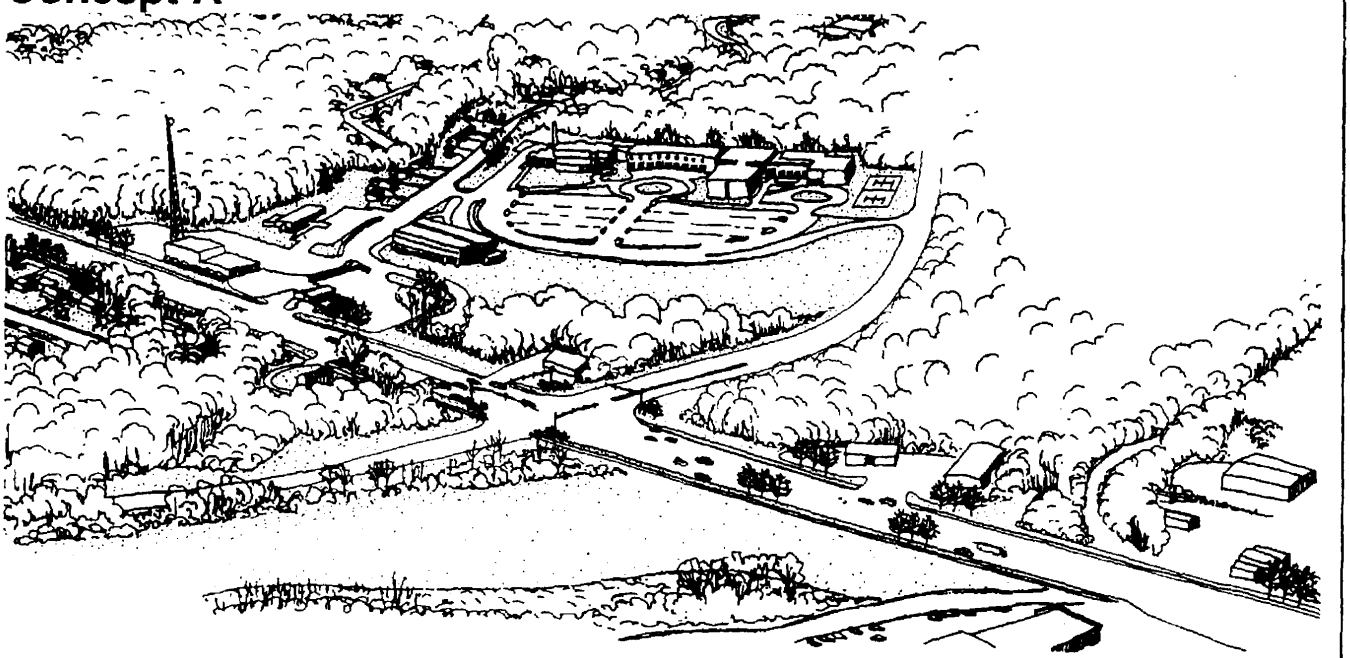
	Cross-Section	Median Treatment	Displacements	Hours of Congestion	Economics	Roadway & R.O.W. Cost (millions)
	Baseline 	**Painted**	**0**	**7**		
	Concept A 	**Painted**	**1-5**	**6**	**Slightly Worse**	**$25**
*	**Concept B** 	**Raised**	**6-10**	**3**	**Much Better**	**$35**
	Concept C 	**Raised**	**11-15**	**3**	**Better**	**$40**
	Concept D 	**Raised**	**11-15**	**3**	**Better**	**$50**

R.O.W. = Right-of-way

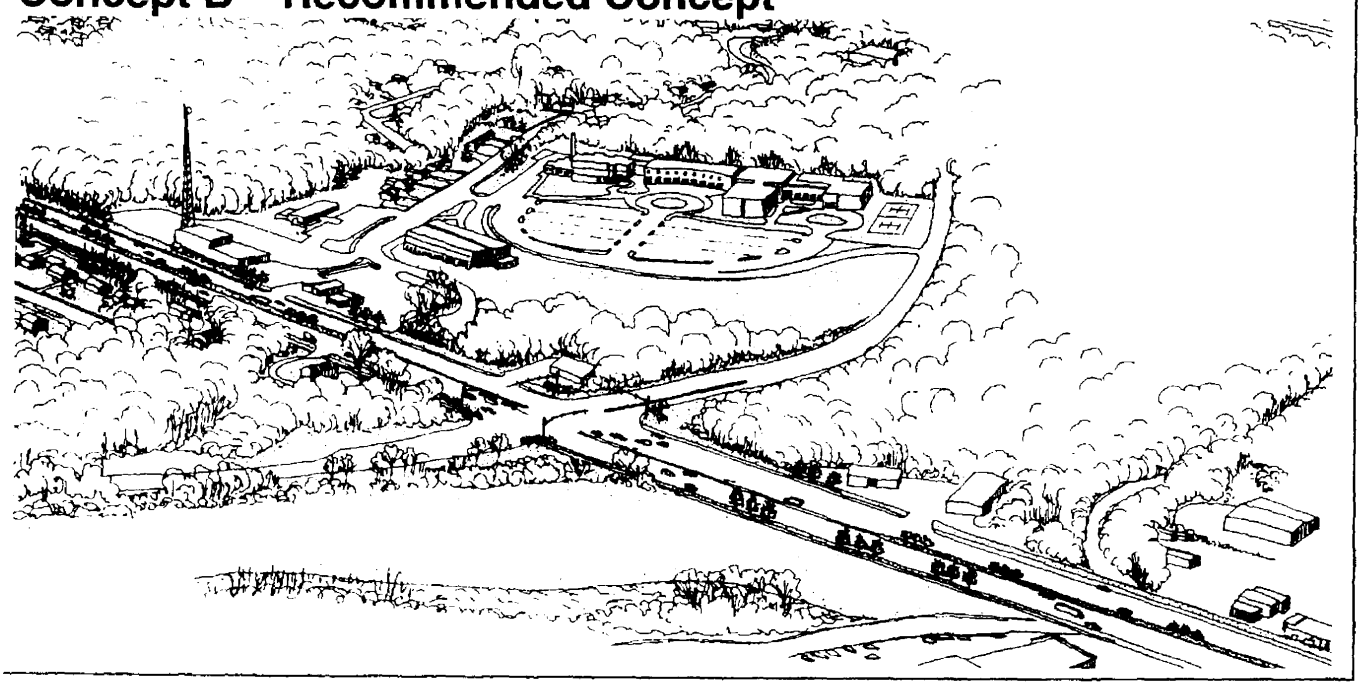
* Indicates Recommended Concept

SEGMENT III

Concept A



Concept B – Recommended Concept



Illustrative sketch looking southwest at Cardinal Drive

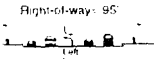
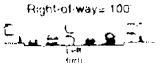
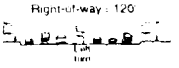
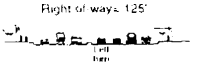
SEGMENT IV- WOODBRIDGE

Dale Boulevard to Occoquan River

The existing cross-section in Woodbridge is a four-lane section with occasional painted left-turn lanes and several sections of two-way left-turn lanes in commercial districts. Concept A provides a continuous two-way left-turn lane (TWLTL) throughout the segment. Concept B adds a lane in each direction with a TWLTL. Concept C is also a six-lane section but has a raised median. Concept D provides for two lanes in each direction and two center reversible lanes.

Concept C is the recommended concept in Woodbridge because it best balances the traffic operational requirements with the need to improve the visual image and enhance economic development opportunities.

- Traffic forecasts and analyses show that a six-lane roadway is the appropriate size for Route 1 to serve local traffic. The amount of traffic using Route 1 if I-95 had unlimited capacity was estimated at 50,000 to 55,000 vehicles per day– a level requiring a six-lane facility.
- The Baseline and Concept A have 4 and 12 hours of congestion each day in 2020 in southern Woodbridge and northern Woodbridge, respectively. The corresponding congestion for Concepts B and C decrease to 2 hours per day and 10 hours per day. Under Concept D the hours of congestion further reduce to 0 and 7.
- An interchange should be provided at Route 123. Interchanges at Opitz Boulevard and Prince William Parkway are not included in the Recommended Concept.
- Concepts A and B do not maximize safety because of the painted median. Further, Concept B's TWLTL does not really provide convenient access to businesses due to high volumes of traffic opposing left turns.
- Concept D's reversible lane scheme suffers from traffic operational problems due to conflicts with left turning vehicles.
- Visual impacts for Concept A are similar to Baseline (existing). Concept B is much worse because of a wider road with no median plantings. Concept D has the best visual impact because of the double planted medians. Concept C enhances the visual image of Route 1 in Woodbridge because of the median landscaping.
- Economically, Concept C is the best because it enhances image, maintains accessibility to businesses, and maximizes the opportunity for quality development.

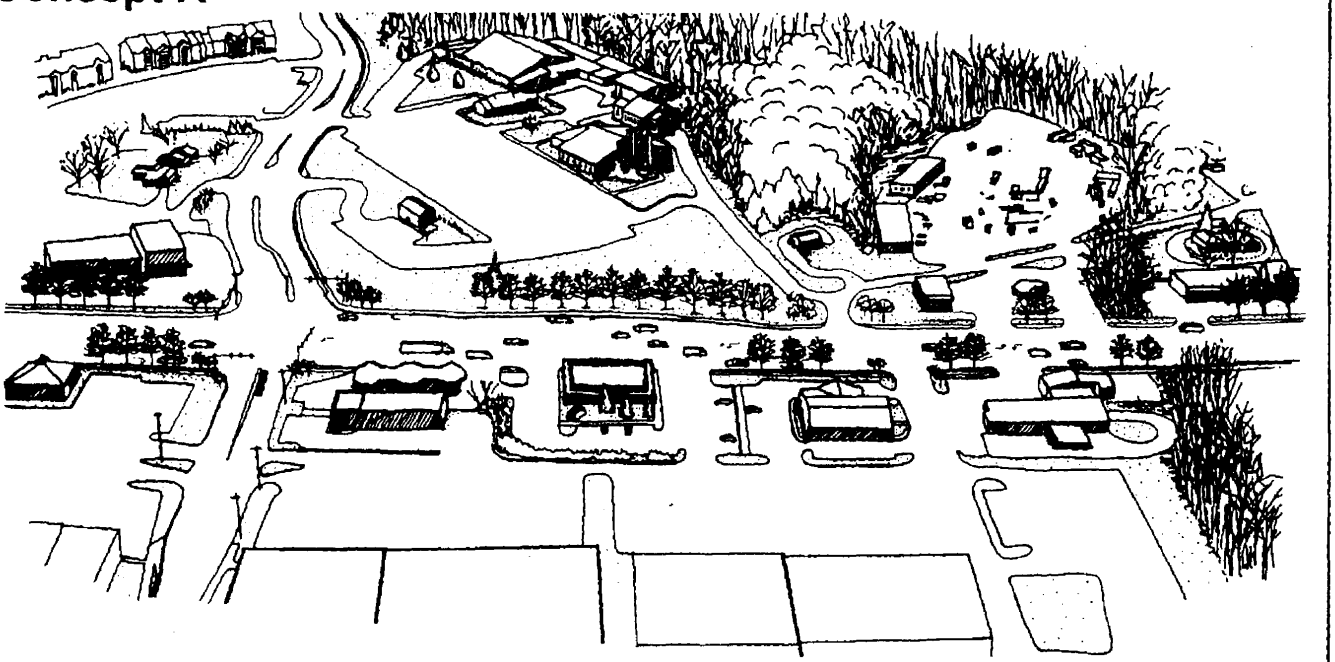
	Cross-Section	Median Treatment	Displacements	Hours of Congestion [1]	Economics	Roadway & R.O.W. / Interchange(s) / Cost (millions)
Baseline		None/ Painted	0	12 / 4		
Concept A		Painted	11-15	12 / 4	Slightly Worse	$20 / $45
Concept B		Painted	26-30	10 / 2	Worse	$30 / $45
* Concept C		Raised	36-45	10 / 2	Much Better	$35 / $45
Concept D		Raised	41-50	7 / 0	Better	$45 / $50

R.O.W. = Right-of-way
* Indicates Recommended Concept

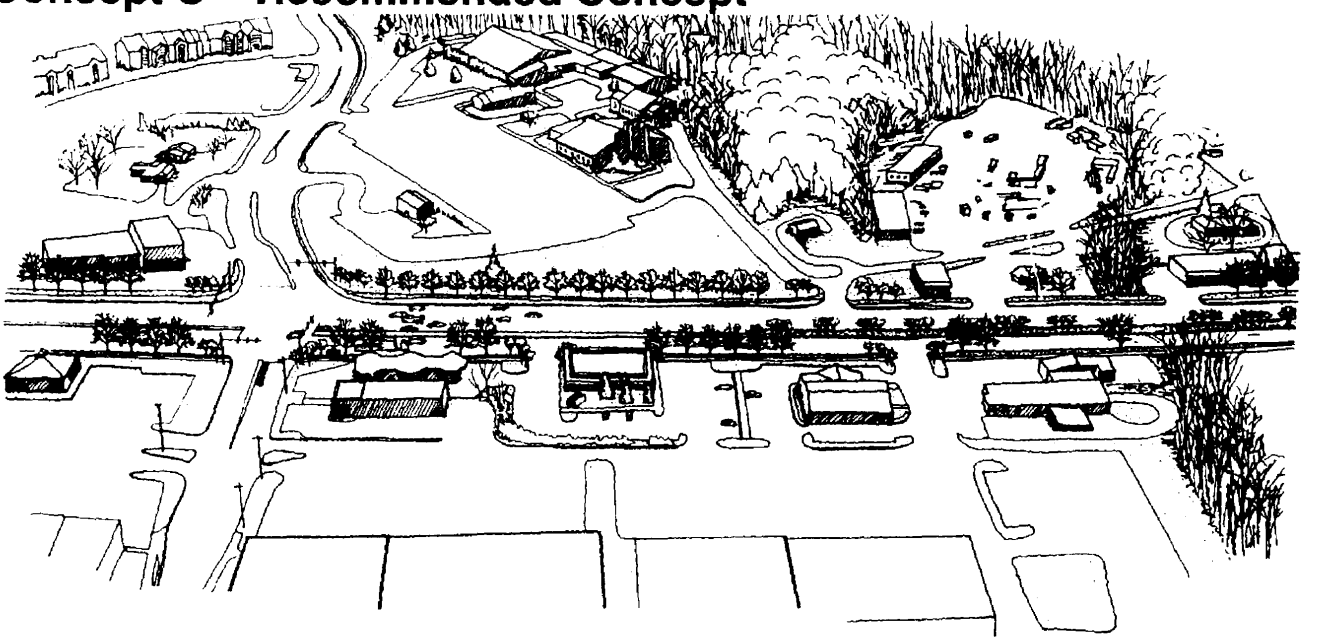
[1] 12/4 Denotes hours of congestion near Occoquan Road and Opitz Boulevard, respectively

SEGMENT IV

Concept A



Concept C – Recommended Concept



Illustrative sketch looking west at the intersection of Route 1 and Mary's Way

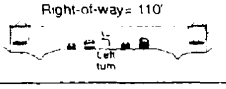
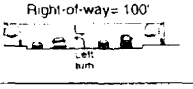
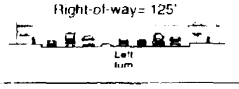
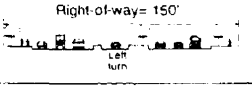
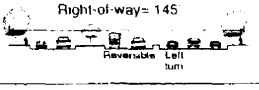
SEGMENT V - LORTON

Occoquan River to Telegraph Road

The existing cross-section is a four-lane undivided highway with painted left turn lanes at most major driveways and intersections. Concept A adds a continuous two-way left-turn lane (TWLTL). Concepts B and C add a lane in each direction with left turn lanes and raised median. Concept C incorporates an extra-wide median. Concept D adds two reversible lanes in the center.

Concept B is the recommended concept in Lorton because it enhances traffic operations, safety, and appearance with minimal displacements.

- The estimated hours of congestion at the Occoquan River crossing for Baseline and Concept A is 9 hours; for Concepts B and C, 7 hours; and Concept D, 6 hours. At Lorton, the corresponding numbers are 8, 8, and 7 hours of congestion per day, respectively.
- An interchange should eventually be provided at Telegraph Road to further reduce congestion.
- Concepts A and B cause 1-5 displacements while Concepts C and D cause 6-10 displacements.
- Concepts B, C, and D have similar visual character and consistency and community impacts.
- The center reversible lanes under Concept D has the lowest hours of congestion, but is more costly and causes more displacements than Concept B. The center reversible lanes also present operational difficulties for left turn lanes.
- Concepts B, C, and D enhance image and economic climate in Lorton.

	Cross-Section	Median Treatment	Displacements	Hours of Congestion [1]	Economics	Roadway & R.O.W. / Interchange(s) Cost (millions)
Baseline		None/ Painted	0	9/8		
Concept A		Painted	1-5	9/8	Same	$25 / $35
* Concept B		Raised	1-5	7/8	Much Better	$30 / $40
Concept C		Raised	6-10	7/8	Much Better	$35 / $40
Concept D		Raised	6-10	6/7	Slightly Better	$40 / $45

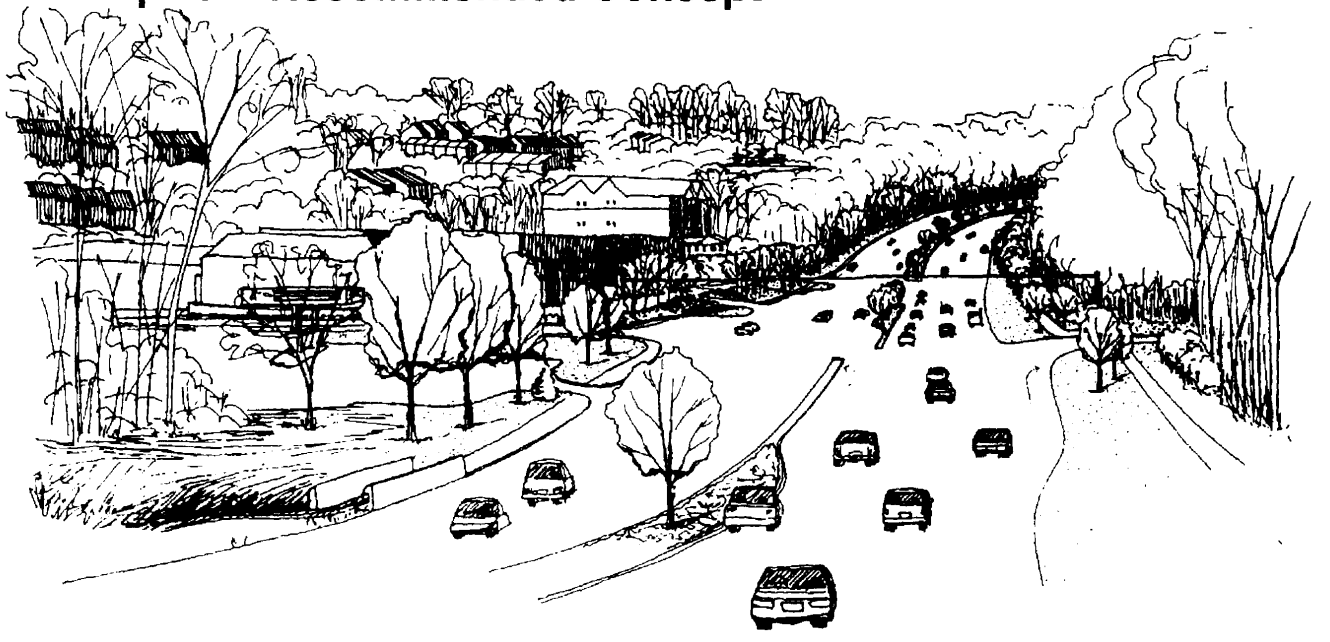
R.O.W. = Right-of-way

* Indicates Recommended Concept

[1] 9/8 Indicates hours of congestion at the Occoquan River crossing and Lorton, respectively

SEGMENT V

Concept B – Recommended Concept



Illustrative sketch looking north at Armistead Road

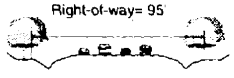
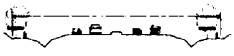
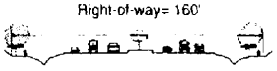
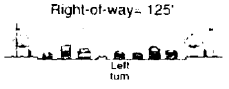
SEGMENT VI - FORT BELVOIR

Telegraph Road to Route 235 South/Old Mill Road

The Route 1 corridor through Fort Belvoir is a 4-lane undivided highway. Concept A adds a raised median. Concept B adds one lane per direction with a raised median and shoulders/ditches. Concept C is also a six-lane section with shoulders/ditches but has a wide, flush planted median. Concept D is a six-lane section with raised median and curb and gutter. Concept D also includes reversible lanes south of the Fairfax County Parkway.

Concept D (without reversible lanes) is the recommended concept through Fort Belvoir because it enhances traffic operations, has the minimum right-of-way requirement, and causes minimum displacements while enhancing the economic and visual image of the corridor.

- Concepts B, C, and D reduce congestion to 3 hours per day in 2020 due to the added through lanes. Baseline and Concept A have 7 and 6 hours of congestion per day.
- Interchanges should be provided at Fairfax County Parkway and Woodlawn Road.
- Concept C requires the widest right-of-way (200') and Concept D the narrowest (125').
- Concept D has the least impact on environmental resources, causes the least displacements, and has only moderate encroachment on woodlands.

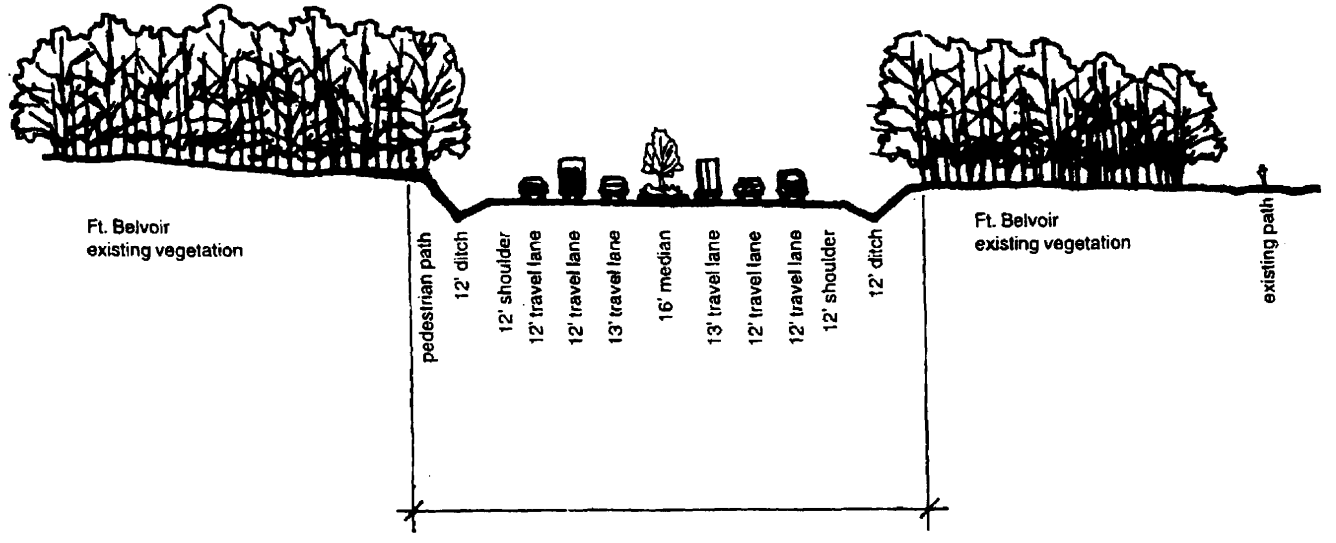
	Cross-Section	Median Treatment	Displacements	Hours of Congestion	Economics	Roadway & R.O.W. / Interchange(s) Cost (millions)
Baseline		None	0	7		
Concept A		Raised	6-10	6	Slightly Better	$20 / $45
Concept B		Raised	6-10	3	Much Better	$30 / $45
Concept C		Graded	6-10	3	Same	$35 / $45
* **Concept D**		Raised	1-5	3	Much Better	$30 / $45

R.O.W. = Right-of-way

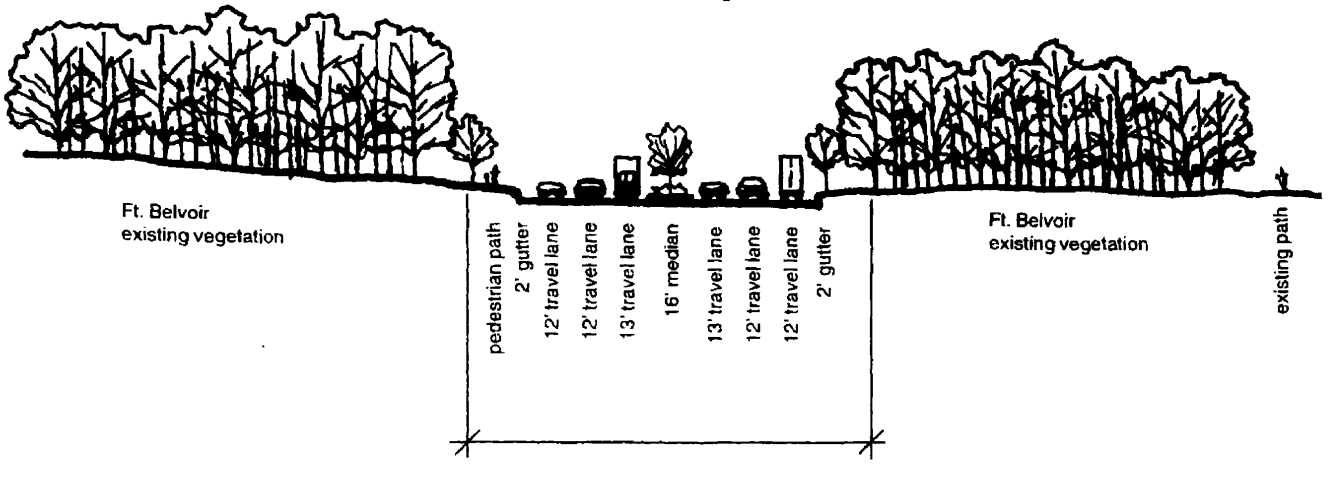
* Indicates Recommended Concept

SEGMENT VI

Concept B



Concept D – Recommended Concept



SEGMENT VII - WOODLAWN TO ALEXANDRIA

Routes 235 South/Old Mill Road to Fairfax County/Alexandria City Line

The Route 1 corridor in this segment of Fairfax County has two basic cross-sections. South of Little Hunting Creek, the roadway is a four-lane undivided highway. North of Little Hunting Creek, the roadway is essentially a six-lane divided section with a raised median. Concept A is a six-lane roadway plus a median reversible lane for transit buses only. Concept B provides a six-lane cross-section plus two center reversible lanes for buses and other high occupancy vehicles (HOV). Concept C provides an eight-lane roadway including a concurrent HOV lane on the right in the peak direction during each peak period in the northern section. The southern section is a six-lane cross-section with a raised median. Concept D provides a median separated express-local concept with left lane HOVs in the express lanes. Concept C1 assumed a six-lane cross-section with a raised median throughout the full length of this segment.

Concept C with minimal service roads is the recommended concept in Segment VII. Analyses show that additional through roadway capacity is needed to accommodate travel demands and reduce congestion to tolerable levels. Of the alternative concepts examined that reduced congestion, Concept C requires the least right-of-way and fewest displacements.

- As compared to 1995, the growth in travel demand increases the hours of congestion in the year 2020 significantly for the Baseline scenario. The added congestion will make the area less attractive for business and more uncomfortable and difficult to use by the local residents.

Hours of Congestion		
Location	**1995**	**2020 Baseline**
South of Capital Beltway	4 hrs.	6 hrs.
Hybla Valley	0 hrs.	6 hrs.
Woodlawn	0 hrs.	7 hrs.

- Interchanges should be provided at North Kings Highway and Huntington Avenue/Fort Hunt Road.

- Concept A and Concept C1, both of which maintain 3 lanes in each direction for non-HOV vehicles, do not significantly reduce congestion in 2020 in the northern section. Aggressive transit improvements alone provide only minor reductions in congestion.

- A six-lane roadway south of Little Hunting Creek, results in little if any congestion in 2020.

- To maintain accessibility for the residents and businesses, added through roadway capacity is needed to reduce the hours of congestion in the northern section of Segment VII.

- Concept B's center reversible HOV lanes suffer from operational problems and reduced effectiveness due to conflicts with left turns. The difficulty with left turns also reduces accessibility to businesses.

- The double medians of Concept B do provide more space for landscaping and result in the best visual appearance.

- Concept D requires substantial right-of-way and displacements and suffers from similar disadvantages related to left turns as Concept B.

- Of the concepts that reduce hours of congestion, Concept C requires the least right-of-way and displacements.

- Slightly wider medians in selected areas should be used to improve the appearance of Concept C.

- Compared to exclusive express lanes, the effectiveness of the right lane HOV lanes will be less due to impedance from right turning vehicles. However, travel time savings on the HOV lane will come primarily from a "queue jumper" effect, where the delays at signals would be reduced, due to shorter queues in the HOV lanes. It may also be possible to gain further travel time savings for buses through the use of signal pre-emption that extends the green time for Route 1.

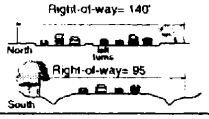
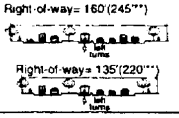
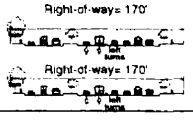
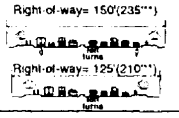
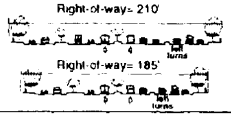
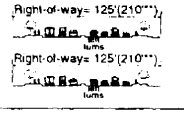
- The implementation of effective service roads on a widespread basis is not possible without substantial right-of-way impacts. Emphasis must be placed on intergrated site plans that provide

SEGMENT VII

quality inter-parcel access and public access easements. If quality interparcel access is not provided, property owners may be required to provide service roads.

- Based on the drawings prepared by the TransCore team, additional right-of-way would not be required along more than 45 percent of Route 1 in the eight-lane section.

- Added capacity in the form of HOV will maximize person throughput, provide incentive for carpooling, support transit, and be consistent with regional HOV policies. These HOV lanes will connect to anticipated HOV lanes on the Capital Beltway, Woodrow Wilson Bridge, and Route 1 in the City of Alexandria.

	Cross-Section	Median Treatment	Displacements	Hours of Congestion [1]	Economics	Roadway & R.O.W. / Interchange(s) Cost (millions)
Baseline		North-Raised South-None/Painted	0	7 / 6 / 6		
Concept A		Raised	46-50	7 / 5 / 5	Better	$90 / $100
Concept B		Raised	51-60	0 / 3 / 3	Much Better	$90 / $100
* **Concept C**		Raised	41-45	0 / 3 / 3	Much Better	$80 / $100
Concept D		Raised	141-150	1 / 2 / 1	Slightly Better	$115 / $100
Concept C1* **		Raised	16-20	0 / 7 / 7	Slightly Better	$40 / $100

R.O.W. = Right-of-way

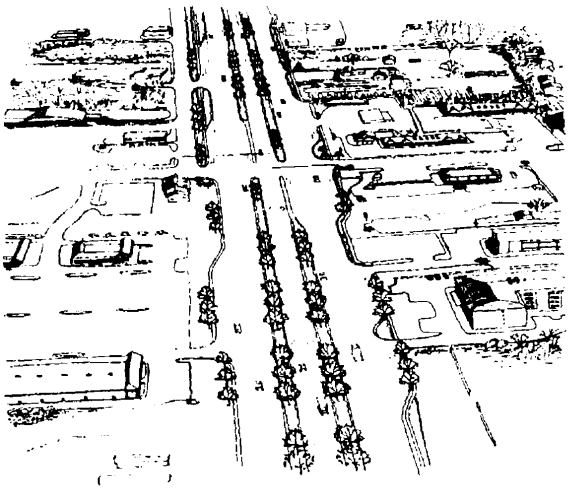
* Indicates Recommended Concept

** Indicates R.O.W. width with service roads on both sides

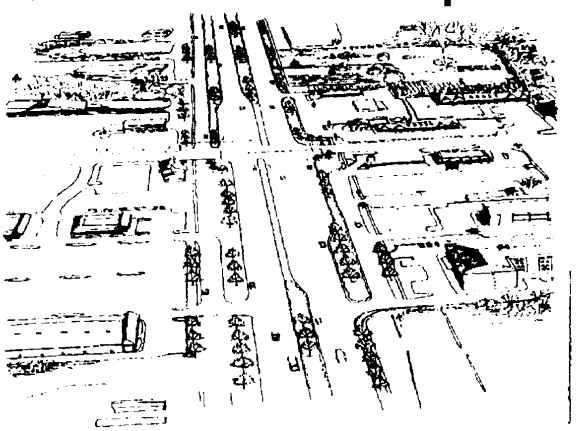
*** Concept C1 is a variation of Concept C. Concept C1 has 6 lanes throughout Segment VII. General right-of-way widths are shown. A wider right-of-way may be needed at some intersections and interchanges.

[1] Indicates hours of congestion South of Rt. 235, North of 235 and South of Capital Beltway, respectively

Concept B



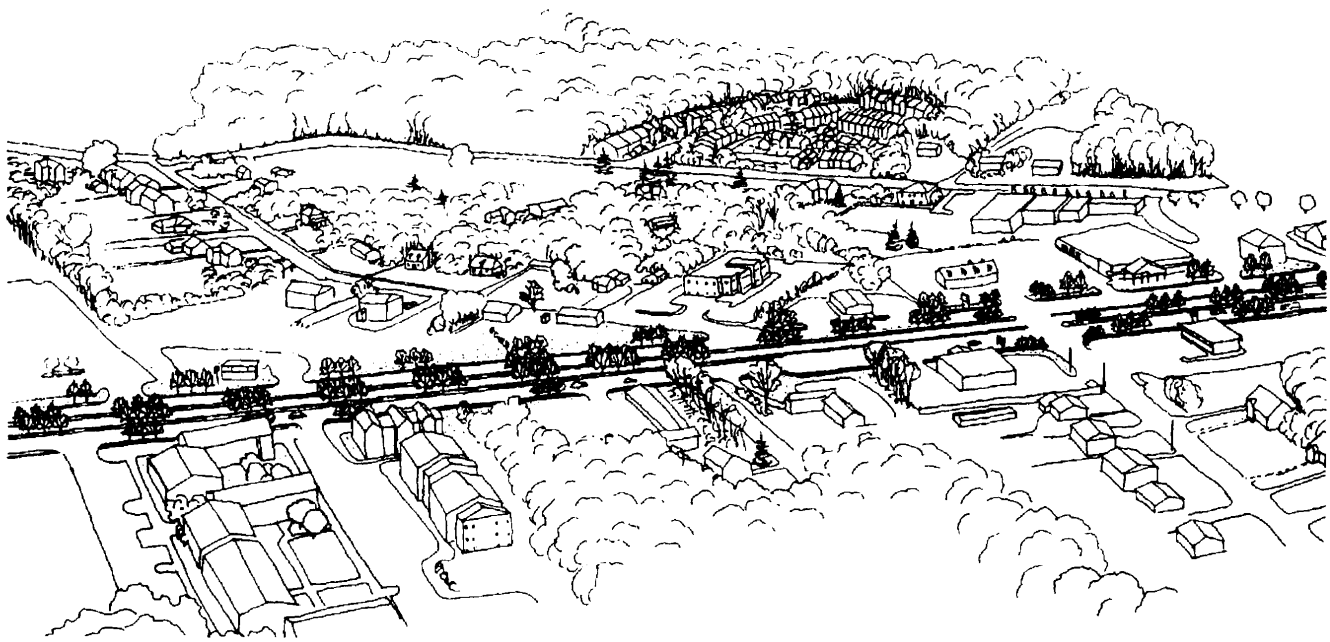
Concept C
Recommended Concept



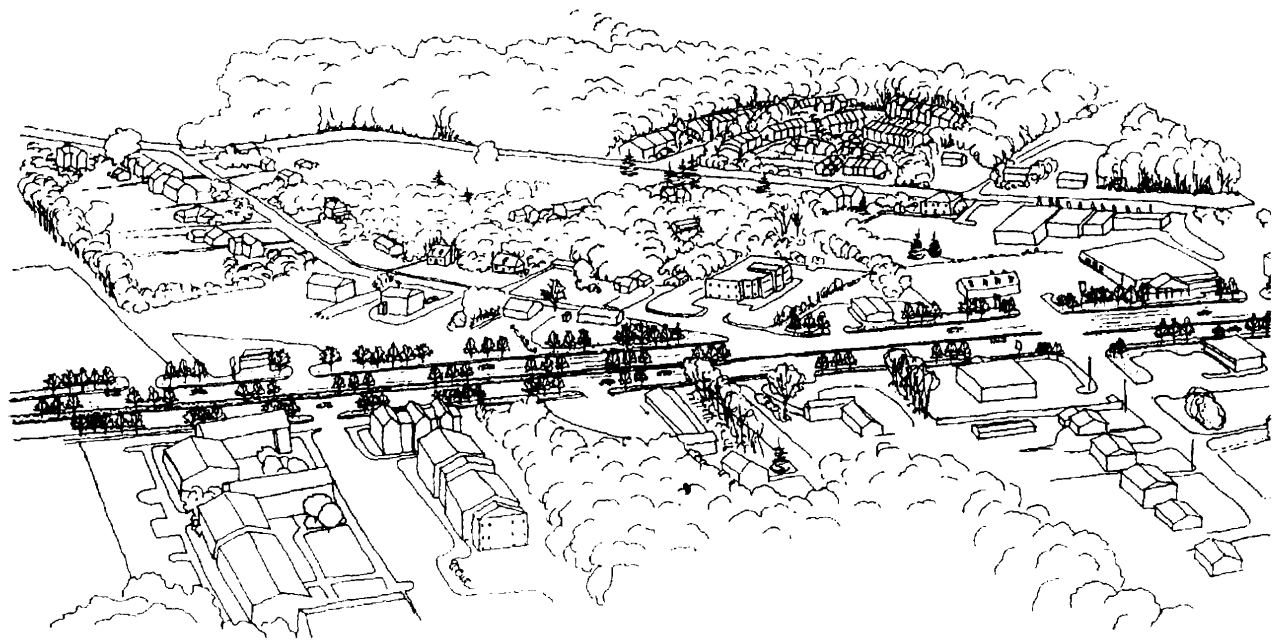
Illustrative sketch looking north at the intersection of Route 1 and Cooper Road

SEGMENT VII

Concept B

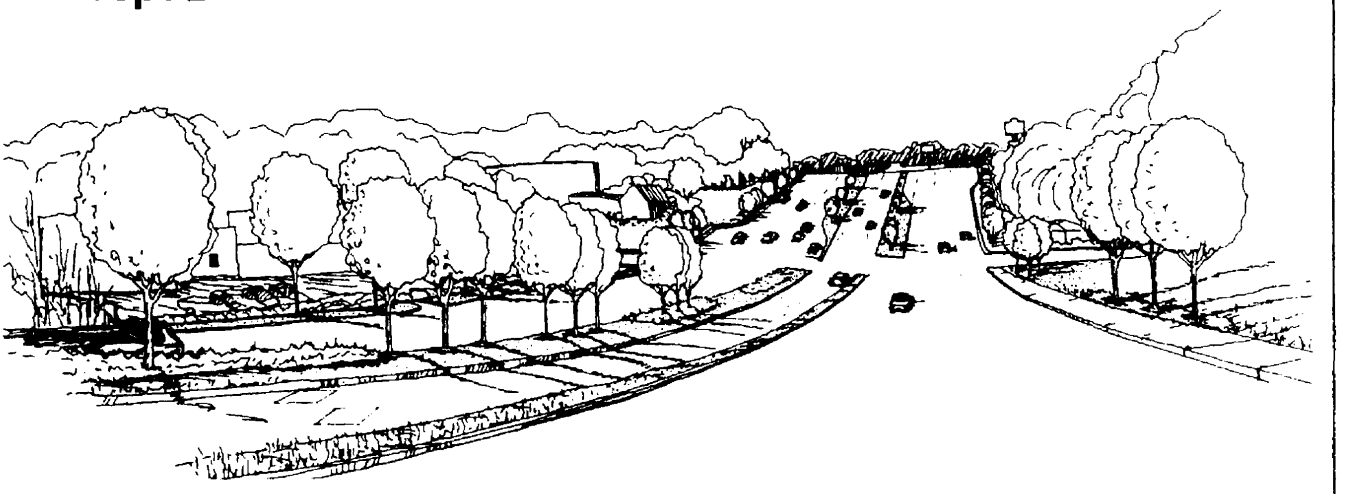


Concept C – Recommended Concept

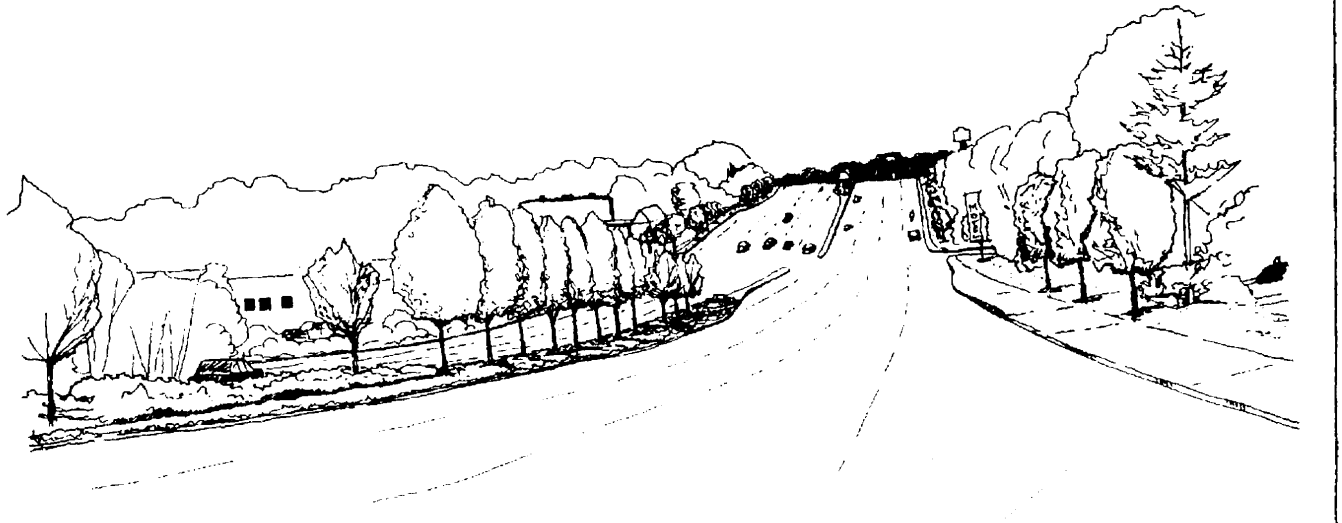


strative sketch looking west at the intersection of Route 1 and Franklin Street

Concept B



Concept C – Recommended Concept



Illustrative sketch looking south at the intersection of Route 1 and Quander Road

CHAPTER 6. RECOMMENDATIONS

INTRODUCTION

This Chapter describes the recommendations of the Route 1 Corridor Study. The various components of the recommended concept are described. This concept is based on a horizon year of 2020. Guidelines to be followed during planning and implementation are also presented. The chapter concludes with a recommended implementation priority for improvements. The concept, guidelines, and priorities represent the recommended Route 1 Corridor Plan.

The Recommended Plan for the corridor is based on the findings of the evaluation process described in the previous Chapter. The Plan is a combination of the best parts of each of the concepts considered and balances multiple objectives to provide an overall positive impact on the corridor.

The recommended concept has been endorsed by the Steering Committee, Prince William and Fairfax County Boards of Supervisors (BOS) and Dumfries Town Council. The Southeast Fairfax Development Corporation (SFDC) and the Mount Vernon Council of Civic Associations (MVCCA) also passed resolutions endorsing the recommended concept, with conditions. Copies of the relevant resolutions are included in Appendix C.

CONTEXT OF THE PLAN

The purpose of the Plan is to guide transportation improvements through the year 2020 in a corridor where more than just transportation system improvements are needed. Clearly, improvement of Route 1 presents challenges beyond moving people and goods. Improvements to the transportation system are one important element of making Route 1 a better place. The Plan provides the long-range vision of the transportation system within which projects are developed and implemented.

The Plan provides guidance for changes needed in the corridor. Some of these changes are needed to address existing and anticipated problems. Other changes will occur as the corridor evolves in response to the trends of the current time. Strong guidance toward a desired condition is one ingredient that has not always been included in the mixture that has created today's Route 1.

The corridor has always been evolving. In the 1700's, King's Highway provided access to the seaports at Colchester and Dumfries. The roots of the current character were begun with the construction of the RF&P Railroad and then U.S. Route 1 in the 1800's and 1900's, respectively. The installation of military facilities at Quantico and Fort Belvoir during this time established a strong Federal presence in the corridor that continues today. In the 1950's and 1960's, the construction of Shirley Highway, I-95, and the Capital Beltway changed the nature of travel in the corridor and further altered its character.

Change has continued in recent time as well. The construction and extension of HOV lanes on Shirley Highway keeps the regional core accessible to southern portions of the corridor. The extension of the Metrorail system to Huntington has induced high density development in the northern portion of the corridor. The implementation of commuter rail added a transportation and lifestyle choice not previously available.

The future holds promising changes to both land use and transportation characteristics. There are areas available for development that will help create the critical mass needed to support diverse, quality development and redevelopment. These include the Cherry Hill peninsula, Belmont, Lorton, and Fort Belvoir.

Transportation projects are planned that improve connections between the corridor and areas to the west. These projects include improvements to Route 234, Cardinal Drive, Route 123, Lorton Road, Woodlawn Road and extensions of Dale Boulevard, the Prince William Parkway, and the Fairfax County Parkway. These improved connections to the population and employment areas to the west will increase the attractiveness of the Route 1 corridor.

Improvements to adjacent and parallel transportation facilities are also part of the context of this plan. Improvements to the Capital Beltway and the Woodrow Wilson Bridge are necessary to maintain the accessibility of the corridor. The completion of interchange improvements at I-95/I-395/I-495 in Springfield is needed to ensure Route 1 can function in its appropriate role in the system. Widening parallel roads, such as Telegraph Road in Fairfax County, is also assumed to provide needed travel capacity.

OVERVIEW

The Route 1 corridor has many positive qualities: varied shopping opportunities, unique recreation areas, and attractive historic sites. However, transportation system improvements are needed to address existing capacity and safety problems, meet increasing demand for travel, and help to revitalize portions of the corridor.

The Recommended Plan for the Route 1 corridor, therefore, includes improvements to all aspects of the transportation system. The Route 1 roadway and intersections must be widened and made more efficient. Bus and train service needs to be improved and complemented with improved pedestrian and bicycle facilities. Measures to encourage more ridesharing are also required.

The improvements must address the transportation needs, help to improve the sense of community, and enhance economic development opportunities. Thus, the Recommended Plan provides a context for making transportation improvements that enable the latter two objectives to be achieved. The design of roadway improvements must recognize the need to improve the appearance of the corridor and assist with redevelopment.

VDOT and the Counties must work closely together throughout the development and implementation of projects to achieve all that is desired and possible for Route 1. Transportation improvements provide substantial opportunities for the Counties to leverage other initiatives in the corridor.

The Route 1 transportation system must continue to serve a dual role while accommodating expected growth in the corridor. The roles of Route 1 are:

1) To provide access to the residences, businesses, and other development in the corridor.
2) To provide for travel between Route 1 and origins and destinations outside the corridor

Both roles are important. The surrounding communities feel much "ownership" of Route 1 as it is where they go about much of their day-to-day lives. Likewise, Route 1 is an important facility for the movement of people and goods between the corridor and the regional transportation system.

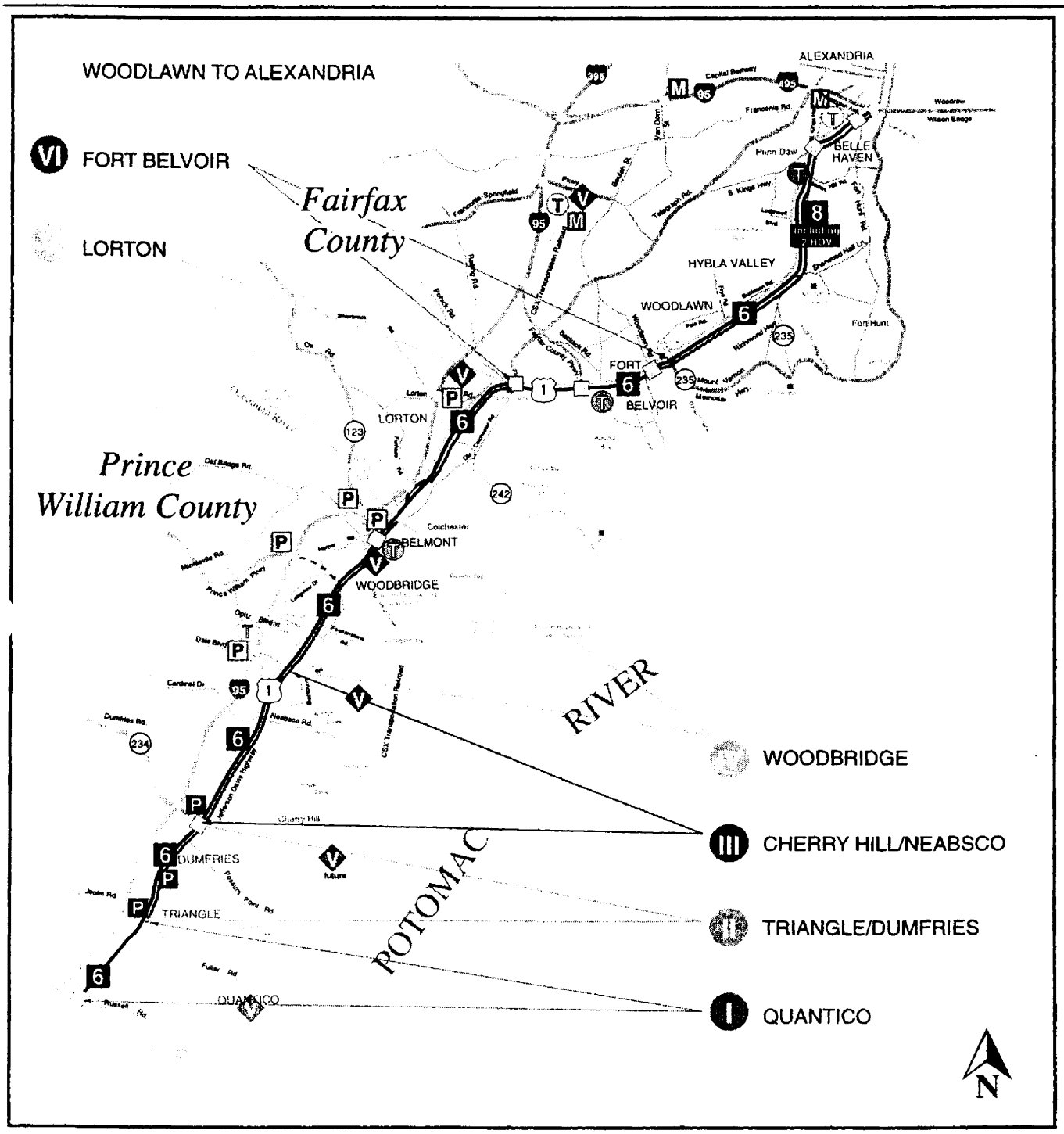
The following list and Exhibits 6-1 and 6-2 summarize the Recommended Plan.

Elements of the Plan are then described in more detail for roadway design, transit and ridesharing, land use and urban design, and economic actions.

The key features of the plan are consistent with both Counties' Comprehensive Plans and include:

- A six-lane boulevard with streetscaping throughout the corridor, except:
  - An eight-lane boulevard including two lanes for high occupancy vehicles (HOV) is recommended for the 4.5 miles between Route 235 North/Buckman Road and the Beltway.
  - As part of final design, a detailed analysis that involves affected parties should be conducted to confirm that operating the seventh and eighth lanes as HOV lanes is the most effective strategy.
- Raised median for landscaping and left turns (16 feet wide typically) with minimum spacing between median breaks of 700 to 1000 feet.
- Quality inter-parcel access and public access easements, through integrated site plans, between properties are preferred rather than service roads.
- Continuous sidewalks/paths along Route 1 that connect with businesses, neighborhoods, and transit stops.
- Accommodation for on-street bicycle usage.
- Improved roadway lighting and signing.
- "Smart Travel" systems including coordinated traffic signals, variable message signs on Route 1, real time traveler information displays at transit centers, and standard transit fare media for the region.
- Enhanced local and express bus service oriented to existing and new transit centers with coordinated schedules. A more detailed transit center location study should be conducted and should consider sites beyond those identified herein.
- Feeder bus service to commuter rail stations.
- Transit route maps and timetables at all bus stops.
- Shelters, benches, and electronic displays at more heavily used bus stops.

xhibit 6-1. Overview of Recommended Plan



LEGEND

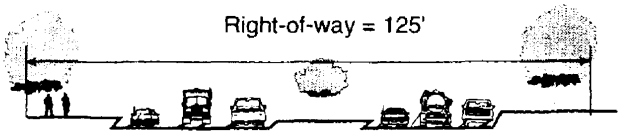
Path (10 feet wide)	New or Improved Interchange	New Transit Center
Sidewalk	Existing Park-and-Ride Lot	VRE Commuter Rail Station
Planned Roadway	New or Improved Park-and-Ride Lot	Metrorail Station
Existing Interchange	Existing Transit Center	Total Through Lanes on Route 1

Exhibit 6-2. Overview of Recommended Plan – Segment Descriptions

I QUANTICO

Stafford County Line to Route 619 (Joplin Road/Fuller Road)

6-Lane Landscaped Boulevard
Raised Median



Recommended Plan Description

- Reconstruct interchange at Russell Road.
- Relocate Iwo Jima Memorial further from Route 1.

Cost

- Roadway and right-of-way = $20 million.
- Russell Road interchange = $5 million.

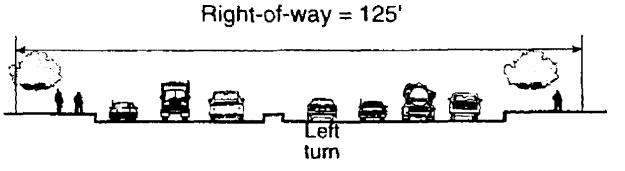
Findings

- Reduces 2020 congestion from 6 hours to 0 hours per day (as compared to Baseline).
- Requires no displacements but requires land from Marine Corps Base and Locust Shade Park.
- Reduces tree buffer between roadway and Quantico housing.
- Curb and gutter minimizes required right-of-way.

II TRIANGLE/DUMFRIES

Route 619 (Joplin Road/Fuller Road) to Route 234

6-Lane Landscaped Boulevard
Raised Median



Recommended Plan Description

- Relocate southbound Route 1 to Fraley Boulevard in Dumfries.
- Provide new/expanded park-and-ride lots.
- Provide demand responsive transit service for the less densely populated areas.
- Construct interchange at Route 234.

Cost

- Roadway and right-of-way = $25 million.
- Route 234 interchange = $25 million.

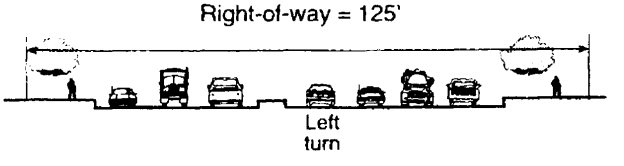
Findings

- Reduces 2020 congestion from 6 hours to 2 hours per day (as compared to Baseline).
- Requires 41 to 50 displacements, mostly in Triangle.
- Provides catalyst for higher quality development in Triangle.
- Median improves visual appearance and supports property consolidation.
- Relocation of southbound Route 1 to Fraley Boulevard produces positive economic impacts on Main Street businesses and the overall Town because it enables the creation of a pedestrian-oriented atmosphere.

III CHERRY HILL/NEABSCO

Route 234 to Dale Boulevard

6-Lane Landscaped Boulevard
Raised Median



Recommended Plan Description

- Implement fixed route local and express bus service with connections to Dale City Transportation Center, Woodbridge transit center (future), Potomac Mills, and Manassas.
- Provide feeder bus service to the future Cherry Hill VRE commuter rail station.

Cost

- Roadway and right-of-way = $35 million.

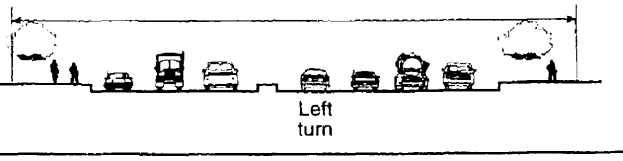
Findings

- Reduces 2020 congestion from 7 hours to 3 hours per day (as compared to Baseline).
- Requires 6 to 10 displacements.
- Boulevard appearance improves image of the segment and supports plans for high quality nodal development.

IV WOODBRIDGE

Dale Boulevard to Occoquan River

6-Lane Landscaped Boulevard
Raised Median



Recommended Plan Description

- Construct interchange at Route 123.
- Provide a transit center at the Woodbridge VRE station.
- Implement fixed route local and express bus service with connections to Dale City Transportation Center, Fort Belvoir transit center (future), Potomac Mills, and Manassas.
- Provide feeder bus service to the Woodbridge and Rippon VRE commuter rail stations.

Cost

- Roadway and right-of-way = $35 million.
- Route 123 interchange = $35 million.
- Occoquan River bridge widening = $10 million.

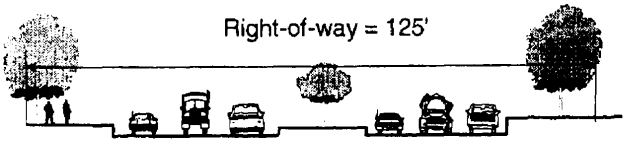
Findings

- Reduces congestion from 4 hours to 2 hours per day in 2020 (as compared to Baseline) on Route 1 near Opitz Boulevard.
- Reduces congestion from 12 hours to 10 hours per day in 2020 (as compared to Baseline) on Route 1 near Occoquan Road.
- Requires 36 to 45 displacements.
- 6 lanes on Route 1 is needed to serve local traffic travelling to and from destinations in the corridor.
- Raised median with landscaping is preferred over a painted median because it is safer for vehicles and pedestrians and greatly improves the appearance of the roadway.
- Raised median restricts access to midblock parcels but encourages parcel consolidation and higher quality development.

V LORTON

Occoquan River to Telegraph Road

6-Lane Landscaped Boulevard
Raised Median



Recommended Plan Description

- Implement fixed route local and express bus service with connections to Woodbridge transit center (future), Fort Belvoir transit center (future), and Franconia-Springfield Transportation Center.
- Provide feeder bus service to the Lorton VRE commuter rail station.
- Provide demand responsive transit service for the less densely populated areas.

Cost

- Roadway and right-of-way = $30 million.
- CSX railroad/I-95 interchange = $15 million.
- Telegraph Road Interchange = $25 million.

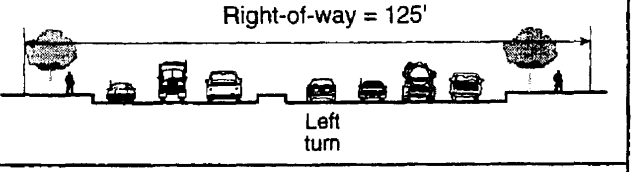
Findings

- Reduces congestion from 9 hours to 7 hours per day in 2020 (as compared to Baseline).
- Requires 1 to 5 displacements.
- Roadway is not shifted closer to Pohick Church.
- Boulevard appearance improves image of the segment and supports plans for high quality nodal development.

VI FORT BELVOIR

Telegraph Road to Route 235 South/Old Mill Road

6-Lane Landscaped Boulevard
Raised Median



Recommended Plan Description

- Construct interchanges at Fairfax County Parkway and Woodlawn Road when required.
- Provide a transit center at Fort Belvoir
- Implement fixed route local and express bus service with connections to Woodbridge transit center (future), Beacon Mall transit center (future), and Franconia-Springfield Transportation Center.

Cost

- Roadway and right-of-way = $30 million.
- Fairfax County Parkway interchange = $20 million.
- Woodlawn Road interchange = $25 million.

Findings

- Reduces congestion from 7 hours to 3 hours per day in 2020 (as compared to Baseline).
- Requires 1 to 5 displacements and requires land from Fort Belvoir and Woodlawn Plantation.
- Curb and gutter minimizes required right-of-way.

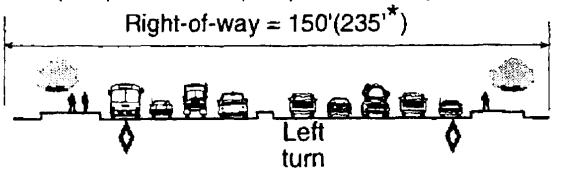
VII WOODLAWN TO ALEXANDRIA

Route 235 South/Old Mill Road to Fairfax County/Alexandria City Line

8-Lane Landscaped Boulevard
Including 2 HOV Lanes**
Raised Median

North Section

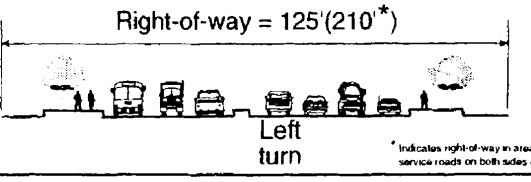
Route 235 (North)/Buckman Road (North) to Fairfax County/Alexandria City Line



6-Lane Landscaped Boulevard
Raised Median

South Section

Route 235 (South)/Old Mill Road to Route 235 (North)/Buckman Road (North)



**Effectiveness of HOV lanes to be re-evaluated as part of final decision

* Indicates right-of-way in areas with service roads on both sides of Route 1

Recommended Plan Description

- Construct interchanges at South Kings Highway and Huntington Avenue.
- Provide a transit center at Beacon Mall.
- Implement fixed route local and express bus service with connections to Fort Belvoir transit center (future) and Huntington Metro Station.
- Provide feeder bus service to the Huntington Metro Station.

Cost

- Roadway and right-of-way = $80 million.
- North/South Kings Highway interchange = $50 million.
  Huntington Avenue/Fort Hunt Road interchange = $50 million.

Findings

- Reduces congestion from 7 hours to 0 hours per day in 2020 (as compared to Baseline) in the southern portion.
- Reduces congestion from 6 hours to 3 hours per day in 2020 (as compared to Baseline) in the northern portion.
- Requires 41 to 45 displacements
- Additional person-moving capacity necessary to maintain accessibility in segment.
- Of concepts which add capacity, Concept C minimizes right-of-way needs and displacements.
- Limited opportunities for service roads without adverse economic impacts; quality "interparcel access" with integrated site plans required instead.

ROADWAY DESIGN FEATURES

This section describes the relevant design features for the roadway and roadside. Appendix D (separate volume) includes drawings of the recommended concept for the corridor.

General

The roadway improvements are designed to improve traffic operations, safety, and the appearance of the corridor. The improvements include an additional lane in each direction, provisions for streetscape elements, pedestrian and bicycle accommodations, transit amenities and utility relocation/burial.

The physical appearance of the roadway improvements will affect revitalization efforts in the corridor. Due to need for revitalization, the following segments have particularly high needs for sensitive design: Segment II (Triangle/Dumfries), Segment IV (Woodbridge), and Segment VII (Woodlawn to Alexandria).

The next step toward implementing improvements is for VDOT to conduct a study to refine the roadway design centerline. This will reduce the uncertainty for landowners along Route 1. For purposes of this planning study, the proposed centerline was assumed to be the same as the existing centerline. The new study should identify centerline adjustments that can reduce right-of-way impacts and facilitate redevelopment.

The centerline study will be a cooperative effort led by VDOT and include an active public involvement program. The County Boards of Supervisors, local landowners, those interested in and responsible for revitalization, and others will need to be involved throughout the study to develop consensus. The refined centerline could then be used as a basis for interim widening and final design of sections of Route 1. The Counties and/or redevelopment entities may need to conduct supplemental studies to identify redevelopment opportunity locations in revitalization areas.

Number of Through Lanes

From the Stafford County Line to the intersection with Route 235 North/Buckman Road, the Plan recommends three through lanes in each direction on Route 1. North of Route 235 North/Buckman Road, the Plan recommends four through lanes in each direction.

North of Buckman Road (North), the outside (right) lanes in each direction should be operated to maximize person movement in the corridor and support local and regional policies. At this time, analyses indicate that the most effective manner to operate these lanes is as HOV lanes. Current local and regional policies emphasize the need for providing incentives for non-single occupant auto travel, such as HOV lanes for carpools and buses. The HOV lanes recommended on Route 1 in the study corridor connect to existing and planned HOV facilities on the Capital Beltway, Woodrow Wilson Bridge, and Route 1 in the City of Alexandria. The Fairfax County Comprehensive Plan also includes HOV lanes on the northern section of the Route 1 study corridor. For all of these reasons, the HOV lanes are recommended in this Plan.

As part of the final design efforts, more detailed and updated analyses should be conducted to determine the most effective means of operating the additional seventh and eight lanes. These analysis efforts should involve those citizens that expressed concern and skepticism regarding the feasibility of operating these lanes as concurrent flow HOV lanes.

Roadway Cross-section and Right-of-way Requirements

As shown to the right and on previous pages, the basic roadway cross section is an urban, or closed, section with curb and gutter and a raised median with a curb. This type of cross-section minimizes required right-of-way and is appropriate for Route 1 in Prince William and Fairfax Counties. The cross-section includes vehicle lanes nominally 12 feet in width, where feasible, with appropriate offsets to curbs. The outside lanes of Route 1 should be oversized to accommodate shared use by bicyclists. This is in addition to the path on the west side of the roadway, because the two facilities accommodate different user groups.

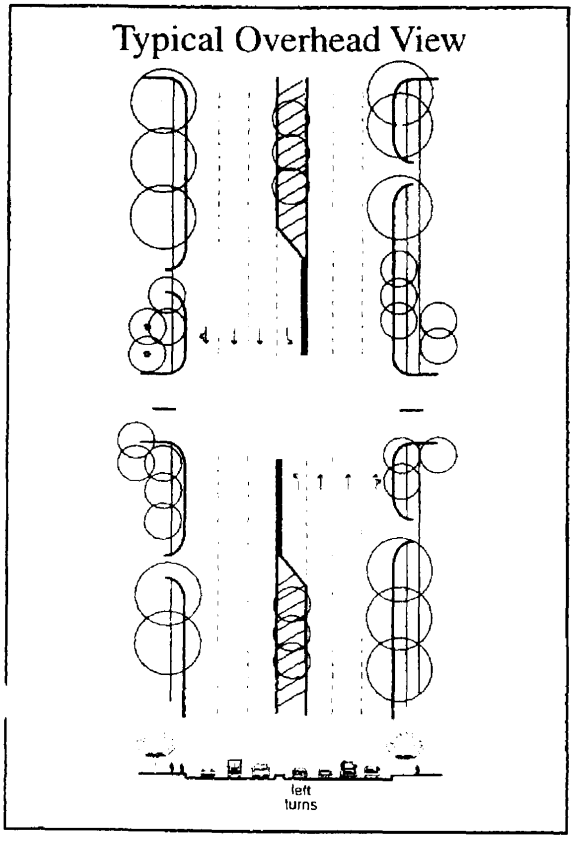
Portions of the cross-section outside the roadway are also an important part of the cross-section. These "bench" areas must accommodate the path and sidewalk; supports for traffic signs, traffic signals, and roadway/pedestrian lighting; streetscaping and landscaping elements; utilities; and other elements suc as bus shelters.

The competition for space will be most intense in areas where utilities are to be buried underground. A utility corridor must be identified that is coordinated and compatible with potential landscaping. Provisions should be made for the landscaping even if the installation of plantings is not done in conjunction with roadway construction. During design, consideration should be given to items such as cross conduits for watering systems in the median.

Stormwater management features, including retention ponds, must be designed to complement the desired character of the area. Retention ponds should be developed based on integrated site plans that are coordinated with roadway design.

A continuous path, 10 feet wide, is included throughout the corridor along the west side of Route 1. Sidewalks are included on the east side in all segments except through the Quantico and Fort Belvoir segments.

Standard median width is 16 feet. This width accommodates left turn lanes and provides adequate space for landscaping in median sections without left-turn lanes. Wider medians are appropriate in special areas (refer to the Land Use and Urban Design section) or in locations with "back-to-back" left-turn lanes. The additional width (typically four feet) provides space for landscaping adjacent to left-turn lanes and additional space for pedestrian refuge.



The right-of-way width for the basic roadway section is approximately 125 feet for the six-lane section and 150 feet for the eight-lane section. Additional right-of-way will be required at selected intersections, driveways, and other locations as warranted by capacity and safety considerations for the following seven items:

- Right-turn lanes
- Multiple left turn lanes
- Bus pull-outs
- Wider medians for additional pedestrian refuge and special landscaping treatments
- Interchanges
- Service roads where adequate interparcel access cannot be provided and maintained
- Traffic signal supports and cabinets.

Service roads, while providing beneficial, controlled public access away from the mainline lanes, are not a preferred element of this Plan. This is due to concerns for additional property impacts associated with their width and traffic operational problems that can occur at intersections. In addition, service roads present another barrier and more safety concerns for pedestrian crossings.

Integrated site plans that provide quality interparcel access and public access easements are, in general, preferred over service roads. If quality interparcel access is not provided, property owners may be required to provide service roads.

Access Management

The roadway facility must provide adequate access to properties while enabling safe and smooth traffic flow on Route 1. The community clearly expressed a desire to not widen Route 1 excessively. The projected level of traffic increases will strain the ability of even the widened roadway to function effectively. For Route 1 to function effectively as a six-lane arterial (eight-lanes in the northern 4.5 miles), the roadway must accommodate more vehicles per lane. This need and the existing safety problems require left turning traffic to be organized at selected locations. This is accomplished through the use of a raised median with left turn bays. In addition, the number of entrances on Route 1 should be reduced, primarily in Segments II, IV, and VII.

There are three primary keys to successful access management in the Route 1 corridor:

- Maintaining appropriate median break spacing
- Establishing quality inter-parcel access through integrated site plans
- Encouraging/enabling redevelopment and parcel consolidation

Median break spacing should be maintained at a minimum of 700 to 1000 feet, depending upon design speed. Reductions in this spacing should be discouraged for several reasons. First, adequate spacing between intersections results in smoother traffic flow and fewer conflicts due to spill back of traffic queues from downstream intersections. Second, reduced space between intersections result in less length for left turn lanes. Third, a short distance between intersections often results in "back-to-back" left turn lanes. This condition eliminates area for any significant landscaping in the median since the entire median area is used for left turn bays.

Interparcel access is vital to maintain adequate accessibility in the corridor and reduce the right-of-way needed. As noted above, there is not sufficient space for a service road system on a wide scale along Route 1. Connectivity between parcels is important to reduce turns to and from the Route 1 roadway.

In the long run, the primary means of reducing the number of entrances on Route 1 is through redevelopment. In the heavily developed sections of the corridor, there are some possibilities for consolidating driveways, sharing access, and simply closing entrances. However, due to existing small parcel sizes, substantial reductions may be limited.

Property consolidation allows for better on-site traffic circulation and eliminates the need for numerous access points to several smaller individual properties. The Economic Actions section describes actions that can be undertaken by the Counties to encourage redevelopment and revitalization. These actions will have a direct benefit on traffic flow as well as the economy of the area.

Interchange and Bridge Improvements

The increasing demand for travel in the corridor will likely require the reconstruction or construction of grade separated interchanges at eight locations along Route 1:

- Russell Road - reconstruction
- Route 234 (Dumfries Road/Potomac Parkway)
- Route 123 (Gordon Boulevard)
- Telegraph Road
- Fairfax County Parkway
- Woodlawn Road
- South/North Kings Highway
- Huntington Avenue/Fort Hunt Road.

The configuration of these interchanges will be developed during a preliminary design study for each location. The design of the interchanges should accommodate travel demand and, as appropriate, be sensitive to pedestrian accommodations, transit effects, local access impacts, visual appearance, historic sites, environmental features, and revitalization efforts.

For example, the area surrounding the South/North Kings Highway interchange has been identified as a key development node. If possible, the interchange configuration and features selected for this location should help to link both sides of Route 1 with public spaces in and around the interchange. The intent is to remove the Route 1 through traffic from the intersection. Turning traffic should be accommodate with a configuration that allows for safe, convenient, and pleasant pedestrian movements across the roadways.

There are several bridges that require reconstruction or replacement in the corridor. The major bridges include the following:

- *Occoquan River Crossing (Segment IV).* This high level bridge requires additional substructure as well as superstructure to accommodate a wider Route 1. The bridge should be designed to permit the future addition of one auxiliary lane in each direction in addition to the six basic lanes.

- *CSX Railroad Overpass (Segment V).* This substandard overpass requires replacement to provide adequate vertical and horizontal clearance for the existing and ultimate cross-sections. Minor relocation of the railroad is likely needed to facilitate construction.

- *Fort Belvoir Railroad Overpass (Segment VI).* This skewed crossing requires removal/replacement due to existing inadequate horizontal clearance for the existing and ultimate cross-sections. Fort Belvoir has abandoned the

railroad but plans to use the rail right-of-way as a trail.

- *Gunston Road Overpass (Segment VI).* This roadway bridge requires replacement due to inadequate horizontal clearance for the existing and ultimate cross-sections.

TRANSIT AND RIDESHARING

The Recommended Plan includes a framework for transit improvements that is summarized below. Exhibit 6-3 shows the transit framework for the Recommended Plan.

The Plan includes enhanced local and express bus service that is oriented to existing and new transit centers. These services should have coordinated schedules to minimize waiting times during transfers. The transit centers provide connections to buses in the Route 1 corridor as well as cross-county bus routes. Transit services in the corridor should be "seamless"—that is have coordinated schedules and fare media among different operators.

New transit centers are recommended at the Woodbridge VRE commuter rail station, Fort Belvoir, and Beacon Hill. The center at Fort Belvoir should be located to permit convenient access to and from Route 1, the Fairfax County Parkway and the internal Fort Belvoir road system. The Beacon Hill center could be part of the mall or a separate facility. Operating as a separate facility would allow more operational flexibility but may be more expensive. A more detailed transit center location study should be conducted and should consider sites beyond those identified herein.

These new transit centers complement existing centers at Dale City, Franconia-Springfield, and Huntington. New transit centers typically have:

- Large shelters with benches
- Bicycle lockers/racks
- Park-and-ride lots (except at Beacon Hill)
- Kiss-and-ride areas
- Real time bus information through electronic bulletin board
- Coordinated transfers between routes to reduce trip times.

The Plan recommends new fixed-route bus service between Woodbridge and Hybla Valley to eliminate the existing gap in bus service along Route 1. In the short-term this will require cooperation between Fairfax County and the PRTC. Other locations for fixed route bus service include: Lorton to Huntington and Cherry Hill to Woodbridge. In those areas not easily served by fixed-route service (or as an interim measure), implement/expand demand responsive bus service in Triangle, Dumfries, and Lorton.

The Plan recommends expanded "through-route" bus service on selected trips to Potomac Mills, Huntington Metrorail Station, and the Franconia-Springfield Transportation Center. The Plan also includes cross-county local bus routes from the Route 1 corridor to Potomac Mills and Manassas/Manassas Park. As noted in Exhibit 6-3, the Plan provides express service for selected trips during the peak periods.

VRE commuter rail service is also improved in the Plan, including:

- Track and signal improvements
- Station improvements (longer platforms and expanded parking)
- Service increases
- Bi-level cars.

Access to the VRE stations is also enhanced with the following actions:

- Construct access roadways to the Rippon and new Cherry Hill stations.
- Provide new and/or improved feeder bus service to the Cherry Hill, Rippon, Woodbridge, and Lorton stations.

The Plan includes "Smart Travel" systems that complement transit services. Systems include coordinated traffic signals with signal prioritization or signal extenders/pre-emption for buses; variable message signs on Route 1; real time traveler information displays at transit centers and some bus stops; and standard transit fare media for the region.

Bus stops in the corridor require improvement, especially in Segment VII (Woodlawn to Alexandria). All bus stops should have:

- Transit route maps and timetables
- Continuous and improved sidewalks connecting residential and commercial areas to transit
- Handicapped access per ADA guidelines.

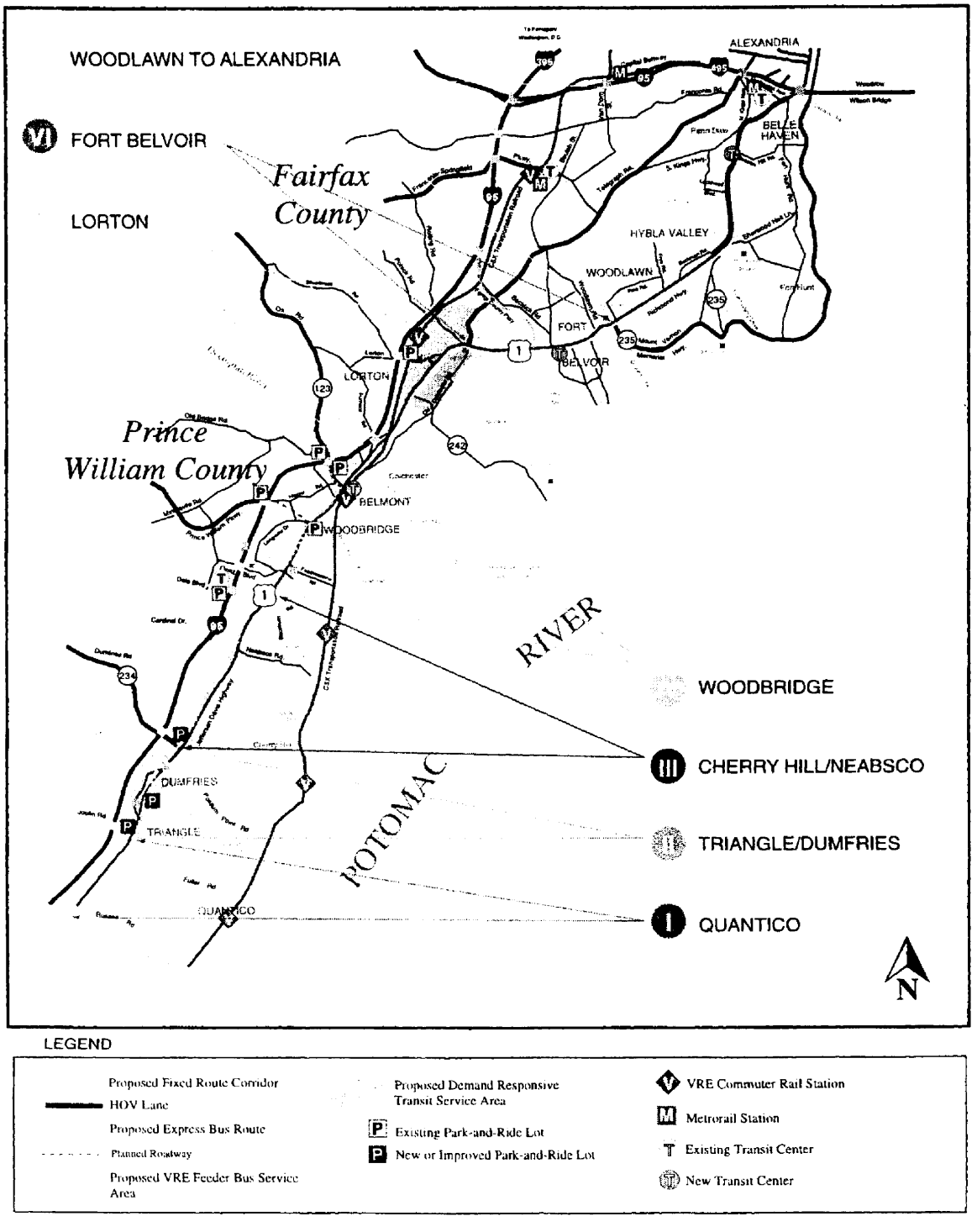
The more heavily used bus stops should have:

- Shelters and benches (stops with 50 or more boardings daily).
- Electronic displays with real-time route specific information (stops with 80 or more boardings daily).

Ridesharing is facilitated in the Plan through expanded park-and-ride lots and the HOV lanes in Segment VII. New and/or enhanced park-and-ride lots should be constructed in Triangle and Dumfries to accommodate the significant growth expected in the nearby areas. Generally, these lots should be oriented to I-95 to enhance the express lane usage.

In Fairfax County, potential locations for park-and-ride lots to complement the HOV lanes should be identified when the operational plans are defined.

Exhibit 6-3. Recommended Transit Framework



LAND USE AND URBAN DESIGN

The Recommended Plan recognizes the interconnection between transportation and land use. The characteristics of one affect the characteristics and opportunities for the other. In addition, urban design features can exert a strong influence on the image of and plans for construction in the area.

While this Plan is focused on transportation elements, the following general guidelines and principles are provided for land use and urban design elements. The study team recognizes that for the Plan to be fully supportive of the counties' goals for the corridor an understanding of the larger context is required.

Many of the guidelines in these sections refer to elements beyond VDOT's responsibilities for design, funding, and/or maintenance. Typically, the Counties must take the lead in applying policies for these items. In general, the plan responds to, and is consistent with, current *Comprehensive Plans.*

Land Use Guidelines

For those sections of the corridor with development adjacent to the roadway, two guidelines are recommended:

1. Emphasize nodes of activity
2. Locate buildings close to the street.

These guidelines maximize the effectiveness of walking and transit as alternative means of travel in the corridor.

Nodes of activity will create a stronger, more positive sense of place for the corridor and enhance opportunities for transit and pedestrian uses. Typically, nodes would include a mix of uses, each with its own identity, appropriate density, and type of use. Nodes should be linked to surrounding neighborhoods and other nodes with sidewalks and vehicular access.

The placement of buildings relatively close to the street positively affects the image of the corridor and its transportation effectiveness. From an urban design perspective, it creates a vertical edge to a horizontal plane of pavement. From a transportation perspective, it improves transit and pedestrian accessibility. Buildings near the street reduce walking distances from sidewalks and bus stops along the roadway. In addition, not having to cross a large parking lot to reach a store enhances the walking experience. From a practical standpoint, this guideline recognizes the physical limitations of the existing parcel characteristics along many portions of the corridor The placement of buildings close to the street must be coordinated with zoning ordinances; utilities; plans for future roadway widening; interchanges and turn lanes; sidewalk or path; landscaping; and streetscaping.

The unique characteristics and needs of these portions of the Route 1 corridor will require special considerations by the counties. Special incentives and zoning changes are needed to realize the full potential. In Fairfax County, the recent Revitalization Study for Segment VII (Woodlawn to Alexandria) identified a number of feasible and effective actions for consideration. Other actions related to land use and redevelopment are discussed in the Economic Actions section.

Urban Design Principles for Route 1 Streetscape Improvements

The Plan establishes the design intent and a set of principles to guide VDOT, Prince William, and Fairfax Counties in achieving an attractive, welcoming place where it is easy to walk, shop, live, work, and move through.

The Route 1 corridor is used by many citizens, many who chose to live and work within the corridor because of its proximity to the Potomac and Occoquan Rivers and nearby historic sites. Any physical improvements should reflect and be sensitive to these features and neighbors. At the same time, the design style of improvements made to the landscape and streetscape should recognize the current and future vitality of the corridor, and not be inexorably limited to nostalgic fixtures.

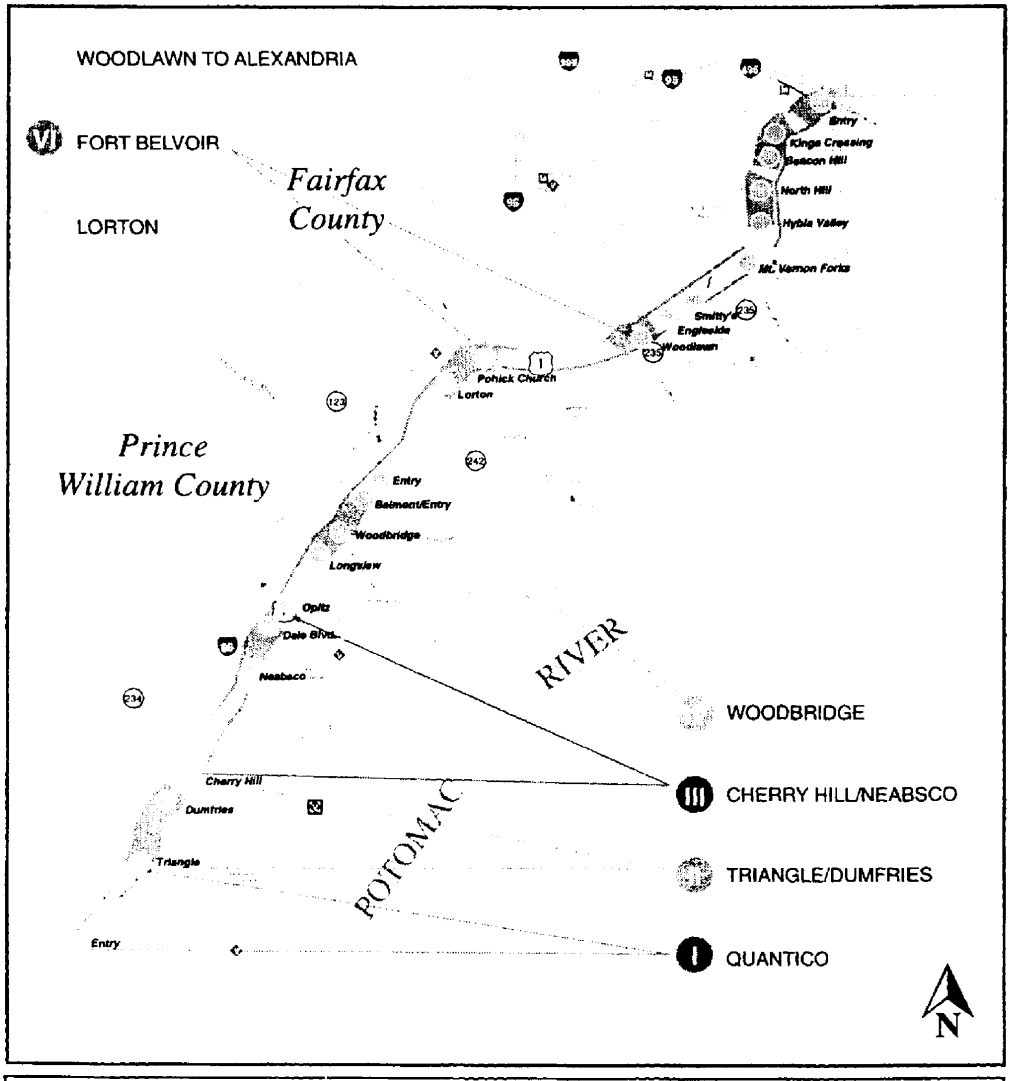
The streetscape design intent for the corridor is to provide an underlying continuity of elements, colors, materials, and textures that are enhanced and accentuated within designated special areas. The special areas —such as development nodes, historic sites, entries, and areas with significant pedestrian activity — should take on their own character and identity that is compatible within the overall design vocabulary found in the corridor. Special areas may be enhanced with additional planting, sidewalks, pedestrian-scaled light fixtures, bus shelters, benches, and trash cans. Additional colors may be used to highlight the special areas.

The Plan includes a raised median (with a curb) planted with trees, shrubs, and groundcovers. Street trees and pedestrian paths, sidewalks, and crosswalks are found throughout the entire corridor. Pedestrian-scaled lighting is located in special areas and the entire corridor is illuminated with road-scaled light fixtures.

Utility lines should be relocated or placed underground in priority areas so as to improve visual aesthetics and eliminate conflicts with the proposed landscape and sidewalk/path improvement. Signs are organized to present a consistent appearance that relieves visual clutter. Traffic mast arms are VDOT standard types, painted black.

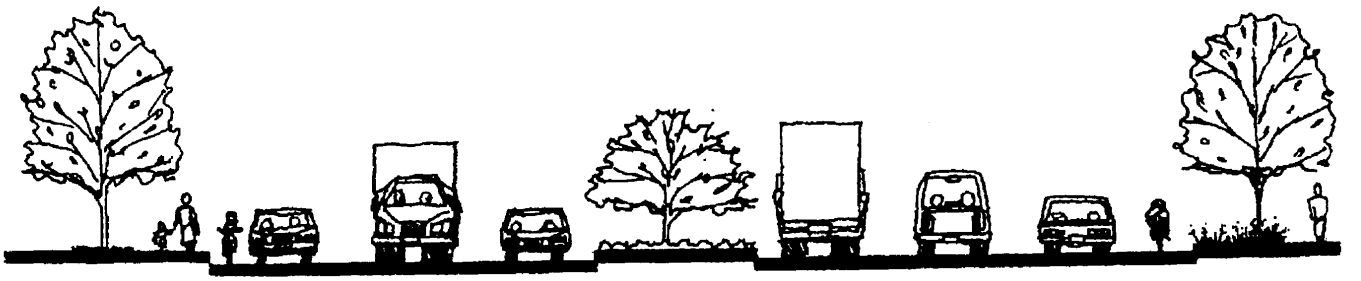
The following pages describe the urban design principles for streetscaping.

Exhibit 6-4. Special Areas and Priority Areas for Utility Relocation/Undergrounding



Legend

- Existing Overhead Utilities
- High Priority Areas for Undergrounding/Relocating Utilities
- Mid Priority Areas for Undergrounding/Relocating Utilities
- Special Areas



Cross section of the six lane boulevard with landscaping and pedestrian path and sidewalk.

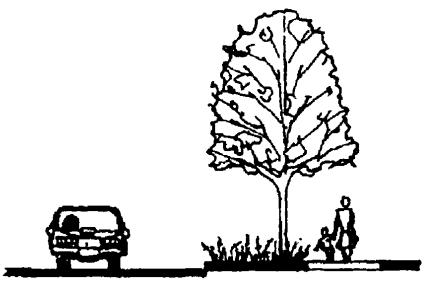
Principle 1: The corridor shall safely and attractively accommodate pedestrians.

- Within Segments II, III, IV, V, and VII a continuous concrete sidewalk or path is provided on each side of Route 1. A six-foot wide concrete walk separated from the curb by a nine-foot wide (minimum) planting strip is on the corridor's eastern edge. A ten-foot wide path immediately adjacent to the curb will be on the corridor's western edge. A five-foot wide planting strip will run parallel to the sidewalk.

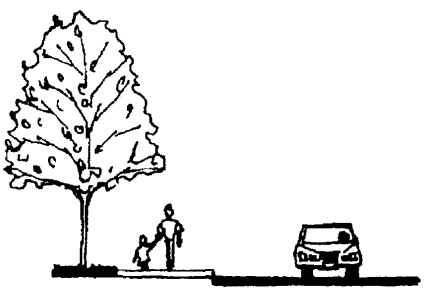
- Within Segments I and VI a continuous ten-foot wide asphalt path will be located on the corridor's western edge. The path may be located immediately adjacent to the curb, or if conditions allow, the path may meander through the woodlands.

- Pedestrian crosswalks at key intersections should be made of materials and colors that are consistent with and complement others used as a part of the corridor improvements. For example, concrete bands on either edge of a twelve-foot wide strip of brown concrete pavers complement the use of concrete sidewalks and the exposed aggregate ramp. Color and material selection may, and should, differ from special area to special area. However, any selected materials and colors for a specific special area must complement the colors and materials found between special areas.

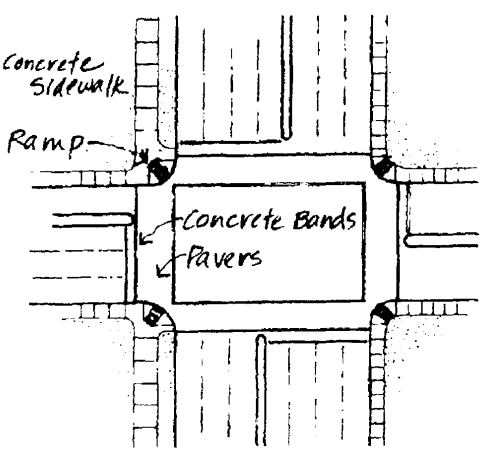
- Ramps at each of the pedestrian curb cuts should be made of exposed aggregate, as per VDOT's standard.



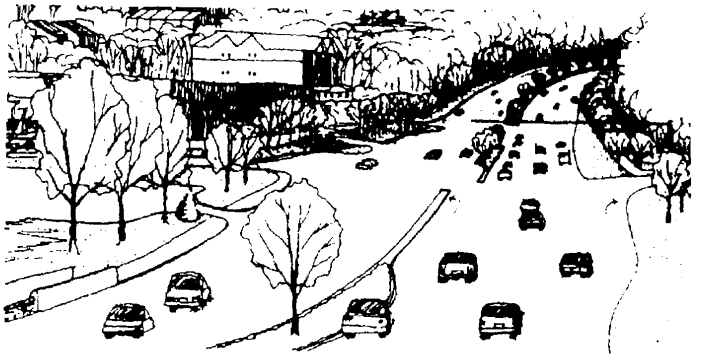
Cross section of the eastern edge of Route 1.



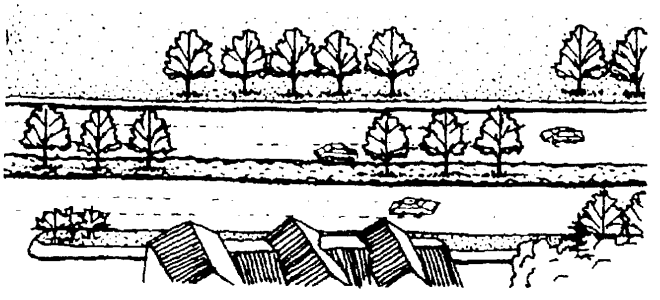
Cross section of the western edge of Route 1.



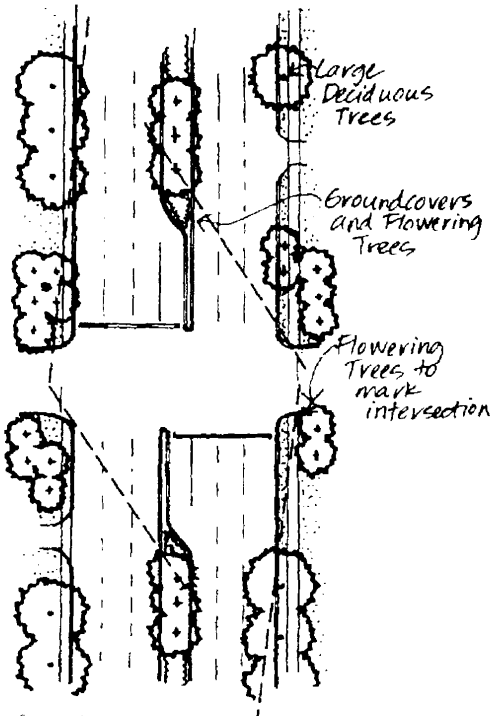
Plan view of intersection with ramps, sidewalks, and crosswalks.



View of landscape plantings illustrating typical groups of trees with space between for visibility of businesses.



Aerial view of landscape plantings.



Plan view of tree plantings. Flowering trees accentuate the intersections and large deciduous trees are planted along the corridor. Sight lines, indicated by the dashed lines, must be maintained and will vary dependent upon site conditions.

Principle 2: Landscape planting shall provide continuity within the corridor and emphasize special areas.

- Landscape plantings are fundamental to the improvement of the Route 1 Corridor. The tree planting design must achieve a well balanced combination of both planted areas and open spaces without appearing to screen properties or be so sparsely planted that the trees are not noticeable and effective in creating a vertical edge to the corridor's cross-section.

- Corridor plantings must be extensive and dense enough to achieve a mass effect for the viewer traveling at the design speed of the highway. Trees also provide a vertical edge, breaking the horizontal plane of the corridor's cross section.

- The sixteen foot wide medians should be planted with groups of flowering trees or large deciduous trees and underplanted with groundcovers and shrubs. The use of grass should be minimized because of its potential maintenance costs. The median's standard width of four feet where protecting left turn lanes should be widened to eight feet to allow for shrub and groundcover plantings in special areas and other locations (such as back-to-back left turn lanes), where needed or feasible.

- Trees along the edge of Route 1 should be planted in groups of three to five. Groups of large deciduous trees should be separated by no more than sixty feet. Within the group's plantings, the large trees should be fifteen to twenty feet apart. Within each group of trees, the same species of tree should be planted. Different groups may be composed of different species. If room allows, and properties remain visible, more than five trees may be planted within one group.

- VDOT sightlines must be maintained. Plantings shall not obscure sight lines at initial installation or at maturity.

- Edges of intersections and major driveways should be planted with flowering trees to highlight a decision point for the corridor user. Flowering trees are smaller than trees planted along the corridor and should be planted more closely together. Depending upon the species selected, flowering trees should be planted ten to fifteen feet apart.

- Trees shall be a minimum of six feet from the back of the curb and no further than twelve feet from the back of the curb. (Plantings shall conform with the *Guidelines for Planting Along Virginia's Roadways* written and published by VDOT's Environmental Division). The location of a tree in relation to a sidewalk may switch from adjacent to the curb to outside of the sidewalk, depending on site conditions.

- Tree types for the large deciduous trees should be, or be similar to, maple, ash, or oak trees. Tree types for the flowering trees should be, or be similar to, crabapples, crapemyrtle, or redbud trees. VDOT standards, County standards, utility company standards, soils, and the quality of the immediate growing environment will influence selection of specific species.

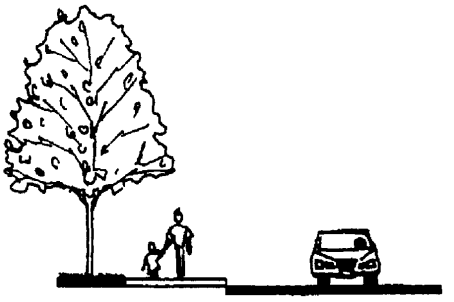
- Low shrubs and groundcovers should be planted between the sidewalk and the street, and in the medians to reduce long term maintenance.

- Landscape plantings in the special areas should be more densely planted and include flowering groundcovers and shrubs.

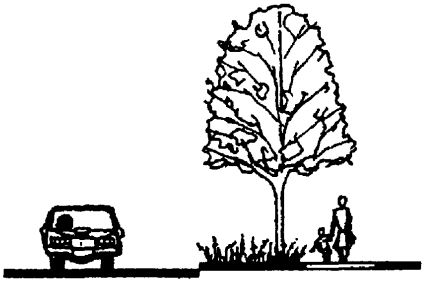
- The character of the road corridor through the native woodland in Segments I and VI should be preserved and enhanced with plantings of trees and shrubs in an informal pattern along the remaining woodlands edge.

Principle 3: Street furniture should be located within special areas.

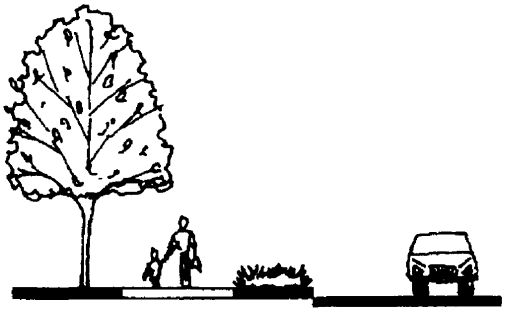
- Natural wood and black metal fixtures should be used throughout the corridor for benches and trash cans in areas with significant pedestrian activity. Other colors and fixtures may be used to highlight additional special areas such as development nodes, historic sites, or entries. Regardless of location, all selected benches, trash cans, bus shelters, and other street furniture should fit the overall character of the corridor's furnishings - compatible in color, texture, and materials.



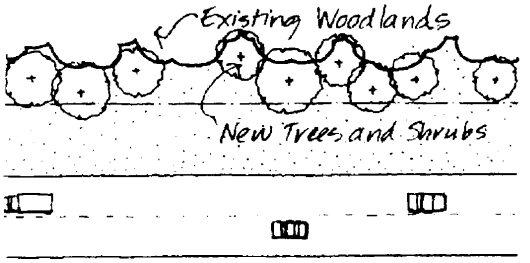
Cross section with new tree planting adjacent to the sidewalk.



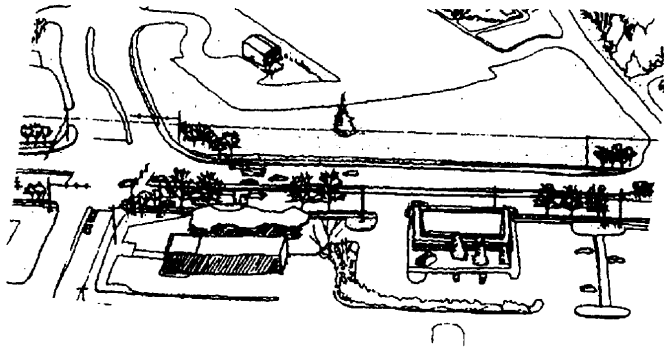
Cross section with new tree planting between the sidewalk and the street.



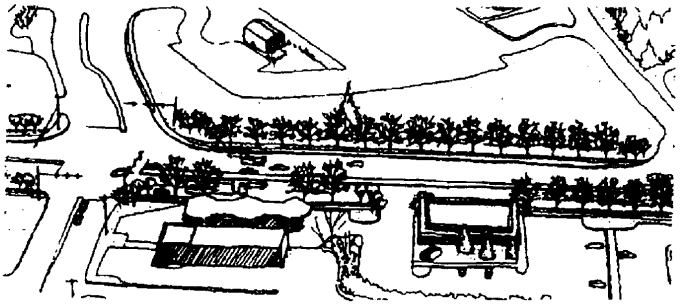
Cross section with new tree planting on outside edge of sidewalk. The planting strip between the sidewalk and Route 1 is planted with low groundcovers and shrubs due to site conditions.



Additional trees and shrubs planted along the edge of the native woodland.



Aerial view of Route 1 with landscape planting and overhead utility lines.



Aerial view of Route 1 with landscape planting and overhead utility lines relocated or placed underground.

- Choices related to a specific manufacturer, color, style, or material may change over time. If a material is changed such as a bench, the new selection should reflect the materials, colors, and textures already found in the corridor's furnishings

Principle 4: Standardized street lighting shall establish a strong and consistent presence for the corridor.

- Pedestrian-scaled light fixtures should be located in special areas and areas of significant pedestrian activity. Each special area may select a fixture that fits with their overall design concept. The "Acorn" fixture supplied by Virginia Power is the preferred fixture, if the fixture source must be Virginia Power.

- Road-scaled light fixtures throughout the corridor should be the Virginia Power supplied "flat lens", with black painted poles.

Principle 5: Overhead utility lines should be relocated or placed underground wherever feasible.

- Establish an easement for future utility undergrounding (Exhibit 6-4).

- Refer to the plan that designates priority areas for utility relocation or undergrounding.

Principle 6: Signing and traffic control devices should be organized to present a consistent appearance that relieves visual clutter.

- Directional sign messages should be combined on sign standards and applied in a consistent manner.

- Standards for low ground base signs should be developed.

- Each County should investigate potential means to accelerate the replacement of nonstandard signs.

- Traffic mast arms should be VDOT standard type and painted black throughout the corridor.

ECONOMIC ACTIONS

Implementation of the Recommended Plan will displace a number of businesses and create some marginal real estate. However, the Recommended Plan will also create the opportunity to eliminate blight, consolidate parcels for high quality mixed use developments, and improve the image of the area.

The Plan helps to facilitate revitalization plans in areas of need by improving transportation within and to the area. Congestion is reduced and safety dramatically improved for motorists and pedestrians. This helps protect and improve the quality of life for surrounding neighborhoods by maintaining reasonable travel times and creating more destination shopping versus convenience businesses.

The Recommended Plan includes significant landscape improvements that play a key role in improving the image of the area. In addition, parcel consolidation opportunities help shift the current strip commercial development pattern that is not pedestrian friendly to nodal developments. Nodal developments are mixed use developments that combine office space, retail, and housing which ties into existing development.

The revitalization effort for Route 1 needs to be a comprehensive plan of which road and transit improvements are one element or tool. The following represent the key issues and programs recommended to maximize the opportunity provided by the proposed transportation improvements to improve Route 1's economic conditions.

- The unique circumstances of Route 1 require changes to local zoning ordinances and special incentives.
  - The changes could include establishing special zoning districts for revitalization areas and creating mixed use zones. Incentives could include expanded tax abatement programs and expedited approval process for projects consistent with revitalization plans.
  - Businesses that are displaced by transportation improvements should be provided the opportunity to relocate to the envisioned higher quality nodal developments.

- A strong local public redevelopment effort needs to be implemented.
  - An entity should be created or empowered that can acquire and assemble marginal real estate to create development site opportunities, where possible.
  - At a minimum, significant public-private partnership efforts should be undertaken.

- The image of Route 1 needs to be improved.
  - Significant landscape improvement should accompany road improvements.
  - Blight should be reduced and development patterns shifted from strip commercial to mixed use development. The development pattern will shift substantially only if a strong redevelopment agency exists which can package the available real estate.

- Establish a mechanism for maintenance of streetscaping and, landscaping elements.
  - VDOT recognizes the need for enhancements to the roadway, but it is not the default provider/maintainer.
  - The Counties, VDOT, and property owners need to identify a stable funding source and the party(s) responsible for maintenance.
  - Possible solutions for maintenance include combinations of: "Adopt a highway" programs, Park Authority staff and equipment used for maintenance, and contracted maintenance.

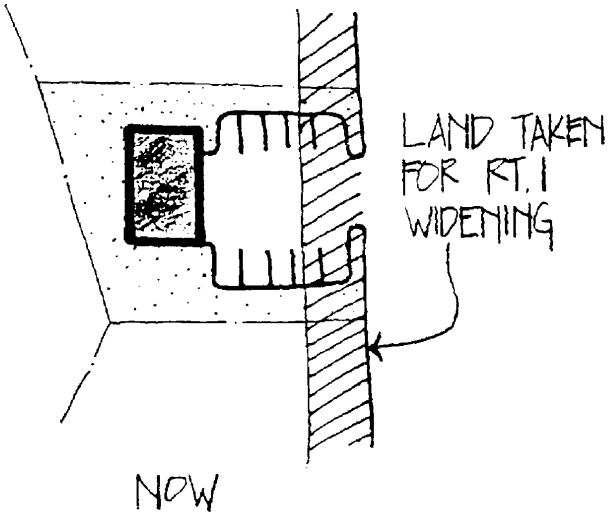
The following matrix and drawings in Exhibit 6-5 illustrate some typical economic conditions in the Route 1 corridor and parcel consolidation scenarios. They show examples of how the transportation improvements may be used as a catalyst for redevelopment for those properties negatively affected.

Exhibit 6-5. Sample Economic Redevelopment Scenarios

1. SMALL COMMERCIAL PARCEL

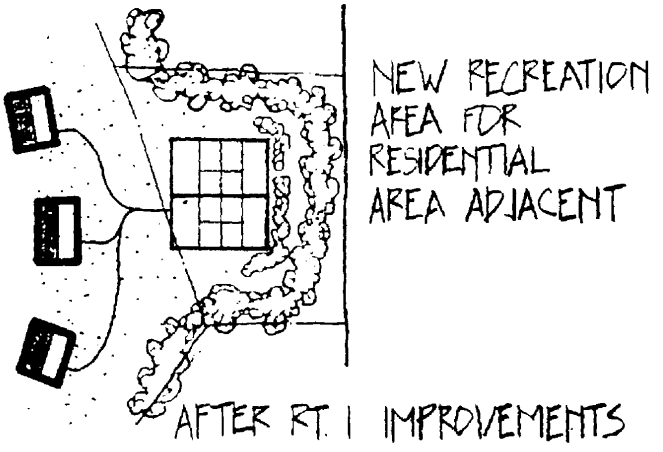
Existing Conditions

- Frontage & curb cut on Route 1
- May be older structure with limited economic life
- May be vacant or underutilized
- Widening Route 1 may take additional land making marginal property less appropriate for commercial use



Possible Reuse

- May need to be totally acquired by VDOT if land taking makes property effectively unuseable
- If not totally acquired, may need to be combined with larger adjacent commercial property(s)
- May be best used as non-commercial and combined with residential land behind



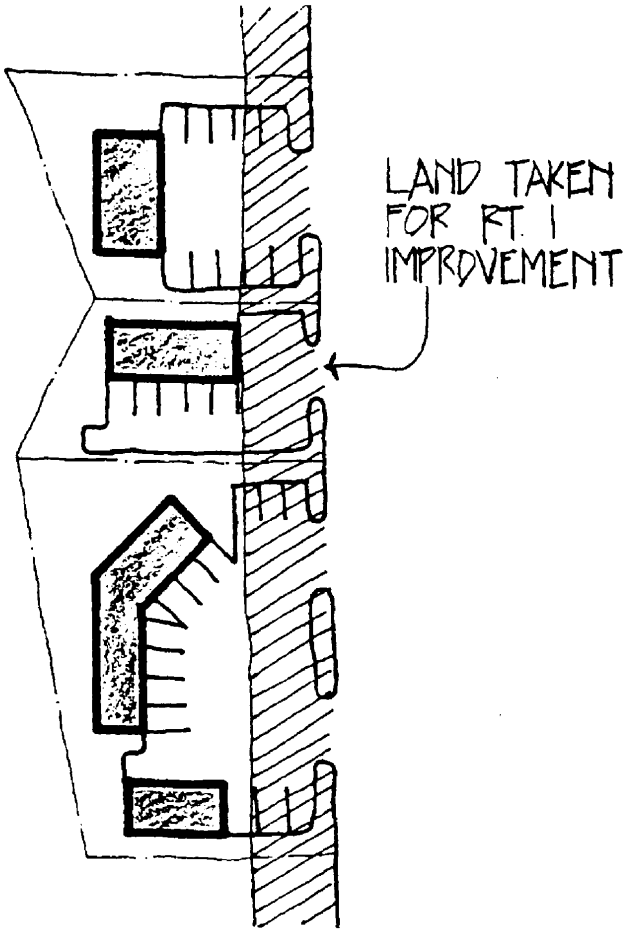
Impacts	*Need for Public Intervention*
• Eliminates Route 1 curb cut • Cleans up a marginal commercial site with a questionable future • Benefit to adjacent property owners • Possible loss of a small business and a few jobs, if business cannot relocate to better facilities • Possible loss of commercial tax base	• VDOT acquisition of entire parcel if future commercial use is not viable • If not totally acquired, local government or a designated redevelopment entity may need to acquire the remaining land (after VDOT acquisition) and determine appropriate reuse on a case-by-case basis

Exhibit 6-5. Sample Economic Redevelopment Scenarios (continued)

2. Several Small Shallow Commercial Parcels

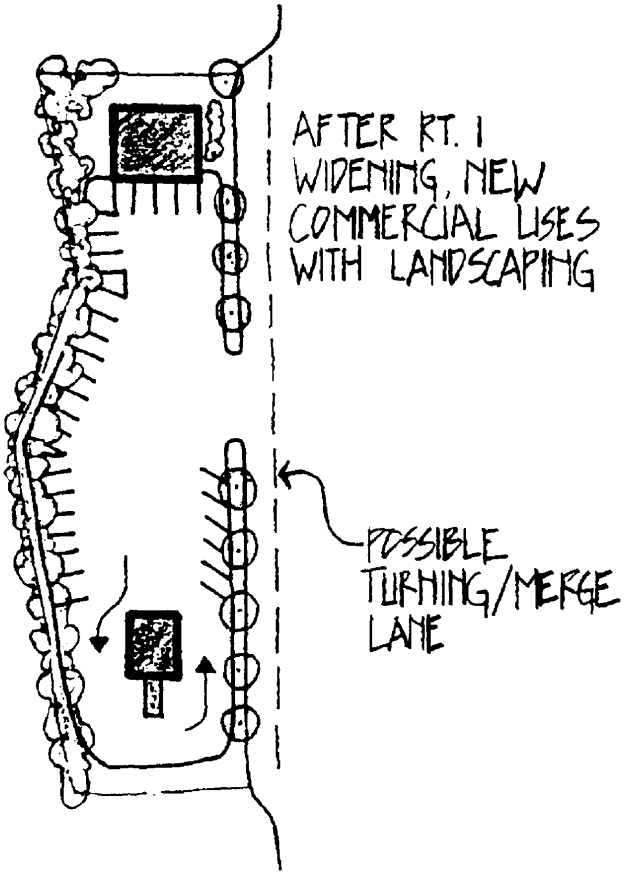
Existing Conditions

- Frontage of all parcels required for Route 1 improvements
- Buildings may be old and inefficient (vacant or yielding low rent) or housing marginal commercial uses
- Remaining property even less viable for several small businesses



Possible Reuse

- Combine several small parcels into a single larger commercial parcel
- Replace vacant stores and marginal uses with convenience goods stores (e.g., ATM Bank, small restaurant or market)



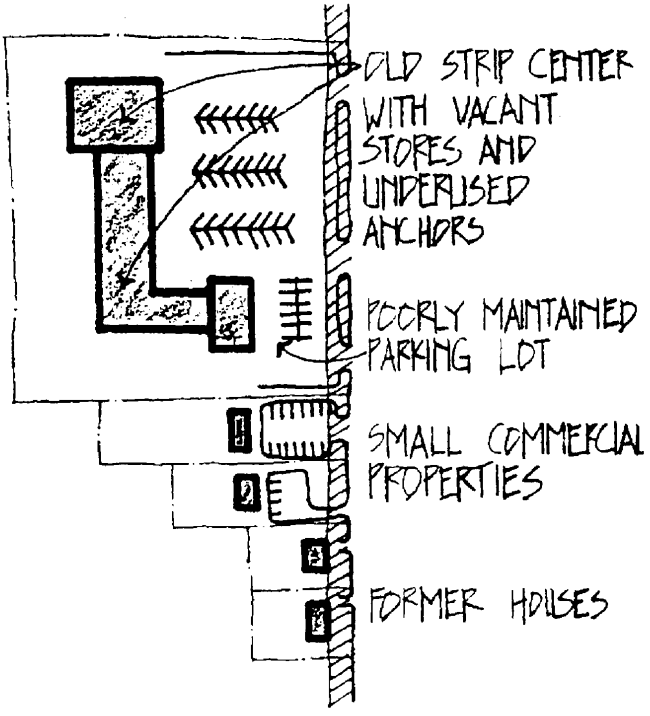
Impacts	*Need for Public Intervention*
• Eliminates several curb cuts onto Route 1 • Reduces turning movements into and out of the property • Improves the appearance of an older commercial strip • May result in new commercial construction • May allow construction of turning/merge lane • Possible net loss of jobs, depending on existing uses • Possible net gain in tax base	• Consolidation not able to be undertaken by VDOT as part of Route 1 improvements • Requires a motivated private developer who is able to profitably assemble sites and accomplish redevelopment • May require a public land acquisition, relocation, demolition and disposition function, possibly with a land writedown – Net cost may be offset by the capitalized value of the tax flow increase

Exhibit 6-5. Sample Economic Redevelopment Scenarios (continued)

3. STRIP CENTER & SMALL ADJACENT PARCELS

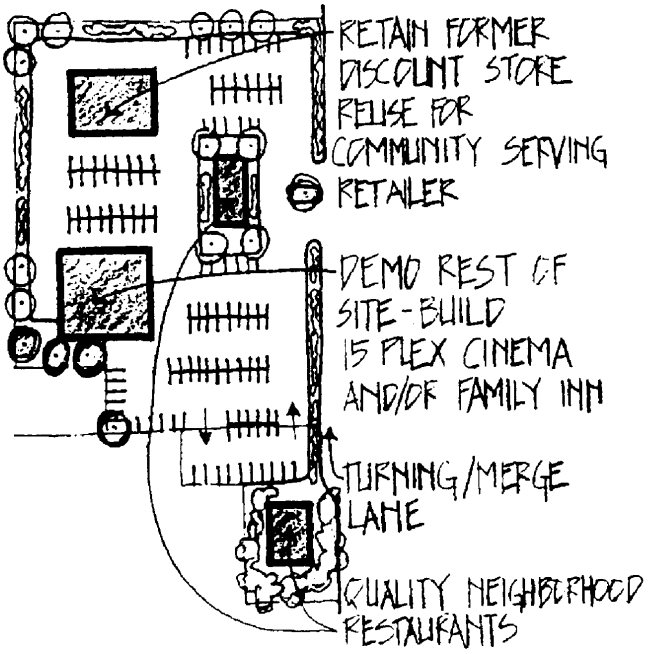
Existing Conditions

- Frontage of all parcels required for Route 1 improvement
- Inefficient and unsightly economic use
- 6 to 8 curb cuts – no turning lanes
- Yields few jobs and little tax base



Possible Reuse

- Assemble center site and adjacent parcel(s) for entertainment center and/or family inn.
- Assemble small commercial property(s) and former residential structures(s) for a single quality restaurant with access from the entertainment center/family inn



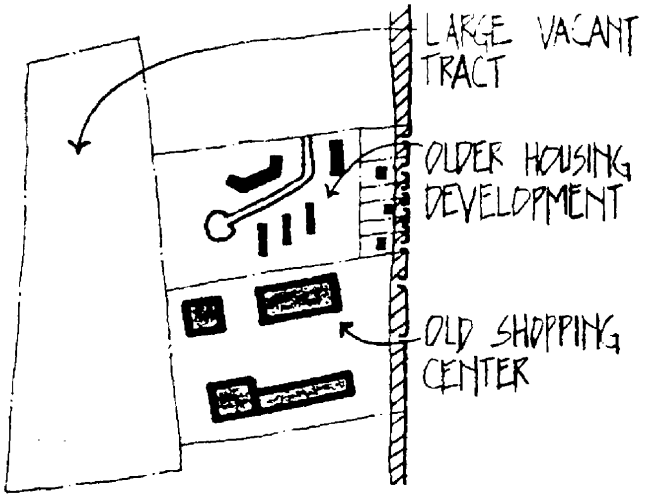
Impacts	*Need for Public Intervention*
• Eliminates many curb cuts • May allow construction of turning/merge lane • Replaces obsolete and poorly maintained shopping center with a contemporary destination entertainment/lodging complex • Mixes lodging, eating, and entertainment uses on same site for one stop (fewer trips) • Results in a net gain in jobs and a big net gain in tax base • Visual improvements	• All reuses are economically feasible • May be able to be completely accomplished by a private developer • If land assembly cannot be done privately, may require public land acquisition and resale to developer – a public/private venture

Exhibit 6-5. Sample Economic Redevelopment Scenarios (continued)

4. Old Shopping Center and Large/Small Adjacent Mixed Parcels

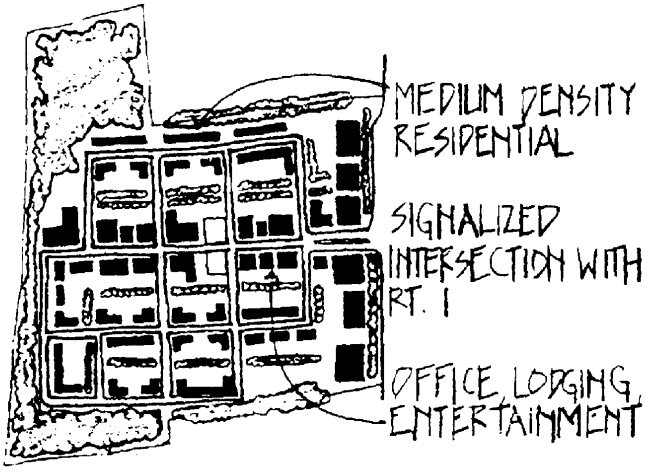
Existing Conditions

- Old shopping center and small frontage parcels; adjacent motel or trailer park or low quality housing; and vacant land at rear with poor access



Possible Reuse

- Opportunity for a large redevelopment project such as a neighborhood center
- Complex land assembly problem – probably requires public sector intervention
- VDOT Route 1 improvements can be the catalyst for launching the redevelopment process
- Reuse could be a mixed-use development with a mix of medium density residential, office, lodging, and entertainment with a single traffic signal on Route 1



Impacts	*Need for Public Intervention*
• Eliminates many curb cuts • May allow construction of turn/merge lane • Cleans up several marginally economic and unsightly uses • Allows vacant land to be developed with improved access • Large positive economic development impacts	• Requires a public land assembly effort • Detailed feasibility analysis and fiscal impact assessment can show cost/benefit to public sector • Can create a major new development node that will help Route 1 gain a new image • A potential "big splash project" that Route 1 needs

RECOMMENDED IMPROVEMENT PRIORITIES

The long-range plan described in the previous sections will not be implemented all at once. Improvements will be made gradually over the next two decades, if not longer. This reflects fiscal realities and the fact that some problems will not emerge until the future.

The long-range plan provides a guiding vision. Within this overall concept, a series of implementable roadway and transit projects is defined and listed in Exhibit 6-6. The improvement priorities are divided into three terms: short, medium, and long. The recommended priorities address existing problems first. Needs which are expected to develop later are met in the longer term.

Within each priority level, projects are listed in geographical order from south to north. The priorities reflect comments by Steering and Technical Committee members.

The priorities are based upon generalized changes in land use and travel patterns. Changes in regional/local priorities or significant individual developments may require shifting of some projects from one time frame to another.

Costs are listed for each project. The costs shown are order of magnitude and include administration, construction, and right-of-way costs. They do not include costs for landscaping, placement of utilities underground, or payment of damages beyond land values. Funding source and/or responsible agency is not listed or implied.

The total cost for the improvement program described in this Plan is approximately $610 million. Of this total, $330 million is for roadway and right-of-way, $240 million is for interchanges, and over $40 million is for transit.

Other Programmed Projects

The priority listing in Exhibit 6-6 does not include four programmed projects in the corridor. These include:

- *Dumfries* – Vertical alignment improvements on Fraley Boulevard
- *Dumfries* – Widen/improve Main Street (Mine Road to Old Stage Coach Road)
- *Neabsco* – Construct relocated Cardinal Drive
- *Woodbridge* - Construct Dale Boulevard extension (I-95 to Route 1).

Short-term Priorities

Of primary interest at this time are the short-term priorities. These projects represent the next steps to be taken in the implementation of the Plan.

As noted previously, the top priority is to conduct a Route 1 centerline location study. This project may be divided into two contracts—one covering each County. Within each contract, sections of Route 1 that have short-term priorities should receive priority within the study. These include the Triangle/Dumfries segment, a portion of the Woodbridge segment, and the southern portion of the Woodlawn to Alexandria segment.

In addition to the segments listed above, other high priority projects for the short-term include:

Woodbridge - Route 1/Route 123 interchange (currently under design)
Lorton - Widen Route 1/improve intersections (Lorton Road to Telegraph Road)
Lorton – Replace/widen CSX railroad bridge

The short-term priorities also include a number of projects grouped under the line items "Intersection/Spot Improvements" and " Roadside Improvements". The following provides a breakdown of those projects.

Intersection/Spot Improvements

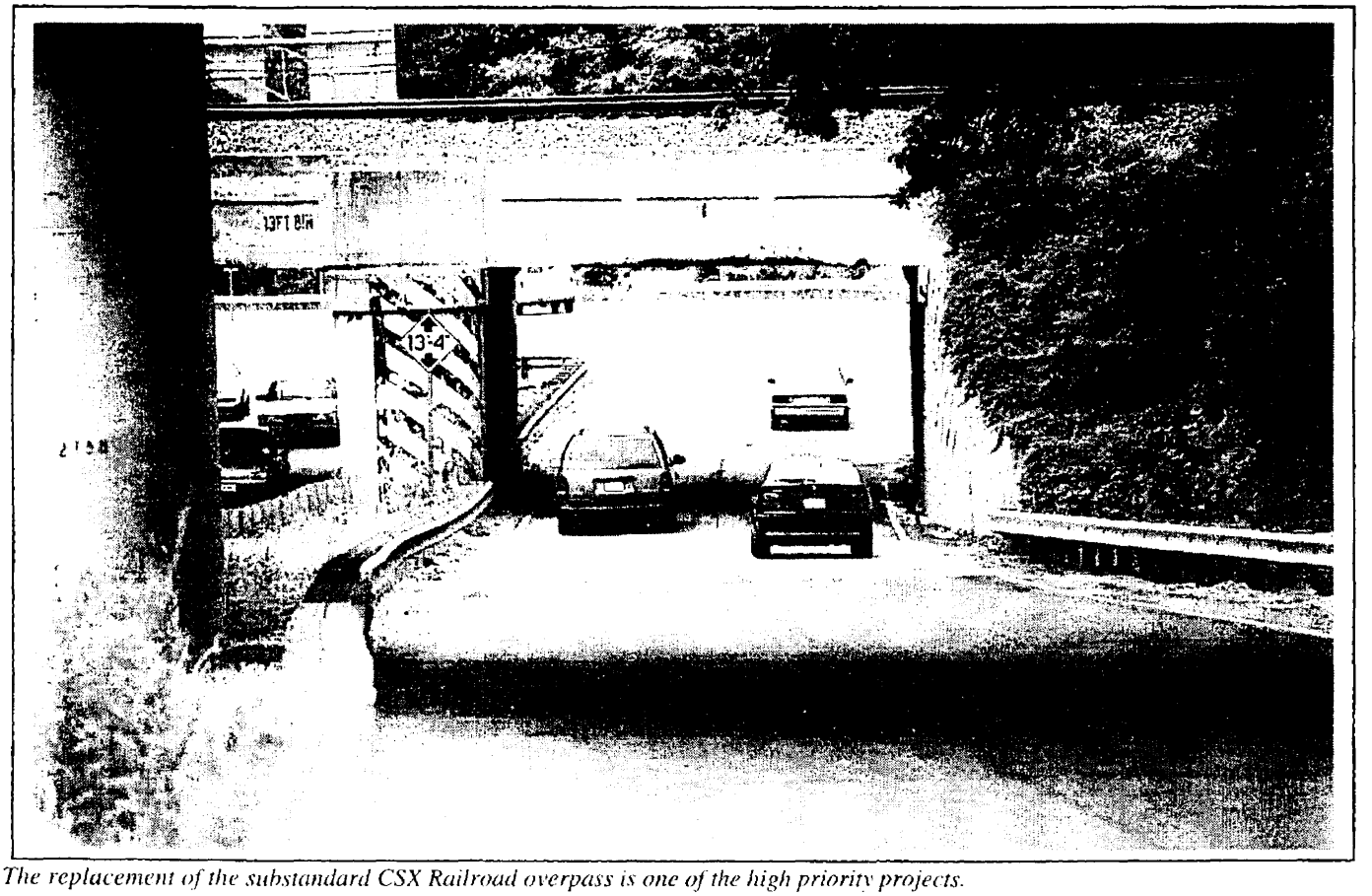
- *Segments not improved in the short term* – Extend and add turn lanes $8.0M
- *Cherry Hill* - Widen/improve Powell's Creek Bridge $0.2M
- *Fort Belvoir* - Replace Accotink Creek Bridge $3.0M
- *Ft. Belvoir* - Remove abandoned RR bridge, replace with trail bridge $1.5M
- *Woodlawn* - Improve Route 235 South/ Old Mill Road intersection $2.0M
- *Hybla Valley* - Improve Fordson Road/ Boswell Avenue intersection $3.0M

Subtotal $17.7M

Roadside Improvements

- *Segments not improved in the short term* – Improve ditches and shoulders.....$2.0M
- *Segments not improved in the short term* – New/improved sidewalks for transit access and key links.....$1.5M
- *All segments* – New/upgraded roadway lighting.....$5.0M
- *All segments* – Remove/relocate a few critical utility poles.....$1.0M
- *Woodbridge, Hybla Valley to Alexandria* – Smart Travel systems.....$5.0M
- *Hybla Valley to Alexandria* – New/improved sidewalks for transit access and key links.....$1.0M
- *Hybla Valley to Alexandria* – Add landscaping improvements.....$1.0M

Subtotal.....$16.5M



The replacement of the substandard CSX Railroad overpass is one of the high priority projects.

Exhibit 6-6. Improvement Priorities

Roadway-related

Short-term

Ref. No.	Segment	Location	Project	County	Approximate Project Limits	Cost ($M) Roadway	Cost ($M) Interchanges	Currently Funded ($M)
1	I-VII	All Segments	Preliminary design to define centerline	PW/Ffx		$2.5		
2	I	Quantico	Reconstruct Russell Road Interchange	PW	At Russell Rd.		$5.0	
3	II	Triangle/Dumfries	Relocate SB Rt. 1/widen Rt. 1/improve safety	PW	Joplin Rd. to Rt. 234	$25.0		
4*	II	Dumfries	Construct Rt. 234 Interchange	PW	At Rt. 234		$25.0	$5.6
5**	III	Neabsco	Replace bridge/ widen Rt. 1	PW	Relocated Cardinal Dr. to Neabsco Mills Rd.	$6.5		$6.5
6	IV	Woodbridge	Widen Rt. 1/improve safety	PW	Opitz Blvd. to Dawson Beach Rd./Occoquan Rd.	$20.0		
7*	IV	Woodbridge	Construct Rt. 1/123 Interchange/widen Route 1	PW	Dawson Beach Rd./Rt 253 to Occoquan River		$40.0	$1.0
8	V	Lorton	Replace/widen CSX Railroad bridge at I-95 interchange	Ffx	Ramps to/from I-95 south to Hassett St.	$5.0		
9**	V	Lorton	Improve intersections/widen Rt. 1	Ffx	Lorton Rd. to Telegraph Rd.	$10.0		$9.1
10	VII	Woodlawn/Hybla Valley	Widen Rt. 1/improve safety	Ffx	Rt. 235 South/Old Mill Rd. to Little Hunting Creek	$40.0		
11	I-VII	All Segments	Intersection/spot improvements	PW/Ffx		$17.7		
12	I-VII	All Segments	Roadside improvements	PW/Ffx		$16.5		
					Short-term subtotal	$143.2	$70.0	$22.2

Medium-term

Ref. No.	Segment	Location	Project	County	Approximate Project Limits	Cost ($M) Roadway	Cost ($M) Interchanges	Currently Funded ($M)
13**	III	Neabsco/Woodbridge	Widen Rt. 1/improve safety	PW	Neabsco Mill Rd. to Opitz Blvd	$15.0		$3.9
14	IV,V	Woodbridge/Lorton	Widen Rt. 1 and improve bridge	PW/Ffx	Occoquan River Bridge to CSX Railroad bridge	$20.0		
15	VI	Ft. Belvoir	Widen Rt. 1/improve safety	Ffx	Telegraph Rd to Backlick Rd.	$15.0		
16	VII	Hybla Valley to Alexandria	Widen Rt. 1 including HOV lanes and interchanges at N/S Kings Hwy and Huntington Ave /Ft. Hunt Rd	Ffx	Rt 235 N. to Capital Beltway	$40.0	$100.0	
17	I-VII	All Segments	Roadside Improvements (TMS Extensions)	PW/Ffx		$10.0		
					Medium-term subtotal	$100.0	$100.0	$3.9

Long-term

Ref. No.	Segment	Location	Project	County	Approximate Project Limits	Cost ($M) Roadway	Cost ($M) Interchanges	Currently Funded ($M)
18	I	Quantico	Widen Rt. 1/improve safety	PW	Prince William/Stafford County line to Joplin Rd.	$20.0		
19	III	Cherry Hill/Neabsco	Widen Rt. 1/improve safety	PW	Rt 234 to Relocated Cardinal Dr./Neabsco Rd.	$25.0		
20	V	Lorton	Widen Rt. 1/improve safety	Ffx	Hassett St. to Lorton Rd.	$25.0		
21	V	Lorton	Construct Telegraph Rd. interchange	Ffx	At Telegraph Road		$25.0	
22	VI	Ft. Belvoir	Construct Fairfax County Parkway interchange	Ffx	At Fairfax County Parkway		$20.0	
23	VI	Ft. Belvoir	Widen Rt. 1/improve safety (including Woodlawn Rd intch.)	Ffx	Backlick Road to Rt. 235 /Old Mill Rd.	$15.0	$25.0	
24	I-VII	All Segments	Roadside Improvements (TMS Extensions)	PW/Ffx		$2.0		
					Long-term subtotal	$87.0	$70.0	$0.0

Total Costs of Roadway, Right-of-way, and Interchanges **$330.2** **$240.0** **$26.1**

* = *Design funded only*
** = *Design and construction funded*
Reference numb[illegible] not indicate funding priority within short-, n[illegible], or long-term categories.

Exhibit 6-6. Improvement Priorities (continued)

Transit-related

Short-term

Ref. No.	Segment	Location	Project	County		Cost ($M)	Currently Funded ($M)
101	II	Triangle	Construct New/expanded park and ride lot	PW		$1.50	
102	IV	Woodbridge	Construct Woodbridge Transit Center	PW		$1.20	
103	IV,V	Woodbridge/Ft. Belvoir	Implement fixed route bus service	PW		$1.00	
104	V	Lorton	Relocation of Lorton park-and-ride lot @ I-95	Fix		$0.40	
105	V	Lorton	Implement feeder bus service to Lorton VRE	Fix		$0.60	
106	V, VI, VII	Lorton/Huntington	Implement/expand fixed route bus service	Fix		$1.50	
107	II-VII	All segments	Improve bus stops	PW/Fix		$0.15	
108**	I-VII	All segments	VRE track & signal improvements and service increases	PW/Fix		$9.00	$9.00
109**	I-VII	All segments	Implement VRE Bilevel cars	PW/Fix		$10.50	$10.50
					Short-term subtotal	$25.85	$19.50

Medium-term

Ref. No.	Segment	Location	Project	County		Cost ($M)	Currently Funded ($M)
110	II	Triangle/Dumfries	Expand demand responsive transit service	PW		$0.16	
111	II,III	Dumfries/Cherry Hill	Construct new/expanded park and ride lot	PW		$1.80	
112	III	Neabsco/Woodbridge	Extend Rippon Blvd to VRE station; add feeder service	PW			
113	III	Cherry Hill	Construct New VRE station; Extend Potomac Pkwy to station	PW		$2.50	
114	III	Cherry Hill	Implement feeder bus service to Cherry Hill VRE	PW		$0.32	
115	IV	Woodbridge	Adjust/expand feeder bus service to Woodbridge VRE	PW		$0.16	
116	V	Lorton	Implement demand responsive transit service	Fix		$0.35	
117	VI	Ft. Belvoir	Construct Ft. Belvoir Transit Center	Fix		$2.00	
118	VII	Beacon Hill	Construct Beacon Hill Transit Center	Fix		$9.00	
119	IV, VI, VII	Transit Centers	Provide real-time transit information at transit centers	PW/Fix		$0.05	
					Medium-term subtotal	$16.34	$0.00

Long-term

Ref. No.	Segment	Location	Project	County		Cost ($M)	Currently Funded ($M)
120	III-IV	Cherry Hill/ Woodbridge	Implement fixed route bus service	PW		$1.00	
121	II-VII	All segments	Provide real-time transit information at busy bus stops	PW/Fix		$0.15	
					Long-term subtotal	$1.15	$0.00

Total Transit Capital Costs **$42.3** **$19.5**

* = *Design funded only*
** = *Design and construction funded*
Reference numbers do not indicate funding priority within short-, medium-, or long-term categories.

APPENDIX A

Copy of Joint Resolution directing the study

1994 SESSION

LD7030410

HOUSE JOINT RESOLUTION NO. 256

Offered January 25, 1994

Directing the Virginia Department of Transportation to study the U. S. Route 1 corridor in Fairfax County.

Patrons—Puller; Senator: Gartlan

Referred to Committee on Roads and Internal Navigation

WHEREAS, U.S. Route 1 is the prime north-south highway serving a substantial portion of interstate, commuter, and local traffic in Fairfax County between the Prince William County line and the Alexandria City boundary, and is the only direct alternative or emergency diversion route for Interstate Route 95; and

WHEREAS, U.S. Route 1 is continually impacted by industrial, commercial, and residential growth that creates conditions detrimental to providing an effective or efficient transportation facility; and, therefore is fraught with congestion, poor access, limited serviceability, and safety problems; and

WHEREAS, continued growth in the corridor will increase the ineffectiveness of the facility, lead to further endangerment of the traveling public, degeneration of socio-economic vitality, and eventual deterioration of the corridor's potential revenue producing capacity; and

WHEREAS, several items, occurring or planned, will continue that scenario including (i) development in the Belmont Bay area (Prince William County) of over 140 acres with a potential of almost 2,000 residential units, and an excess of three million square feet of non-residential use including some 500 condominiums or hotel units; (ii) expansion of Fort Belvoir's scope and mission in accordance with the Base Realignment and Closure Act (BRAC), increasing the work force, dependent housing, personal and personnel services for active and retired government employees in the region, thereby increasing the demands on the already strained transportation infrastructure; (iii) development of the Engineer Proving Grounds (EPG), an 840-acre tract in a unique government and private enterprise partnership, with potential for many square feet of commercial and office and approximately 4,000 residential units at buildout; (iv) completion of the Fairfax County Parkway (VA 7100) from I-95 to U.S. Route 1, providing direct connection of the U.S. Government-related operations and services at the EPG and the service-oriented facilities at Fort Belvoir; and (v) reconstruction or replacement of the Woodrow Wilson Bridge, and improvements to the I-95 (Capital Beltway) at the northern terminus of U.S. Route 1 in Fairfax County; and

WHEREAS, the capability of U.S. Route 1 to act as an efficient transportation corridor is directly related to the ability of the region to present viable business and housing opportunities to potential developers, ensuring a continuing and stable revenue base; and

WHEREAS, the Clean Air Act and its Amendments (CAAA), and the State Implementation Plan (SIP) legislate specific criteria for emissions reductions, especially in an identified non-attainment area, directing a Corridor Study and Alternatives Analysis of any transportation improvement projects; and

WHEREAS, U.S. Route 1 is included in the National Highway System (NHS) of the International Surface Transportation Efficiency Act (ISTEA), it is not included in the Strategic Highway Network (STRAHNET) category, pending a study of its existing and proposed capabilities; and

WHEREAS, a complete and comprehensive study has never been carried out for the entire U.S. Route 1 corridor in Fairfax County; now, therefore, be it

RESOLVED by the House of Delegates, the Senate concurring, That the Virginia Department of Transportation (VDOT) be requested to study the U.S. Route 1 corridor in Fairfax County from the Prince William County line to the Alexandria City limits. VDOT is requested to pursue every avenue for funding availability through the U.S. Department of

Transportation, and the Regional Metropolitan Planning Organization. The study should be modeled after the "Beltway Study" and provide a series of immediate near-term and long-term recommendations; and, be it

RESOLVED FURTHER, That the study be conducted using the citizen input and participation model of the I-95/395/495 Interchange and Woodrow Wilson Bridge studies; and, be it

RESOLVED FINALLY, That the Department complete its study in time to present its findings and recommendations to the Governor and the 1995 Session of the General Assembly in compliance with the procedures of the Division of Legislative Automated Systems for processing legislative documents.

Official Use By Clerks	
Agreed to By The House of Delegates	**Agreed to By The Senate**
without amendment ☐	without amendment ☐
with amendment ☐	with amendment ☐
substitute ☐	substitute ☐
substitute w/amdt ☐	substitute w/amdt ☐
Date: _____	Date: _____
Clerk of the House of Delegates	Clerk of the Senate

GENERAL ASSEMBLY OF VIRGINIA -- 1996 SESSION

HOUSE JOINT RESOLUTION NO. 21

Requesting the Virginia Department of Transportation to continue its study of the U. S. Route 1 corridor in Fairfax and Prince William Counties.

Agreed to by the House of Delegates, February 8, 1996
Agreed to by the Senate, February 29, 1996

WHEREAS, U. S. Route 1 is the prime north-south highway serving a substantial portion of interstate, commuter, and local traffic in Fairfax County and Prince William County between the Stafford County line and the Alexandria City boundary, and is the only direct alternative or emergency diversion route for Interstate Route 95; and

WHEREAS, House Joint Resolution No. 256 (1994) requested the Virginia Department of Transportation (VDOT) to study the U. S. Route 1 corridor in Fairfax County and Prince William County; and

WHEREAS, VDOT has advertised for consultant services, gone through the selection process, negotiated with the selected consultant to arrive at an acceptable contract, and signed the consultant agreement; and

WHEREAS, it will take the consultant 18 to 24 months to complete this work on the study; now, therefore, be it

RESOLVED by the House of Delegates, the Senate concurring, That the Virginia Department o Transportation be requested to continue its study of the U. S. Route 1 corridor in Fairfax County an Prince William County.

The Department shall complete its work in time to submit an interim report to the Governor an the 1997 Session of the General Assembly and its findings and recommendations in a final repor t the Governor and the 1998 Session of the General Assembly as provided in the procedures of th Division of Legislative Automated Systems for the processing of legislative documents.

APPENDIX B

Evaluation Matrix

Note: Recommended Concept indicated by Reverse heading.

ROUTE 1 CONCEPT ALTERNATIVES
Segment I – Quantico

	Baseline	Concept A	Concept B	Concept C	Concept D
Objective Group (OG) 1. Modal Coverage & Connectivity					
1.1 Bicycle & Pedestrian Facilities		Better	Better	Better	Better
1.2 Transit Service Coverage (see regional matrix)					
Objective Group (OG) 2. Transportation System Operation					
Daily Traffic Volumes	46,000	46,000	55,000	55,000	55,000
2.1 Transit Service Performance (see regional matrix)					
2.2 Hours of Congestion	6	5	0	0	1
Objective Group (OG) 3. Transportation System Design					
Right-of-Way Width (in feet)	90'	165'	200'	220'	125'
3.1 Existing Safety Deficiencies Addressed	None	Full *	Full	Full	Full
3.2 Conformance To Design Standards	None	Full *	Full	Full	Full
3.3 Access Management – Facility Design (# of median breaks/mile)	1	1	1	1	1
3.4 Access Management – Driveway Design (# of driveways adjacent to thru lanes per mile)	0 to 3	0 to 3	0 to 3	0 to 3	0 to 3
Objective Group (OG) 4. Environmental Resources					
4.1 Wetlands Affected (acres)		0.5	2.5	4.0	2.0
4.2 Floodplain Affected (acres)		0.5	1.0	1.5	1.0
4.3 Water Quality		Better	Better	Better	Better
4.4 Wildlife		None	Minimal Impact	Minimal Impact	Minimal Impact
4.5 Public Lands	Quantico/Locust Shade Park	Quantico/Locust Shade Park	Quantico/Locust Shade Park	Quantico/Locust Shade Park	Quantico/Locust Shade Park
4.6 Historic Resources (see environmental drawings)					
Objective Group (OG) 5. Community Impacts					
5.1 Displacements		0	0	0	0
5.2 Community Character/Structure		Same	Better	Better	Better
5.3 Conformance With Local/Regional Plans	None	Partial	Full	Full	Full
5.4 Visual Character *(as measured against the existing conditions)*		WORSE • pavement width remains the same • no planted median • right-of-way and visual width of corridor moderately widened for drainage and slope • path on western side • significant encroachment into woodlands -- approx. 50 feet on either side • displacement of monument at Fuller Road	MUCH WORSE • pavement width expanded by two lanes • addition of continuous planted median • right-of-way and visual width of corridor significantly widened for drainage and slope • path on western side • significant encroachment on native woodlands -- approx. 50-75 feet on either side • displacement of monument at Fuller Road	MUCH WORSE • pavement width expanded by two lanes • flush grassed median/drainage with no trees • right-of-way and visual width of corridor significantly widened for drainage and slope • path on western side • significant encroachment on native woodlands -- approx. 75 feet on either side • displacement of monument at Fuller Road	SAME • pavement width expanded by two lanes • addition of planted median • visual width of corridor remains similar with trees retained and planted close to road due to curb and gutter • path on western side • moderate encroachment on native woodlands -- approx. 25 feet on either side of road • displacement of monument at Fuller Road

* Roadways with continuous two-way left turn lanes are acceptable; however, they are not as safe as roadways with raised or open median.

ROUTE 1 CONCEPT ALTERNATIVES
Segment I – Quantico

	Baseline	Concept A	Concept B	Concept C	Concept D
5.5 Visual Consistency *(as measured against the desired character for the segment)*		NONE • removal of significant portion of woodlands	NONE • removal of significant portion of native woodlands	NONE • removal of significant portion of native woodlands -- most impact of all • broad expanse of pavement and cleared area: including median and drainage	COMPLETE • minimal removal of native woodlands
5.6 Conformance with Established Urban Design Guidelines		• overhead utility wires remain • path on west side of road • trees planted on edge of road • minimal curbcut reduction	• overhead utility wires remain • path on west side • trees planted on edge of road • curbcut reduction	• overhead utility wires remain • path on west side of road • trees planted on edge of road • curbcut reduction	• overhead utility wires remain • path on west side of road • trees planted on edge of road • curbcut reduction
Objective Group (OG) 6. Economic Development					
6.1 Accessibility *(compared to existing/baseline)*		SLIGHTLY BETTER • Reduced congestion	MUCH BETTER • Reduced congestion	MUCH BETTER • Reduced congestion	MUCH BETTER • Reduced congestion
6.2 Economic Image *(compared to existing/baseline)*		SAME	BETTER • Landscaping	WORSE • Lack of median landscaping	BETTER • Landscaping
6.3 Adjacent Property Impacts *(compared to existing/baseline)*		WORSE • Removal of native woodlands	WORSE • Removal of native woodlands	MUCH WORSE • Removal of native woodlands	SLIGHTLY WORSE • Removal of native woodlands
6.4 Overall Corridor Impacts *(compared to existing/baseline)*		SAME	BETTER	SLIGHTLY BETTER	BETTER
6.5 Conformance With County Economic/Revitalization Plans *(compared to existing/baseline)*		NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE
Objective Group (OG) 7. Cost (in millions – 1997 dollars)					
7.1 Capital Cost (in millions)[1]					
• Roadway Construction		$10	$13	$16	$11
• Right-of-Way		$9	$12	$16	$7
• Total (rounded to nearest 5 million)		$20	$25	$30	$20
• Russel Road Interchange		$5	$5	$5	$5
7.2 Operating Costs (see regional matrix)					
7.3 Incremental Phasing Feasibility		Easy	Easy	Easy	Easy

[1] Does not include costs for landscaping, placement of utilities underground or payment of damages beyond land values.

ROUTE 1 CONCEPT ALTERNATIVES
Segment II – Triangle/Dumfries

	Baseline	Concept A	Concept B	Concept C	Concept D
Objective Group (OG) 1. Modal Coverage & Connectivity					
1.1 Bicycle & Pedestrian Facilities		Better	Better	Better	Better
1.2 Transit Service Coverage (see regional matrix)					
Objective Group (OG) 2. Transportation System Operation					
Daily Traffic Volumes	50,000	47,000	59,000	59,000	60,000
2.1 Transit Service Performance (see regional matrix)					
2.1 Hours of Congestion	6	5	2	2	2
Objective Group (OG) 3. Transportation System Design					
Right-of-Way (in feet)	60' – 80'	100'	120'	125'	125'
3.1 Existing Safety Deficiencies Addressed	None	Full *	Full *	Full	Full
3.2 Conformance To Design Standards	None	Full *	Full *	Full	Full
3.3 Access Management – Facility Design (# of median breaks/mile)	Painted Median	Painted Median	Painted Median	3	3
3.4 Access Management – Driveway Design (# of driveways adjacent to thru lanes per mile)	30 to 40	25 to 30	20 to 25	15 to 20	15 to 20
Objective Group (OG) 4. Environmental Resources					
4.1 Wetlands Affected (acres)		0.5	1.5	1.5	1.5
4.2 Floodplain Affected (acres)		0.5	1.0	1.0	1.0
4.3 Water Quality		Better	Better	Better	Better
4.4 Wildlife		None	None	None	None
4.5 Public Lands	Cecil W. Garrison Park	Cecil W. Garrison Park	Cecil W. Garrison Park	Cecil W. Garrison Park	Cecil W. Garrison Park
4.6 Historic Resources (see environmental drawings)					
Objective Group (OG) 5. Community Impacts					
5.1 Displacements	None	11 to 20	21 to 30	41 to 50	41 to 50
5.2 Community Character/Structure		Same	Better	Much Better	Much Better
5.3 Conformance With Local/Regional Plans		Partial	Partial	Full	Full
5.4 Visual Character *(as measured against the existing conditions)*		WORSE • pavement width expanded by one turn lane • no median • visual width of corridor expanded slightly • sidewalks	MUCH WORSE • pavement width expanded by two lanes and a turn lane • no median • visual width of corridor expanded by more than 75% • sidewalks	BETTER • pavement width expanded by two lanes and turn lane/median • addition of a planted median • visual width of corridor remains similar to baseline with median splitting lanes • sidewalks	BETTER • pavement width expanded by two lanes and a turn lane/median • addition of a planted median • visual width of corridor remains similar to baseline with median splitting lanes • sidewalks

* Roadways with continuous two-way left turn lanes are acceptable; however, they are not as safe as roadways with raised or open median.

ROUTE 1 CONCEPT ALTERNATIVES
Segment II – Triangle/Dumfries

	Baseline	Concept A	Concept B	Concept C	Concept D
5.5 Visual Consistency *(as measured against the desired character for the segment)*		NONE ▪ does not appear as a boulevard ▪ trees planted along road edges ▪ sidewalks added	NONE ▪ does not appear as a boulevard ▪ trees planted along road edges ▪ sidewalks added	PARTIAL ▪ achieves boulevard concept ▪ trees planted along road edges ▪ sidewalks added ▪ change visual appearance from small parcels/small buildings to suburban boulevard	PARTIAL ▪ no small town left with # of displacements ▪ trees planted along road edges ▪ sidewalks added ▪ change visual appearance from small parcel/small building to suburban boulevard
5.6 Conformance with Established Urban Design Guidelines		All concepts are in accord with established standards. In addition, they include: ▪ Underground or moving utility wires ▪ Landscape plantings along the road's edges ▪ A sidewalk on each side ▪ A reduction in curbcuts			
Objective Group (OG) 6. Economic Development					
6.1 Accessibility *(compared to existing/baseline)*		SLIGHTLY BETTER	BETTER ▪ Reduced congestion ▪ Center TWLTL does not significantly enhance access to businesses because of high opposing traffic volumes	BETTER ▪ Reduced congestion	BETTER ▪ Reduced congestion
6.2 Economic Image *(compared to existing/baseline)*		***Dumfries:*** BETTER ▪ Relocation of SB Rt. 1 ***Triangle:*** SAME	***Dumfries:*** SAME ▪ Relocation of SB Rt. 1 better ▪ Wide road without landscaping ***Triangle:*** SLIGHTLY WORSE ▪ Wide road without landscaping ▪ More blighted properties removed	***Dumfries:*** BETTER ▪ Relocation of SB Rt. 1 ▪ Boulevard appearance ***Triangle:*** MUCH BETTER ▪ Boulevard appearance ▪ Removal of blighted properties	***Dumfries:*** BETTER ▪ Relocation of SB Rt. 1 ▪ Boulevard appearance ***Triangle:*** MUCH BETTER ▪ Boulevard appearance ▪ Removal of blighted properties
6.3 Adjacent Property Impacts *(compared to existing/baseline)*		WORSE ▪ Displacements without image improvement	MUCH WORSE ▪ Displacements and worse image	BETTER ▪ Displacements due to opportunities for higher quality development through improved image	BETTER ▪ Opportunities for higher quality development through improved image
6.4 Overall Corridor Impacts *(compared to existing/baseline)*		SAME	SAME ▪ Positive impacts of Dumfries Town Center are offset by worse image on Rt. 1	MUCH BETTER ▪ Improved image on Rt. 1	MUCH BETTER ▪ Improved image on Rt. 1
6.5 Conformance With County Economic/Revitalization Plans *(compared to existing/baseline)*		WORSE	SLIGHTLY BETTER	MUCH BETTER	MUCH BETTER

ROUTE 1 CONCEPT ALTERNATIVES
Segment II – Triangle/Dumfries

	Baseline	Concept A	Concept B	Concept C	Concept D
Objective Group (OG) 7. Cost (in millions – 1997 dollars)					
7.1 Capital Cost (in millions)[1]					
▪ Roadway Construction		$12	$15	$15	$15
▪ Right-of-Way		$6	$9	$9	$9
▪ Total (rounded to nearest 5 million)		$20	$25	$25	$25
▪ Route 234 Interchange		$25	$25	$25	$25
7.2 Operating Costs (see regional matrix)					
7.3 Incremental Phasing Feasibility		Easy	Easy	Easy	Easy

[1] Does not include costs for landscaping, placement of utilities underground or payments of damages beyond land values.

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ROUTE 1 CONCEPT ALTERNATIVES
Segment III – Cherry Hill/Neabsco

	Baseline	Concept A	Concept B	Concept C	Concept D
Objective Group (OG) 1. Modal Coverage & Connectivity					
1.1 Bicycle & Pedestrian Facilities		Better	Better	Better	Better
1.2 Transit Service Coverage (see regional matrix)					
Objective Group (OG) 2. Transportation System Operation					
Daily Traffic Volumes	60,000	60,000	77,000	77,000	91,000
2.1 Transit Service Performance (see regional matrix)					
2.2 Hours of Congestion	7	6	3	3	3
Objective Group (OG) 3. Transportation System Design					
Right-of-Way (in feet)	100'	100'	125'	150'	150'
3.1 Existing Safety Deficiencies Addressed	None	Full *	Full	Full	Full
3.2 Conformance To Design Standards	None	Full *	Full	Full	Full
3.3 Access Management – Facility Design (# of median breaks/mile)	Painted Median	Painted Median	4	4	4
3.4 Access Management – Driveway Design (# of driveways adjacent to thru lanes per mile)	5 to 10	5 ±	5 ±	0 to 5	0 to 5
Objective Group (OG) 4. Environmental Resources					
4.1 Wetlands Affected (acres)		1.0	2.5	3.0	4.0
4.2 Floodplain Affected (acres)		0.5	1.0	1.0	1.5
4.3 Water Quality		Better	Better	Better	Better
4.4 Wildlife		None	None	None	None
4.5 Public Lands	None	None	None	None	None
4.6 Historic Resources (see environmental drawings)					
Objective Group (OG) 5. Community Impacts					
5.1 Displacements		1 to 5	6 to 10	11 to 15	11 to 15
5.2 Community Character/Structure	Worse	Same	Better	Better	Much Better
5.3 Conformance With Local/Regional Plans	None	Partial	Full	Full	Full
5.4 Visual Character *(as measured against the existing conditions)*		WORSE • pavement width expanded by one lane • no median • visual appearance of width of road corridor reduced due to plantings closer to lane edge (curb and gutter) • sidewalk and path added to each side	BETTER • pavement width expanded by three travel lanes and a planted median/turn lane • addition of planted median • visual width of road corridor remains similar to baseline due to plantings closer to lane edge (curb and gutter) • sidewalk and path	MUCH BETTER • pavement width expanded by three lanes and double median/turn lane • maximized median with double width for planting trees (28 feet) • right-of-way and visual width of corridor broader than baseline • sidewalk and path	SAME/WORSE • pavement width expanded by four travel lanes and a turn lane/median • visual width of corridor slightly less than twice the existing road • planted median -- appear as second road with separation from baseline • sidewalk and path

* Roadways with continuous two-way left turn lanes are acceptable; however, they are not as safe as roadways with raised or open median.

ROUTE 1 CONC. ALTERNATIVES
Segment III – Cherry Hill/Neabsco

	Baseline	Concept A	Concept B	Concept C	Concept D
5.5 Visual Consistency *(as measured against the desired character for the segment)*		NONE • no boulevard • trees planted on road edges	COMPLETE • achieves boulevard appearance • trees planted on road edges	COMPLETE • achieves boulevard appearance • trees planted on road edges	PARTIAL • median provides boulevard planting, but may be so wide that it is not perceived as boulevard. Almost twice as big as existing road • trees planted on road edges
5.6 Conformance with Established Urban Design Guidelines		All concepts are in accord with the established standards. These standards include: Pedestrian connections, landscaping and recommendations for reducing the number of driveways, if possible. In addition, these concepts include undergrounding or moving utility wires			
Objective Group (OG) 6. Economic Development					
6.1 Accessibility *(compared to existing/baseline)*		SAME	BETTER • Reduced congestion	BETTER • Reduced congestion	BETTER • Reduced congestion
6.2 Economic Image *(compared to existing/baseline)*		WORSE • No boulevard appearance is achieved	BETTER • Boulevard appearance	BETTER • Boulevard appearance	SLIGHTLY BETTER • Increase in visual width, but improved landscaping
6.3 Adjacent Property Impacts *(compared to existing/baseline)*		SLIGHTLY WORSE	MUCH BETTER • Moderate displacement • Boulevard appearance	BETTER	SLIGHTLY BETTER
6.4 Overall Corridor Impacts *(compared to existing/baseline)*		SAME	BETTER • Enhance accessibility • Image	BETTER • Enhance accessibility • Image	BETTER • Enhance accessibility
6.5 Conformance With County Economic/Revitalization Plans *(compared to existing/baseline)*		SAME	MUCH BETTER • Enhancements of existing development pattern	MUCH BETTER • Enhancements of existing development pattern	SLIGHTLY BETTER • Discourages commercial strip development
Objective Group (OG) 7. Cost (in millions – 1997 dollars)					
7.1 Capital Cost (in millions)[1] • Roadway Construction • Right-of-Way • Total (rounded to nearest 5 million)		$19 $7 $25	$24 $12 $35	$25 $16 $40	$29 $21 $50
7.2 Operating Costs (see regional matrix)					
7.3 Incremental Phasing Feasibility		Easy	Easy	Easy	Easy

[1] Does not include costs for landscaping, placement of utilities underground or payment of damages beyond land values.

ROUTE 1 CONCEPT ALTERNATIVES
Segment IV – Woodbridge

	Baseline	Concept A	Concept B	Concept C	Concept D
Objective Group (OG) 1. Modal Coverage & Connectivity					
1.1 Bicycle & Pedestrian Facilities		Better	Better	Better	Better
1.2 Transit Service Coverage (see regional matrix)					
Objective Group (OG) 2. Transportation System Operation					
Daily Traffic Volumes	56,000	56,000	73,000	73,000	74,000
2.1 Transit Service Performance (see regional matrix)					
2.2 Hours of Congestion:					
South	4	4	2	2	0
North	12	12	10	10	7
Objective Group (OG) 3. Transportation System Design					
Right-of-Way (in feet)	95'	100'	120'	125'	145'
3.1 Existing Safety Deficiencies Addressed	None	Full *	Full *	Full	Full
3.2 Conformance To Design Standards	Partial	Full *	Full *	Full	Full
3.3 Access Management – Facility Design (# of median breaks/mile)	Painted Median	Painted Median	Painted Median	4	4
3.4 Access Management – Driveway Design (# of driveways adjacent to thru lanes per mile)	50 to 55	50 to 55	50 to 55	50 to 55	40 to 45
Objective Group (OG) 4. Environmental Resources					
4.1 Wetlands Affected (acres)		0.5	1.0	1.0	1.5
4.2 Floodplain Affected (acres)		0	1.0	1.0	1.5
4.3 Water Quality		Better	Better	Better	Better
4.4 Wildlife		None	None	None	None
4.5 Public Lands		None	None	None	None
4.6 Historic Resources (see environmental drawings)					
Objective Group (OG) 5. Community Impacts					
5.1 Displacements		11 – 15	26 – 30	36 – 45	41 – 50
5.2 Community Character/Structure	Worse	Same	Better	Better	Much Better
5.3 Conformance With Local/Regional Plans	None	None	Partial	Full	Full
5.4 Visual Character *(as measured against the existing conditions)*		SAME • pavement width unchanged • no median • visual width of corridor remains similar to baseline • sidewalks	WORSE • pavement width expanded with two lanes and flush turn lane • no median • right-of-way and visual width of corridor more broad than baseline • sidewalks	BETTER • pavement width expanded with two lanes and turn lane/median • addition of planted median • visual width of corridor slightly wider than baseline with significant plantings in median reduce visible pavement by one lane each direction • sidewalks	MUCH BETTER • pavement width is expanded with one additional turn lane and two reversible lanes • addition of two planted medians • visual width of corridor moderated by double medians, breaking number of continuous lanes into small groups of twos and threes • sidewalks

* Roadways with continuous two-way left turn lanes are acceptable; however, they are not as safe as roadways with raised or open median.

ROUTE 1 CONC. ALTERNATIVES
Segment IV – Woodbridge

	Baseline	Concept A	Concept B	Concept C	Concept D
5.5 Visual Consistency *(as measured against the desired character for the segment)*		NONE ▪ no boulevard appearance ▪ sidewalks ▪ trees added on road edges	NONE ▪ no boulevard appearance ▪ sidewalks ▪ trees added on road edges	COMPLETE ▪ achieves boulevard appearance ▪ sidewalks ▪ trees added on road edges	COMPLETE ▪ achieves boulevard appearance ▪ sidewalks ▪ trees added on road edges
5.6 Conformance with Established Urban Design Guidelines		All four concepts are in accord with Route 1 Task Force recommendations. All four concepts include: ▪ Undergrounding or moving utility wires ▪ Landscape plantings along the road's edges ▪ A sidewalk on each side ▪ A reduction in curbcuts			
Objective Group (OG) 6. Economic Development					
6.1 Accessibility *(compared to existing/baseline)*		SAME	SLIGHTLY BETTER ▪ Reduction of congestion ▪ Center TWLTL does not significantly enhance access to businesses because of high opposing traffic volumes	SLIGHTLY BETTER ▪ Reduction of congestion	MUCH BETTER ▪ Reduction of congestion ▪ Reversible lanes restrict access to businesses
6.2 Economic Image *(compared to existing/baseline)*		SAME	WORSE ▪ No boulevard appearance created ▪ Wider roadway	BETTER ▪ Boulevard appearance	BETTER ▪ Boulevard appearance
6.3 Adjacent Property Impacts *(compared to existing/baseline)*		SLIGHTLY WORSE	WORSE ▪ Displacement of existing businesses without enhancing image	BETTER ▪ Displacement of existing businesses offset by better image that will encourage higher quality development and revitalization	BETTER ▪ Displacement of existing businesses offset by better image that will encourage higher quality development
6.4 Overall Corridor Impacts *(compared to existing/baseline)*		SAME	SLIGHTLY BETTER	BETTER ▪ Best in terms of enhancing existing development pattern	BETTER ▪ Will discourage commercial strip development
6.5 Conformance With County Economic/Revitalization Plans *(compared to existing/baseline)*					
Objective Group (OG) 7. Cost (in millions – 1997 dollars)					
7.1 Capital Cost (in millions)[1]					
▪ Roadway Construction		$17	$21	$21	$28
▪ Right-of-Way		$5	$9	$12	$16
▪ Total (rounded to nearest 5 million)		$20	$30	$35	$45
▪ Occoquan Bridge		$8	$12	$12	$14
▪ Route 123 Interchange		$35	$35	$35	$35
7.2 Operating Costs (see regional matrix)					
7.3 Incremental Phasing Feasibility		Easy	Easy	Easy	Difficult

[1] Does not include costs for landscaping, placement of utilities underground or payment of damages beyond land values.

ROUTE 1 CONCEPT ALTERNATIVES
Segment V – Lorton

	Baseline	Concept A	Concept B	Concept C	Concept D
Objective Group (OG) 1. Modal Coverage & Connectivity					
1.1 Bicycle & Pedestrian Facilities		Better	Better	Better	Better
1.2 Transit Service Coverage (see regional matrix)					
Objective Group (OG) 2. Transportation System Operation					
Daily Traffic Volumes					
• Occoquan River Crossing	59,000	59,000	75,000	75,000	75,000
• Lorton	79,000	79,000	81,000	81,000	81,000
2.1 Transit Service Performance (see regional matrix)					
2.2 Hours of Congestion					
• Occoquan River Crossing	9	9	7	7	6
• Lorton	8	8	8	8	7
Objective Group (OG) 3. Transportation System Design					
Right-of-Way (in feet)	110'	100'	125'	150'	145'
3.1 Existing Safety Deficiencies Addressed	None	Full *	Full	Full	Full
3.2 Conformance To Design Standards	None	Full *	Full	Full	Full
3.3 Access Management – Facility Design (# of median breaks/mile)	Painted Median	Painted Median	3	3	3
3.4 Access Management – Driveway Design (# of driveways adjacent to thru lanes per mile)	5 to 10	5 to 10	5 to 10	5 to 10	5 to 10
Objective Group (OG) 4. Environmental Resources					
4.1 Wetlands Affected (acres)		1.0	1.0	2.0	2.0
4.2 Floodplain Affected (acres)		0.5	1.0	1.5	2.0
4.3 Water Quality		Better	Better	Better	Better
4.4 Wildlife		None	None	None	None
4.5 Public Lands	• Mason Neck Park • Lorton Rec. Fields • LPPCP	• Mason Neck Park • Lorton Rec. Fields • LPPCP	• Mason Neck Park • Lorton Rec. Fields • LPPCP	• Mason Neck Park • Lorton Rec. Fields • LPPCP	• Mason Neck Park • Lorton Rec. Fields • LPPCP
4.6 Historic Resources (see environmental drawings)	• Pohick Church	• Pohick Church	• Pohick Church	• Pohick Church	• Pohick Church
Objective Group (OG) 5. Community Impacts					
5.1 Displacements	1 – 5	1 – 5	1 – 5	6 – 10	6 - 10
5.2 Community Character/Structure		Same	Better	Better	Much Better
5.3 Conformance With Local/Regional Plans	None	None	Full	Full	Full
5.4 Visual Character *(as measured against the existing conditions)*		SAME/WORSE • pavement width remains the same • no median • visual width of corridor significantly less because of curb and gutter • sidewalks	BETTER • pavement width expanded with two lanes • addition of planted median • right-of-way similar to baseline • visual width of corridor less than baseline because of median addition • sidewalks	BETTER • pavement width expanded with three lanes between Telegraph and Lorton • pavement width expanded with two lanes between Lorton and County line • addition of planted median • visual width of corridor less because of median • sidewalks • no service drives	BETTER • pavement width expanded with two lanes • addition of planted median • visual width of corridor reduced because of median breaks • sidewalks

*Roadways with continuous two-way left turn lanes are acceptable; however, they are not as safe as roadways with raised or open median.

ROUTE 1 CON ALTERNATIVES
Segmen. . – Lorton

	Baseline	Concept A	Concept B	Concept C	Concept D
5.5 Visual Consistency *(as measured against the desired character for the segment)*		COMPLETE ▪ achieves desired character	COMPLETE ▪ achieves desired character	COMPLETE ▪ achieves desired character	COMPLETE ▪ achieves desired character
5.6 Conformance with Established Urban Design Guidelines		All four concepts are able to reflect the Comprehensive Plan in full when they are more fully detailed. All include: ▪ Undergrounding or moving utility wires ▪ Landscape plantings along the road's edges ▪ A sidewalk or path on each side of the road ▪ A reduction in curb cuts Each concept can be enhanced to mark the gateways at I-95 and Ox Road and at Lorton with additional plantings, special pavers, signs, and pedestrian amenities. The roadway can be modified to include a broader median at these points.			
Objective Group (OG) 6. Economic Development					
6.1 Accessibility *(compared to existing/baseline)*		SAME	SLIGHTLY BETTER ▪ Reduced congestion	SLIGHTLY BETTER ▪ Reduced congestion	BETTER ▪ Reduced congestion ▪ Reversible lanes reduce access to businesses
6.2 Economic Image *(compared to existing/baseline)*		SAME	BETTER ▪ Landscaping	BETTER ▪ Landscaping	BETTER ▪ Landscaping
6.3 Adjacent Property Impacts *(compared to existing/baseline)*		SAME	BETTER ▪ Displacements offset by image improvement	BETTER ▪ Displacements offset by image improvement	BETTER ▪ Displacements offset by image improvement
6.4 Overall Corridor Impacts *(compared to existing/baseline)*		SAME	BETTER ▪ Increased accessibility ▪ Improved image	BETTER ▪ Increased accessibility ▪ Improved image	BETTER ▪ Increased accessibility ▪ Improved image
6.5 Conformance With County Economic/Revitalization Plans *(compared to existing/baseline)*		SAME	BETTER ▪ Aid in realization of highest quality development	BETTER ▪ Aid in realization of highest quality development	BETTER ▪ Aid in realization of highest quality development
Objective Group (OG) 7. Cost (in millions – 1997 dollars)					
7.1 Capital Cost (in millions)[1]					
▪ Roadway Construction		$18	$22	$23	$30
▪ Right-of-Way		$5	$8	$11	$11
▪ Total (rounded to nearest 5 million)		$25	$30	$35	$40
▪ CSX Railroad Bridge Replacement/I-95 Interchange Upgrade		$10	$15	$15	$20
▪ Telegraph Road Interchange		$25	$25	$25	$25
7.2 Operating Costs (see regional matrix)					
7.3 Incremental Phasing Feasibility		Easy	Easy	Easy	Difficult

[1] Does not include costs for landscaping, placement of utilities underground or payment of damages beyond land values.

ROUTE 1 CONCEPT ALTERNATIVES
Segment VI – Fort Belvoir

	Baseline	Concept A	Concept B	Concept C	Concept D
Objective Group (OG) 1. Modal Coverage & Connectivity					
1.1 Bicycle & Pedestrian Facilities		Better	Better	Better	Better
1.2 Transit Service Coverage (see regional matrix)					
Objective Group (OG) 2. Transportation System Operation					
Daily Traffic Volumes	50,000	50,000	63,000	63,000	63,000
2.1 Transit Service Performance (see regional matrix)					
2.2 Hours of Congestion	7	6	3	3	3
Objective Group (OG) 3. Transportation System Design					
Right-of-Way (in feet)	95'	130'	160'	200'	125'
3.1 Existing Safety Deficiencies Addressed	None	Full	Full	Full	Full
3.2 Conformance To Design Standards	None	Full	Full	Full	Full
3.3 Access Management – Facility Design (# of median breaks/mile)	Painted Median	2	2	2	2
3.4 Access Management – Driveway Design (# of driveways adjacent to thru lanes per mile)	0 to 5	0 to 5	0 to 5	0 to 5	0 to 5
Objective Group (OG) 4. Environmental Resources					
4.1 Wetlands Affected (acres)		0.5	3.0	4.0	2.0
4.2 Floodplain Affected (acres)		0.5	1.0	1.5	1.0
4.3 Water Quality	Worse	Better	Better	Better	Better
4.4 Wildlife	None	None	None	None	None
4.5 Public Lands	• Accotink Bay • Wildlife Refuge • Ft. Belvoir • Woodlawn Plantation	• Accotink Bay • Wildlife Refuge • Ft. Belvoir • Woodlawn Plantation	• Accotink Bay • Wildlife Refuge • Ft. Belvoir • Woodlawn Plantation	• Accotink Bay • Wildlife Refuge • Ft. Belvoir • Woodlawn Plantation	• Accotink Bay • Wildlife Refuge • Ft. Belvoir • Woodlawn Plantation
4.6 Historic Resources (see environmental drawings)	• Pohick Church	• Pohick Church	• Pohick Church	• Pohick Church	• Pohick Church
Objective Group (OG) 5. Community Impacts					
5.1 Displacements		6 – 10	6 – 10	6 – 10	1 - 5
5.2 Community Character/Structure		Same	Better	Better	Better
5.3 Conformance With Local/Regional Plans	None	None	Full	Full	Full
5.4 Visual Character *(as measured against the existing conditions)*		MUCH BETTER • no additional lanes • addition of planted median • visual width of corridor reduced because of planted median • sidewalks • moderate encroachment on woodlands -- approx. 25 feet on either side of road	BETTER • pavement width expanded with two lanes • addition of planted median • right-of-way wider than baseline • visual width of corridor similar to baseline because of median addition -- each side of median is similar in size to baseline • sidewalks • moderate encroachment on woodlands -- approx. 25 feet on either side of road	MUCH WORSE • pavement width expanded with two lanes • addition of swale median with no trees • visual width of corridor much broader because of unplanted swale medians • sidewalks • significant encroachment on woodlands -- approx. 60 feet on either side of road • no service roads	SAME • pavement width expanded with three lanes • addition of planted median • visual width of corridor similar to baseline due to planted median • sidewalks • moderate encroachment on woodlands -- approx. 25 feet on either side of road

ROUTE 1 CONCEPT ALTERNATIVES
Segment VI – Fort Belvoir

	Baseline	Concept A	Concept B	Concept C	Concept D
5.5 Visual Consistency *(as measured against the desired character for the segment)*		PARTIAL • moderate encroachment on woodlands	PARTIAL • moderate encroachment on woodlands	NONE • significant encroachment on woodlands	PARTIAL • moderate encroachment on woodlands
5.6 Conformance with Established Urban Design Guidelines		All four concepts are in accord with established standards			
Objective Group (OG) 6. Economic Development					
6.1 Accessibility *(compared to existing/baseline)*		SLIGHTLY BETTER	BETTER • Reduced hours of congestion	BETTTER • Reduced hours of congestion	BETTER • Reduced hours of congestion
6.2 Economic Image *(compared to existing/baseline)*		BETTER • Landscape improvements	BETTER • Landscape improvements	WORSE • Broader median with no landscaping	BETTER • Landscape improvements
6.3 Adjacent Property Impacts *(compared to existing/baseline)*		SLIGHTLY WORSE • Minor impacts on businesses	SLIGHTLY WORSE • Minor impacts on businesses	WORSE • Minor impacts on businesses but maximum encroachment on woodland	SLIGHTLY WORSE • Least impact on adjacent businesses and only minor encroachment on woodlands
6.5 Overall Corridor Impacts *(compared to existing/baseline)*		SAME	BETTER • Improves character of corridor by enhancing accessibility and image	SLIGHTLY BETTER • Enhances accessibility but does not affect image	BETTER • Improves character of corridor by enhancing accessibility and image
6.5 Conformance With County Economic/Revitalization Plans *(compared to existing/baseline)*		SAME	MUCH BETTER • Encourages highest quality economic development	SLIGHTLY BETTER	MUCH BETTER • Encourages highest quality economic development
Objective Group (OG) 7. Cost (in millions – 1997 dollars)					
7.1 Capital Cost (in millions)[1] • Roadway Construction • Right-of-Way • Total (rounded to nearest 5 million) • Fairfax County Parkway Interchange • Woodlawn Road Interchange		$17 $5 $20 $20 $25	$22 $7 $30 $20 $25	$24 $10 $35 $20 $25	$25 $6 $30 $20 $25
7.2 Operating Costs (see regional matrix)					
7.3 Incremental Phasing Feasibility		Easy	Easy	Easy	Easy

[1] Does not include costs for landscaping, placement of utilities underground or payment of damages beyond land values.

ROUTE 1 CONCEPT ALTERNATIVES

Segment VII – Woodlawn To Alexandria

	Baseline	Concept A	Concept B	Concept C	Concept C1	Concept D
Objective Group (OG) 1. Modal Coverage & Connectivity						
1.1 Bicycle & Pedestrian Facilities		Better	Better	Better	Better	Better
1.2 Transit Service Coverage (see regional matrix)						
Objective Group (OG) 2. Transportation System Operation						
Daily Traffic Volumes						
South of Route 235	54,000	54,000	78,000	64,000	72,000	80,000
North of Route 235	77,000	77,000	84,000	84,000	78,000	98,000
South of Beltway	98,000	98,000	103,000	103,000	99,000	109,000
2.1 Transit Service Performance (see regional matrix)						
2.2 Hours of Congestion						
• South of Route 235	7	7	0	0	0	1
• North of Route 235	6	5	3	3	7	2
• South of Beltway	6	5	3	3	7	1
Objective Group (OG) 3. Transportation System Design						
Right-of-Way (in feet)						
South of Route 235	95'	135' – 220'	170'	125' – 210'	125' – 210'	210'
North of Route 235	140'	160' – 245'	170'	150' – 235'	125' – 210'	185'
3.1 Existing Safety Deficiencies Addressed	None	Full	Full	Full	Full	Full
3.2 Conformance To Design Standards						
South of Route 235	None	Full*	Full	Full	Full	Full
North of Route 235	Partial	Full	Full	Full	Full	Full
3.3 Access Management – Facility Design (# of median breaks/mile)						
South of Route 235	Painted Median	3	3	3	3	3
North of Route 235	5	5	5	5	5	5
3.4 Access Management – Driveway Design (# of driveways adjacent to thru lanes)						
South of Route 235	20 – 25	20 – 25	20 – 25	20 – 25	20 – 25	20 – 25
North of Route 235	30 – 35	30 – 35	30 – 35	30 – 35	30 – 35	30 – 35
Objective Group (OG) 4. Environmental Resources						
4.1 Wetlands Affected (acres)		0.5	2.0	2.5	0.5	3.0
4.2 Floodplain Affected (acres)		0.5	0.5	1.0	0	1.0
4.3 Water Quality		Better	Better	Better	Better	Better
4.4 Wildlife		None	None	None	None	None
4.5 Public Lands	Belle Haven Park	Belle Haven Park	Belle Haven Park	Belle Haven Park	Belle Haven Park	Belle Haven Park
4.6 Historic Resources (see environmental drawings)	Woodlawn Plantation	Woodlawn Plantation	Woodlawn Plantation	Woodlawn Plantation	Woodlawn Plantation	Woodlawn Plantation
Objective Group (OG) 5. Community Impacts						
5.1 Displacements		46 – 50	51 – 60	41 – 45	16 – 20	141 – 150
5.2 Community Character/Structure						
South of Route 235		Same	Better	Better	Better	Better
North of Route 235		Same	Better	Better	Same	Better
5.3 Conformance With Local/Regional Plans						
South of Route 235	None	None	Full	Full	Full	Full
North of Route 235	None	Partial	Full	Full	None	Full

* Doe ide costs for landscaping, placement of utilities underground or payment of damages beyond land

ROUTE 1 CONCEPT ALTERNATIVES
Segment VII – Woodlawn To Alexandria

	Concept A	Concept B	Concept C	Concept C1	Concept D
5.4 Visual Character – **Northern** *(as measured against the existing conditions)*	BETTER ▪ pavement width expanded one lane ▪ additional continuous planted median length, except in Beacon Mall area between Collard and Southgate ▪ sidewalk/path	BETTER ▪ pavement width expanded two lanes ▪ addition of double planted median ▪ right-of-way slightly wider than baseline ▪ visual width of corridor similar to baseline because of median addition – each side of median is similar in size to baseline, except between Popkins and Southgate sidewalk/path	SAME ▪ pavement width expanded two lanes ▪ no service roads ▪ addition of planted median ▪ visual width of corridor similar to baseline because of median addition ▪ sidewalk/path	SAME ▪ pavement width same as existing/baseline	SAME ▪ pavement width expanded four lanes ▪ addition of three planted medians ▪ visual width of corridor similar to baseline due to median breaks ▪ sidewalk/path
5.4 Visual Character – **Southern** *(as measured against the existing conditions*	SAME ▪ pavement width expanded four lanes ▪ addition of double planted median ▪ visual width of corridor similar to baseline because of median addition -- each side of median is similar in size to baseline ▪ sidewalks	SAME ▪ pavement width expanded five lanes ▪ addition of double planted median ▪ right-of-way wider than baseline ▪ visual width of corridor similar to baseline because of median addition -- each side of median is similar in size to baseline ▪ sidewalks	SAME ▪ pavement width expanded three lanes except near the Sacramento Shopping Center where service roads are added and expand the pavement width to seven lanes ▪ addition of planted median, except in Sacramento Shopping Center where three medians added in conjunction with service roads ▪ visual width of corridor similar to baseline with median addition except in Sacramento Center area ▪ sidewalks	SAME ▪ pavement width expanded three lanes except near the Sacramento Shopping Center where service roads are added and expand the pavement width to seven lanes ▪ addition of planted median, except in Sacramento Shopping Center where three medians added in conjunction with service roads ▪ visual width of corridor similar to baseline with median addition except in Sacramento Center area ▪ sidewalks	SAME ▪ pavement width expanded seven lanes throughout to just south of Cooper Road ▪ pavement width expanded with six lanes south of Cooper Road ▪ addition of three planted medians to just south of Cooper Road ▪ addition of two medians south of Cooper Road ▪ visual width of corridor reduced due to three medians to just south of Cooper Road ▪ visual width of corridor similar to baseline south of Cooper Road ▪ pavement width expanded with four lanes at Old Mill road and north ▪ addition of one median at Old Mill Road and north
5.5 Visual Consistency – **Northern** *(as measured against the desired character for the segment)*	PARTIAL ▪ achieves boulevard appearance except in Beacon Mall area	PARTIAL ▪ achieves boulevard appearance in northern segment except in Beacon Hill Road area between Popkins and Southgate	PARTIAL ▪ achieves boulevard appearance except in Beacon Hill Mall area between Popkins and Southgate	PARTIAL ▪ achieves boulevard appearance except in Beacon Hill Mall area	COMPLETE ▪ achieves boulevard appearance throughout northern segment
5.5 Visual Consistency – **Southern** *(as measured against the desired character for the segment)*	COMPLETE ▪ achieves boulevard appearance	COMPLETE ▪ achieves boulevard appearance	COMPLETE ▪ achieves boulevard appearance	COMPLETE ▪ achieves boulevard appearance	COMPLETE ▪ achieves boulevard appearance
5.6 Conformance with Established Urban Design Guidelines – **Northern**	All four concepts are able to reflect the Established Urban Design Guidelines in full when they are more fully detailed throughout the segment except in the Beacon Mall area in Concepts A, B, C and C1. All include: ▪ Undergrounding or moving utility wires ▪ Landscape plantings along the road's edges ▪ A sidewalk or path on each side of the road ▪ A reduction in curbcuts Each concept can be enhanced to mark the nodes (except at Beacon Mall in Concepts A, B, C and C1) with additional plantings, special pavers, signs, and pedestrian amenities.				

ROUTE 1 CONCEPT ALTERNATIVES
Segment VII – Woodlawn To Alexandria

	Concept A	Concept B	Concept C	Concept C1	Concept D
5.6 Conformance with Established Urban Design Guidelines – **Southern**	All concepts are able to reflect the Established Urban Design Guidelines in full when they are more fully detailed throughout the segment. All include: • Undergrounding or moving utility wires • Landscape plantings along the road's edges • A sidewalk or path on each side of the road • A reduction in curbcuts Each concept can be enhanced to mark the nodes and gateways with additional plantings, special pavers, signs, and pedestrian amenities.				
Objective Group (OG) 6. Economic Development					
6.1 Accessibility *(compared to existing/baseline)*	SAME	BETTER • Reduced hours of congestion • Improvements more pronounced in the southern section • Reversible lanes restrict access to businesses	BETTER • Reduced hours of congestion • Improvements more pronounced in the southern section	SAME • Decreases congestion south of Route 235, increases congestion north of Route 235	BETTER • Reduced hours of congestion • Improvements more pronounced in the southern section • Express lanes restrict access to businesses
6.2 Economic Image *(compared to existing baseline)*	BETTER • Landscape improvements	MUCH BETTER • Maximum landscape improvements	BETTER • Landscape improvements	SLIGHTER BETTER • Northern portion same as baseline/existing, southern segment better	SLIGHTLY BETTER • Landscape improvements offset by wider roadway
6.3 Adjacent Property Impacts *(compared to existing baseline)*	SLIGHTLY BETTER • Displacement of businesses mitigated by adjacent higher quality development • Potential limited by poor accessibility	BETTER • Displacement of businesses mitigated by adjacent higher quality developments • Potential for parcel consolidation and higher density nodal development instead of strip development.	BETTER • Displacement of businesses mitigated by adjacent higher quality development • Potential for parcel consolidation and higher density nodal development instead of strip development.	BETTER • Causes minimum displacement • Encourages higher quality development in southern section.	MUCH WORSE • Substantially more displacements
6.4 Overall Corridor Impacts *(compared to existing baseline)*	SLIGHTLY BETTER • Landscape enhancements offset by poor accessibility	BETTER • Improves character of corridor by enhancing accessibility and image	BETTER • Improves character of corridor by enhancing accessibility and image.	SAME • Enhances accessibility in southern section but causes displacements. • Northern section experiences increased congestion	SLIGHTLY BETTER • Enhances accessibility but causes higher displacements • Does not enhance image
6.5 Conformance With County Economic/Revitalization Plans *(compared to existing baseline)*		SLIGHTLY BETTER	MUCH BETTER	BETTER	WORSE
Objective Group (OG) 7. Cost (in millions – 1997 dollars)					
7.1 Capital Cost (in millions)[1]					
• Roadway Construction	$65	$65	$54	$69	$25
• Right-of-Way	$25	$27	$25	$46	$13
• Total (rounded to nearest 5 million)	$90	$90	$80	$115	$40
• Huntington Avenue/Fort Hunt Road Interchange	$50	$50	$50	$50	$50
• South Kings Highway Interchange	$50	$50	$50	$50	$50
7.2 Operating Costs					
7.3 Incremental Phasir ibility	Difficult	Difficult	Possible	Possible	ible

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APPENDIX C

Copies of Recommended Concept Endorsements

Prince William County Board of Supervisors
Fairfax County Board of Supervisors
Town of Dumfries
Southeast Fairfax Development Corporation

MOTION: BARG

SECOND: CADDIGAN

September 16, 1997
Regular Meeting
Res. No. 97-722

RE: SUPPORT THE CONSULTANT'S PREFERRED CONCEPT FOR THE U.S. ROUTE 1 CORRIDOR STUDY

ACTION: APPROVED

WHEREAS, House Joint Resolution 256 was passed in 1994 by the Virginia General Assembly for a comprehensive study of U.S. Route 1 which falls within Prince William and Fairfax County; and

WHEREAS, the study identified transportation related features and existing deficiencies, projected future demand of the corridor through the year 2020, developed and evaluated alternatives to address transportation needs, recommended short-term solutions, and accommodated county economic development goals; and

WHEREAS, the Virginia Department of Transportation (VDOT) hired the consultant, TransCore, to plan the study; and

WHEREAS, the consultant offered their preferred concept for the Route 1 corridor which includes a six-lane boulevard with streetscaping features on a 125 foot wide right-of-way with sixteen foot wide raised medians dividing the north and southbound lanes, improved street lighting, consideration of a continuous sidewalk and/or trail along Route 1, in addition to the transit, streetscaping, and economic features as described in the attachment contained herein; and

WHEREAS, the preferred concept will help promote the economic vitality of businesses located along the corridor while meeting the transportation needs of motorists through the year 2020; and

WHEREAS, the Route 1 Steering Committee selected the preferred concept as described above during their August 6 meeting; and

WHEREAS, VDOT is prepared to send a final draft report on the findings of the study to the Virginia General Assembly;

NOW, THEREFORE, BE IT RESOLVED that the Prince William Board of County Supervisors does hereby support TransCore's (the consultant) preferred concept for the economic revitalization and transportation improvements to the U.S. Route 1 corridor.

ATTACHMENT: Concept Description - Route 1 Corridor

Votes:
Ayes: Barg, Caddigan, Hill, Jenkins, McQuigg, Seefeldt, Thompson, Wilbourn
Nays: None
Absent from Vote: None
Absent from Meeting: None

For Information:
Assistant County Executive - PH
Director of Public Works
Transportation Division Chief

CERTIFIED COPY Phillip J Campbell
Clerk to the Board

Key Features of Preferred Plan

- **Serves the Route 1 community; encourages and supports economic development and revitalization**
- **6-lane boulevard with streetscaping**
  - Additional lane for HOV in each direction in existing 6-lane section north of Little Hunting Creek
- **Raised median (16 feet wide typically)**
  - 700 to 1000 feet minimum between median breaks
  - Additional 4 feet of median width in special areas, where feasible, for enhanced landscaping and pedestrian refuge
- **Inter-parcel access rather than service roads**
- **Continuous sidewalks/trail**
- **Accommodate on-street bicycle facility during design**
- **Improved lighting and signage**
- **Smart Travel systems (ITS)**

Route 1 Corridor Study
Fairfax and Prince William Counties

Key Features of Plan - Transit

- **Enhanced local and express bus service throughout corridor oriented to transit centers (timed transfers)**
- **Feeder Bus to VRE Commuter Rail Stations**
- **Improvements to VRE Commuter Rail Services**
- **Demand responsive bus service in Lorton, Triangle, and Dumfries**
- **All bus stops with maps, timetables, and connecting sidewalks**
- **Busy stops with shelters, benches, and electronic displays**
- **Standard fare media for region**
- **New/expanded park-and-ride lots in Triangle and Dumfries**

Route 1 Corridor Study
Fairfax and Prince William Counties

Key Features of Plan - Streetscaping

- **Integral element to improve the image of Route 1**
- **Plan establishes design intent and principles**
- **Streetscaping should reflect importance and proximity of Potomac and Occoquan Rivers and historic sites**
- **Landscaping needed throughout corridor with enhancements in special areas**
  - Special areas enhanced with additional plantings, pedestrian light fixtures, benches, and trash cans
  - Special areas include development nodes, historic sites, entries, and areas with significant pedestrian activity
  - Plant and streetscape materials should be similar in color and texture throughout corridor; additional colors in special areas
- **Relocate/bury overhead utility lines where feasible**
  - Plan defines "priority areas"

Route 1 Corridor Study
Fairfax and Prince William Counties

Key Features of Plan - Economics

- **Improving the image of Route 1 is key**
- **Transportation improvements present opportunity to encourage redevelopment/revitalization**
  - Key is to maximize this opportunity for the overall well-being of Route 1
  - Opportunities can be maximized with strong public intervention by the Counties
- **Incentives and zoning changes are needed**
- **Revitalization efforts need to be a comprehensive plan, of which transportation improvements are one tool**
- **VDOT recognizes the need to work with the Counties**
- **Stable funding source needed for revitalization and maintenance**

Route 1 Corridor Study
Fairfax and Prince William Counties

FAIRFAX COUNTY

OFFICE OF TRANSPORTATION
Suite 1034
12055 Government Center Parkway
Fairfax, Virginia 22035-5511

Telephone(703)324-1100 Fax(703)324-1450

V I R G I N I A

September 29, 1997

Mr. Thomas F. Farley
Virginia Department of Transportation
3975 Fair Ridge Drive
Fairfax, Virginia 22033

SUBJECT: Route 1 Corridor Study

Dear Mr. Farley:

At its September 22, 1997, meeting, the Fairfax County Board of Supervisors concurred in the recommendation of staff and endorsed the preferred concept of improvements for the Route 1 Corridor Study as outlined in the attached Memo to the Board dated September 22, 1997. Please contact Kathy Ichter at 324-1150 should you have any questions regarding this matter.

Sincerely,

Shiva K. Pant
Director

SKP/KDI:kdr

Attachment

cc: Young Ho Chang, Assistant District Engineer for Planning and Development, Virginia Department of Transportation
Carolyn Panker, Virginia Department of Transportation
Joe Langley, Virginia Department of Transportation

Memo to the Board
September 22, 1997

ACTION - 2.

ROUTE 1 CORRIDOR STUDY (MOUNT VERNON AND LEE DISTRICTS).

ISSUE:
Board endorsement of a preferred concept of improvement as identified through the Route 1 Corridor Study.

RECOMMENDATION:
I recommend that the Board of Supervisors take the following action:

1. For the study segments within Fairfax County, endorse the consultant's preferred concept as follows:

   a. For study segment V-Lorton, which includes Route 1 from the Occoquan River to Telegraph Road, endorse concept B, which includes six through lanes and transit improvements as described in Attachment I.

   b. For study segment VI-Fort Belvoir, which includes Route 1 from Telegraph Road to Route 235 south/Old Mill Road, endorse concept D, which includes six through lanes and transit improvements as described in Attachment I.

   c. For study segment VII-Woodlawn to Alexandria, which includes Route 1 from Route 235 south/Old Mill Road to the Alexandria City line, endorse concept C, which includes six through lanes south of Route 235 north/Buckman Road, and eight through lanes north of Route 235 north/Buckman Road, and transit improvements as described in Attachment I.

2. Recommend to the Virginia Department of Transportation (VDOT) the following:

   a. Prepare a preliminary centerline design. Work with the community to reduce property impacts by shifting the centerline where appropriate.

   b. Work with policy makers to seek county, state, and/or federal resources to implement elements of revitalization on Route 1, including parcel consolidation, in conjunction with the completion of additional through lanes.

c. Perform a transit center location study. Any subsequent study that VDOT undertakes to determine the sites of future transit centers should not be limited strictly to the Fort Belvoir and Beacon Hill locations identified in this study. Other locations within the Route 1 corridor should be considered as candidate sites, as well as locations in areas adjacent to the corridor. In particular, a follow-up transit center study should address the desirability of continuing to include the Telegraph Road transit center as an element in the Fairfax County transportation plan.

d. Within study segment VII-Woodlawn to Alexandria, review the operational characteristics of high-occupancy vehicle (HOV) lanes.

e. Implement an access management plan that balances traffic safety and operations with the ability to create and maintain viable business activity.

f. In conjunction with roadway improvements, construct enhancements such as sidewalks, trails, crosswalks, and bus shelters throughout the project length, and landscaping and undergrounding of utilities in selected special treatment areas.

g. Continue to coordinate efforts in study segment VII-Woodlawn to Alexandria, with the Woodrow Wilson Bridge project.

TIMING:
The Board should take action on this matter on September 22, 1997, in order that the Board's position is included in the final VDOT report to the General Assembly in October 1997. Board endorsement at this time, in conjunction with endorsement by the Prince William County Board of Supervisors, will assist General Assembly members in the pursuit of funding for improvements to the Route 1 corridor.

BACKGROUND:
In 1994, legislation approved by the General Assembly directed VDOT to conduct a study of the 27-mile long U.S. Route 1 corridor in Fairfax and Prince William Counties. The study was directed to address transportation needs through the year 2020, and to help ensure coordinated revitalization efforts in the corridor.

The study has proceeded with input from three primary sources: 1) citizens and business-owners, including community focus groups and a citizen advisory committee, 2) a study technical team made up of various transit and highway agency technical staff, staff from Fort Belvoir, and two citizen representatives from each county, and 3) a study steering committee composed of state senators, delegates, county supervisors, and representatives from the Town of Dumfries, Fort Belvoir, and Quantico. The study team divided the 27-mile long corridor into seven segments, the first four of which are in Prince William County:

Segment I: Quantico
Segment II: Triangle/Dumfries
Segment III: Cherry Hill/Neabsco
Segment IV: Woodbridge
Segment V: Lorton (Occoquan River to Telegraph Road)
Segment VI: Fort Belvoir (Telegraph Road to Route 235 south/Old Mill Road)
Segment VII: Woodlawn to Alexandria (Route 235 south/Old Mill Road to Alexandria City line)

The study recognized that, as an arterial roadway, Route 1 serves two primary purposes: 1) to provide access to residences, businesses, and other development in the corridor, and 2) to provide for travel between Route 1 and origins and destinations outside of the corridor. Few people regularly travel the entire length of the corridor primarily due to the proximity of I-95 to Route 1.

Through citizen and technical input, various alternative concepts were developed and evaluated, as summarized in Attachments II and III. Based on a variety of measurements to improve mobility and accessibility within the corridor, including but not limited to hours of congestion by the year 2020, physical displacements of property uses, and cost, a preferred concept was presented by the consultant, as shown in Attachment I.

Following additional community input, the study steering committee endorsed the preferred concept on August 4, 1997. However, VDOT was also directed to work with community members regarding the HOV lanes included in the northern portion of study Segment VII, north of Route 235 north/Buckman Road to the Capital Beltway. Attachment IV provides a summary justification for these lanes. Note that this study has reaffirmed the Comprehensive Plan, which already calls for these additional through lanes.

FISCAL IMPACT:
None.

Memo to the Board
September 22, 1997

ENCLOSED DOCUMENTS:
Attachment I: Preferred Concept
Attachment II: Summary Concept Evaluation
Attachment III: Public Bulletin dated June 1997
Attachment IV: Justification of Eight Lanes in North Segment VII

STAFF:
Anthony H. Griffin, Deputy County Executive for Planning and Development
Shiva K. Pant, Director, Office of Transportation
Katharine D. Ichter, Chief, Highway Operations Division, Office of Transportation
William C. Cuttler, Transportation Planner, Highway Operations Division, Office of Transportation

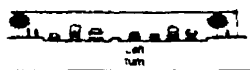
Preferred Concept

V LORTON

Occoquan River to Telegraph Road

Preferred Concept Description

Right-of-way = 125'



6-Lane Landscaped Boulevard
Raised Median

- Implement fixed route local and express bus service with connections to Woodbridge transit center (future), Fort Belvoir transit center (future) and Franconia-Springfield Transportation Center.
- Provide feeder bus service to the Lorton VRE commuter rail station.
- Provide demand responsive transit service for the less densely populated areas.

Cost

- Roadway and right-of-way = $30 million.
- CSX railroad/I-95 interchange = $15 million.

Findings

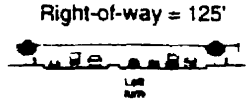
- Reduces congestion from 9 hours to 7 hours per day in 2020 (as compared to Baseline).
- Requires 1 to 5 displacements.
- Roadway is not shifted closer to Pohick Church.
- Boulevard appearance improves image of the segment and supports plans for high quality nodal development.

VI FORT BELVOIR

Telegraph Road to Route 235 South/Old Mill Road

Preferred Concept Description

Right-of-way = 125'



6-Lane Landscaped Boulevard
Raised Median

- Construct interchanges at Fairfax County Parkway and Woodlawn Road when required.
- Provide a transit center at Fort Belvoir.
- Implement fixed route local and express bus service with connections to Woodbridge transit center (future), Beacon Mall transit center (future), and Franconia-Springfield Transportation Center.

Cost

- Roadway and right-of-way = $30 million.
- Fairfax County Parkway interchange = $20 million.
- Woodlawn Road interchange = $25 million.

Findings

- Reduces congestion from 7 hours to 3 hours per day in 2020 (as compared to Baseline).
- Requires 1 to 5 displacements and requires land from Fort Belvoir and Woodlawn Plantation.
- Curb and gutter minimizes required right-of-way.

- WOODLAWN TO ALEXANDRIA

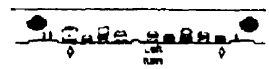
Route 235 South/Old Mill Road to Fairfax County/Alexandria City Line

Preferred Concept Description

North Section

Route 235 (North)/Buckman Road (North) to Fairfax County/Alexandria City Line

Right-of-way = 150'(235'*)

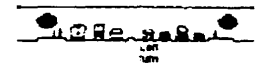


6-Lane Landscaped Boulevard
Plus 2 HOV Lanes
Raised Median

South Section

Route 235 (South)/Old Mill Road to Route 235 (North)/Buckman Road (North)

Right-of-way = 125'(210'*)



6-Lane Landscaped Boulevard
Raised Median

* Indicates right-of-way in areas with service roads on both sides of Route 1

- Construct interchange at South Kings Highway and Huntington Avenue.
- Provide a transit center at Beacon Mall.
- Implement fixed route local and express bus service with connections to Fort Belvoir transit center (future) and Huntington Metro Station.
- Provide feeder bus service to the Huntington Metro Station.

Cost

- Roadway and right-of-way = $80 million.
- South Kings Highway interchange = $50 million.
- Huntington Avenue interchange = $35 million.

Findings

- Reduces congestion from 7 hours to 0 hours per day in 2020 (as compared to Baseline) in the southern portion.
- Reduces congestion from 6 hours to 3 hours per day in 2020 (as compared to Baseline) in the northern portion.
- Requires 41 to 45 displacements.
- Additional person-moving capacity necessary to maintain accessibility in segment.
- Of concepts which add capacity, Concept C minimizes right-of-way needs and displacements.
- Limited opportunities for service roads without adverse economic impacts: "interparcel access" required instead.

Including PWC segments.

Cost of Consultant's Preferred Concept:

Roadway and Right-of-way = $255 M
Interchanges and Bridge = $220 M
Total = $475 M

Costs listed are approximate and include administration, construction, and right-of-way costs. They do not include costs for landscaping, placement of utilities underground, or payment of damages beyond land values.

General right-of-way widths are shown. A wider right-of-way may be needed at some intersections and interchanges.

Key Features of Preferred Plan

- **Serves the Route 1 community; encourages and supports economic development and revitalization**
- **6-lane boulevard with streetscaping**
  - Additional lane for HOV in each direction in existing 6-lane section north of Little Hunting Creek
- **Raised median (16 feet wide typically)**
  - 700 to 1000 feet minimum between median breaks
  - Additional 4 feet of median width in special areas, where feasible for enhanced landscaping and pedestrian refuge
- **Inter-parcel access rather than service roads**
- **Continuous sidewalks/trail**
- **Accommodate on-street bicycle facility during design**
- **Improved lighting and signage**
- **Smart Travel systems (ITS)**

Key Features of Plan - Transit

- **Enhanced local and express bus service throughout corridor oriented to transit centers (timed transfers)**
- **Feeder Bus to VRE Commuter Rail Stations**
- **Improvements to VRE Commuter Rail Services**
- **Demand responsive bus service in Lorton, Triangle, and Dumfries**
- **All bus stops with maps, timetables, and connecting sidewalks**
- **Busy stops with shelters, benches, and electronic displays**
- **Standard fare media for region**
- **New/expanded park-and-ride lots in Triangle and Dumfries**

Key Features of Plan - Streetscaping

- **Integral element to improve the image of Route 1**
- **Plan establishes design intent and principles**
- **Streetscaping should reflect importance and proximity of Potomac and Occoquan Rivers and historic sites**
- **Landscaping needed throughout corridor with enhancements in special areas**
  - Special areas enhanced with additional plantings, pedestrian light fixtures, benches, and trash cans
  - Special areas include development nodes, historic sites, entries, and areas with significant pedestrian activity
  - Plant and streetscape materials should be similar in color and texture throughout corridor; additional colors in special areas
- **Relocate/bury overhead utility lines where feasible**
  - Plan defines "priority areas"

Key Features of Plan - Economics

- **Improving the image of Route 1 is key**
- **Transportation improvements present opportunity to encourage redevelopment/revitalization**
  - Key is to maximize this opportunity for the overall well-being of Route 1
  - Opportunities can be maximized with strong public intervention by the Counties
- **Incentives and zoning changes are needed**
- **Revitalization efforts need to be a comprehensive plan, of which transportation improvements are one tool**
- **VDOT recognizes the need to work with the Counties**
- **Stable funding source needed for revitalization and maintenance**

Summary Concept Evaluation

Factor	Baseline	Concept A	Concept B	Concept C	Concept D	C[illegible]
Segment V - Lorton						
Cross Section						
Median Treatment	None/Painted	Painted	Raised	Raised	Raised	
Displacements	0	1-5	1-5	6-10	6-10	
Hours of Congestion						
[illegible] Crossing	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
Cost (in millions)						
Roadway and Right-of-way		$25	$30	$35	$40	
[illegible] Interchange		$10	[illegible]	$15	$20	
Segment VI - Ft. Belvoir						
Cross Section						
Median Treatment	None	Raised	Raised	Raised	Raised	
Displacements	0	5-10	5-10	5-10	1-5	
Hours of Congestion	[illegible]	[illegible]	[illegible]	[illegible]	3	
Cost (in millions)						
Roadway and Right-of-way		$20	$30	$35	$30	
[illegible] Interchange		$20	$20	$20	$20	
[illegible] Interchange		$25	$25	$25	$25	
Segment VII - Woodlawn to Alexandria						
Cross-Sections						
Median Treatment	North - Raised South - Painted	Raised	Raised	Raised	Raised	Raised
Displacements	0	46-50	51-60	41-45	141-150	31-40
Hours of Congestion						
[illegible] Rt. 235	[illegible]	[illegible]		[illegible]		[illegible]
[illegible] Rt. 235	5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	6	[illegible]	[illegible]	[illegible]		[illegible]
Cost (in millions)						
Roadway and Right-of-way		$90	$90	$80	$115	$40
[illegible] Interchange		$35	$35	$35	$35	$35
[illegible] Interchange		$50	$50	$50	$50	$50
Concept Cost (in millions)						
Roadway and Right-of-way		$220	$265	$280	$325	$240
Interchanges and [illegible] Bridge		$215	$220	$220	$235	$220
Total		$435	$485	$500	$555	$460

☐ Indicates preferred concept for each segment

Cost of Consultant's Preferred Concept: Roadway and Right-of-way = $255 M; Interchanges and Bridge = $220 M; Total = $475 M

Costs listed are approximate and include administration, construction, and right-of-way costs. They do not include costs for landscaping, placement of utilities underground, or payment of damages beyond land values.

Indicates right-of-way width for areas with service roads on both sides of Route [illegible]

Concept [illegible] is a variation of Concept C. Concept C[illegible] has [illegible] lanes throughout Segment VII.

General right-of-way widths are shown. A wider right-of-way may be needed at some intersections and interchanges.

PUBLIC BULLETIN

Route 1 Corridor Study

Fairfax and Prince William Counties

June, 1997
Issue Number 4

VDOT Evaluates Potential Solutions

The Virginia Department of Transportation (VDOT) is conducting a study of the Route 1 Corridor in Fairfax and Prince William Counties. The purpose of the study is to identify the current and future transportation needs through the year 2329. To date, the study has identified existing and future problems and developed four alternative concepts to address the identified needs. These concepts were described in the previous newsletter and are summarized here. The study team has now completed its initial evaluation of the four concepts. This newsletter provides an update of the findings to date. Please use the form on Page 7 of this newsletter to send in your comments on these findings.

What Have We Learned So Far?

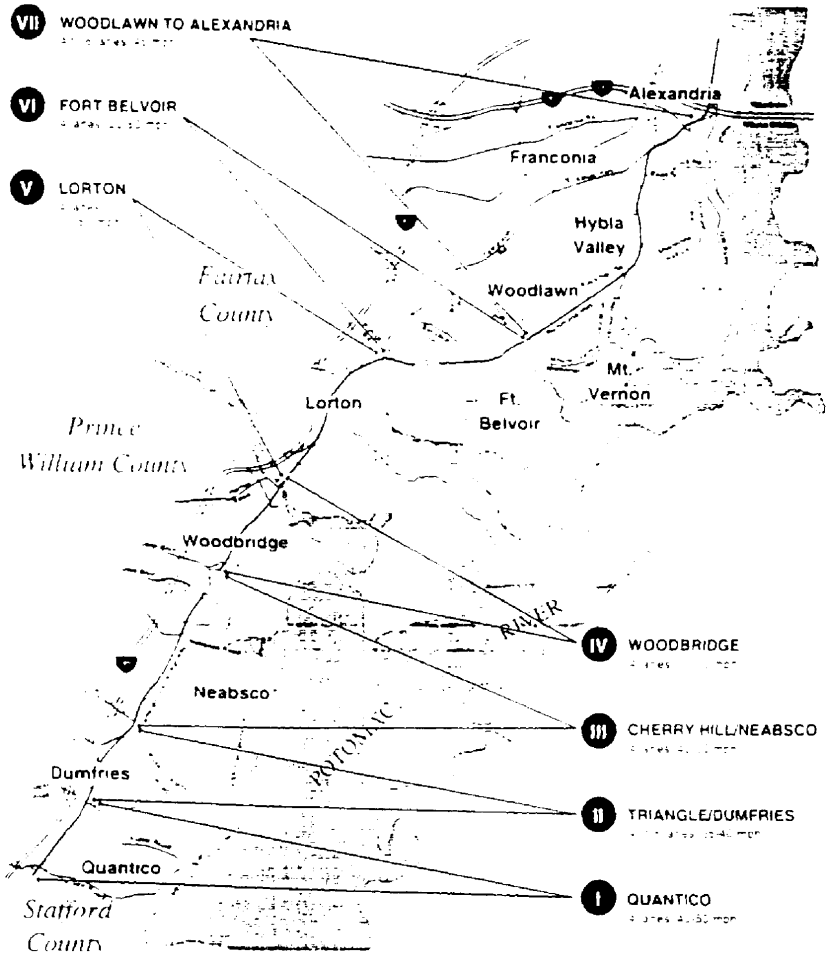
The Route 1 corridor has many positive qualities to offer those who live and work here: varied shopping opportunities, unique recreation areas, and attractive historic sites. However, transportation system improvements are needed to meet increasing demand for travel and help to revitalize portions of the corridor. The study team realizes the importance of the dual role of Route 1:

1) To provide access to the residences, businesses, and other development in the corridor.

2) To provide for travel between Route 1 and origins and destinations outside the corridor.

Continued on Page 2

The study team evaluated a range of concept alternatives that were customized for the characteristics of each of the seven segments of the 27-mile corridor.



Public Information Meetings in June

The study team will present the findings of the evaluation and the Consultant's Preferred Concept. No decisions have been made. Come and tell us which findings you agree with and what concerns you have with the Consultant's Preferred Concept.

Monday June 16
Open House
4:00-8:00 P.M.

Potomac High School
16°06 Jefferson Davis Highway
Dumfries, VA
Take Rt. 1 South, turn right on Four Year Trail

Tuesday June 17
Open House
4:00-8:00 P.M.

Woodlawn Elementary School
8505 Highland Street
Alexandria, VA
Take Rt. 1 South, turn right on Highland Lane, turn right on Woodlawn Street

A brief presentation will be made at 7:00 P.M. each night. The study team and Steering Committee will then respond to questions. Study team members will be available throughout the open house to answer your questions.

continued from page 1

The Route 1 transportation system must continue to serve this dual role while accommodating expected growth in the corridor. Any program of improvements must address the transportation needs, help to improve the sense of community, and enhance economic development opportunities along the corridor.

Existing Problems and Future Challenge

The program of solutions for the next 20 years must address both the existing problems and needs that will emerge by the year 2020. Existing problems were described in previous newsletters include safety concerns for drivers and pedestrians, chaotic appearance of many sections of the road, disconnected transit services with poor bus stops, traffic bottleneck locations, and a negative economic market image.

Future problems arise from the expected continuing growth in and around the Route 1 corridor. According to the Metropolitan Washington Council of Governments, an additional 85,000 residents (from 157,000 to 242,000 people) and 45,000 jobs (from 68,000 to 115,000 jobs) are projected in the corridor by 2020.

This growth will produce increased trip making and result in higher traffic volumes and more congestion on Route 1 and adjacent roadways. By 2020, traffic in the overall corridor is forecast to increase by 25 to 100 percent in Fairfax County and by 130 to 160 percent in Prince William County.

These increases result in an additional 10,000 to 40,000 vehicles per day on Route 1 in 2020 for a "baseline" scenario. The baseline scenario assumes that no additional improvements are made to the Route 1 transportation system beyond the few projects currently funded.

The Need for Action

The graphic to the right shows that Route 1 will generally have more hours of congestion per day in 2020 than in 1995 for the Baseline scenario. For purposes of this analysis, "hours of congestion" is defined as hours of the day when the traffic demand exceeds the capacity of the roadway. The Baseline scenario is projected to have 4 to 12 hours of congestion per day in 2020, depending upon the location in the corridor.

To improve mobility and accessibility in the corridor, improvements are needed to all aspects of the Route 1 transportation system. The roadway and intersections must be widened and made more efficient. Bus and train service needs to be improved and complimented with improved pedestrian and bicycle facilities. Methods to encourage more ridesharing will also be required. The ability to satisfy trip demand, however, is just one of the factors in determining the program of solutions. The study team is considering each Concept's effects on travel in the corridor, environmental and historic resources, community quality of life, economic vitality, and costs.

The challenge for the study team is to find the best balance among the various improvement options and their benefits and impacts. Which mix of improvements

Where Are We Now?

The two-year study, which began in October, 1995, has several key phases. To date the study team has completed data collection, field inventory, an assessment of existing and future transportation conditions, and development of long-range improvement Concepts.

We are coming to you now to get your thoughts on the initial evaluation of the Concepts. Your feedback is vital to help guide upcoming decisions regarding the future of Route 1. If you have any ideas or comments concerning the findings and/or Consultant's Preferred Concept, please use the attached comment sheet.

The input received on the findings will be used by the Steering Committee in the next phase of the study, Preferred Package Selection and Refinement, to be conducted during July and August. In addition, a prioritized action plan will be developed describing a timetable for improvements. The recommended plan will be documented in a draft Final Report in September, 1997. The study is scheduled for completion in November, 1997.

Remember that the study team is seeking solutions that will carry the Route 1 corridor well into the next century, to the year 2020. Solving existing problems will be the first priority. If possible, the worst safety hazards and traffic bottlenecks will receive attention first. However, a long-range plan is necessary to provide a guiding vision for Route 1.

Route 1 Corridor Study

Fairfax and Prince William Counties

will provide acceptable transportation service and have an overall positive impact on the adjacent communities and businesses? For much of this corridor, economic revitalization is a priority. Transportation improvements, properly implemented, can be a catalyst by improving the appearance of the corridor and encouraging beneficial redevelopment.

Concepts Evaluated

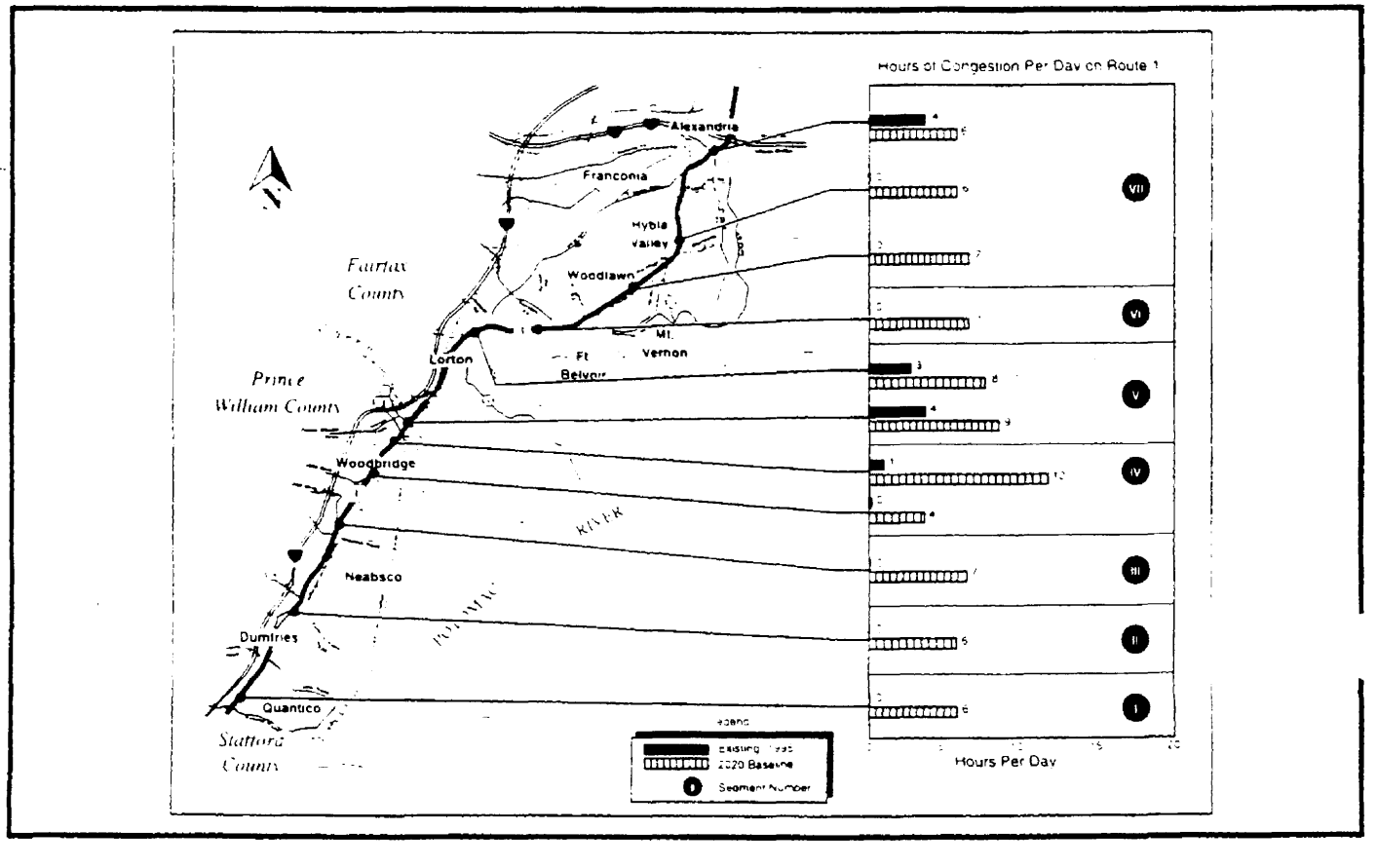
Four alternative Concepts were developed to be compared to the Baseline scenario. Concept A, B, C, and D. A variation on Concept C, Concept C1, was added based on community input. These concepts represent a range of potential solutions and were described in a previous newsletter. Detailed information on each Concept will be available for review at the public meetings. The Concepts can be summarized as follows:

- Baseline - Assumes regional transportation improvements consistent with MWCOG's 2020 Constrained Long-Range Plan. On Route 1, however, only currently funded improvements are assumed.
- Concept A - Includes major transit service improvements. Roadway improvements are limited to adding left turns throughout the corridor with painted medians. No additional thru lanes are included.
- Concepts B, C, and D: Include moderate to minor transit service improvements. Each concept adds a through lane in each direction and left turn lanes throughout the corridor. Some locations have painted medians in Concept B. Concepts C, C1, and D have raised medians. Concept C1 represents a variation on Concept C in which no additional lanes are added to the existing 6-lane roadway in the northern four mile of the corridor.

Each Concept was customized for the characteristics and issues in each segment of the corridor. For example, in Segment VII, Woodlawn to Alexandria, the concepts include special lanes for transit and high occupancy vehicles since there is much transit usage in this area. Details of the concepts in each segment will be shown at the public meetings.

The study team has evaluated the concepts to understand the benefits and impacts of each option. The following pages present a summary of the key findings to date.

Hours of congestion on Route 1 are projected to increase throughout the corridor for the Baseline scenario by the year 2020



Consultant's 2020 Preferred Concept

The findings to date are summarized in terms of a "Consultant's Preferred Concept" for the year 2020. This Preferred Concept represents a package of improvements that is a combination of parts of each of the Concepts described on the previous page. No final decisions have been made. The study team has not endorsed or rejected these findings. The Steering Committee, comprised of your elected officials, needs your input.

This Preferred Concept is based on what we have learned from the evaluation and the ongoing study process. The findings reflect a balancing of the overall values of the community, the need for economic revitalization, and meeting the travel demand needs in the corridor. The study team has listened to what is important to you and puts forward these findings for your review and comment.

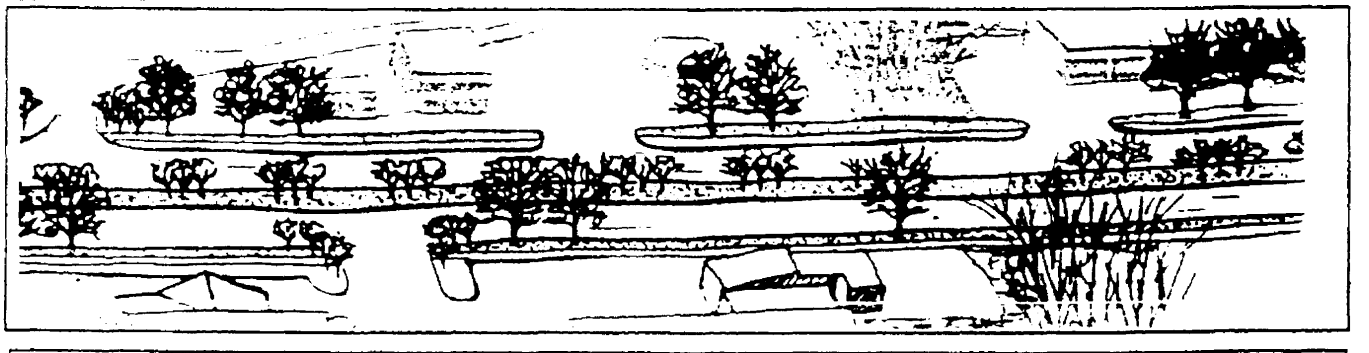
Any long-range plan for Route 1 will not be implemented all at once. Improvements to the corridor will be constructed gradually over the next two decades. Solving existing problems will the first priority. A long-range plan is necessary to provide a guiding vision.

Overall Summary

The Consultant's Preferred Concept for the long-range (2020) plan for the Route 1 Corridor includes improvements to all aspects of the transportation system. The following provides a general summary for the overall corridor. The highlights of the concept is then described for each segment of the corridor.

- 6-lane boulevard with landscaping.
- Raised median for landscaping and left turns (16 feet wide typically) with minimum spacing between median breaks of 700 to 1000 feet.
- Continuous sidewalks trail along Route 1 that connect with businesses, neighborhoods, and transit stops.
- Improved roadway lighting and signing.
- Enhanced local and express bus service oriented to existing and new transit centers with coordinated schedules.
- "Smart Travel" systems including coordinated traffic signals, variable message signs on Route 1, real-time traveller information displays at transit centers, and standard transit fare media for the region.
- Feeder bus service to VRE commuter rail stations.
- Transit route maps and timetables at all bus stops.
- Busy bus stops have shelters, benches, and electronic displays.

The Consultant's Preferred Concept includes a 6-lane boulevard with a landscaped median that improves safety and the visual appearance of the roadway.



Segment I - Quantico

Preferred Concept Description

- Similar to Concept D for this segment
- Construct 6-lane landscaped boulevard with curb and gutter and raised median
- Reconstruct interchange at Russell Road
- Relocate Iwo Jima Memorial further from Route 1

Findings

- Reduces congestion from 6 hours to 0 hours per day in 2020 (as compared to Baseline).
- Requires no displacements but requires land from Marine Corps base and Locust Shade Park.
- Reduces tree buffer between roadway and Quantico housing.
- Curb and gutter minimizes required right-of-way.

Cost*

Roadway and right-of-way = $20 million

Russell Road interchange = $5 million

Route 1 Corridor Study

Fairfax and Prince William Counties

Segment II - Triangle/Dumfries

Preferred Concept Description

- Similar to Concept D for this segment.
- Relocate southbound Route 1 to Fraley Boulevard in Dumfries.
- Construct 6-lane landscaped boulevard with curb and gutter and raised median
- Provide new/expanded park-and-ride lots
- Provide demand responsive transit service for the less densely populated areas
- Construct interchange at Route 234

Cost*

Roadway and right-of-way = $25 million

Route 234 interchange = $25 million

Findings

- Reduces congestion from 6 hours to 2 hours per day in 2020 (as compared to Baseline).
- Requires 41 to 50 displacements, mostly in Triangle.
- Provides catalyst for higher quality development in Triangle.
- Median improves visual appearance and supports property consolidation.
- Relocation of southbound Route 1 to Fraley Boulevard produces positive economic impacts on Main Street businesses and the overall Town because it enables the creation of a pedestrian-oriented atmosphere.

Segment III - Cherry Hill/Neabsco

Preferred Concept Description

- Similar to Concept B for this segment
- Construct 6-lane landscaped boulevard with curb and gutter and raised median
- Implement fixed route local and express bus service with connections to Dale City Transportation Center, Woodbridge transit center (future), Potomac Mills, and Manassas
- Provide feeder bus service to the future Cherry Hill VRE commuter rail station

Cost*

Roadway and right-of-way = $55 million

Findings

- Reduces congestion from 7 hours to 3 hours per day in 2020 (as compared to Baseline).
- Requires 6 to 10 displacements
- Boulevard appearance improves image of the segment and supports plans for high quality nodal development

Segment IV - Woodbridge

Preferred Concept Description

- Similar to Concept C for this segment
- Construct 6-lane landscaped boulevard with curb and gutter and raised median
- Construct interchange at Route 123
- Provide a transit center at the Woodbridge VRE station
- Implement fixed route local and express bus service with connections to Dale City Transportation Center, Fort Belvoir transit center (future), Potomac Mills, and Manassas
- Provide feeder bus service to the Woodbridge and Rippon VRE commuter rail stations

Cost*

Roadway and right-of-way = $55 million

Route 123 interchange = $35 million

Occoquan River bridge widening = $10 million

Findings

- Reduces congestion from 4 hours to 2 hours per day in 2020 (as compared to Baseline) on Route 1 near Opitz Boulevard.
- Reduces congestion from 12 hours to 10 hours per day in 2020 (as compared to Baseline) on Route 1 near Occoquan Road.
- Requires 36 to 45 displacements
- 6 lanes on Route 1 is needed to serve local traffic travelling to and from destinations in the corridor
- Raised median with landscaping is preferred over a painted median because it is safer for vehicles and pedestrians and greatly improves the appearance of the roadway
- Raised median restricts access to midblock parcels but encourages parcel consolidation and higher quality development

* Costs listed are approximate and include administration, construction, and right-of-way costs. They do not include costs for landscaping, placement of utilities underground, or payment of damages beyond land values

Segment V - Lorton

Preferred Concept Description

- Similar to Concept B for this segment.
- Construct 6-lane landscaped boulevard with curb and gutter and raised median.
- Implement fixed route local and express bus service with connections to Woodbridge transit center (future), Fort Belvoir transit center (future) and Franconia-Springfield Transportation Center.
- Provide feeder bus service to the Lorton VRE commuter rail station.
- Provide demand responsive transit service for the less densely populated areas.

Cost*

Roadway and right-of-way = $30 million.

CSX railroad/I-95 interchange = $15 million.

Findings

- Reduces congestion from 9 hours to ~ hours per day in 2020 (as compared to Baseline).
- Requires 1 to 5 displacements.
- Roadway is not shifted closer to Pohick Church.
- Boulevard appearance improves image of the segment and supports plans for high quality nodal development.

Segment VI - Fort Belvoir

Preferred Concept Description

- Similar to Concept D (without reversible lanes) for this segment.
- Construct 6-lane landscaped boulevard with curb and gutter and raised median.
- Construct interchanges at Fairfax County Parkway and Woodlawn Road when required.
- Implement fixed route local and express bus service with connections to Woodbridge transit center (future), Beacon Mall transit center (future) and Franconia-Springfield Transportation Center.

Cost*

Roadway and right-of-way = $30 million.

Fairfax County Parkway interchange = $20 million.

Woodlawn Road interchange = $25 million.

Findings

- Reduces congestion from ~ hours to 3 hours per day in 2020 (as compared to Baseline).
- Requires 1 to 5 displacements and requires land from Fort Belvoir and Woodlawn Plantation.
- Curb and gutter minimizes required right-of-way.

Segment V - Woodlawn to Alexandria

Preferred Concept Description

- Similar to Concept C for this segment but with few service roads.
- Southern portion (existing 4-lane roadway section) Construct 6-lane landscaped boulevard with curb and gutter and raised median.
- Northern Portion (existing 6-lane roadway section) Construct 6-lanes plus right lane high occupancy vehicle (HOV) lanes
  landscaped boulevard with curb and gutter and raised median.
- Construct interchange at South Kings Highway and Huntington Avenue.
- Provide a transit center at Beacon Mall.
- Implement fixed route local and express bus service with connections to Fort Belvoir transit center (future) and Huntington Metro Station.
- Provide feeder bus service to the Huntington Metro Station.

Cost*

Roadway and right-of-way = $80 million.

South Kings Highway interchange = $50 million.

Huntington Avenue interchange = $35 million.

Findings

- Reduces congestion from ~ hours to 0 hours per day in 2020 (as compared to Baseline) in the southern portion.
- Reduces congestion from 6 hours to 3 hours per day in 2020 (as compared to Baseline) in the northern portion.
- Requires 41 to 45 displacements.
- Additional person-moving capacity necessary to maintain accessibility in segment.
- Of concepts which add capacity, Concept C minimizes right-of-way needs and displacements.
- Limited opportunities for service roads without adverse economic impacts; "interparcel access" required instead.

* Costs listed are approximate and include administration, construction, and right-of-way costs. They do not include costs for landscaping, placement of utilities underground, or payment of damages beyond land values.

Why is an Eight-Lane Roadway Needed in the Northern Portion of Segment VII?

- ***Corridor[1] Will Experience Growth***

  - Population in the Woodlawn to Alexandria portion of the [illegible] Route [illegible] Study Corridor (Segment VII) will increase from 93,000 in [illegible] to [illegible]6,000 in 2020. This corresponds to an overall growth of 25% and an annual growth rate of 0.8% per year.
  - Employment in the corridor will increase from 20,000 to 2[illegible],[illegible]00 (16%) overall, 0.5% annual)

- ***Growth Will Result in Increased Traffic***

  - Daily traffic volumes in the Hybla Valley to Alexandria Section of Route [illegible] will increase by [illegible] between now and 2020. This will add up to [illegible],000 vehicles per day.
  - Annualized traffic growth rate [illegible] [illegible] per [illegible]

- ***Traffic Growth Will Result in Increased Hours of Congestion***

  - With a 6-lane Route [illegible] throughout Fairfax County, hours of congestion in 2020 will increase to [illegible] hours per day (see table below)

	Hours of Congestion Per Day		
	1995	2020 with 6-lanes	2020 with 8-lanes (HOV)
South of Capital Beltway	4 hrs	[illegible] hrs	3 hrs
Hybla Valley	0 hrs	[illegible] hrs	3 hrs

- ***This Extent of Congestion Will Adversely Affect Economic Vitality of the Corridor***

  - This increase in the level of congestion will negatively affect the level of accessibility and thus reduce the economic vitality of the corridor.

- ***Additional Roadway Lanes Are Needed to Reduce Congestion***

  - Major transit service increases showed only slight reductions in congestion
  - To significantly reduce congestion, additional through lanes on Route [illegible] are needed.

- ***HOV is the Most Efficient Operational Strategy for the Added Lanes***

  - HOV is the most efficient operating strategy since it maximizes person movement and therefore congestion reduction

---

[1] Corridor is defined as the area between [illegible] Road and the Potomac River

Hours of congestion refers to the number of hours for which demand will exceed capacity. This would result in continuous stop and go traffic between signalized intersections. At signals, it would take several cycles to clear the intersection

[illegible]0102 Aug [illegible] hov doc

Town of Dumfries

Chartered 1749
Incorporated 1961
Virginia's Oldest Town

Motion: Brown
Second: Yohey

Date: Nov. 18, 1997
Resolution: #97-5

WHEREAS, House Joint Resolution 256 was passed in 1994 by the Virginia General Assembly for a comprehensive study of US Route 1 which falls within the Town of Dumfries, Prince William and Fairfax County; and

WHEREAS, the study identified transportation related features and existing deficiencies, projected future demand of the corridor through the year 2020, developed and evaluated alternatives to address transportation needs, recommended short-term solutions, and accommodate town economic development goals; and

WHEREAS, the Virginia Department of Transportation (VDOT) hired the consultant, TransCore, to plan the study; and

WHEREAS, the consultant offered their preferred concept for the Route 1 corridor which includes a six-lane boulevard with streetscaping features on a 125 foot wide right-of-way with sixteen foot wide raised medians dividing the north and southbound lanes, improved street lighting, construction of continuous sidewalk along Route 1, in addition to the transit, streetscaping, and economic features as described in the attachment contained herein; and

WHEREAS, the preferred concept will help promote the economic vitality of businesses located along the corridor while meeting the transportation need of motorists through the year 2020; and

WHEREAS, the Route 1 Steering Committee selected the preferred concept as described above during their August 6 meeting; and

WHEREAS, VDOT is prepared to send a final draft report on the findings of the study to the Virginia General Assembly;

Resolution: #97-5

NOW THEREFORE, BE IT RESOLVED that the Dumfries Town Council does hereby support TransCore's (the consultant) preferred concept for the economic revitalization and transportation improvements to the US Route 1 corridor.

Adopted this 18th **day of** November **1997.**

AYES: Washington, English, Bray, Cornell, Yohey, Brown, Bauckman
NAYS: None

BY ORDER OF THE COUNCIL

Samuel W. Bauckman
Mayor

ATTEST: Retta Ladd

Retta Ladd, CMC/AAE
Town Clerk

SFDC
PROGRESS BY DESIGN

Southeast Fairfax Development Corporation

7704 Richmond Highway, Suite 202 • Alexandria, Virginia 22306 **(703) 360-5008**

Southeast Fairfax Development
Corporation on the
Virginia Department of Transportation
Route 1 Study

Resolution #139-97

The SFDC supports an improved Richmond Highway transportation corridor which is safer, more efficient and more aesthetically pleasing. We support the Virginia Department of Transportation study recommendations for Segment VII which promote the redevelopment and revitalization of Richmond Highway through an improved physical image. We feel the adopted study concept should balance improvements to reflect the dual nature of Richmond Highway as both a community-serving "Main Street" and a commuter route. While the SFDC prefers "Alternative C-1", the SFDC could support Transcore's Preferred Alternative "C", but only with the following important considerations:

SFDC desires to be actively involved in the design phase of the oject, to work with all agencies to minimize as many negative land use and economic impacts of the roadway improvements on existing Route 1 businesses and properties as possible.

2. Provision for adequate vehicular access to existing and future businesses must be made. Any implementation plan for access management should balance traffic safety and operations with the ability to create and maintain viable business activity. The proposed 40% reduction in access points is a significant concern.

3. A decision on designating the additional fourth through lane as an HOV lane should be postponed until such time as VDOT and Transcore can provide a clearer justification for such a designation, so that the Segment VII "community" can support the concept. We have difficulty understanding how HOV can work on a 3 1/2 mile segment of Highway with 18 traffic lights (buses and HOV'ers stopping at each light; traffic cutting across lanes to make right turns, possibly deterring customers trying to access businesses). Also, the consultant's conclusion that the majority of Route 1 traffic is local (for shorter vs. longer interjurisdictional commuter distances) argues against HOV lanes, even if a fourth lane proves to be eded.

4. Road improvements should be constructed only in combination with revitalization enhancements such as sidewalks, trails, crosswalks, bus shelters, landscaping and undergrounding of utilities. We are concerned about receiving the transportation improvements without the streetscape

improvements and assistance in assembling, marketing, and subsidizing development on residential lots which the study recommends.

5. There will be significant County costs associated with Preferred Concept C. Fairfax County Government officials should recognize the costs associated with Option C. Absent the County funding for the revitalization improvements recommended by Concept C, the strictly transportation-oriented improvements will possibly act to worsen the area's economy, aesthetic image, viability and desirability. This is due to the need for additional right of way width required for Preferred Concept C. Because property lots are already generally very small and shallow, additional right-of-way acquisition will cause these small parcels to be rendered undevelopable via private market forces. Transcore recommends the public sector (County government) absorb the costs associated with assembling, marketing and possibly subsidizing the development of these residue parcels. Another possible alternative being recommended by Transcore is the conversion of these parcels into landscaped and maintained open spaces. This is in addition to the recommendations for additional landscaped raised medians, the costs of which will also have to be absorbed by the County. The perpetual maintenance of these landscaped areas and the land assemblage/marketing/subsidizing will be extremely expensive for Fairfax County. In addition to the County government, other sources (federa and/or state) of funding for these purposes should be immediatel, identified.

6. Cost effective improvements which provide for alleviating existing traffic congestion on Segment VII should receive the highest funding priority. Other roadway efficiency measures, such as conversion of service drives to deceleration lanes, bus pull-off lanes, and/or additional/longer left turn lanes should also be given the highest and earliest priority.

7. Once a design concept is approved, there must be early identification and approval of the design center line. This will ease the stress, uneasiness and turmoil among developers, business and property owners.

Finally, the SFDC would like to assess accurately the impact of the proposed roadway improvements when the design phase is completed and before construction funding is identified. It will only be after the design is completed that the full measure of the impacts, positive and negative, can be accurately gauged and weighed.