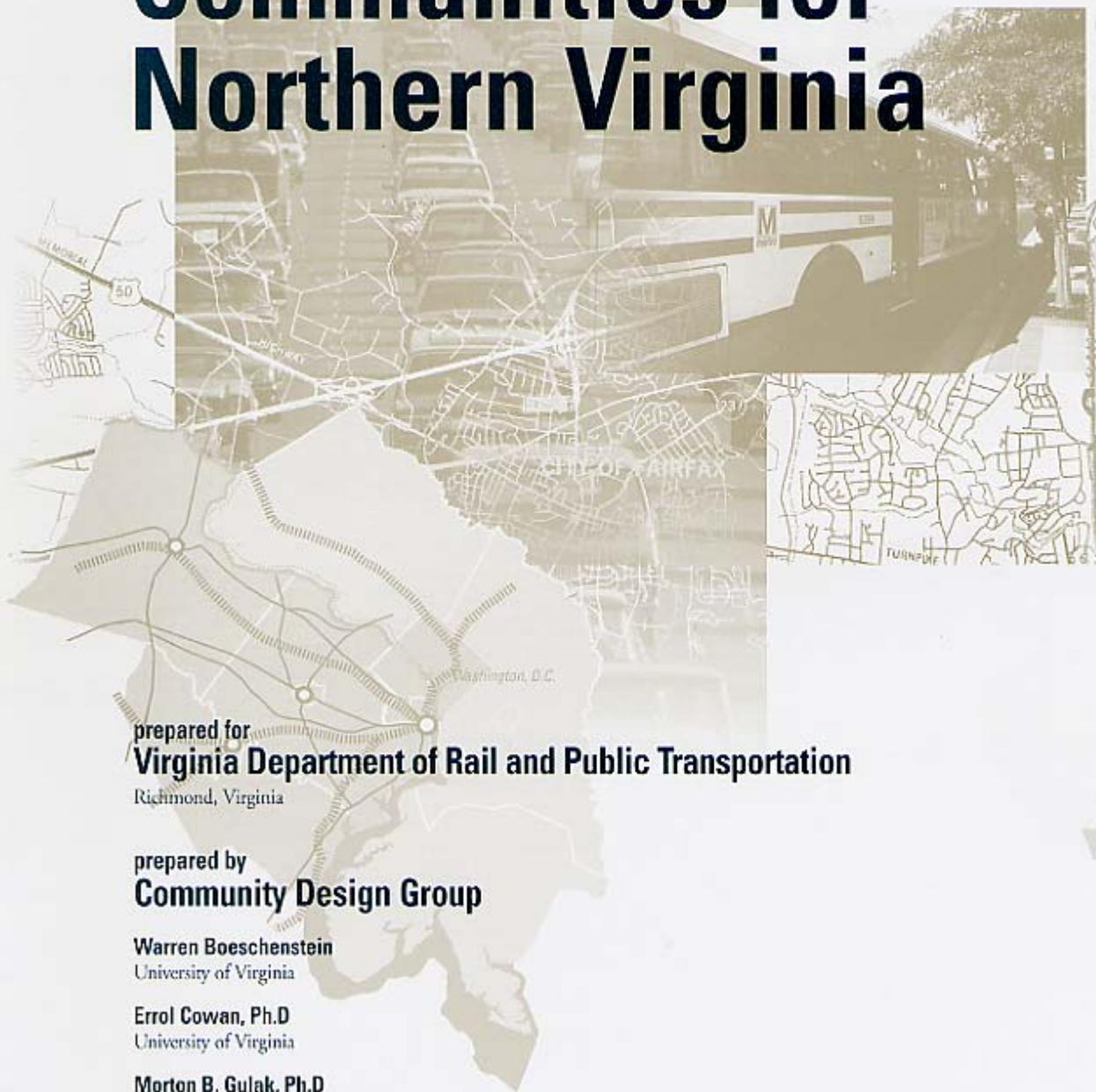


Transit-Oriented Communities for Northern Virginia



prepared for
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Richmond, Virginia

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Northern Virginia

introduction

This report examines new opportunities for passenger rail service and its potential benefits to communities in Northern Virginia. As regional population grows, highway congestion increases, and development patterns disperse, the existing highway system and the radial METRO system are increasingly unable to meet current and future demands for accessibility. This report explores and illustrates possible models to stimulate further discussion of the positive potential of multi-modal transit and compact development initiatives as a supplement to Northern Virginia's existing highway-dominant transportation system.

This report consists of a compilation of case studies illustrating the potential for transit-oriented development. They include:

Regional Network A region-wide exploration of existing or potential activity centers connected by transit-served corridors within a regional transportation network.

Route 28 Corridor The exploration of alternative rail transit corridor locations linking activity centers, from the City of Manassas to Dulles International Airport, along this rapidly growing employment sector.

Activity Center Case Studies The development and illustration of the potential for increased vitality stimulated by transit access for selected activity centers. These include Baileys Crossroads, City of Manassas, Centreville, and Chantilly.

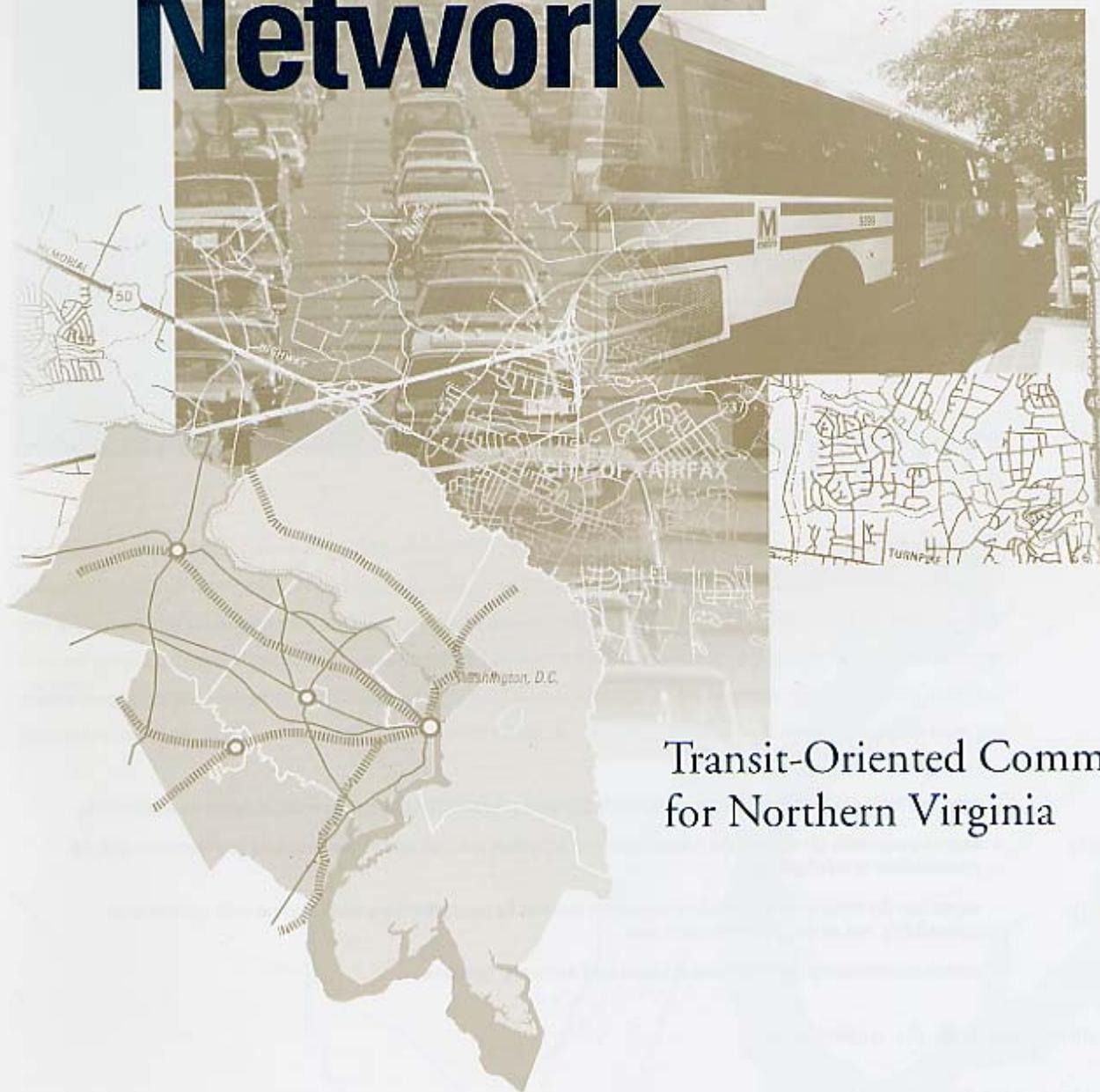
Demographic and Economic Dynamics The examination of regional and place-specific forces that can influence the viability of transit as well as development patterns. These include Demographic Influences on Transit Location and Market Aspects.

acknowledgements

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Regional Network

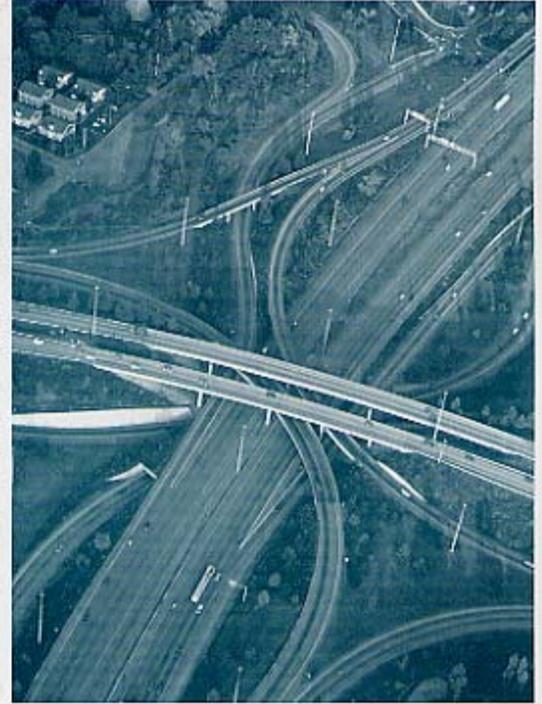


Transit-Oriented Communities
for Northern Virginia

Regional Network

introduction

Transportation systems affect where people choose to live and work. Patterns of living and working, in turn, influence the distribution, capacity, and convenience of transportation services. During recent decades of growth, Northern Virginia has predominantly relied on automobiles for transportation, resulting in dispersed, low-density, and segmented patterns of development which are increasingly difficult for transportation systems to serve. Auto-dependency and low-density development have also generated pollution problems and degraded environmental quality. If Northern Virginia is to continue to grow and prosper, other means of movement than the automobile will have to structure new living and working patterns and redefine existing ones.



purpose

Transportation systems should allow people to move conveniently throughout Northern Virginia without impinging upon the integrity of local communities. Transportation choices should expand and include not only greater utilization and extension of existing rail, Metrorail, pedestrian and bicycle paths, highways, and streets, and the construction of new systems such as those of light-rail, but also improved integration of these modes. This report argues that *activity centers*—compact, mixed-use, pedestrian-oriented communities with multi-modal transportation choices—are the keys to achieving more efficient transportation and a regional environment with enhanced opportunities. Thus, the primary objectives of this report are to:

- ▶ provide a wide choice of transportation modes to increase accessibility and to reduce dependence on automobiles,
- ▶ support community life through the intensification of activities, the provision of conveniences and amenities, and the preservations of local identities,
- ▶ encourage the development of efficient settlement patterns by concentrating growth in areas with suitable land, accessibility, and existing infrastructure, and
- ▶ protect environmental resources and enhance land and water qualities.

If Northern Virginia

is to continue to

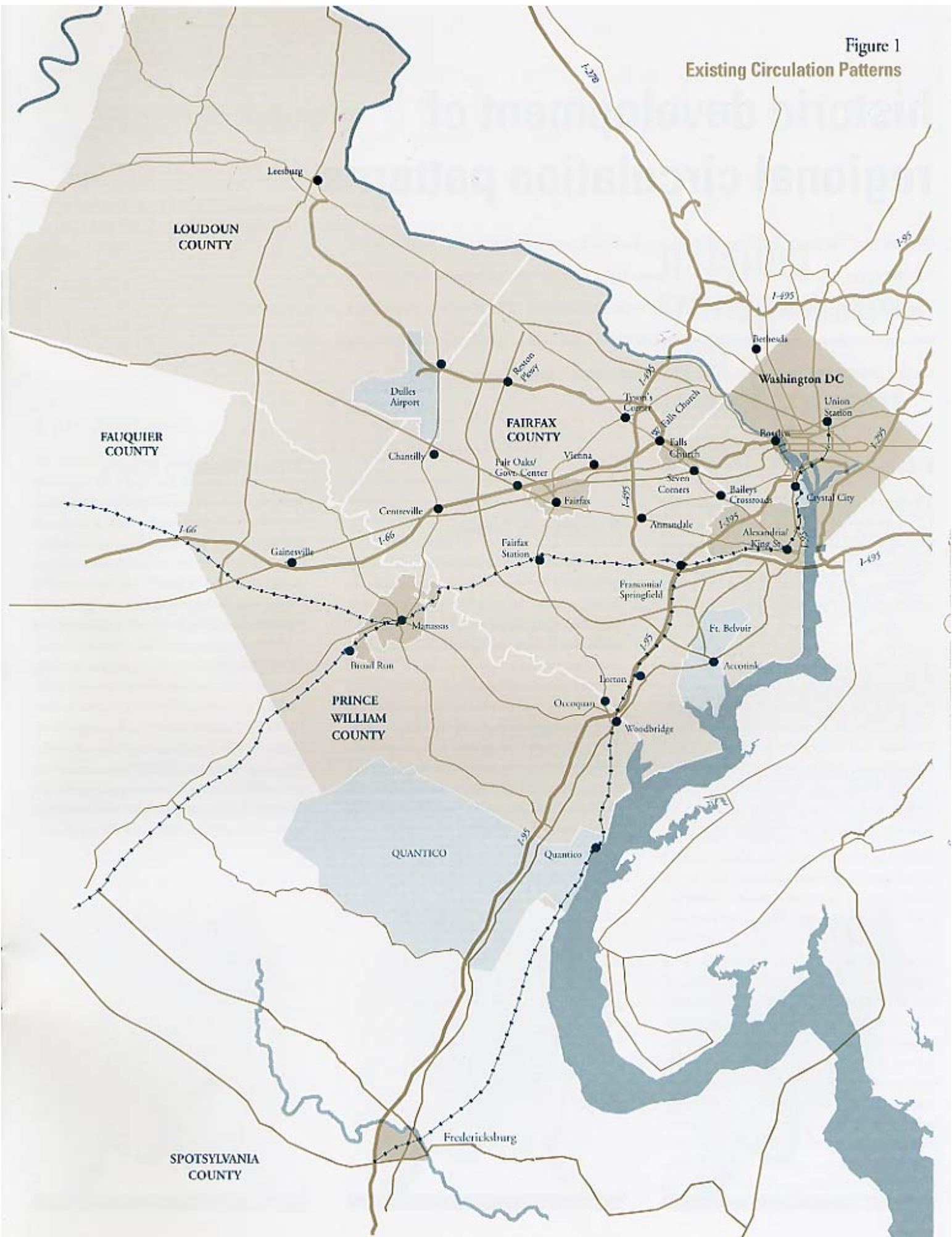
grow and prosper,

other means of movement than the automobile

will have to structure new living and working

patterns and redefine existing ones.

Figure 1
Existing Circulation Patterns



historic development of regional circulation patterns

Over the past 300 years, Northern Virginia has evolved from a marginal area of large colonial land holdings to a suburban region with burgeoning development of national significance. Transportation systems have been integral to this transformation. A brief review of these and the regional development patterns that resulted from them helps explain current conditions and the present need to use transportation an instrument to guide change.

1 Colonial Period

The region's earliest roads were built during the 1730s to export products from the region's plantations and farms to the port at Alexandria and to import supplies from there for the inland settlements. By mid-century, these roads were augmented by privately-funded turnpikes, including the Leesburg and Little River Turnpikes. Private funding also supported the introduction of ferries and canals, such as the Potomac and C&O Canals, which crossed the Potomac River and linked it to the Ohio River. Many of these routes, including Braddock Road, Ox Road, and Little River Turnpike, and with name changes, the Leesburg Pike (formerly New Church Road), and Route 50 (formerly the Fauquier and Alexandria Road) remain today and continue to influence development patterns.

2 Nineteenth Century

Railroads were introduced into the region in the 1830s and by the 1870s, the rail network (including the B&O, the RFP, and the Norfolk Western) had largely supplanted the system of ferries, canals and turnpikes for the long distance shipping of products. The Civil War, in particular, necessitated improvement of the rail infrastructure to move military supplies and personnel for the defense of the Union capital. The railroads, in turn, encouraged the development of communities along the rail lines such as Fairfax Station and Vienna and, particularly, at important junctions such as Manassas and Springfield.

3 Early Twentieth Century

Rail-oriented communities continued to flourish into the early twentieth century with the development of trolley systems and the advent of "streetcar suburbs" in such communities as Arlington, Falls Church, and Fairfax. After World War I, the automobile emerged as the vehicle of choice and, with the proliferation of roads, as the dominant form of transportation. In the 1930s the New Deal contributed to the centralization of government in the federal city and, the sponsorship of parkways, most notably the G.W. Parkway along the Potomac River. World War II further increased the role of the federal government and the core area as the primary destination for commuters, resulting in improved highway access to the central city and other major centers, such as the Pentagon.



ment

existing
patterns

existing transportation and development patterns

4 Post World War II

By the 1950s, more automobiles, federal mortgage and highway programs, and racial conflicts spurred rapid suburban development in Northern Virginia, causing the antiquated road system to become overloaded. To address this, in 1961 the National Capital Planning Commission proposed the "Wedges and Corridors" concept for regional growth, and subsequently, the Metropolitan Council of Governments (COG) adopted the concept to guide regional growth. Under this plan, I-270 and I-95, and the Metrorail transit system were built to serve corridors of development while the rivers, government installations, and other existing undeveloped land provided "wedges" of open spaces. I-495, the Capital Beltway, became the rim around the hub, and the federal core continued to serve as the primary destination for commuters.

5 Late Twentieth Century

As suburban growth continued, it filled the wedges of open spaces, because local governments had few means to control development. By the end of the 1980s, the capacity of the "Wedges and Corridors" plan had been exceeded, and dominant commuting patterns had shifted from radial to circumferential, or intersuburban, travel. To address this problem, COG proposed a new concept, the "Spiderweb" network. This concept introduced concentric rings of movement around the hub and across the wedges and corridors to connect suburban centers. However, a lack of bridges across the Potomac River, jurisdictional disputes between states and counties, and local community resistance to more road construction, has compromised this plan's success even as suburban traffic has mushroomed and placed ever more demands on the highway system.

Today Northern Virginia is served by a network of roads, arterials, and interstate highways that primarily radiate from central Washington, D.C. Metrorail, Amtrak and VRE also stem from the central city and thread out through the region. These networks, however, are not accommodating the now dominant, suburb-to-suburb pattern of travel, resulting in growing congestion. To build new circumferential highways through this built-up suburban region will be extremely, if not prohibitively, expensive as well as highly contentious.

The prevailing pattern of development in Northern Virginia is also an obstacle to improved transportation. Except for historic centers such as Alexandria, Manassas, Fairfax City, and Falls Church, most development has been in the form of residential suburbs, commercial strips, and office parks—usually built at low densities and as separate entities detached from one another. Since World War II, large commercial complexes, most notably Tysons Corner, have also emerged, again shaped by and highly dependent on automobiles for access. Massive highway investments have driven these developments, yet highways once built, attract new development and subsequent congestion (the region is second only to Los Angeles in time lost to congestion), because highways have limited expansion capacities. Their extensions prompt further outward growth with the loss of open space while at the same time contribute to the decline of older city centers and inner suburbs which have existing but then underutilized infrastructure.



4 Post World War II Wedges & Corridors

5 Late Twentieth Century Spiderweb Network

activity centers/ transit linkage concept

Transit systems (Metrorail, busses, light-rail, VRE, Amtrak) are most efficient if they link centers of development. In a regional pattern of *activity centers*, transit gains sufficient densities to support its patronage as well as uninterrupted passages for efficiencies of speed. Thus *activity centers* are essential for improved transportation. Not inconsequentially, these patterns also allow for the preservation of open space and, in general, for a more varied environment in which to live and work.

An *activity center* may be a district within a region, city or town. It may also be a village, a hamlet, or have a special purpose. Whatever its character, it should serve as a point of origin and destination for travel. In so doing, it should accommodate varied means of transportation and access regional opportunities. While differing in age and socio-economic characteristics, successful *activity centers* typically are compact, possess a mix of uses, have human scale, and convey a sense of physical identity. Because of these characteristics, residents identify with and may even feel responsible for them.

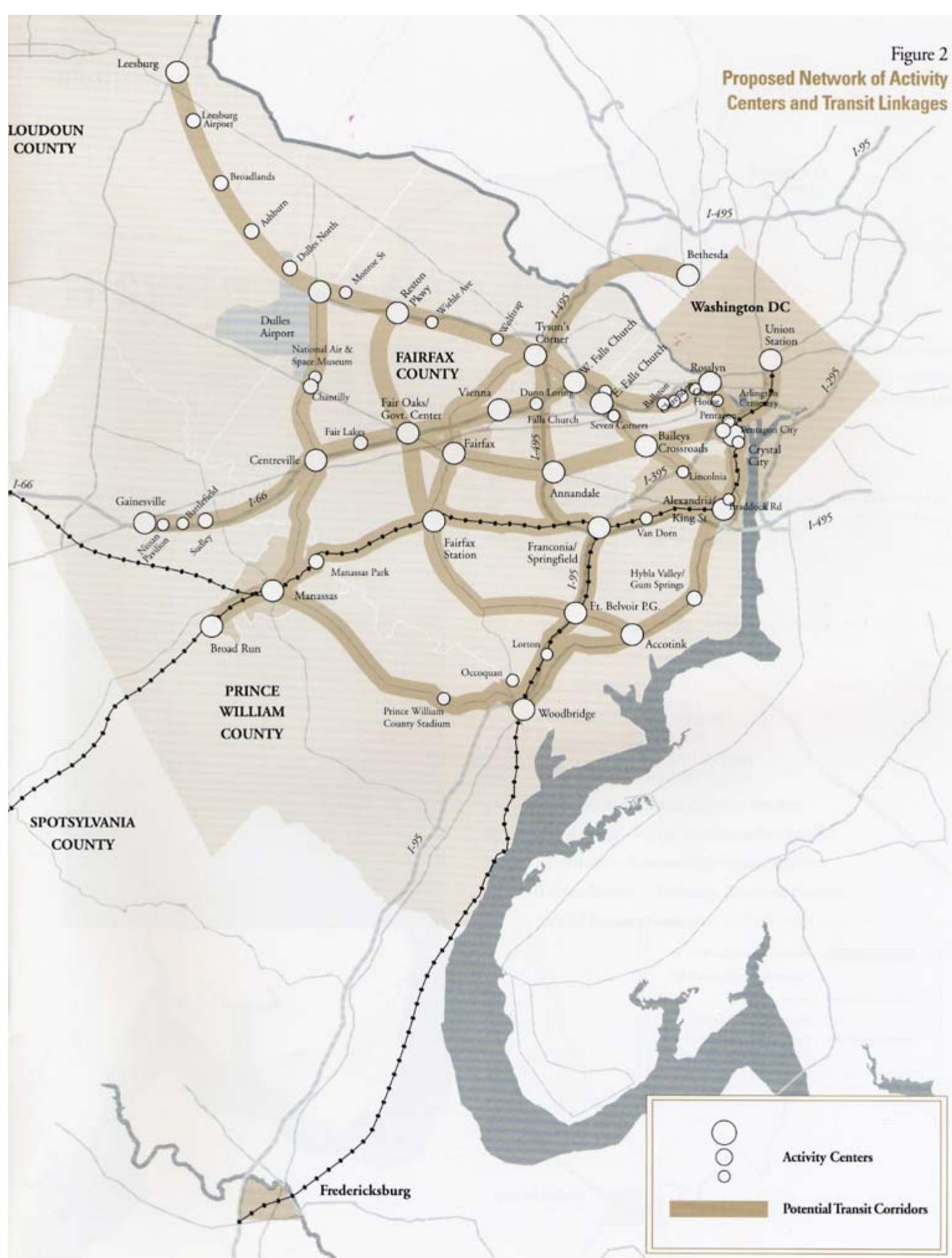
Activity centers have a primary area defined by a circle whose radius is one-quarter mile from a center served by transit and whose subsidiary catchment area is one-half mile radius from the center. In these terms, Washington, D.C. is not one but a cluster of *activity centers*, each one usually oriented to a Metro station. On the other hand, a village, for example, constitutes just one *activity center*.

network of activity centers and transportation linkages

Existing and new *activity centers* in Northern Virginia should serve as transit nodes. The linkage of these nodes then forms an initial transit structure for the region. Based on ridership projections and origin-destination preferences, combinations of Metrorail, VRE, highways, and bike trails should tie activity centers together and allow people to move throughout the region in circumferential as well as radial patterns. With improved access, these centers should attract further development.

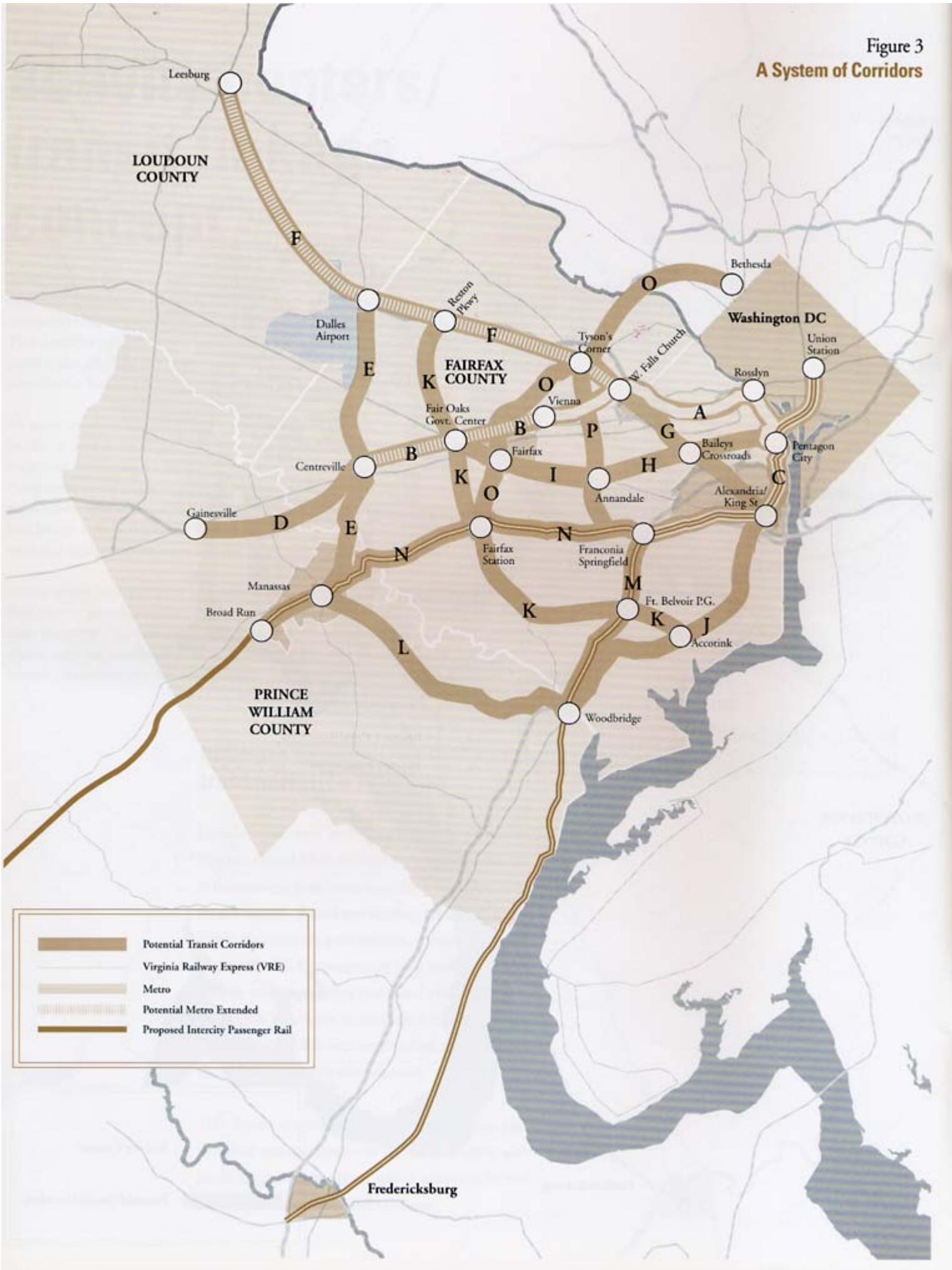
This figure illustrates locations of existing and potential activity centers in Northern Virginia and the linkages between them, which generally follow current routes of roads and rail lines.

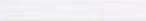
Figure 2
Proposed Network of Activity Centers and Transit Linkages



	Activity Centers
	
	
	Potential Transit Corridors

Figure 3
A System of Corridors



-  Potential Transit Corridors
-  Virginia Railway Express (VRE)
-  Metro
-  Potential Metro Extended
-  Proposed Intercity Passenger Rail

a system of corridors



Based on the relative importance of activity centers, the distances between them, and the feasibility of multi-modal linkages, a set of priority corridors for Northern Virginia can be defined, as illustrated in the map to the left. Important corridors include:

- A METRO Orange Line Corridor
- B METRO Orange Line Extended Corridor
- C METRO Yellow Line Corridor
- D I-66 Rail Corridor
- E Route 28 Corridor
- F Dulles Corridor
- G Leesburg Pike Corridor
- H Columbia Pike Corridor
- I Little River Turnpike Corridor
- J Route 1 Corridor
- K Fairfax County Parkway Corridor
- L Prince William County Parkway Corridor
- M Woodbridge — Franconia/Springfield Corridor
- N Manassas — Franconia/Springfield Corridor
- O Fairfax Station — Bethesda, Maryland Corridor
- P Capital Beltway Corridor

existing and potential activity centers in northern virginia

Activity centers include a broad spectrum of uses and scales of activity. The following listing describes ten generic types of activity centers and cites illustrative examples for each in Northern Virginia.

1 Metropolitan Centers

Metropolitan centers are the most intensely developed mixed-use complexes in the region. In this category are the central business districts around which the region grew and also the post-World War II "edge cities" which have emerged to compete with the older CBDs. Often serving population catchments that exceed 200,000, they attract a diversity of people as shoppers, residents, and employees, including long-distance commuters. With buildings typically 10 stories or higher, parking garages, and grade separated interchanges and walkways, these centers attain high densities and floor area ratios (F.A.R.s) of 5.0 or more. These centers feature specialized uses and have regional spheres of influence. Intercity, regional, and local transportation systems serve these centers. Since these centers are already developed, greater density through redeveloping existing land and buildings must be gained in these places to avoid sprawl in unserved outlying areas of the region. Examples of this type of *activity center* are areas surrounding major Metrorail stops in Washington, D.C. and Crystal City and Tysons Corner.

2 District Centers

District Centers have the next highest density with F.A.R.s of 3.0, building heights of 5-10 stories, parking garages, multi-use public spaces, pedestrian areas around central transit stations, and a range of mixed-uses. Located in suburbs as well as central cities and typically along primary routes served by transit, they are prime places to live and work and benefit from commuter access to other centers. The population catchments for these range between 100,000-200,000 people, including commuters who come for specific purposes (employment, comparison shopping) as well as residents in the immediate area who are of diverse income and household types. Typically, dense housing (apartments and row housing) offering a broad range of choices are within convenient walking distance of these centers. Examples of this type are Pentagon City, Ballston, and Reston.

3 Suburban Centers

Suburban Centers appear along commercial strips or as shopping centers located in low to mid-density residential areas where auto use predominates. With population catchments of from 40,000 to 100,000, generally within a 3-5 mile radius of the center, and with densities less than a F.A.R of 0.5, these centers also depend on automobiles for access. They are characterized by low-rise buildings (1-2 stories), surface parking, and single-use outdoor spaces. Redevelopment of these should favor those located along transit corridors to facilitate access to other centers and to create more employment and diverse housing opportunities. Examples of this type are Bailey's Crossroads, Chantilly and Hybla Valley.

4 Community/Town Centers

Community/Town Centers include those settlements with existing and frequently underutilized infrastructure. With a population base of 2,500-15,000 and a density F.A.R of 0.5-1.0, they typically have buildings 1-3 stories in height and surface parking, often accommodated on the streets. Having existed for a relatively long period of time, they usually have a range of architectural styles and a variety of uses, including schools, churches, as well as residences and places of employment, to support local needs. Typically located along older transportation corridors, they are prime locations for revitalization, if not more intense development. Examples of this type are Falls Church, Manassas, and Occoquan.

5 Rural Centers

Rural Centers are in exurban areas surrounded by agricultural uses and large-lot residential sites accessed by automobiles. Traditionally service centers for their areas, they are transforming into residential enclaves for commuters. The residents, who typically number between 2,500-10,000, cluster around the center of town where there are a range of uses, building types, and services and an environment that favors pedestrians. Because of their histories, these rural centers frequently have unique identities. Revitalization efforts should revive these centers by providing more employment as well as housing opportunities within their cores to support more transit use. Examples of this type are Clifton and Hillsboro.



6 Villages

Rural Villages are hamlets, often formed at crossroads, which still exist throughout the metropolitan fringe. Resident population seldom exceeds 1,500. While the settlements are usually compact and feature a center, they often blend into the surrounding agricultural environments on their fringes. They possess a pedestrian, if not intimate scale, easily destroyed through new development. Having developed as agricultural villages, they are now sought after as places of residence for those commuting to work elsewhere. Rural villages may be too small to support primary transit but should be connected to it by bus service. Examples of this type of *activity center* are Wheatland and Bull Run.

7 Transportation Centers

These centers are locations, such as commuter rail stations and airports, where travelers change from one mode of travel to another. Extensive park-and-ride lots dominate these areas. The availability and ease of transfer between modes of travel are essential for these centers. More mixed-use facilities and services in these locations should consolidate trips and reduce unnecessary travel. Examples of this type of *activity center* are Dulles Airport, Franconia-Springfield, and Vienna.

8 Special Purpose Centers

Special Purpose Centers are locations of intense, specialized activities which periodically place heavy demands on the transportation systems. Active during non-commuting hours—mid-day, evenings, and weekends—they can attract steady flows and even crowds of people, causing congestion. Residential uses and commercial conveniences are seldom significant components of these centers. Transit service, thus, is important to serve these centers, both for the convenience of patrons and for the reduced impacts on traveling and even living in the general area. Examples of this type of *activity center* are Wolf Trap, Potomac Mills, George Mason University, Fairfax Government Center, and Quantico.

9 Commercial Corridors

Commercial corridors developed along arterial routes to provide office, employment, service, and retail uses for commuters and neighboring residents. These corridors developed as automobiles became the dominant form of transportation. However, congestion has also increased due to traffic interruptions. The corridors' wide lanes, intermittent sidewalks, excessive curb cuts, and lack of landscaping have often resulted in unattractive environments and particularly hostile ones for pedestrians. Yet, because these corridors traditionally connected centers of activity, they remain essential routes for transit. To serve transit more effectively, these corridors should have more nodes of concentrated activity along them which favor pedestrians and accommodate transit stops. Examples of existing commercial corridors are portions of Route 7, Little River Turnpike, and Route 1.

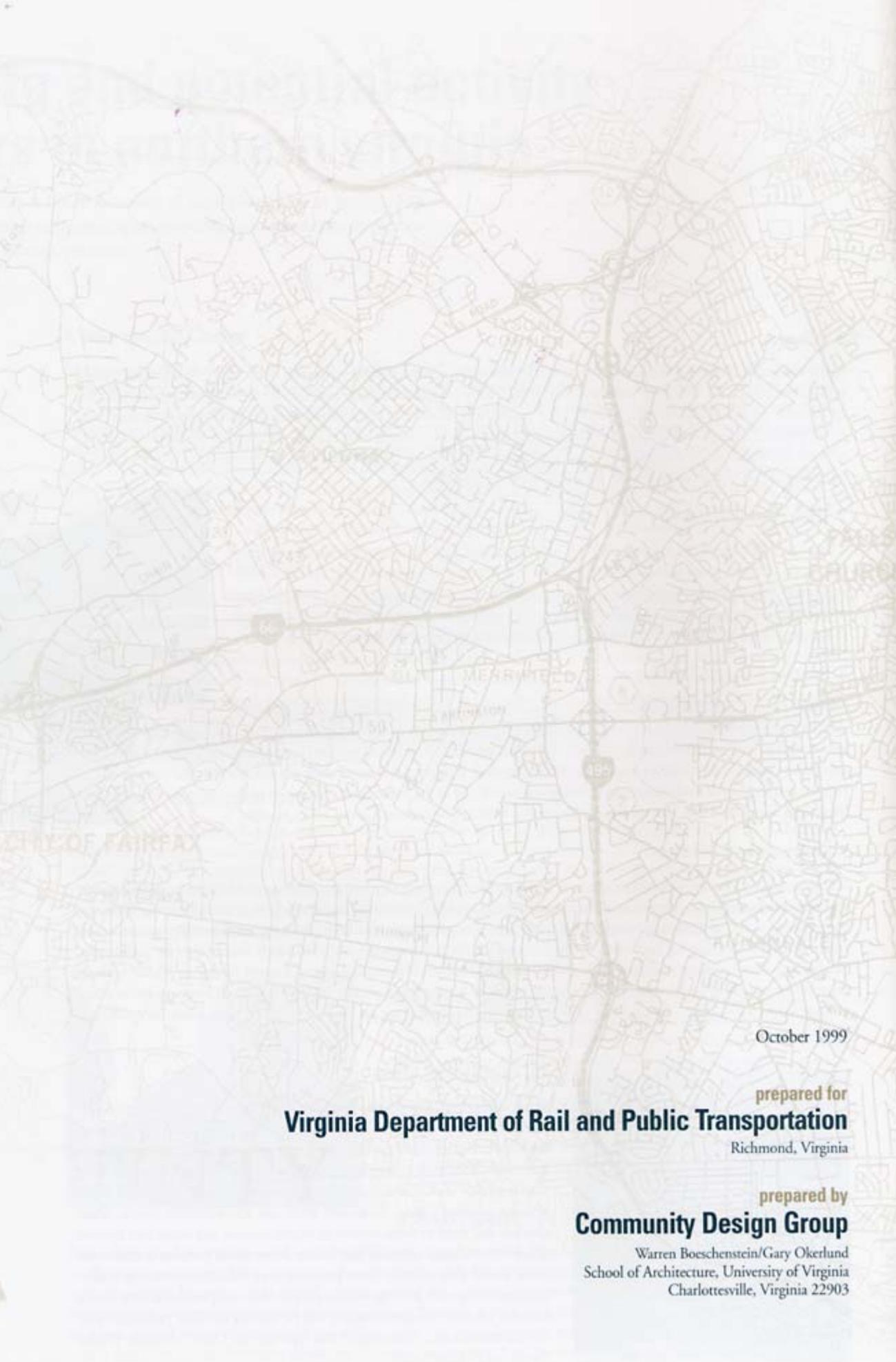


10 Employment Areas

A more recent form of development, these precincts contain large buildings, often of national corporations and, increasingly in Northern Virginia, those involved in high technology. The buildings which are accessed by automobiles have been developed on large land parcels, as separate entities, detached from surrounding ones. Local jurisdictions have frequently designated these districts as growth areas. To benefit from and accommodate transit, these districts will need to form centers in which stations can occur and around which convenience activities can locate. More dense peripheral residential areas would also support these precincts and reduce commuting traffic. Because land parcels are large within the precincts, cooperative arrangements between adjacent property owners will be needed to effect pedestrian and bicycle connections. Examples of this type are Fair Oaks, Chantilly, Dulles North, and Dulles South.



Regional Network



October 1999

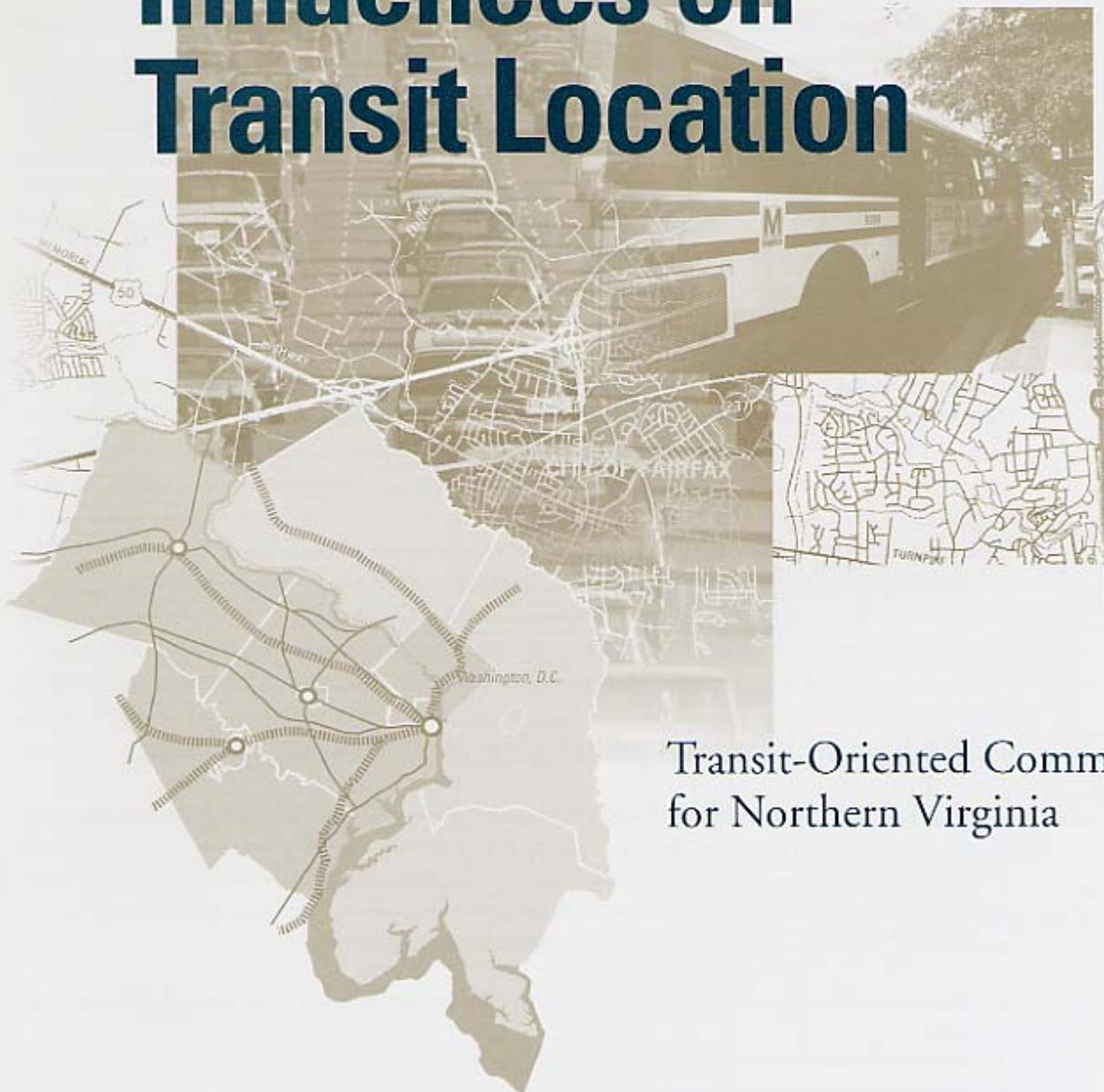
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Demographic Influences on Transit Location



Transit-Oriented Communities
for Northern Virginia

Transit Location

purpose

As a component of a broader effort exploring the benefits of alternative transit and community development strategies in Northern Virginia, this report examines the population, land use and economic conditions that determine the location and feasibility of transit/community policies. General conditions for the entire area establish a priority for transit location. Station location criteria are established that increase the benefits to local communities. Two case studies are presented as examples that indicate the opportunities that exist with transit-oriented development for local government and private development.

background

Throughout the development of the region, changes in the pattern of land uses made possible better roads that facilitated travel within and between counties and cities. Particularly over the past twenty five years, increases in population and commerce led to increasing growth of suburban counties outside of Washington, D.C. Those commuting from suburb to suburb soon matched commuters traveling to work in Washington. New work centers in suburban locations encouraged travel from suburban residential locations creating enormous demands on land use and road systems that were designed principally to serve lower levels of traffic. Of course, improvements have been made over this time period but it now appears that the region can no longer sustain an efficient system of travel. It is important to consider new comprehensive solutions at this time considering the projected increase in suburban population of approximately 30 percent by the year 2010. Solutions are needed that allow people to move conveniently through the region and choose appropriate forms of transportation for particular objectives. In addition, considerations should be given environmental stability and maintaining the identity of the numerous distinctive communities in the region.

Land uses are the major determinant in the pattern of development that encourages the flow of traffic within cities and counties and throughout entire regions. The location of concentrations of work (offices, retail centers and industry) and residence (single-family and multi-family homes of low and high density) determine where people travel: trips to work from home, to shop, to find entertainment or to visit friends, for example, are determined by land uses established by local governments. The highest level of travel is between home and work. Increases in employment and population in Northern Virginia have strained existing travel systems and created problems for residents—congestion, unnecessary time delays and stress—due to the large number of trips being generated. Problems have also emerged for local governments—increasing cost for services, responding to the demands of rapid development and the changing character of communities leaving citizens unhappy—who attempt to regulate land use and transportation plans. A recent survey (1999, Center for Public Policy, Virginia Commonwealth University) confirmed these problems and cited congestion as a major problem in the Northern Virginia region. This study is intended to assist local jurisdictions in the region implement their land use goals for mass transit.

mass transit location principles for northern virginia

A set of principles is presented to guide the location of mass transit in Northern Virginia. The first four principles take into account the region's rapid growth over the past two decades, the land use patterns that have evolved and future growth projections. The area's unique and complex commuting patterns are included in these criteria. The remaining principles guide the location of future rail corridors and while encourage new development around mass transit stations. The principles reflect the conditions in Northern Virginia and national literature on mass transit.

1. Provide mass transit to employment centers. Employment centers are defined as areas of high commercial/industrial land use.
2. Locate transit stops in areas with the highest residential population density.
3. Consideration should be given to areas with higher numbers of registered automobiles.
4. Encourage alternate modes of commuter travel in areas of high population and high population growth.
5. Locate transit stops to facilitate commuting patterns in the region.
6. Connect major commercial centers with light rail lines.
7. Encourage residential and mixed-use growth around transit stops and work centers.
8. Provide public property near employment centers to allow for the development of transit stops.

jurisdictions included in the analysis

Eight jurisdictions were considered in the analysis - three cities and five counties:

Alexandria **Arlington** **Fairfax City** **Fairfax** **Falls Church City** **Loudoun** **Manassas City** **Prince William**

Information for each jurisdiction was derived from its pattern of existing development and its own vision of the future. The following categories of intensity are presented in relation to the principles of transit location.

commercial land use intensity

Commercial Land Use Intensity is a measure of the percent of commercial, office and /or industrial land in the entire county/city. Areas with a high intensity are considered Employment Centers and are likely to attract commuters for jobs. Employment Centers are also likely destination points for mass transit stops.

Alexandria contains the highest intensity with 32% of its land used for commercial purposes. Table One shows the Commercial Land Use Intensity of all of the localities in ranked order.

Table 1
Land Use Intensity
Commercial/Office/Industrial
(by percent)

1 Alexandria	32.0%
2 Manassas	28.3%
3 Falls Church	20.4%
4 City of Fairfax	18.1%
5 Prince William	10.0%
6 Fairfax County	7.5%
7 Loudoun	7.3%
8 Arlington	6.7%

population density

Population density is another key factor that affects transportation needs. Areas of high population density are more likely to face severe automobile traffic congestion. The density and compact size of these areas may be highly suitable to the placement of transit stops. Population density figures were calculated with 2010 projected populations. The densities were measured in population per square mile.

Alexandria has the highest density with 8,306 people per square mile. Table 2 shows the population density figures with the localities ranked in order.

Table 2
Population Density 2010
pop/sq m

1 Alexandria	8,306
2 Arlington	7,017
3 Falls Church	5,308
4 Manassas	4,028
5 City of Fairfax	3,252
6 Fairfax County	2,688
7 Prince William	969
8 Loudoun	299

registered automobiles

A large number of registered automobiles in a given location presents an opportunity to provide mass transit as an alternative to commuting. Fairfax County contains the largest number of registered automobiles with 704,718. The number of automobiles in 1997 for each locality is shown in Table 3.

Table 3
1997 Registered Automobiles

1 Fairfax	704,718
2 Prince William	199,091
3 Arlington	132,184
4 Loudoun	123,688
5 Alexandria	106,985
6 Manassas	26,768
7 City of Fairfax	15,369
8 Falls Church	10,023

2010 population

One of the strongest indicators of the need for alternate types of transportation is the level of population. Fairfax County is by far the largest locality in Northern Virginia, containing 54.6% of the region's 2010 projected population. The transportation needs of these 1,070,010 people are significant as they affect commuting patterns throughout the region. Table 4 shows the projected 2010 population of each of the region's localities.

Table 4
2010 Population

1 Fairfax County	1,070,010
2 Prince William	331,811
3 Arlington	183,017
4 Loudoun	134,985
5 Alexandria	125,501
6 Manassas	40,398
7 City of Fairfax	20,330
8 Falls Church	10,551

population growth

The population of the region is expanding outward with new growth occurring in the far suburbs and rural areas. Transit can assist in organizing this growth by providing centers of activities around stops which can take advantage of mixed-use development, concentrated growth rather than sprawl and increased pedestrian access to a variety of uses including mass transit. Citizens and governments will benefit from reduced use of automobiles and contemporary growth patterns. The highest percentage of population change is expected in Loudoun County. Table 5 shows population growth figures for each of the localities.

Table 5
Population Change 1990-2010
(by percent)

1 Loudoun	56.7
2 Prince William	53.9
3 Manassas	44.5
4 Fairfax County	30.7
5 Alexandria	12.9
6 Falls Church	10.2
7 Arlington	7.1
8 City of Fairfax	3.6

commuting patterns

The commuting patterns of the Northern Virginia region are extremely complex because workers commute to many different destinations from each of the localities. In 1990, no locality retained a majority of its work force. Fairfax County was the most popular destination for workers, while it also sent out more commuters than any other locality. Despite losing 169,891 workers to other localities, Fairfax County was the locality that retained the highest percentage of its workers (50%). Table 6 shows the total number of out commuters for each locality, Table 7 shows the total number of in commuters.

Table 6
Out Commuting

1 Fairfax County	169,891
2 Arlington	129,506
3 Alexandria	64,165
4 Prince William	26,648
5 City of Fairfax	23,018
6 Loudoun	18,477
7 Manassas	10,772
8 Falls Church	8,389

Table 7
In Commuting

1 Fairfax County	241,900
2 Prince William	79,445
3 Arlington	74,473
4 Alexandria	52,235
5 Loudoun	28,794
6 Manassas	10,334
7 City of Fairfax	9,181
8 Falls Church	4,914

overall need for transit

The eight localities were compared based on how they ranked in each of the preceding key categories. This need ranking is useful in determining the future location of mass transit in the Northern Virginia area, based on the principles set forth earlier. A total for each locality was calculated by summing the rankings for each factor. Fairfax County has the highest need for mass transit. Fairfax County's need ranking was boosted by its population size as well as the number of commuters for whom the county is either a starting point or final destination. Prince William County, which was tied for second in need ranking, exhibited similar characteristics. Alexandria also displayed a high need ranking due, not to its population size, but its density, and its recognition as an employment center. The overall rank for each of the jurisdictions is displayed in Table 8.

Table 8
Overall Need Ranking

Fairfax County	1
Prince William	2
Alexandria	2
Arlington	4
Manassas	5
Loudoun	6
City of Fairfax	7
Falls Church	8

case study examples

Two detailed case studies were prepared to demonstrate the opportunities of transit-oriented community development. A similar needs analysis was conducted within Fairfax County to identify two strong employment centers, indicating also a high need for a transit station location. The two locations are the Baileys Crossroads and the Bull Run Planning Districts.

Baileys Crossroads

Baileys Crossroads, located in eastern Fairfax County inside the Capital Beltway, has been deemed a Revitalization Area by the County's Department of Housing and Community Development. It is a densely populated commercial area that is attractive to lower income residents due to its older housing stock and supply of public housing units. The Baileys Planning District is the most densely populated district in Fairfax County with a population of 7,033 per square mile. Although the area does display its age through visible deterioration in certain places, overall it appears to be a stable, well-maintained community.

There are currently 13 major retail centers in the area, some of which have already made considerable reinvestments in their properties through remodeling and reconfiguring existing structures. This kind of maintenance and attention has helped make the area successful in attracting national retailers like Barnes and Noble, and Home Depot. Table 9 displays the area's shopping centers that are larger than 50,000 square feet.

Table 9

Major Retail Centers

Name	square ft.
Seven Corners Shopping Center	600,895
Crossroads Center	387,763
Burlington Plaza	352,303
Baileys Crossroads Shopping Center	226,380
Skyline Shopping Center	225,147
Culmore Shopping Center	111,468
Willston Shopping Center	109,838
Barcroft Plaza	88,034
Willston Center II	83,967
Leesburg Pike Plaza	83,677
Hechinger Shopping Center	78,283
The Corners at Seven Corners	65,130
Glen Forest Shopping Center	50,362
Total	2,463,247

Source: Commercial Redevelopment Plan, Bailey's Crossroads and Seven Corners Revitalization Areas

A revitalization process is being guided by the Revitalization Corporation, which consists of local residents and business people. This volunteer organization advises county supervisors and reviews proposed actions. The members of the Corporation are the key stakeholders of the community, and are likely to have the greatest economic interest in the success of the revitalization.

Because of the relatively low cost of housing in the area, Baileys is an attractive place for recent immigrants to locate. This creates a very diverse ethnic composition that can certainly be seen as an asset for the area. There are large populations of residents of Asian, including Vietnamese (16%) or Latin American descent (28%). The white population is 45%. Several ethnic restaurants and shops can be found among the area's commercial structures.

Table 10

Baileys Crossroads Need Ranking Factors Within Fairfax County (14 Planning Districts)

2010 Population	42,193 (12th)
% Change 1990-2010	9.9% (13th)
2010 Population Density	7,857 (1st)
Land Use Intensity (commercial/office/industrial %)	10.9% (5th)
% Commuting to Fairfax County location	43.3% (12th)

Bull Run (Centreville, Chantilly, Dulles)

This area of Fairfax County, located south and east of Dulles International Airport, has seen tremendous change recently, including an increase in high-tech service jobs, especially in computer-related industries, as well as growth in residential units. Many of the residential sections of the area are currently zoned for large lots (1 and 5 acre lots), but with continued growth this is likely to change.

Chantilly is located at the intersection of Route 50 and Route 28, just 5 miles southeast of Dulles International Airport. Centreville is south of Chantilly, near the intersection of Routes 28 and 29, and I-66. Both are included in the Bull Run Planning District. Compared to the Baileys Planning District, the Bull Run District has a higher concentration of office space, higher median household income (\$68,000), and a more homogeneous ethnic makeup. The white population is 72%, African American 10%, Asian 10% and Hispanic 6%.

Table 11
Bull Run District
Need Ranking Factors Within Fairfax County

2010 Population	122,311 (3rd)
% Change 1990-2010	84.7% (1st)
2010 Population Density	2,692 (12th)
Land Use Intensity (commercial/office/industrial %)	8.3% (6th)
% Commuting to Fairfax County location	63.3% (2nd)

Economic Conditions—Baileys Crossroads and Bull Run

Two areas that depict Northern Virginia's reliance on retail trade and services are Baileys Crossroads and the Dulles Corridor. Baileys Crossroads can be characterized as a traditional retail area, while the Dulles Corridor contains more high-tech development with an abundance of service employment - particularly in computer related industries. 33.5% of all employment in Baileys Crossroads was in retail trade, compared to 14.4% in the Dulles Corridor. Retail trade in Baileys was spread almost evenly among the various employment categories. The Dulles Corridor employed 58% of its workers in services, primarily in Business Services (43.5% of total employment). Within this category, a large number of Dulles Corridor employees were employed in computer and data processing related industries. Baileys Crossroads and the Dulles Corridor are two distinct areas, with different economic roots, but they represent the major components of Northern Virginia's overall employment, and the key elements of the area's economy.

implementation

The implementation of transit-oriented development in Northern Virginia can be beneficial to citizens and economically feasible through strong public and private leadership. Creative and action-oriented tools such as the following should be incorporated to ensure success.

- A commitment to the concept of a well planned transit corridor
- The development of active public and private partnership arrangements and efforts to engender public support through effective communication
- The development of a conceptual vision plan stressing a cohesive image, a dense, compact and mixed land use pattern, with coordinated multi-modal accessibility and enhanced walkability
- The creation of a public/ private short and long range phasing and investment strategy
- Advanced land acquisition and assembly to enable orderly redevelopment
- Early investment in infrastructure needs to support transit and redevelopment
- Employment of creative incentives and regulations to support phased implementation. Examples include property and sales tax abatement, investment tax credits, accelerated depreciation, tax incentives on the cost of transit use and low interest loans. Also bonuses for higher densities, the application of design and development standards and the use of public improvements as incentives for quality private development

Transit Location

October 1999

prepared for
Virginia Department of Rail and Public Transportation

Richmond, Virginia

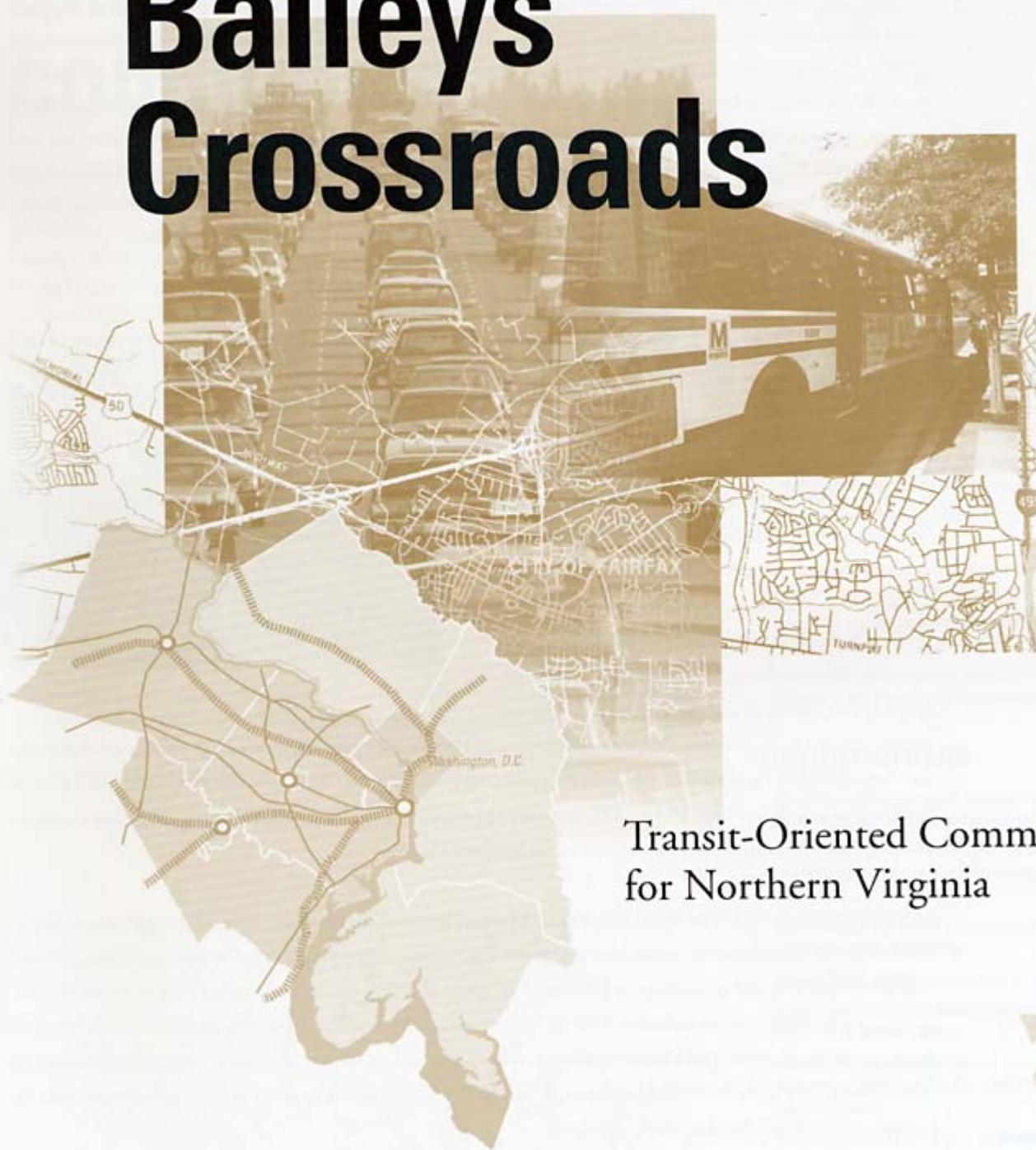
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Baileys Crossroads

Transit-Oriented Communities
for Northern Virginia

Baileys Crossroads



purpose

As part of a proposed regional transportation system for Northern Virginia, this report evaluates the potential for improved transit service in the Baileys Crossroads area of Fairfax County. This initial investigation suggests development opportunities tied to these new circulation patterns which should increase land utilization and private property values, improve the area's character and attractiveness, and contribute to the county's tax base. While the goals for this report stem from those stated in the Fairfax County Comprehensive Plan, further studies are required and should include consultations with public officials, residents of the community, and area business leaders. Economic studies and market analyses as well as investigations of light-rail feasibility for the region and this locale in particular should also accompany subsequent planning. Based on available information, this proposal thus seeks to explore possibilities and stimulate further discussion.

introduction

Strategically located in Fairfax County, Baileys Crossroads is an older suburban district that possesses significant redevelopment potential. Centered on the intersection of the Leesburg and Columbia pikes, it has excellent links to the surrounding region. Columbia Pike (Route 244) connects to the Pentagon five miles to the northeast and, across the Potomac River, to Washington, D.C., while Leesburg Pike (Route 7) leads to Alexandria and its waterfront six miles to the southeast. In their opposite directions both routes extend into the suburbs of Fairfax County and then beyond into the rapidly growing counties of Loudon and Prince William. With improved transit service and redevelopment of its area, Baileys Crossroads could become not only an important transportation interchange for these routes but also a significant destination and locus of activity for Northern Virginia.



After growing rapidly in the Post World War II period, Baileys Crossroads has noticeably declined in recent years as newer, more efficiently organized retail centers have emerged in the outlying suburbs. Hampered by poor circulation patterns, fragmented land uses, and an unattractive physical environment, Baileys Crossroads now suffers from economic obsolescence and is classified as a "Revitalization Area" by Fairfax County's Department of Housing and Community Development. However, an overall plan that incorporates a range of uses and coordinates circulation systems, including public transit—most likely in the form of light-rail service—on either or both of the main arterial roads, could offer incentives for property owners to use their land more intensively.

**Hampered by poor
circulation patterns,
fragmented land uses,**

and an unattractive physical environment, Baileys

Crossroads now suffers from economic obsolescence.

existing conditions

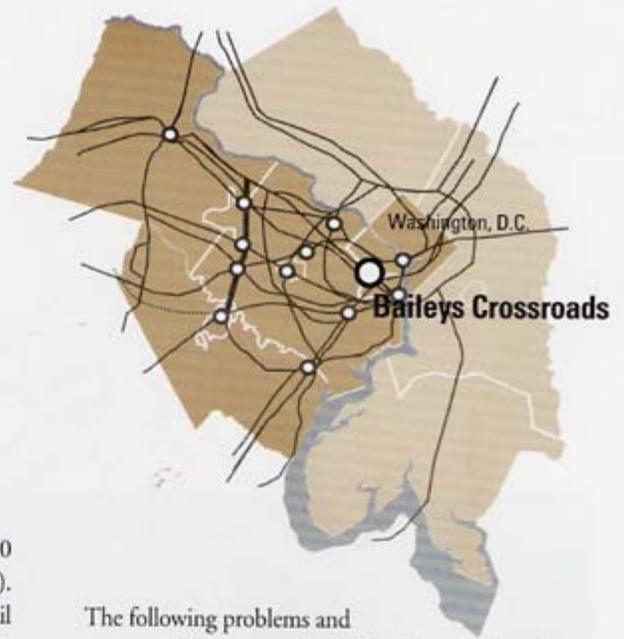
The Baileys Crossroads Community Business Center (CBC) consists of approximately 530 acres encircling the intersection of the two commuter routes (Leesburg and Columbia pikes). The CBC contains several community and neighborhood shopping centers, "big-box" retail outlets, a 100-acre mixed-use development (residential, retail, and office) called Skyline Center, and scattered light industrial uses. Surrounding the retail core are stable, single-family residential neighborhoods. While buildings range from the more than twenty stories of nearby Skyline Center to single family houses, one-story buildings are most numerous throughout the area. Despite the visual dominance of the tall buildings of Skyline Center and of the highway interchange, the CBC lacks visual focus and a clear public image.

Within a half mile radius of the highway interchange, there are approximately 400 residential units, 800,000 square feet of retail space, and 400,000 square feet of office uses. Approximately 3,400 employees work here. Of the total 126 acres, sixty-three percent is dedicated to streets, highways, and off-street parking. Sixty acres or forty-eight percent of the land area is designated or potentially available for redevelopment.

Because of the width of the highways and the volume of traffic along them, few connections tie the sectors together. The bisecting highways thus restrict the area from working as a larger whole. The street pattern within the sectors contains eight three-way and thirteen four-way intersections as well as four major cul-de-sacs, indicating for an area of this size a comparatively low degree of internal circulation and accessibility. For the most part, the retail facilities are encircled by parking and disconnected from each other and from the residential neighborhoods which surround the retail core.



Figure 1
Existing Building Pattern



The following problems and opportunities characterize Baileys Crossroads today:

problems

- ▶ poor connections between sectors and between disparate buildings within sectors, resulting in weak land use synergies,
- ▶ inefficient utilization of land with predominance of one-story buildings and excessive on-grade parking,
- ▶ inadequate pedestrian, spatial, and landscape qualities which discourage people to patronize the area,
- ▶ fragmented ownership patterns that may complicate larger land assemblage efforts,
- ▶ existing neighborhood communities that may resist more intensive commercial redevelopment,
- ▶ lack of an overall positive image for the area to serve as a magnet other than the draw of isolated buildings, and
- ▶ numerous obsolescent and unoccupied buildings which deter new investment and detract from the area's character.

opportunities

- ▶ good regional connections along commuter routes to residential and employment locations in prosperous and growing Fairfax County and Washington, D.C.,
- ▶ opportunity to develop a public transportation hub at this crossroads,
- ▶ considerable vacant land and obsolete buildings to redevelop more intensively,
- ▶ availability of existing utilities and public infrastructure,
- ▶ market precedents for dense development already exist in the area at Skyline Center,
- ▶ existing resident population and economic base in the area with the presence of Skyline Center and the surrounding neighborhoods,
- ▶ presence of and potential to tap federal government employment and related housing,
- ▶ good visibility of the properties from along the highways because of the topography as well as potential for views from here of central Washington, D.C., and
- ▶ opportunity to refocus regional growth pressure in inner suburbs, including this one, as the problems of sprawl grow in public importance.

goals

Following are the primary goals guiding the development of this plan:

- Encourage light-rail transit as part of a regional system to reduce congestion and include strategically placed stations to provide more options to access Baileys Crossroads,
- Support greater densities of development and a wider range of land uses to transform this area into a significant center of activity in Northern Virginia.
- Facilitate linkages within Baileys Crossroads between area sectors, between properties within sectors, and between neighborhoods and the commercial core, allowing more people to walk between these sections and thus rely less on automobiles,
- Create opportunities for the reasonable sharing of capital investments (e.g., parking garages, public open space, landscape amenities) that will reduce burdens on individual property owners while creating a more efficient and attractive overall environment,
- Redefine the image of the area from one that is fragmented and economically obsolete to one that is unified and vital, and
- Improve the overall identity through the creation of "gateways" into the district and the establishment of a clear unified image for the area.



proposal concept

To achieve a more unified center of activity, the four sectors of Baileys Crossroads should be effectively linked together. These connections can most easily occur around the interchange of Columbia and Leesburg pikes. The proposed scheme allows for light-rail transit platforms at any or all of four locations along the highways on either side of the interchange. A pedestrian route should link these stops and encircle the interchange, allowing commuters to transfer between transit lines. Pedestrian bridges should cross above the main highways while arcades along building fronts should offer shelter for those walking through the quadrants. The interchange itself should be landscaped as a "visual park," giving new identity to the area for passing motorists and allowing taller buildings to front on this amenity. New transit service should encourage development in proximity to the stations, and the pedestrian circuit should link these developments and provide the maximum transportation options here where density is greatest. Height and density should taper off from the center as distances from the stations increase. In the northeast quadrant, a pedestrian street should extend from the transit promenade to an area of "big-box" retail facilities, which should be compactly aligned along streets and have accompanying parking garages.

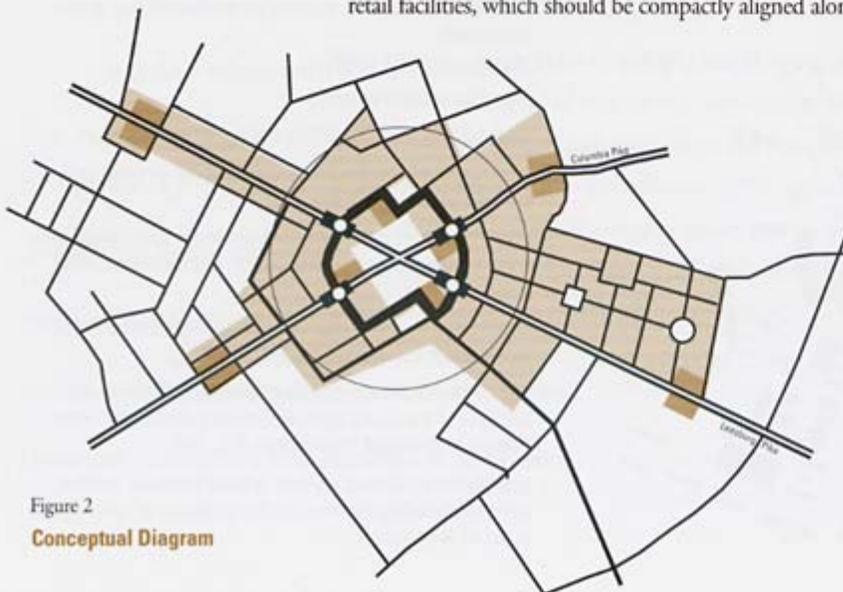


Figure 2
Conceptual Diagram

Figure 3
Proposed Building Pattern

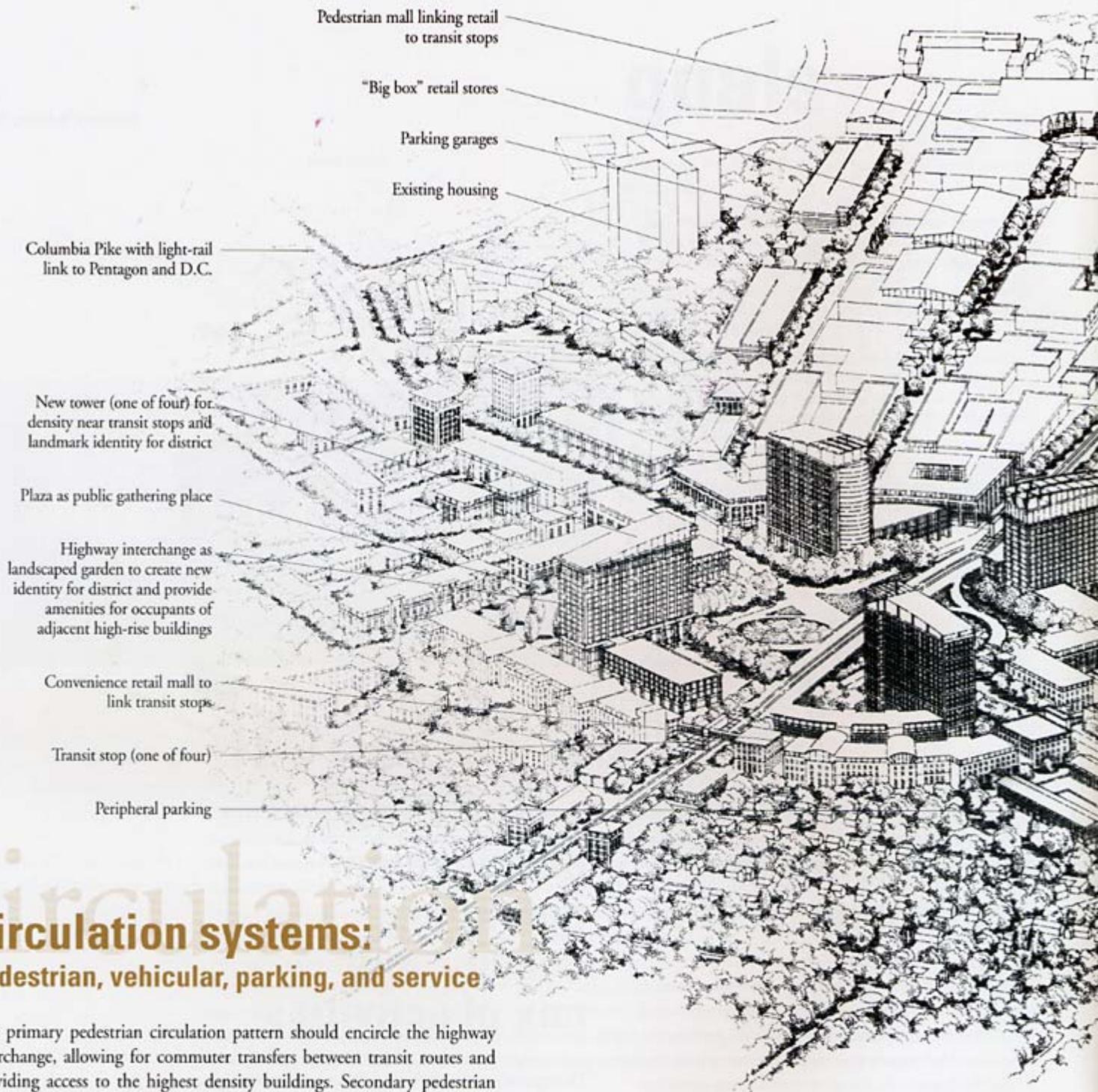


urban form and community identity

A cluster of tall buildings, geometrically related to each other around a landscaped highway interchange and linked together by an encircling pedestrian promenade, should establish a new image for an area presently characterized by disparate buildings scattered across seemingly endless parking lots. The cluster of new buildings should be easily recognizable from a distance and serve as a landmark for transit commuters and for motorists driving through the area. The redeveloped area should also be engaging for pedestrians passing through the sequence of streets and for those working and living within the layout of buildings that will comprise this new complex. New development should feature the collective character of the overall area—its convenience, efficiency, variety, and environmental character—and de-emphasize the individual identity of separate buildings. Greater density of buildings, more connections and relationships between buildings, and more purposeful and people-oriented open spaces should replace the present fragmented pattern of building placement.

development potential, density, and mix of activities

The regional location of Bailey's Crossroads warrants higher building densities. If well planned, the increased densities should improve transit as well as commercial services. Development should be most intense surrounding the transit stops. Proximity to transit, high visibility from the arterial roads, as well as increased densities should attract retail services and conveniences at grade level and allow corporate and federal government offices above. For the overall area the proposed densities should increase. To achieve a sufficient critical mass of activity, a range of activities should be accommodated here including retail, office, residential, hospitality, recreational, and institutional uses. Increased density will create a higher ratio of buildings to open space and thus allow for more connections between buildings and the careful shaping of public spaces, including the spatial quality of streets.



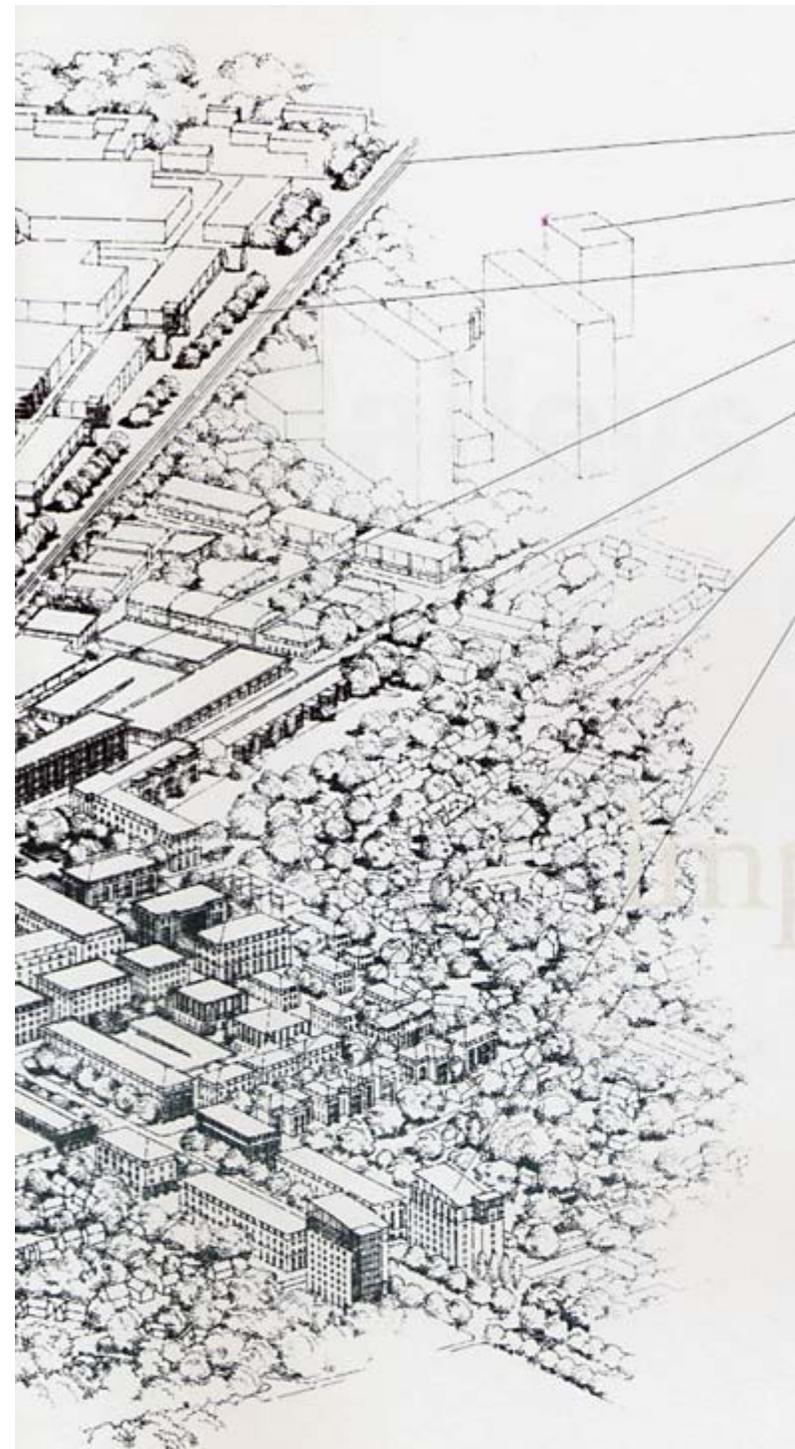
circulation systems: pedestrian, vehicular, parking, and service

The primary pedestrian circulation pattern should encircle the highway interchange, allowing for commuter transfers between transit routes and providing access to the highest density buildings. Secondary pedestrian connections should radiate out from this circuit to link more distant areas of each segment, extending beyond these to neighboring residential areas. There should be lanes exclusively for pedestrians and streets shared by pedestrians and vehicles, as well as thoroughfares primarily for vehicles. However, all buildings should be easily accessible for pedestrians, reducing the need for internal automobile traffic.

A more regularized and interconnected street system, including more four-way intersections, should increase access for motorists and pedestrians. Parking decks should be sited close to the central pedestrian circuit and other activity locations such as the "big box" retail area, while surface parking should primarily serve the fringe sites. Drop-off areas should give commuters access to the transit stops. However, large commuter parking lots are discouraged because they are a poor use of land in this location. Service access should be on streets primarily designated for these purposes and in service "yards," shielded from view of the more pedestrian-oriented streets.

open space and landscaping

Parks, designed open spaces, and landscaped areas should play prominent roles at a range of scales to enhance the character of the district. The highway interchange, designed as a "visual park" for motorists, should be the focal point. At least two quadrants should have landscaped plazas along the pedestrian circuit to serve as the social spaces where employees, shoppers and commuters can congregate. Street landscaping should reinforce intended scale, ranging from the large trees along the entrance corridors to the more intimate plantings along the pedestrian lanes.



- Route 7 with light-rail line to Alexandria
- Skyline Center—existing housing, office, retail complex
- Street landscaping to signify special district
- New office building located close to transit stop
- Plaza to accommodate adjacent office, retail, residential activities
- Low-rise offices and housing as transitions to established neighborhoods
- Tall, paired buildings to serve as district "gateways"

implementation

To realize the development opportunities at Baileys Crossroads will require the support of citizens, property owners, businesses, developers, and government. While present development practices in Northern Virginia favor auto-dependence, as the region becomes more built-out, commuting more congested, older projects—such as those comprising much of Baileys Crossroads—more obsolete, the market support for transit and higher density transit-oriented projects will increase. Government intervention can facilitate market acceptance and assure that land and transit are available when these conditions occur.

To enhance opportunities in the Baileys Crossroads district for transit-oriented projects, local governments should prepare a plan to guide the phasing in of more compact, coordinated, mixed-use development. To accomplish the plan, local governments should:

- organize efforts for advance land acquisition and parcel assembly and other means to enable orderly redevelopment,
- create property and sales tax incentives for the district,
- tax parking spaces,
- form public/private development partnerships,
- mandate through ordinances mixed-use, higher density development, and discourage low-density development at transit stops,
- establish programs encouraging employer site location in transit stop zones and, where appropriate, employer-assisted transit passes,
- offer low interest loans to transit-oriented developers,
- confer bonuses for higher density, mixed-use developments,
- create user-friendly, streamlined approval processes for transit-oriented developers,
- install appropriate infrastructure in transit stop areas, and
- encourage comprehensive planning, architectural excellence, and development guidelines to achieve identity at transit stops and to support the ease of use for riders.

gateways and transitions

To achieve a distinct identity, Baileys Crossroads should have not only a strong central image (the proposed landscaped interchange, tower complex, and pedestrian circuit) but also distinct "gateways" into the district. As one travels along the highways, these gateways should consist of higher buildings related to each other across the highways. As part of the entry sequence, the light-rail stops should be noticeable, and undoubtedly will be, if they are located in the highway medians and have pedestrian bridges connecting them to the developments on either sides.

Baileys Crossroads

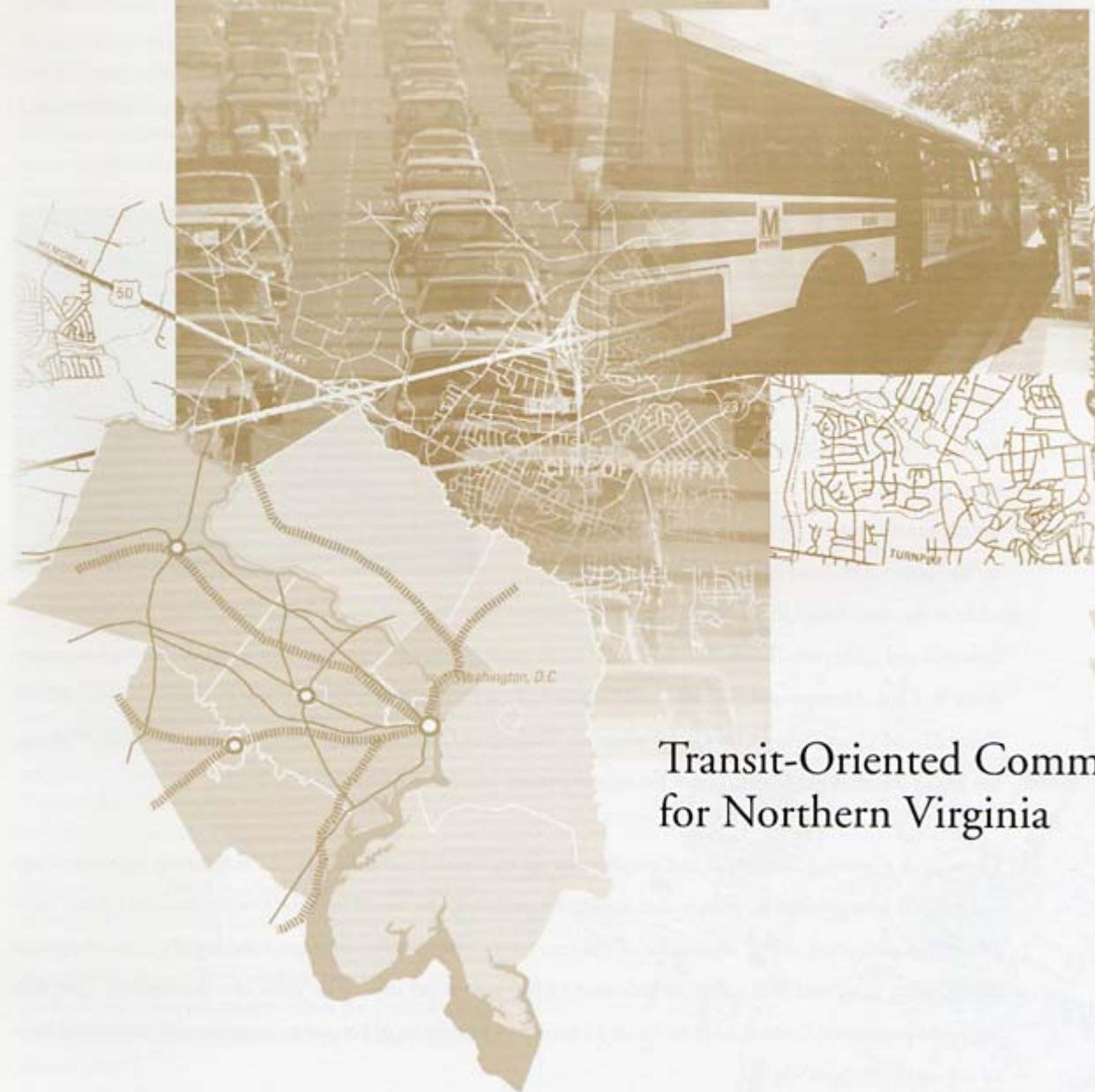
October 1999

prepared for
Virginia Department of Rail and Public Transportation
Richmond, Virginia

prepared by
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Chantilly



Transit-Oriented Communities
for Northern Virginia

Chantilly

purpose

This report evaluates the redevelopment potential for the Chantilly area of Fairfax County. It is part of a proposal for an improved regional transportation system for Northern Virginia that includes light-rail service along Route 28. Based on improved transit, this report recommends development opportunities for Chantilly that should increase land utilization and private property values, improve the area's character and attractiveness, and contribute to the county's tax base. While the goals for this report stem from those stated in the Fairfax County Comprehensive Plan, further studies are required and should include consultations with public officials, residents of the community, and area business leaders. Economic studies and market analyses as well as investigations of light-rail feasibility for the region and this locale in particular should also accompany subsequent planning. Based on available information, this proposal thus seeks to explore possibilities and stimulate further discussion for Chantilly.

introduction

The selected area lies south of the intersection of Route 50 (Lee Jackson Memorial Highway) and Route 28 (Sully Road). This area of Chantilly has significant redevelopment potential, in part, because it has excellent links to the surrounding region. To the east Route 50 gives access to Washington, D.C., and its major employment centers,

while to the west, Route 50 connects to Loudoun County where farms are rapidly being transformed into suburbs and industrial and office parks. Route 28 is a principal north-south corridor through Northern Virginia. Passing from south to north, it links Manassas and its Amtrak and Virginia Railway Express station, Centreville at the intersection of I-66 and Route 29, and Chantilly, to Dulles Corner where the Washington Dulles Access and Toll Road connects to the Washington Dulles International Airport, one of the region's primary transportation hubs.

Chantilly is a growing commercial and employment center, favored particularly by the burgeoning high-technology industries of the region and the services they require. Chantilly will also benefit from the new Smithsonian Air and Space Museum Annex which will be constructed in the near future immediately northwest of the highway interchange and which, when completed, will attract an estimated 10,000 visitors per day. With these new developments and with improved passenger rail service along the Route 28 corridor, Chantilly could become an important destination and locus of activity in Northern Virginia.

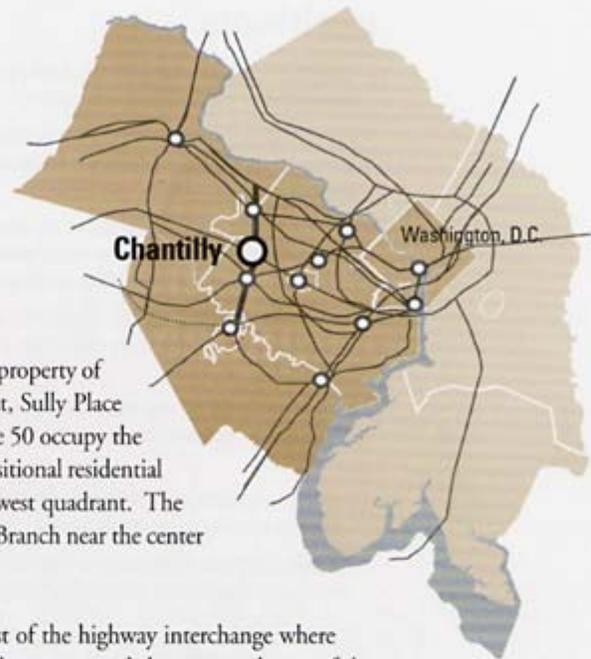


**Chantilly is a growing
commercial and
employment center,**

favored particularly by the burgeoning high-technology

industries of the region and the services they require.

existing conditions



Routes 50 and 28 effectively divide Chantilly into disconnected quadrants. The property of the Washington Dulles International Airport dominates the northwest quadrant, Sully Place Office Park, Sully Place Shopping Center, and more retail uses oriented to Route 50 occupy the northeast quadrant, and Sullyfield Business Park, other low density uses and transitional residential areas comprise the southeast quadrant, and underdeveloped land fills the southwest quadrant. The topography is generally flat with two streams and their flood plains—Schneider Branch near the center and Flatlick Branch to the south—winding through the area.

This study focuses primarily on the two southern quadrants—the one southeast of the highway interchange where older buildings have reached a level of obsolescence that may warrant their replacement and the one southwest of the interchange where large tracts of vacant land will inevitably be developed. In the southeast area offices, warehouses, light industries, and retail uses occupy comparatively older low-rise buildings. Several small shopping centers also dot the area. The vehicular circulation is awkward and pedestrian ways are virtually non-existent. Overall, the commercial area has a poor physical environment and projects a weak image to those passing along the highways. It lacks both a functional and visual focus. Surrounding the commercial area are residential neighborhoods, although they are poorly connected to each other and to the commercial area.

Within the southeast area and a quarter-mile distance from Route 28 are approximately 95 residential units, 11,000 square feet of retail space, and 2.3 million square feet of office and light industrial uses. Approximately 5,700 employees work here. Of the total 126 acres, 48 percent is dedicated to streets, highways, and off-street parking—a very high percentage indicative of the area's auto-dependence. All 126 acres are designated as suitable for redevelopment. Since most of the land is within the Dulles Airport Noise Impact Area overlay zone, restrictions pertain, particularly those limiting residential uses.

Because of the width of the two major highways and the volumes of traffic along them, few vehicular or pedestrian linkages tie the quadrants together. The highways thus restrict the area from working as a unified whole. Furthermore, the street systems within the quadrants are discontinuous, thwarting access except for the most informed drivers.

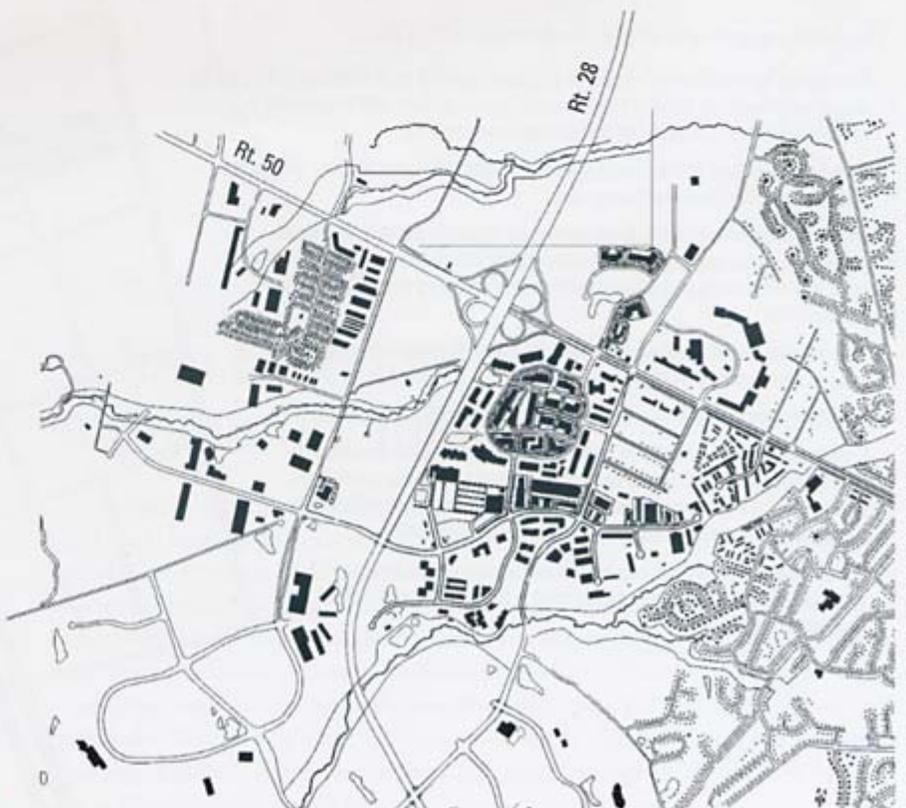


Figure 1
Existing Building Pattern

Following is a summary of identified problems and opportunities in Chantilly.

problems

- ▶ Lack of a landmark image for this area presently dominated by isolated, low-rise buildings.
- ▶ Poor connections between sectors and between disparate buildings within sectors, resulting in lost synergy between land uses and activities,
- ▶ Inefficient utilization of land with a predominance of widely separated, low-rise, and increasingly obsolescent buildings, and excessive surface parking areas,
- ▶ Inadequate pedestrian, open space, and landscape amenities, thus discouraging public use and outdoor activities,
- ▶ Lack of human scale and pedestrian interest in an area dominated by automobiles, wide streets, and extensive parking lots.
- ▶ Existing neighborhood communities that may resist more intensive commercial redevelopment.
- ▶ Fragmented ownership patterns that may complicate larger land assemblage efforts and redevelopment.

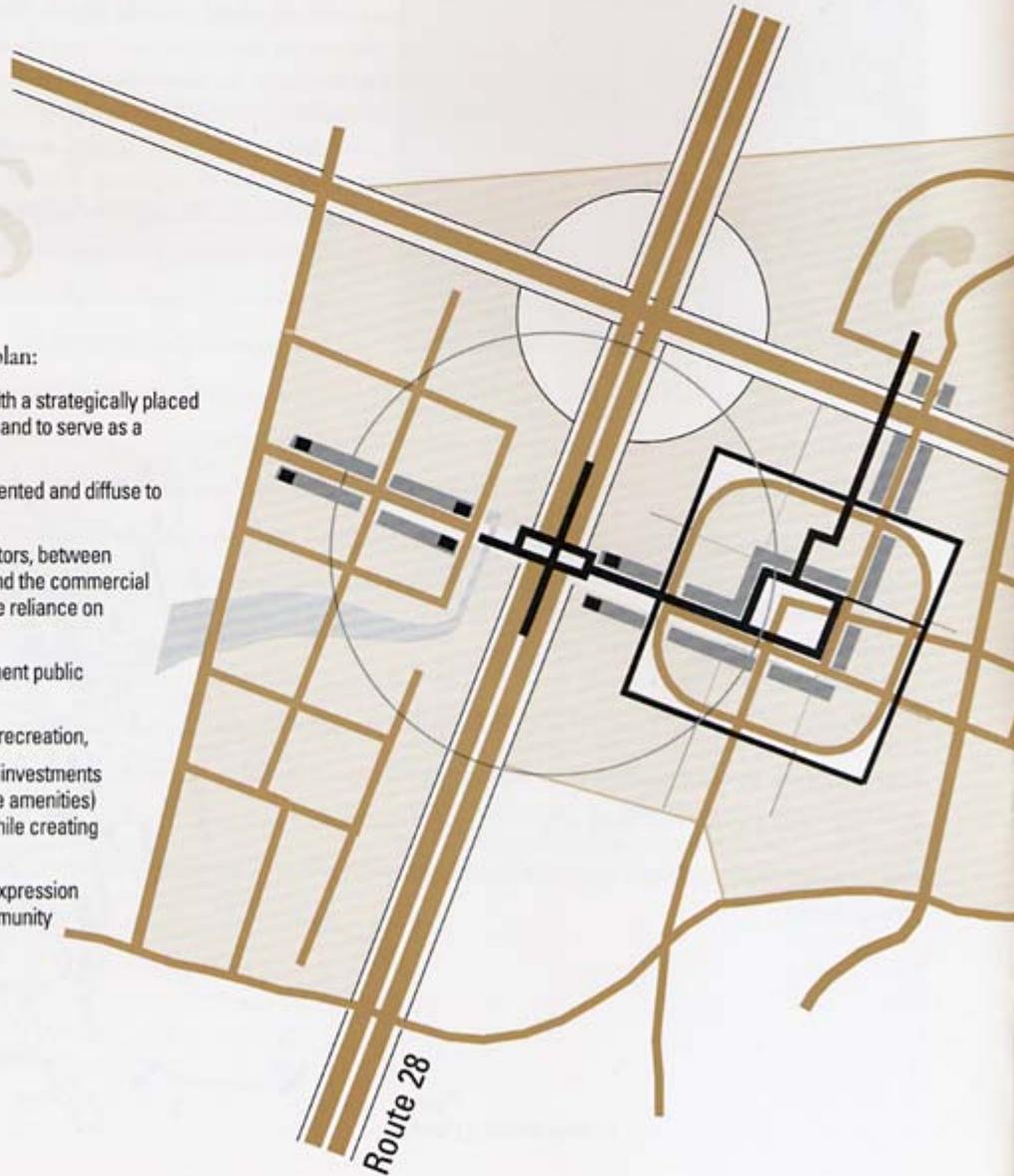
opportunities

- ▶ Good regional connections along commuter routes to residential and employment locations in the prosperous counties of Northern Virginia,
- ▶ Proximity to regional destinations such as Dulles International airport and attractions such as the planned Smithsonian Air and Space Museum Annex,
- ▶ Potential to attract more high-technology businesses and the services they require,
- ▶ Capacities of existing highways, particularly Rt. 28, to accommodate public transit and thus increase the area's accessibility,
- ▶ High visibility of properties from along the major highways,
- ▶ Availability of obsolete buildings and vacant land suitable for development in strategic locations,
- ▶ Existing utilities and public infrastructure that could be immediately and more fully utilized, and
- ▶ Potential to serve surrounding neighborhoods which provide a resident population and economic base

goals

The following goals guided the development of this plan:

- ▶ Encourage light-rail transit as part of a regional system with a strategically placed station in Chantilly to provide more transportation options and to serve as a catalyst for more compact and mixed-use development,
- ▶ Redefine the image of the Chantilly from one that is fragmented and diffuse to one that is unified and intensively used,
- ▶ Improve linkages within the area, among its separate sectors, between properties within sectors, and between neighborhoods and the commercial core, thus improving pedestrian qualities and reducing the reliance on automobiles,
- ▶ Improve the overall identity of the area by creating prominent public spaces and features within the area,
- ▶ Facilitate access to the nearby streams and wetlands for recreation,
- ▶ Create opportunities for the reasonable sharing of capital investments (e.g., parking garages, public open spaces, and landscape amenities) that will reduce burdens on individual property owners while creating a more efficient, unified, and attractive environment, and
- ▶ Establish an architectural framework that allows for the expression of corporate identities while maintaining a collective community character.



densities

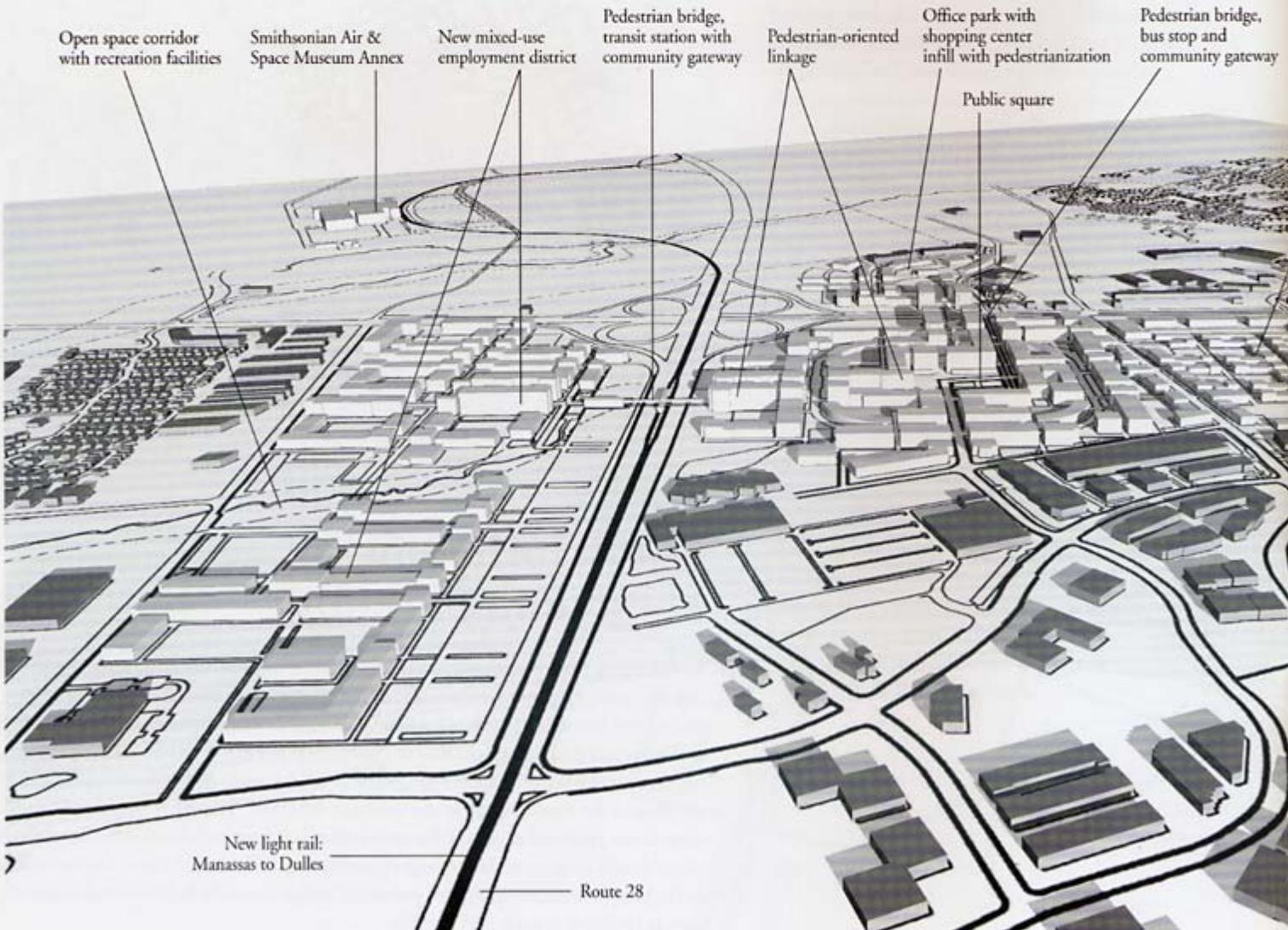
densities and activities

To achieve a critical level of activity, a range of activities should be accommodated that include retail, office, service, hospitality, recreational and institutional uses. The proposed plan has an approximate floor area ratio (FAR) of 2. Current regulations allow an FAR of 0.8 but do not consider the availability of transit or the benefits of a more compact and walkable environment. The plan accommodates approximately 7 million square feet of office and commercial uses, compared to the existing 1.2 million square feet. Thirty-five percent of the land area is dedicated to streets, highways and off-street parking, considerably less than the present 49 percent, indicating a more efficient use of land and a more pedestrian-friendly environment.

Parking garages are sited within street blocks, rather than fronting the streets, while surface parking is relegated to fringe sites. On-street parking is provided for short-term convenience. Drop-off zones provide convenient access to the transit station and at other locations to serve a loop bus system. Large commuter parking lots, however, are discouraged because they are a poor use of land in such a strategic location. Service alleys and loading zones are incorporated within buildings or within street blocks, shielded from view from along the pedestrian-oriented streets.

open space and landscaping

Parks, plazas, and well-landscaped open spaces and pedestrian ways should enhance the community at a range of scales. In addition to the central plaza, smaller ones, each with a different character, should become focal places for the sub-districts around the circular drive. Employees, visitors, shoppers and commuters should be able to come to these places to interact and relax.



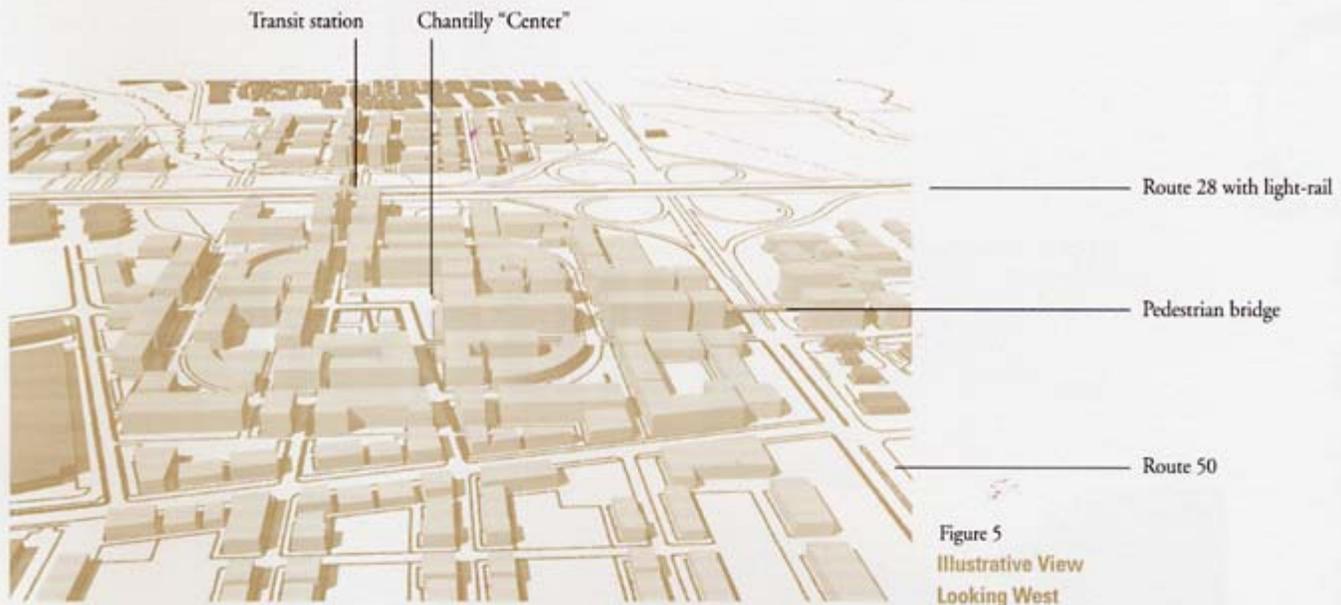
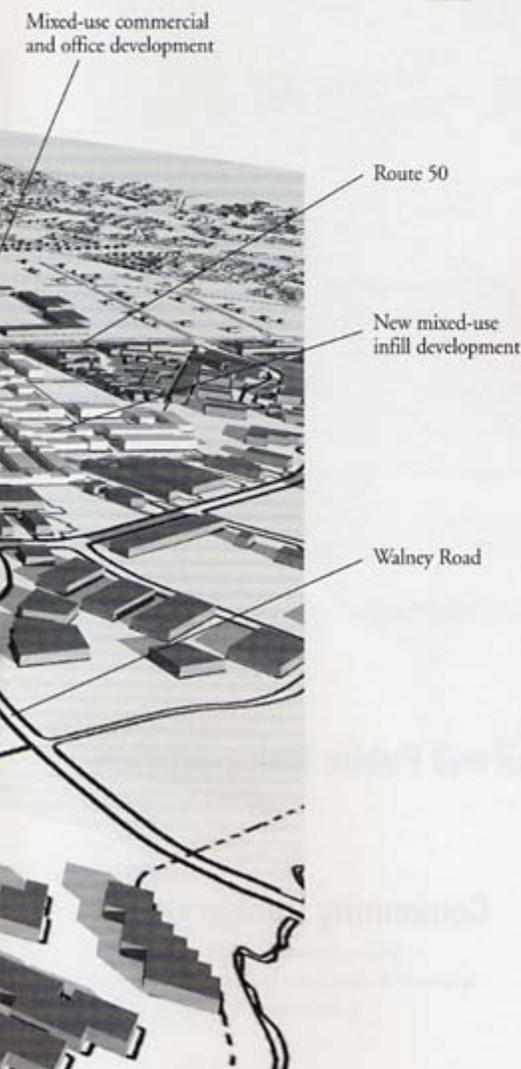


Figure 5
Illustrative View
Looking West

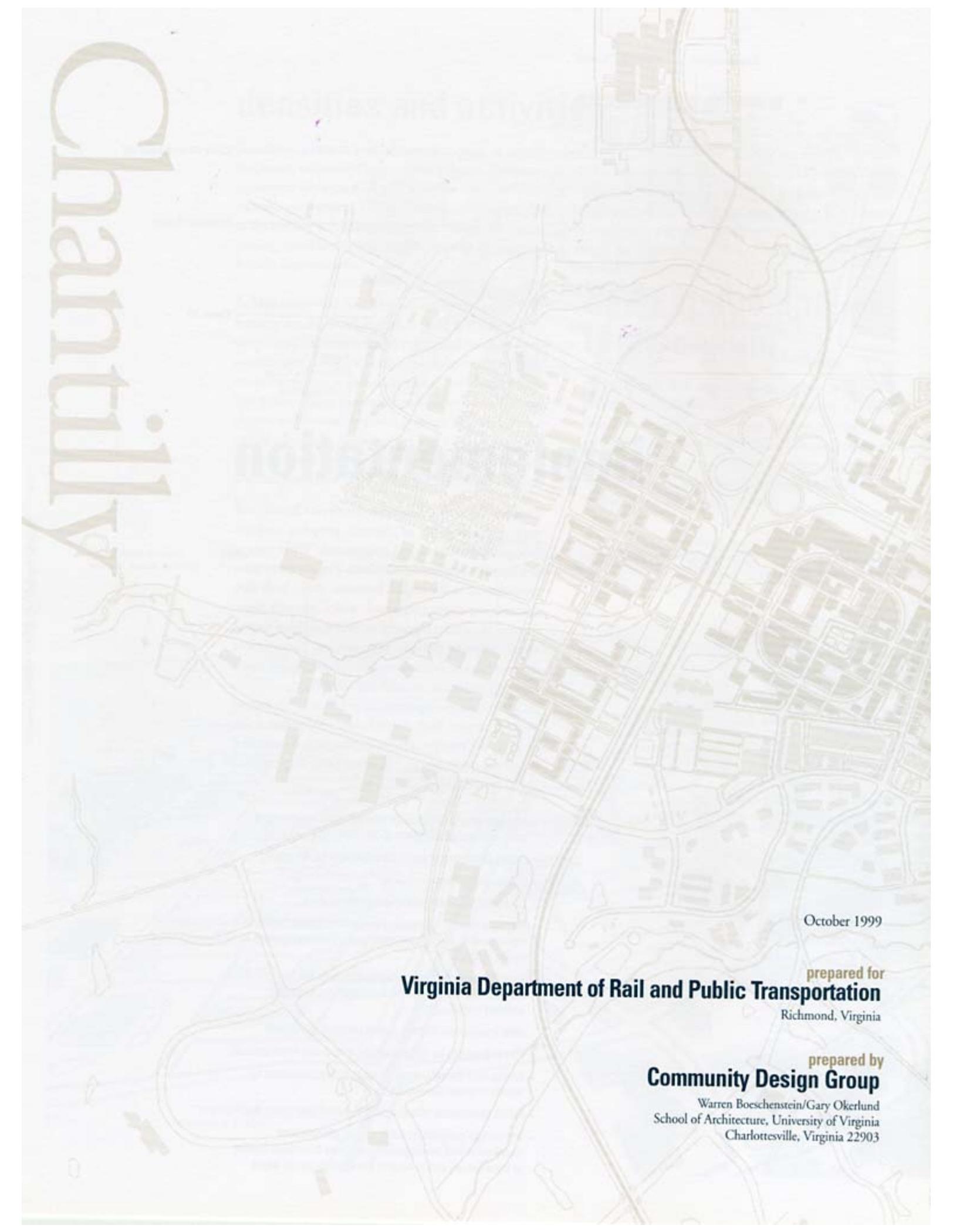
implementation

To realize the development opportunities in Chantilly will require the support of citizens, property owners, businesses, developers, and government. While present development practices in Northern Virginia favor auto-dependence, as the region becomes more built-out, commuting more congested, older projects more obsolete, the market support for transit and higher density, transit-oriented projects will increase. Government intervention can facilitate market acceptance and assure that land and transit are available when these conditions occur. To enhance opportunities in Chantilly for transit-oriented projects, local governments should prepare a plan to guide the phasing in of more compact, coordinated, mixed-use development. To accomplish the plan, local governments should:

- ▶ organize efforts for advance land acquisition and parcel assembly and other means to enable orderly redevelopment,
- ▶ create property and sales tax incentives for the district,
- ▶ tax parking spaces,
- ▶ form public/private development partnerships,
- ▶ mandate through ordinances mixed-use, higher density development, and discourage low-density development at transit stops,
- ▶ establish programs encouraging employer site location in transit stop zones and, where appropriate, employer-assisted transit passes,
- ▶ offer low interest loans to transit-oriented developers,
- ▶ confer bonuses for higher density, mixed-use developments,
- ▶ create user-friendly, streamlined approval processes for transit-oriented developers,
- ▶ install appropriate infrastructure in transit stop areas, and
- ▶ encourage comprehensive planning, architectural excellence, and development guidelines to achieve identity at transit stops and to support the ease of use for riders.



Charnville



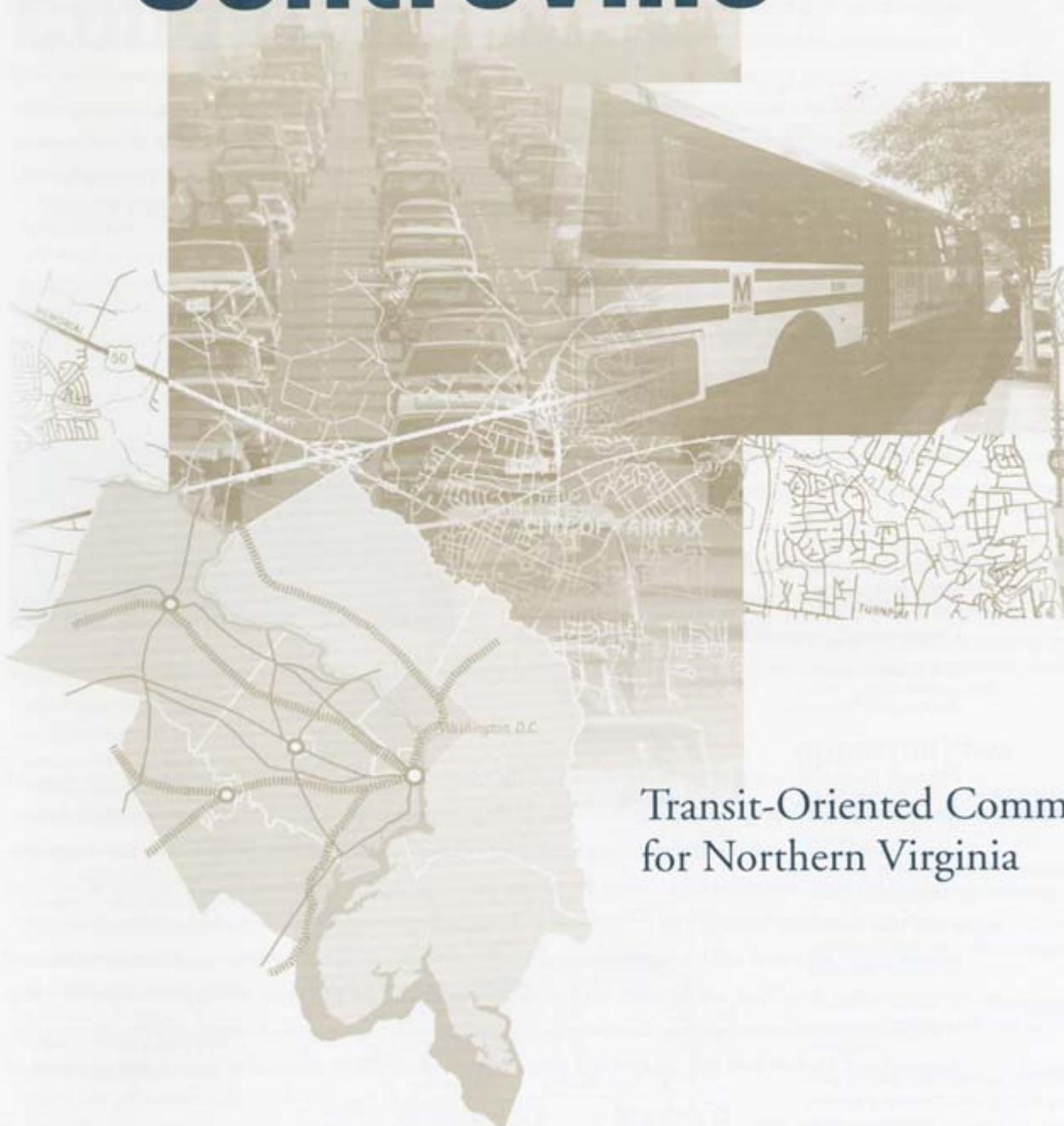
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Centreville



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Centreville

purpose

This report explores the potential for new development in the Centreville area of Fairfax County which could result from improved transit service along I-66 and Route 28 (Sully Road). As an initial investigation, this report suggests development opportunities tied to these new transit systems which should facilitate regional accessibility, increase land utilization and private property values, improve the area's character and attractiveness, and contribute to the county's tax base. While the goals for this report stem from those stated in the Fairfax County Comprehensive Plan, further studies are required and should include consultations with public officials, residents of the community, and area business leaders. Economic studies and market analyses as well as investigations of light-rail feasibility for the region and this locale in particular should also accompany subsequent planning. Based on available information, this proposal thus seeks to explore possibilities and stimulate further discussion that will facilitate transportation and land use planning in Northern Virginia.

introduction

Situated at the convergence of three regional highways—Interstate 66, Route 29, and Route 28—Centreville has outstanding locational advantages. I-66 is the primary commuting route for those traveling from the west into Fairfax County and beyond to Washington, D.C.; Route 29 is a major highway from the south and allows in Fairfax County access to commercial services along the highway and residential areas off of it; and Route 28 is a critical north/south link in this area, connecting Dulles International Airport and Manassas.



Although Centreville as a rural crossroads dates from the nineteenth century, most development in the area occurred during the 1980s following the construction of I-66. During this period, large-scale subdivisions, townhouse and apartment complexes, and suburban shopping centers and office buildings rapidly filled what had previously been marginally used and relatively inaccessible land. While the existing pattern of highways and roads and the presence of wetlands provided a rudimentary framework for development of the area and while zoning controls guided the construction within separate parcels, the overall area has become a confusing and inefficiently organized environment. Connections between different sections are difficult and the character of public spaces, primarily the road rights-of-way, are inhospitable. Lying at the convergence of major highways, Centreville thus has outstanding transportation advantages, but in recent years has developed with a lack of focus and character, and, from a regional standpoint, an underutilization of its strategic location.

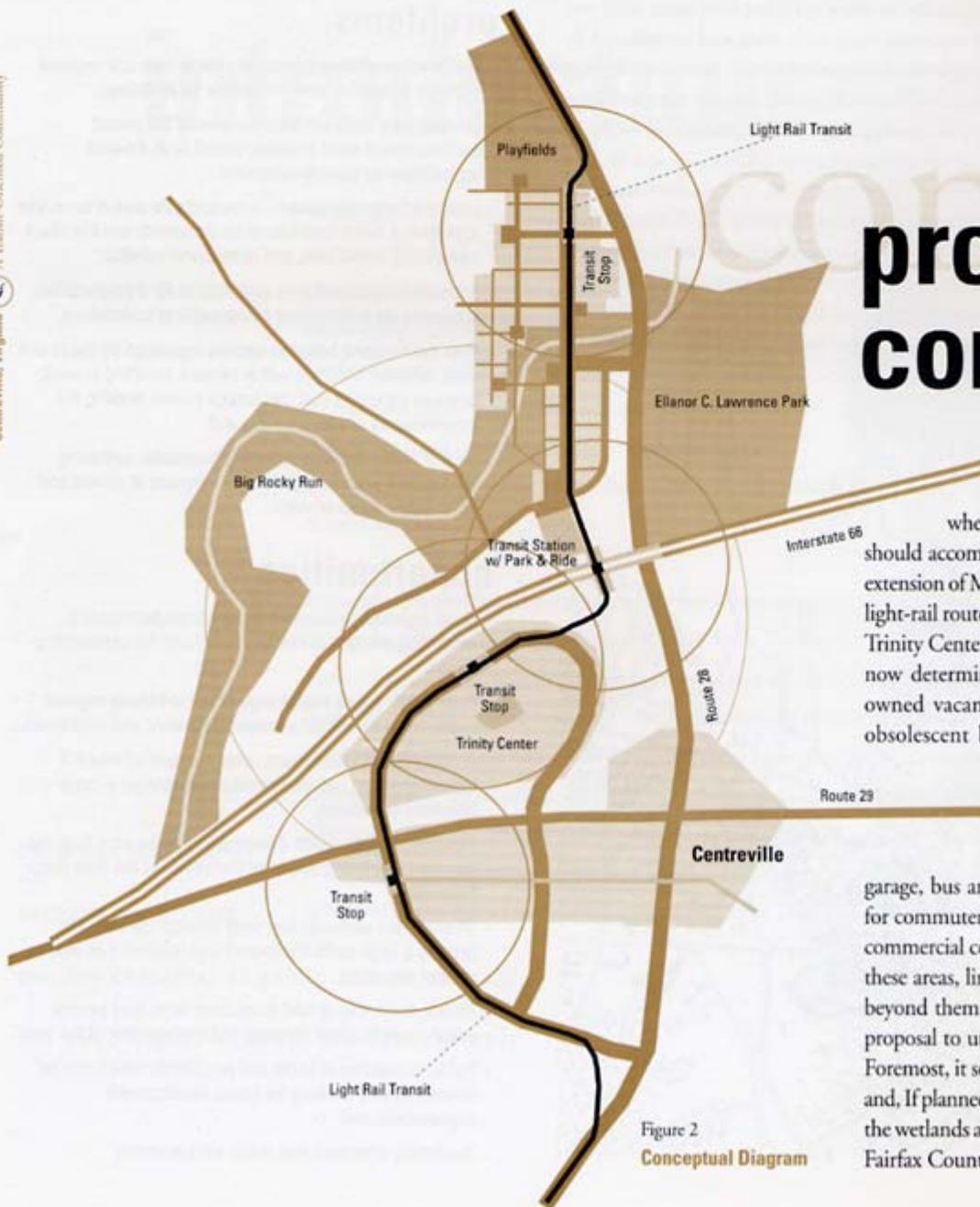
**Connections
between different
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goals

The following goals guided the development of this plan:

- Provide for light-rail transit through this area, a transfer station with Metrorail along I-66, and park-and-ride-facilities for commuters,
- Use transit to support greater development densities, a wider range of land uses, and more round-the-clock activities in Centreville,
- Establish a center in Centreville that will more fully utilize its locational advantages and provide conveniences, services, and amenities for those who live and work in western Fairfax County,
- Facilitate linkages within Centreville between area sectors, between properties within sectors, and between neighborhoods and commercial areas, allowing more people to walk between these sections and thus rely less on automobiles,
- Create opportunities for the reasonable sharing of capital investments (e.g., parking garages, public gathering spaces, landscape amenities) that will reduce burdens on individual property owners while creating a more efficient and attractive overall environment, and
- Protect the wetlands which thread through the area while allowing people to appreciate those qualities and benefits.



proposal concept

This plan recommends a location for a transit interchange immediately west of where Route 28 crosses I-66. A station here should accommodate connections between the planned extension of Metrorail along the I-66 median and a future light-rail route through the Route 28 corridor. Since the Trinity Center complex, southwest of the interchange, is now determined and since no other major privately-owned vacant parcels or significant properties with obsolescent buildings remain, new transit-oriented development should be built northwest of the interchange in the presently inaccessible section of the park. In this development should be a park-and-ride garage, bus and drop-off facilities, convenience services for commuters, and, north of the wetlands, a mixed-use commercial center. A light-rail line should pass through these areas, linking sub-areas to each other and to those beyond them along its route. While controversial, this proposal to utilize the woodlands offers public benefits. Foremost, it solves regional transportation requirements, and, if planned carefully, it should protect and even feature the wetlands as part of a new center of activity for western Fairfax County.

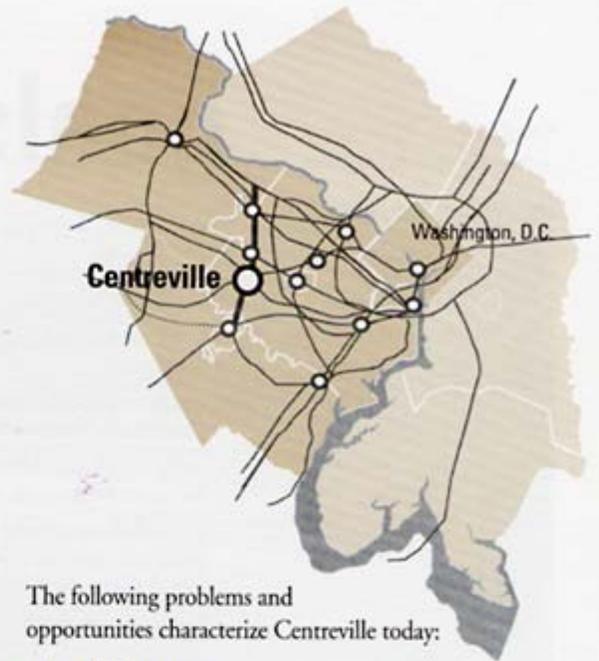
Figure 2
Conceptual Diagram

existing conditions

The Centreville study area of this report focuses on the area including and immediately surrounding the triangular core formed by the convergence of the three major highways. Until recently, the core area, which covers 151 acres, included the last remaining, privately owned, large parcel of land in the area. The Trinity Center, a complex of buildings is now being developed there. These buildings, primarily for office space but with some retail uses and hotel accommodations, are typically separated from each other and surrounded by parking. The wide road rights-of-way through the development would, however, allow for a future transit route. Within the core area along Route 28 are sets of apartment buildings and townhouses which face inward, not to the highway. The relatively old Newgate neighborhood shopping center occupies the critical intersection of Routes 28 and 29. East of the core, there are more apartment complexes (5-8 units/acre) on 22 acres, the Centreville Historic District encompassing 17 acres, commercial development along Route 29, and beyond these, the Centreville Farms subdivision, an older neighborhood with a density of .5 units/acre and remnants of Civil War fortifications. South of the core is a recent suburban shopping center on 63 acres, beyond which is a residential area developed at 12 units/acre. Along Route 29 on 4 acres is a County library, one of the few public facilities in the area. Southwest of the core on lower lying land is an area of 131 acres that includes protected wetlands and a section zoned for light industry as well as residential neighborhoods built at densities of 5-12 units/acre. North of the core and I-66 is the Eleanor C. Lawrence Park whose stream and related flood plain form part of the County's Environmental Quality Corridor System. Route 28 splits the park into an eastern and more public section through which Walney Road passes and a western section which, except for ball fields to the far north, is inaccessible.



Figure 1
Existing Building Pattern



The following problems and opportunities characterize Centreville today:

problems

- Traffic congestion as commuters move from one regional highway to another and complicate local access,
- Development build-out that, because of the recent construction of most privately owned land, thwarts opportunities for new development,
- Lack of a Centreville center—a recognizable area of focus that appeals to a broad spectrum of the community and that offers commercial, social, civic, and recreational activities,
- Excessive dependence on automobiles for transportation, producing an environment inhospitable to pedestrians,
- Poor connections between sectors separated by roads and even between buildings within sectors, resulting in weak land use synergies that discourage people seeking the conveniences of everyday life, and
- Lack of public facilities including landmarks, gathering places, and a gracious public environment of streets and other public rights-of-way.

opportunities

- Good regional connections along commuter routes to expanding markets in Fairfax County and the surrounding region,
- Potential for transit interchange which in serving regional needs could benefit local residents, owners, and employees,
- A mix of uses (employment, retail, residential) which if further enriched and integrated could achieve a more balanced community,
- Prominent location with distant views of the area from the approach highways and from Centreville of the Blue Ridge Mountains.
- Streams and wetlands that wind through the area and provide a large scale framework and reference as well as natural amenities,
- Private ownership of land in relatively large land parcels which could facilitate planning and management of the area,
- Public ownership of parks and woodlands which can be viewed as land-banking for future development opportunities, and
- Availability of utilities and public infrastructure.

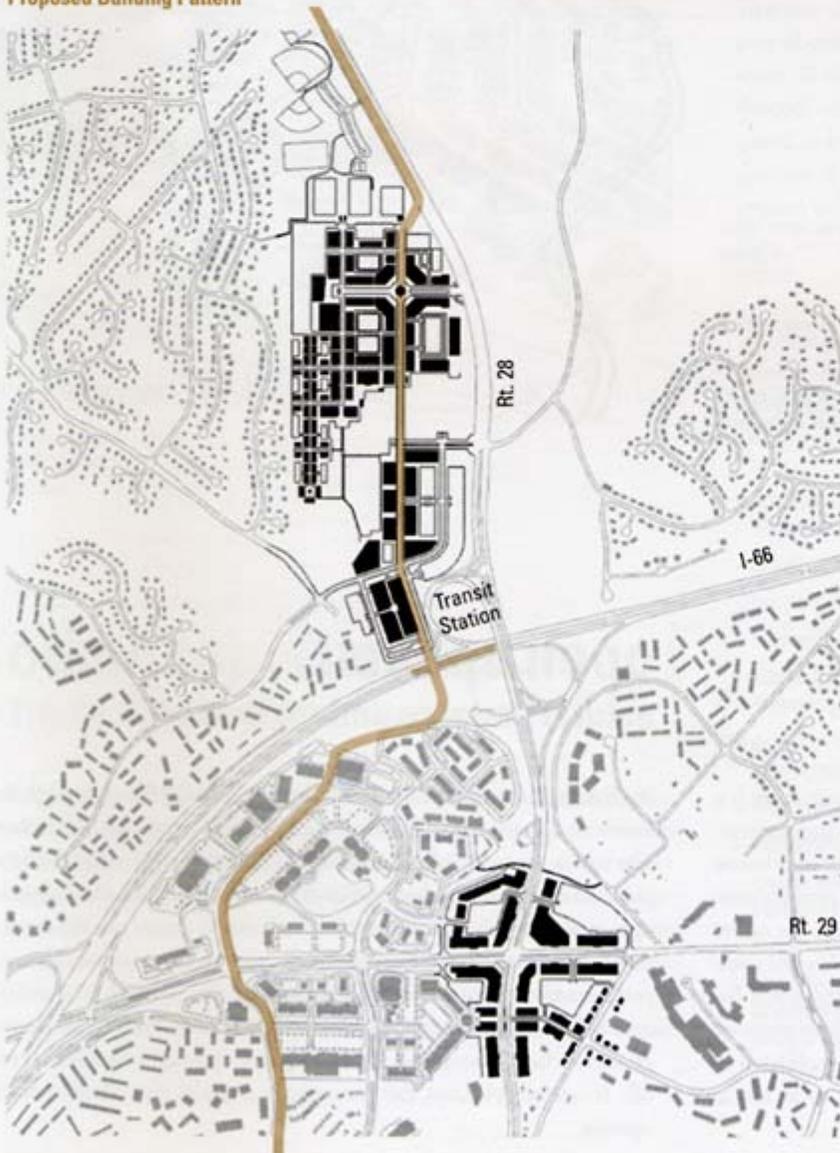
transit facilities

In Centreville the proposed light-rail line along Route 28, coming from the south, should divert west through the Trinity Center to bridge north across I-66 and serve Metrorail and transit stops and a major new park-and-ride facility. This transit facility, which would include a four-level garage, should be sited between I-66 and realigned Braddock Road, its connection to Route 28. A pedestrian bridge from the garage south across I-66 should allow commuters access to a new Metrorail platform below in a widened segment of the I-66 median between the light-rail and the Route 28 bridges. This arrangement could also permit the I-66 and Route 28 intersection to become a full, clover-leaf interchange.

Figure 3
Location of proposed transit platform on I-66 median near Route 28 bridge.

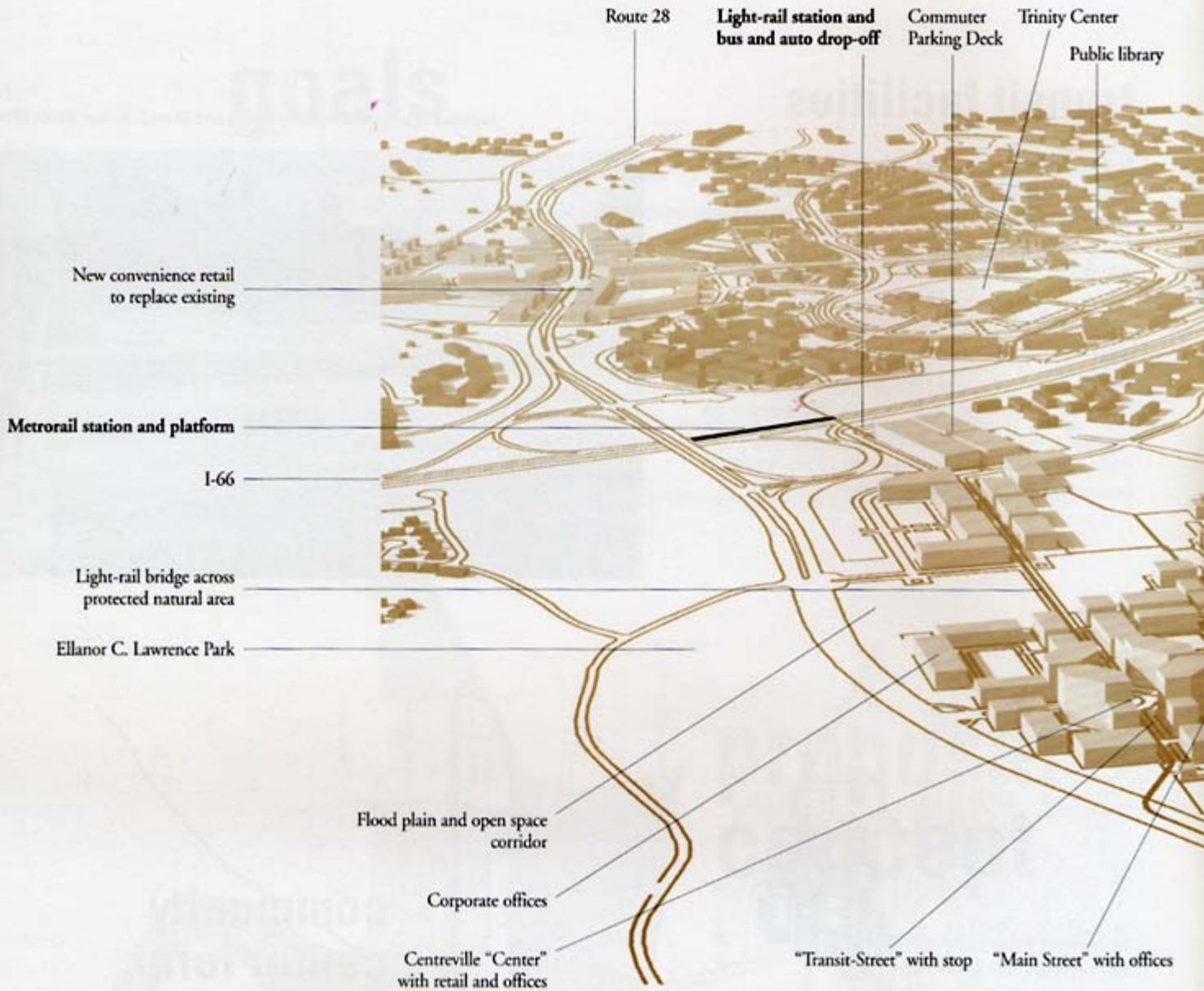


Figure 4
Proposed Building Pattern



community center form: phasing, identity, and activities

The commuter station, garage, and drop-areas should be the first phase of development. The second phase should occur to the immediate north of them. Benefiting from proximity to the commuter center, this private development should support convenience retail and corporate office uses. While the buildings could have large floor areas, they should front the light-rail "transit street" that bridges north across the wetlands. The third and northern phase should be a mixed-use center, sufficiently diverse in activities (commercial, institutional, residential), prominent in appearance, and engaging in its design, spatial sequences, and landscape amenities to serve as a focus for area residents. This development should respect its surroundings by having its primary entrance from Route 28 on the west, protection of and connections to the existing recreational fields to the north, new residential areas adjacent to the existing neighborhoods on the west, and preservation of the wetlands that pass along its southern edge.

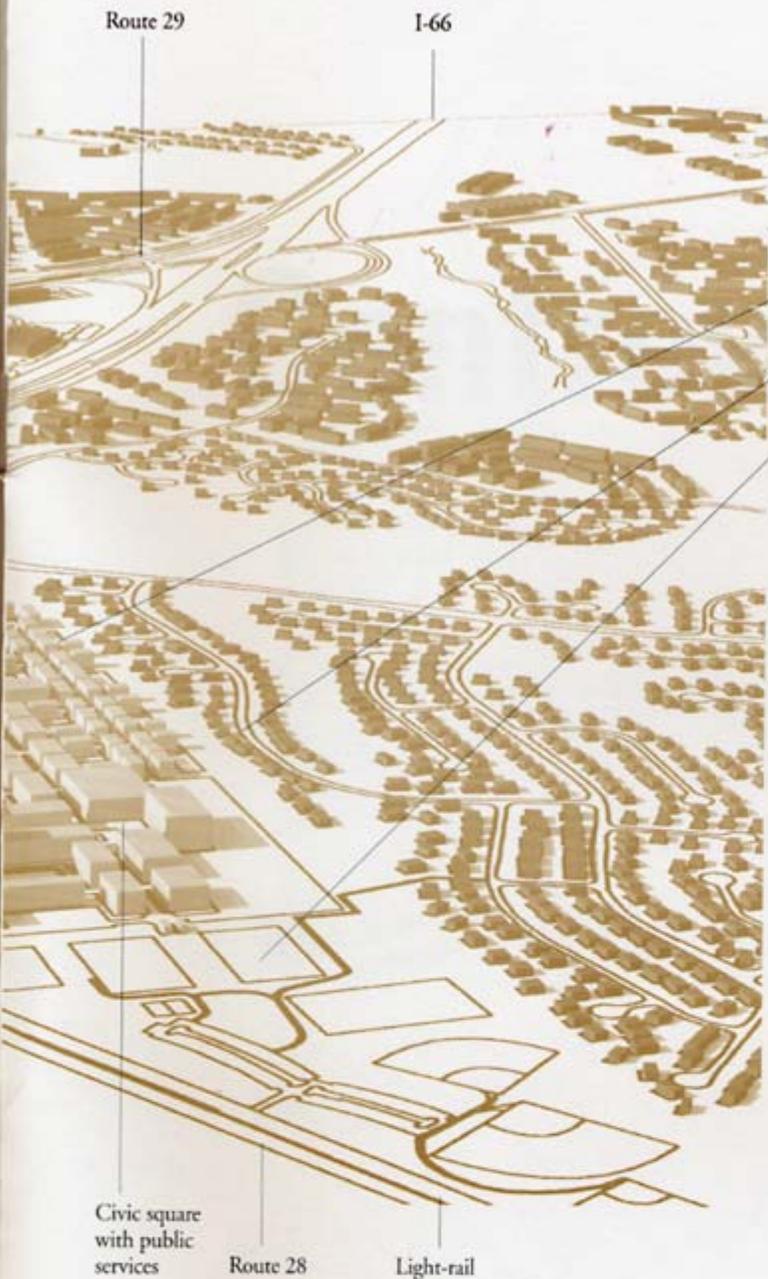


circulation systems: pedestrian, vehicular, parking

Two primary streets organize the development. The north/south route is a "transit street" for light-rail trains, pedestrians, and slow-moving automobiles. Light-rail trains pass through this street and serve its sub-areas before returning to their alignment along the Route 28 median. The primary east-west road is the entrance for automobiles from Route 28 into the center complex. The entrance road intersects the "transit street" forming the commercial center, the area of highest development density. Further west it becomes the area's "Main Street," terminating in a civic square. Pedestrians are favored throughout the development. Parking should be consolidated in garages and, around the periphery, in the middle of blocks, so as not to distract from the pedestrian environment.

open space: natural features and recreation

Big Rocky Run, a tributary of the Occoquan River, flows through the site in an approximately 300-foot wide swath of protected flood plain. The transit-way and pedestrian boardwalks should bridge across the flood plain, leaving it undisturbed. Embankments with promenades along the open space edge should allow pedestrians also to appreciate the natural resources without compromising them, and adjacent buildings with porches and overlooks towards the open space should bring more people into daily contact with this site asset. Containment basins and porous ground surfaces throughout the development should control water runoff. If carefully planned, this site could be a model for ecological development.



New residential
 Existing residential
 Existing playfields and recreation facilities

implementation

To realize the development opportunities in Centreville will require the support of citizens, property owners, businesses, developers, and local government. While present development practices in Northern Virginia favor auto-dependence, as the region becomes more built-out, commuting more congested, older projects—such as those comprising much of Centreville—more obsolete, the market support for transit and higher density transit-oriented projects will increase. Government intervention can facilitate market acceptance and assure that land and transit are available when these conditions occur.

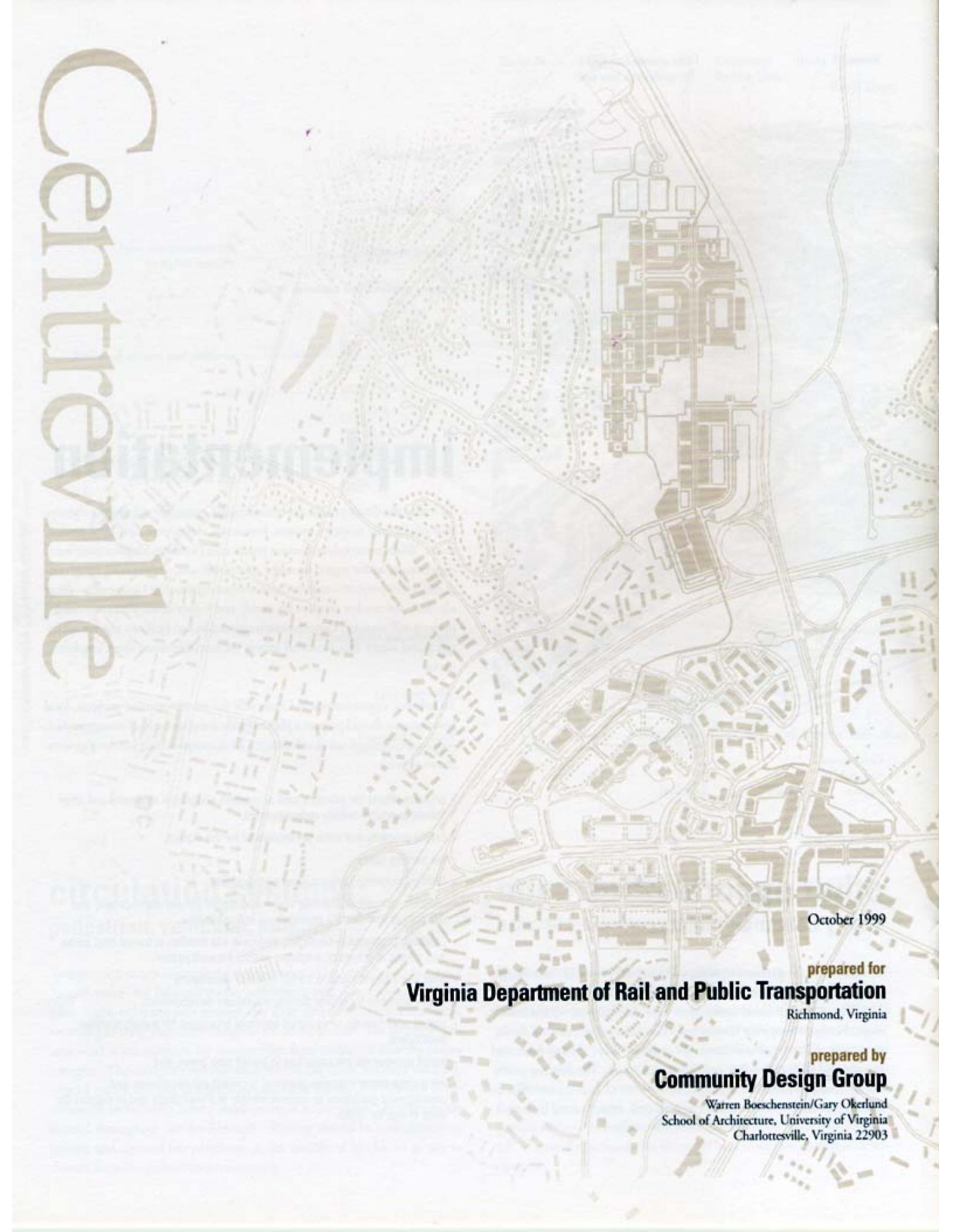
To enhance opportunities in Centreville for transit-oriented projects, local governments should prepare a plan to guide the phasing in of more compact, coordinated, mixed-use development. To accomplish the plan, local governments should:

- organize efforts for advance land acquisition and parcel assembly and other means to enable orderly redevelopment,
- create property and sales tax incentives for the district,
- tax parking spaces,
- form public/private development partnerships,
- mandate through ordinances mixed-use, higher density development, and discourage low-density development at transit stops,
- establish programs encouraging employer site location in transit stop zones and, where appropriate, employer-assisted transit passes,
- offer low interest loans to transit-oriented developers,
- confer bonuses for higher density, mixed-use developments,
- create user-friendly, streamlined approval processes for transit-oriented developers,
- install appropriate infrastructure in transit stop areas, and
- encourage comprehensive planning, architectural excellence, and development guidelines to achieve identity at transit stops and to support the ease of use for riders.

other opportunities: Trinity Center and intersections

In addition to the proposal northwest of the I-66/Route 28 interchange, other opportunities for transit-oriented development exist in Centreville. The Trinity Center could orient more new development to the transit stops. Newgate Shopping Center and other land parcels around the intersection of Route 28 and Route 29 could be more densely built and coordinated with each other and the transit stops. The existing public library could be joined by other public facilities such as a post office to make its location along Route 29 a small civic center served by transit.

Centreville



October 1999

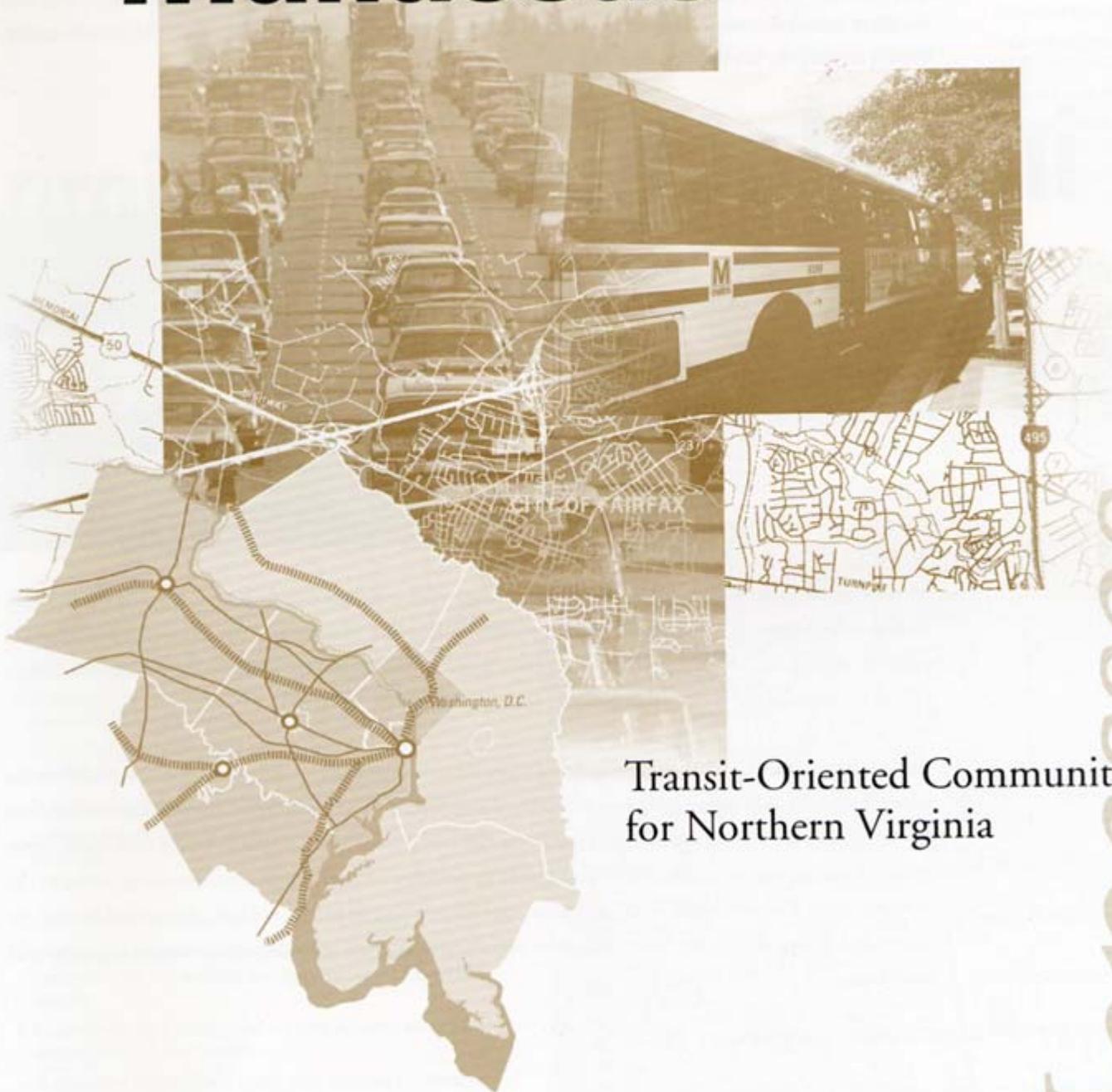
prepared for
Virginia Department of Rail and Public Transportation

Richmond, Virginia

prepared by
Community Design Group

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School of Architecture, University of Virginia
Charlottesville, Virginia 22903

Manassas



Transit-Oriented Communities
for Northern Virginia

Manassas

purpose

This proposal for the City of Manassas, Virginia, illustrates development opportunities based on improved public transit for Northern Virginia. In Manassas, intercity rail to Washington, D.C., could connect to a new light rail service from this area through the Route 28 corridor to Dulles International Airport. This conceptual proposal for Manassas seeks to stimulate discussion among public officials, community residents, and area business leaders. Economic studies and market analyses, along with feasibility studies for the light rail service, should accompany subsequent planning.

introduction

The City of Manassas has a rich history which is evident in its buildings, town pattern, and surrounding areas. It is a heritage worth preserving. During the Civil War, Union and Confederate Armies fought over this ground, because the Manassas junction controlled vital supply lines to and from Washington, D.C. Rail lines still converge here, and as the metropolitan area expands, these rail lines offer Manassas a new strategic advantage to shape development.

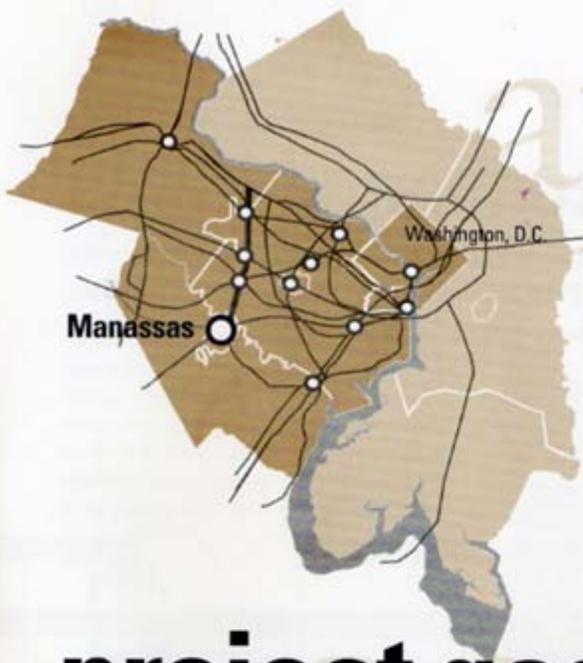


Although settled for over a century, Manassas, as an incorporated city, dates only from 1975. Located within Prince William County, the City of Manassas is twenty-five miles southwest of Washington, D.C., in a region that has grown rapidly in recent years. I-66 passes six miles to the east. Particularly in the last two decades, development in Northern Virginia has extended out from the federal city along these corridors.

The residents of Manassas and of the surrounding region have depended almost exclusively on the automobile as the primary means of transportation in the post-World War II growth period. Particularly in the last decade, automobiles that once offered convenience and accessibility have brought major congestion, serious air pollution, and some would argue, deterioration in the regional quality of life. New solutions are needed to avoid exacerbating these mounting problems. The existing Virginia Railway Express (VRE) and a proposed light-rail link from here to Dulles Airport will increase the locational advantages of Manassas, and consequently, opportunities to centralize development around the city's depot and historic core.

Particularly in the last decade, automobiles that once offered convenience

and accessibility have brought major congestion, serious air pollution, and some would argue, deterioration in the regional quality of life.



plan approach

This study focuses on an area primarily defined by a ten minute walking distance of a quarter-mile radius from the depot. This area includes the core of the downtown and reaches from bordering residential neighborhoods on the north to the Museum and the open spaces in front of the high school to the south, and from the downtown "entry" at the water tower on the east to another potential "entry" at the new Prince William Court House facilities on the west side.

recommended uses in the plan area

- business and government
- telecommunications facilities
- technology-based employment
- general retail/service
- specialty retail (tourism, entertainment)
- cultural facilities (museums)
- hospitality accommodations (small hotels, inns)
- office and commercial
- commuter related services (day care, personal services)
- residential (adaptive reuse, new projects)

project goals

These goals establish the framework for proposals presented in this report. These goals build upon those stated in existing local planning documents.

To promote economic growth in Manassas

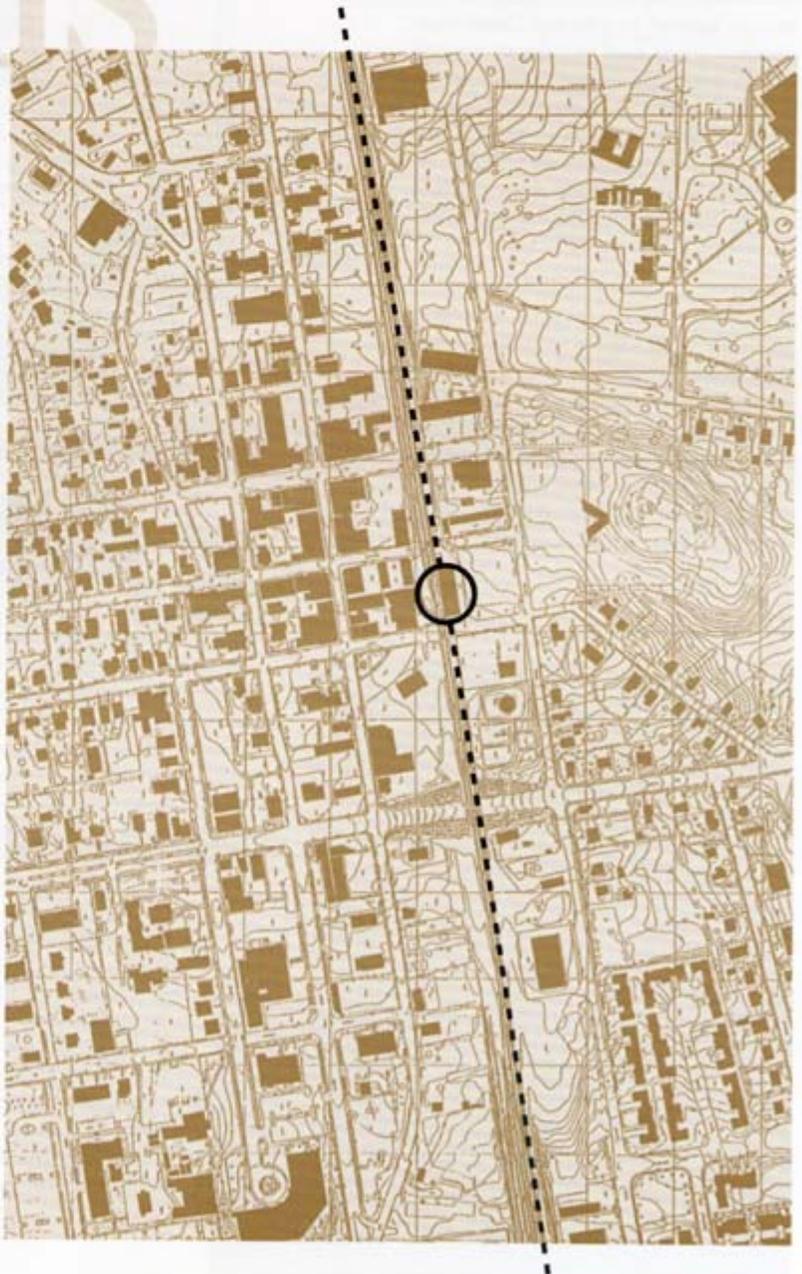
- > to encourage businesses that will expand and diversity the City's economic base,
- > to develop downtown Manassas as a telecommunications center,
- > to attract tourists interested in the city's cultural resources,
- > to draw shoppers to the downtown businesses,

To provide for the efficient use of improved rail service

- > to promote the use of alternative modes of transportation,
- > to reduce the volume of vehicular traffic in the downtown core, particularly trucks and through traffic,
- > to consolidate parking in more efficient, less disruptive arrangements,
- > to improve the pedestrian environment in the downtown core,
- > to initiate transportation programs that reduce the level of vehicle emissions.

To enhance the physical quality of Manassas

- > to preserve the historic quality of the city by maintaining the traditional scale and materials and reducing current allowable heights,
- > to develop stronger linkages that will unify disparate buildings, spaces, and sections of the city,
- > to strengthen the tradition of mixed-uses, particularly commercial and residential which can complement each other,
- > to encourage pedestrian patterns and activities and de-emphasize the prominence of automobile traffic and parking lots,
- > to use vacant public land near the depot for multiple uses to benefit a broader range of people and foster more activity,
- > to initiate transportation programs which reduce the level of vehicle emissions.



community design plan recommendations

Unlike older Virginia towns that developed along rivers, Manassas grew on the Piedmont plain and in response to railroad commerce. In this particular location, Manassas has its own unique features to celebrate: the flat topography that accentuates the town's skyline, the compact grid pattern that relates to the depot, the rail line that divides the town yet also is an orientation feature, and the buildings from past eras that reflect the life of the community.

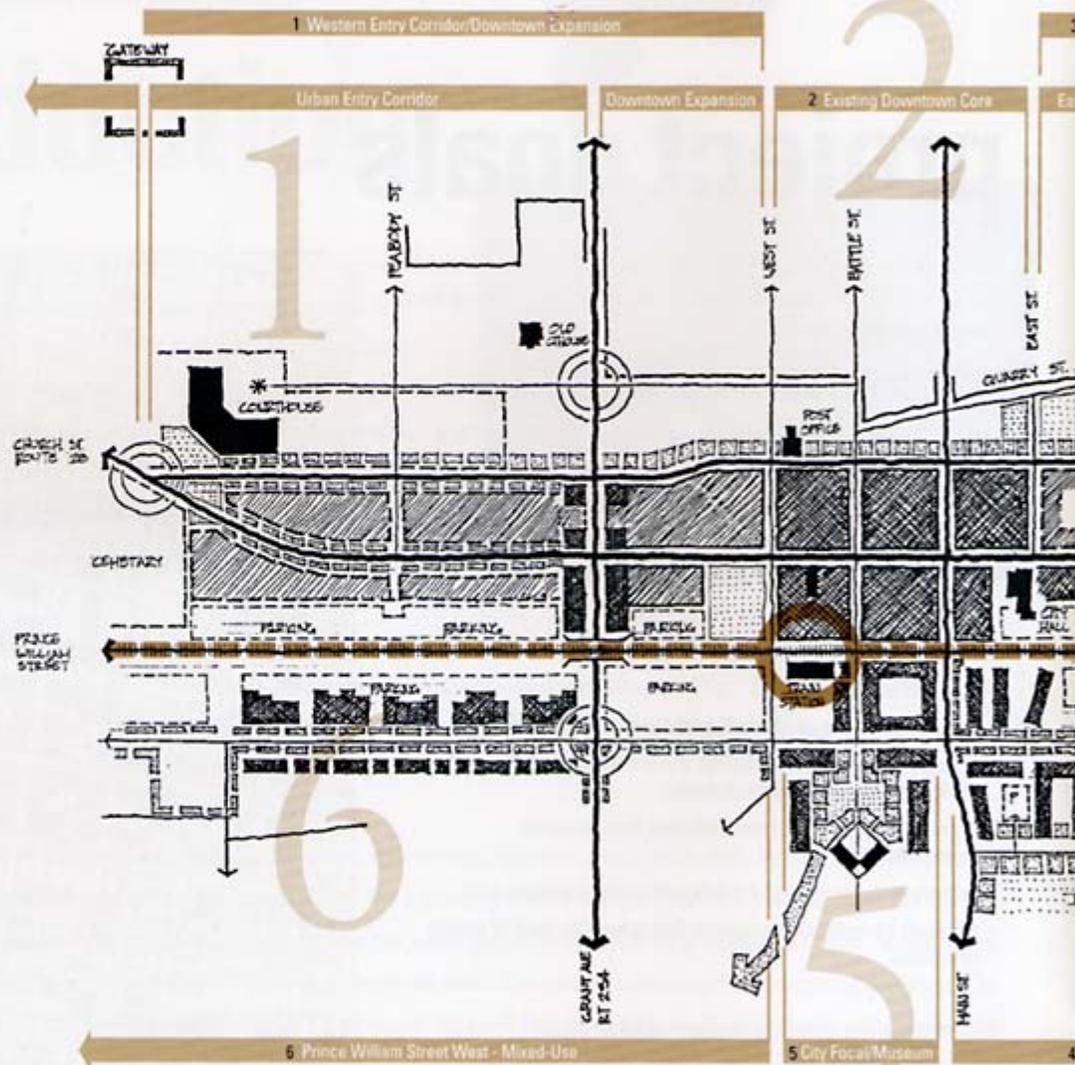
1 Western Corridor/ Downtown Expansion

This western quadrant, adjacent to the west side of the downtown core and north of the railroad, offers significant opportunities to expand the pedestrian-oriented qualities of downtown and serve as a "gateway" from the west. Church Street remains an arterial street, providing access to and through downtown. A visual "gateway," at the intersection with Center Street, reinforced by landscaping, can serve as an entry to the downtown. This location should emphasize the court facilities, a major activity that should have symbolic importance but that has been lost in the welter of recent building.

Center Street, currently underdeveloped and dependent on automobile circulation, should favor pedestrians. While it should be less densely built up than the core, new infill buildings should orient to the street with parking areas provided behind them. The band of property stretching along the north side of the rail tracks is particularly suitable for parking. From here, people could walk east to the depot and the downtown core and north to the court facilities.

6 Prince William Street West

This area is mixed-use and transitional in scale. To the south is an existing residential area, to the north, west of Route 234, industrial uses are developing, providing more employment opportunities. As this continues, new buildings should front the street with parking areas provided behind them along the railroad tracks. The streetscape should unify the differing uses.



5 Central Spaces

This zone, directly across the tracks and south of the existing downtown core, focuses on the depot and on the museum. The depot, museum and Market Square are three important civic spaces which should contrast in character and use with each other and link together, strengthening the attractiveness of this area. The depot "square" centering on the depot and the area to the south should remain an active transportation area, supporting commuter rail. A parking garage (maximum of three levels) should be on the south side of the square. Convenience stores on the ground floor of the garage fronting the depot could serve commuters. North of the depot, the edge of the buildings and the service alley should be unified with landscaping. A pedestrian way from the parking lots to the west could extend along this edge.



2 Existing Downtown Core

The heart of the downtown, the six block area north of the depot, remains compactly organized in a grid pattern with most buildings fronting on the street. It contains many of the city's historic buildings. New infill buildings and the adaptive use of existing structures should strengthen this pattern. To achieve this, the extensive surface parking in the downtown core should be reduced by providing consolidated parking parallel to the railroad tracks, yet still close to the core. Parking removal would allow for pedestrian-oriented interior-block courtyards, areas to benefit adjoining restaurants and other businesses.

Upper floor apartments could also gain access from these spaces. With reduced through-traffic and a two-way traffic pattern on Church and Center streets, and Center Street restricted to local traffic, the sidewalks and streets in the downtown can emphasize pedestrian qualities. Opportunities also exist to expand the role of the farmers' market.



design objectives

The following design objectives provide the framework for the design plan recommendations:

- emphasize a scale consistent with that existing in the downtown area,
- retain structures and features that have historic and cultural and architectural value,
- limit building heights to four stories and encourage most to be two and three stories,
- seek a medium density of development (FAR of 1.5-3.0 and/or D.U./acre up to 25), grading down from the highest density around the train depot,
- encourage mixed-uses and structures for new and infill buildings that will allow changes to occur easily,

3 Eastern Corridor

The eastern quadrant, adjacent to the east side of the downtown core and north of the railroad tracks, offers additional opportunities to expand the pedestrian-oriented qualities of downtown and also serve as a gateway. Church Street (Route 28) should remain an arterial street, providing access to and through downtown.

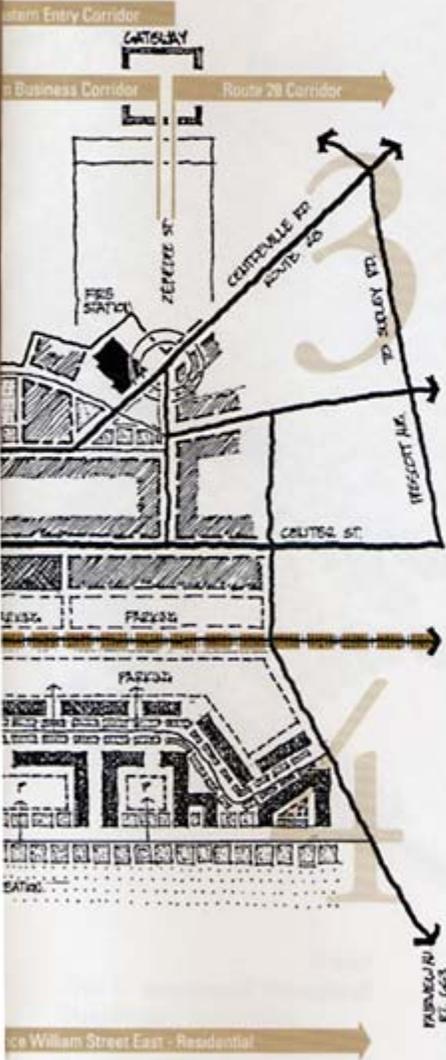
This area would also benefit from additional infill and new development which, in turn, should support the downtown. New uses in this area, such as consumer services, should be pedestrian-oriented, accessible to the adjacent residential area yet not compete with the businesses in the downtown core. Additional infill development along streets should provide more unity through the spacing of buildings and orientation to the street. Street trees and appropriate landscaping should bring further order to this area. Parking should not front the street, but be consolidated within blocks, in surface parking lots, or in parking decks (e.g., on the City Hall parking lot), and parallel to the railroad tracks. A pedestrian connection under the tracks to the area to the south, where schools are located, would reduce the need for automobile traffic.

- promote mixed-uses either within buildings or in close proximity that would foster more visible activity throughout the day, week, and year,
- minimize intrusions into residential areas and buffer potentially conflicting adjacent uses,
- reroute through traffic around the downtown area,
- develop environments that favor pedestrians particularly near the depot and within the downtown core,
- utilize the rail depot and its surroundings as a focal point for downtown activity,

4 Prince William Street East

This area, much of which is City-owned, should be made available for residential development. A grid pattern of streets should be established, approximately of the same dimension as in the historic core north of the tracks, to organize the area. Townhouse development, three stories in height, should be encouraged. Buildings nearest the depot should combine retail (cleaners, small food stores, etc.) on the ground floor with office and residential uses above. Buildings further from the depot should primarily be residential. Parking spaces should be within the interior of the blocks. Immediately north of the high school should be recreation facilities (e.g., tennis, basketball) to be shared by students during school sessions, residents in adjacent housing, and employees in nearby offices, as well as other citizens. The streets should be pedestrian-oriented and residential in character, with street trees, landscaping, generous sidewalks and other amenities.

- orient buildings to the street rather than to parking lots and thus encourage them to contribute to pedestrian life,
- link more effectively the north and south sections of the central area.



The museum and its surrounding space form a vital yet detached downtown feature. By linking the museum to the depot and the downtown core through a sequence of spaces and complementary activities, the museum could become more integral to downtown and support passenger rail service. A new major space between the depot and the museum could enhance the linkage of the museum to the depot and downtown. Spatially, it should be well-defined with building heights similar to downtown. It should have an interesting edge along which to walk, possibly stores on the ground floor or at the corners, which would attract pedestrians from the depot to the museum.

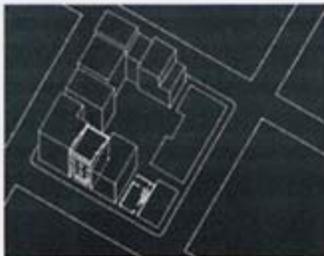
transit-oriented development strategies

architectural prototypes

These building types suggest the intended character for Manassas as it continues to change, yet still allow for a variety of choices. These prototypes emphasize mixed-uses, compact forms, and different housing accommodations, densities, and costs for a range of social classes and family sizes.

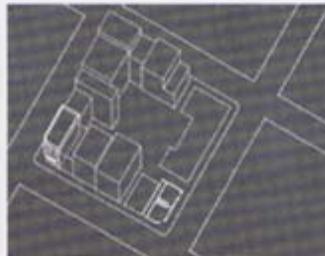
Type A Downtown Infill

Infill building for existing mid-block in downtown core; commercial on ground floor with option for office and/or residential above; 1,800 s.f. per floor, could interconnect with adjacent buildings for larger floor areas.



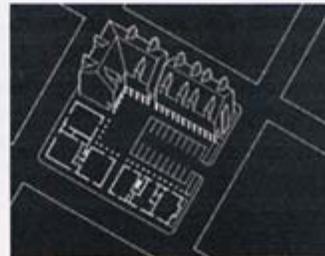
Type B Commercial Corner Infill

Infill building for existing corner of block in downtown core; commercial on ground floor with option for office and/or residential above; 2,000 s.f. per floor, could interconnect with adjacent buildings for larger floor areas.



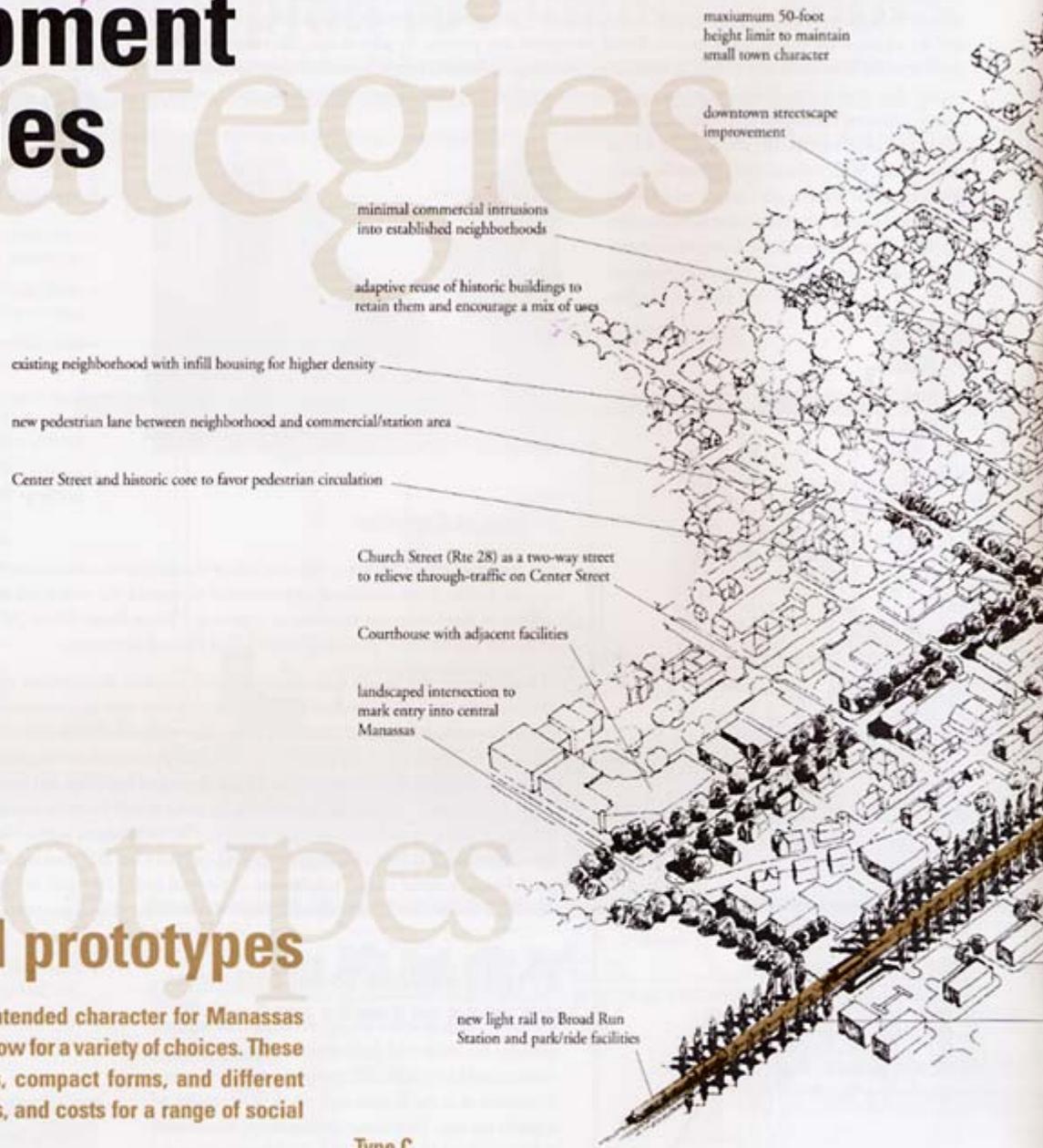
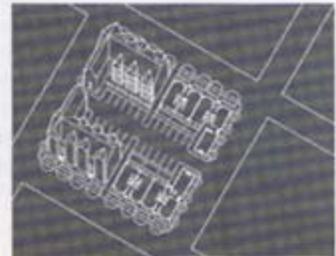
Type C Commercial Mixed-Use

Two and one half stories in height with alternate of 3 1/2 stories; commercial on ground floor with option for office and/or residential above; floor areas in modules of up to 7,000 s.f., floor area per level equals 24,000 s.f.; arcade around interior court; off-street parking for 18 cars, on-street parking for 33 cars.

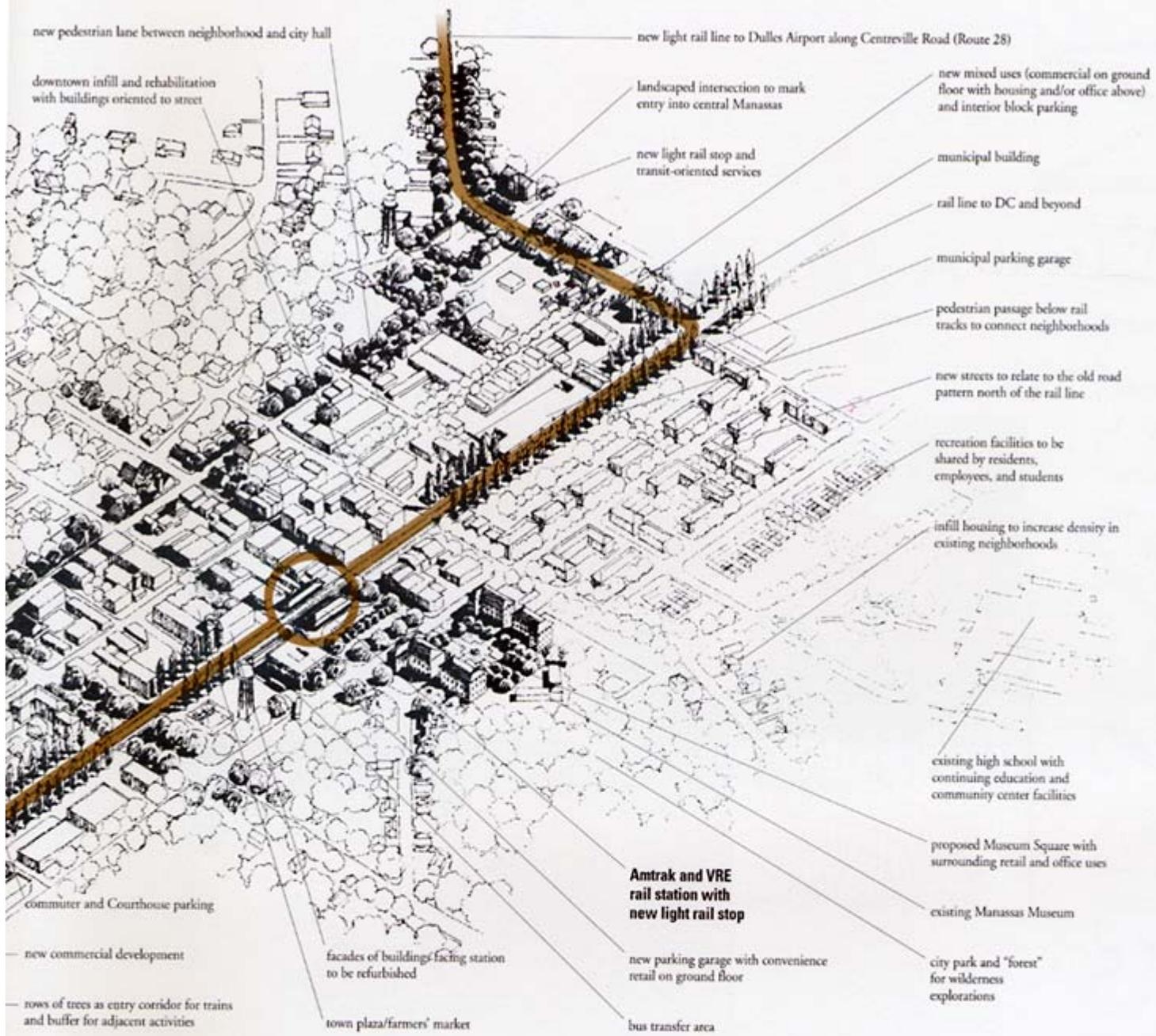


Type D Residential Townhouse

20 D.U./acre
Two stories in height; 2,000 s.f. per average dwelling, private patios and porches, 20 dwellings total; off-street parking for 24 cars, on-street parking for 30 cars.

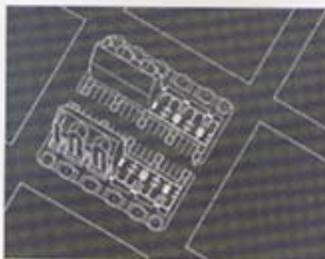


prototypes



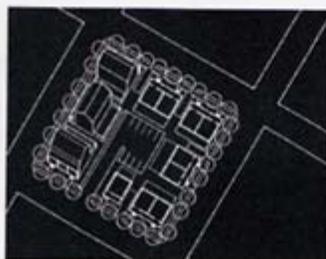
Type E
Residential Townhouse

12-20 D.U./acre
Two stories in height; 1,500 to 2,100 s.f. per dwelling, private patios, 20 dwellings maximum total; off-street parking for 32 cars, on-street parking for 30 cars.



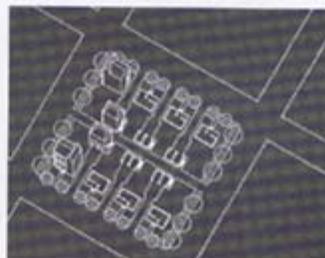
Type F
Residential Duplex

15 D.U./acre
Two stories in height; 1,500 s.f. per dwelling, private yards, 15 dwellings maximum total; off-street parking for 14 cars, on-street parking for 27 cars.



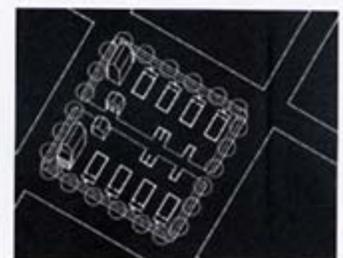
Type G
Single Family and Apartment

8-14 D.U./acre
Two stories in height; eight main dwellings at 1,200 s.f. per dwelling, six garage apartments at 400 s.f. per dwelling, private yards; off-street parking for 12 cars, on-street parking for 20 cars.

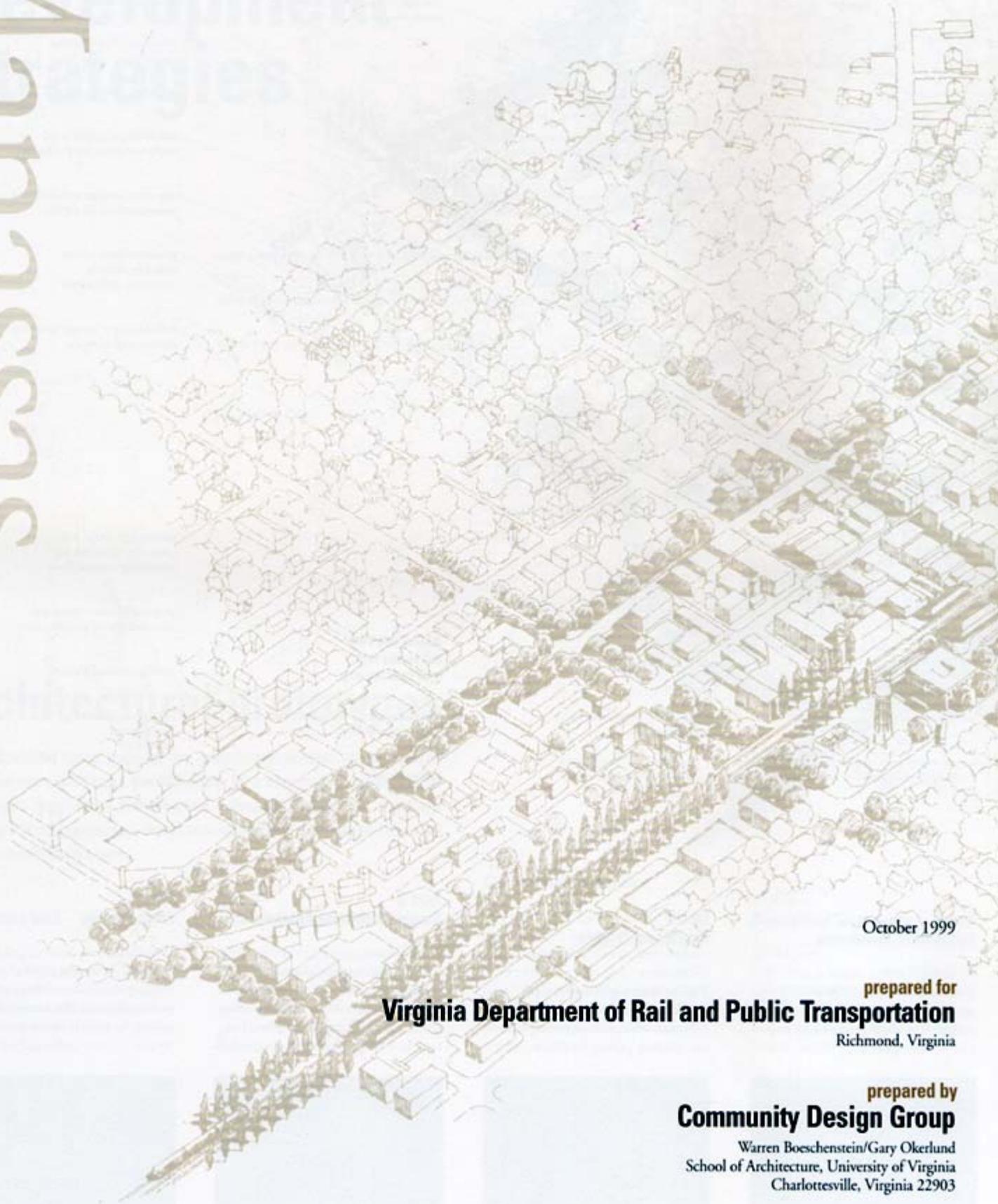


Type H
Single Family

10 D.U./acre
Two stories in height; 1,500 s.f. per dwelling with space to enlarge, private yards; garage with alley access; off-street parking for 10 cars, on-street parking for 30 cars.



Manassas

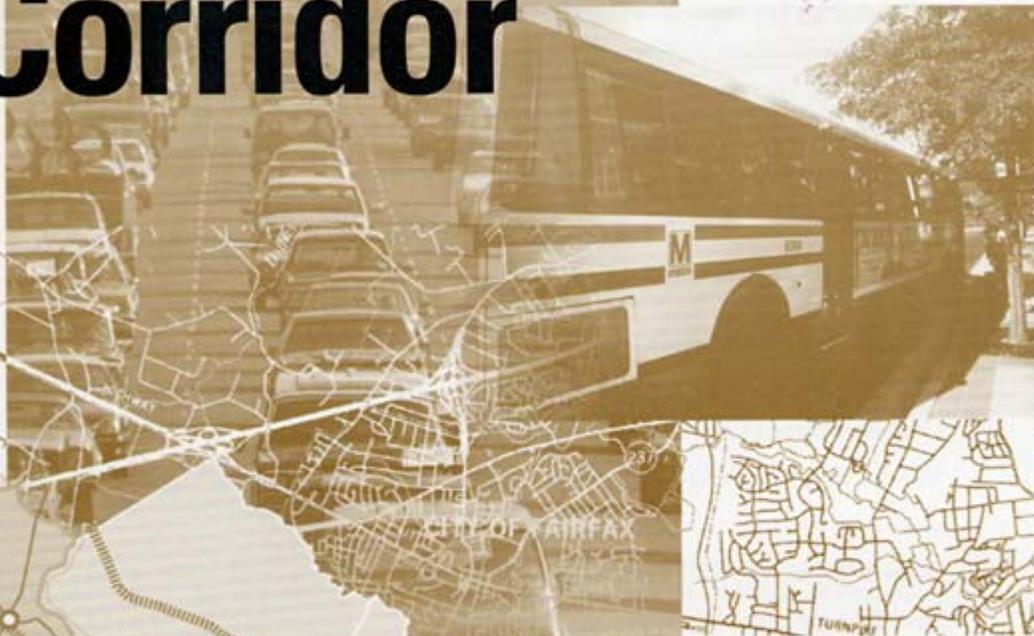


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Route 28 Corridor



Transit-Oriented Communities
for Northern Virginia

Route 28 Corridor

purpose

This report investigates the potential for a light-rail connection between the City of Manassas and the Washington Dulles International Airport. It evaluates alternative routes between these destinations and considers how light-rail could serve existing communities as well as support new ones in advantageous locations. This study is part of a proposal for an improved regional transportation system for Northern Virginia. In addition to improving the region's accessibility, the overall intent is to increase land utilization and private property values, improve the area's character and attractiveness, and contribute to the local tax bases. While the goals for this report stem from those stated in county comprehensive plans, further studies are required and should include consultations with public officials, residents of the communities, and area business leaders. Economic studies and market analyses as well as investigations of light-rail feasibility for the region and this locale in particular should also accompany subsequent planning. Based on available information, this proposal thus seeks to explore possibilities and stimulate further discussion for the feasibility of light-rail in this corridor.

introduction

Once surrounded by the rural landscape of Northern Virginia, Dulles International Airport is today the focus of and catalyst for enormous growth in the outer suburban region of Washington, D.C. High-technology industries especially value access to the airport and the nearby land that has been available. These and other major employers, in turn, have attracted commercial activity and residential construction. Development stretches along the primary



highways to the airport, most notably the Dulles Access Road and Tollway from the east, the Dulles Greenway from the west, and Virginia Route 28 from the south. Yet the capacity of these highways to carry more automobiles is limited. Alternative means of transit and more compact patterns of development to support this transit will be needed.

While secondary routes extend through this region and link the City of Manassas and Dulles Airport, Route 28 is the primary north/south arterial highway. Coming from the south, it passes near Broad Run where there are park-and-ride facilities, through Old Town Manassas where there are Amtrak and Virginia Railway Express (VRE) connections, and through Centreville where U.S. 29 intersects, and, more importantly, where Interstate 66 (I-66) crosses and whose median could accommodate Metro's planned extension. Route 28 continues to Chantilly at the intersection of U.S. Route 50, and then to the Dulles Airport Access Road. At this point, known as Dulles Corner, transit could either extend directly to Dulles Airport or connect to proposed transit along the Dulles corridor which will link to the airport. Because of these important highway connections and the planned transit systems along them, the recent widening of Route 28, and the growth of Dulles Airport and activities in its surrounding area, the Route 28 corridor will continue to be a major focus for development in Northern Virginia.

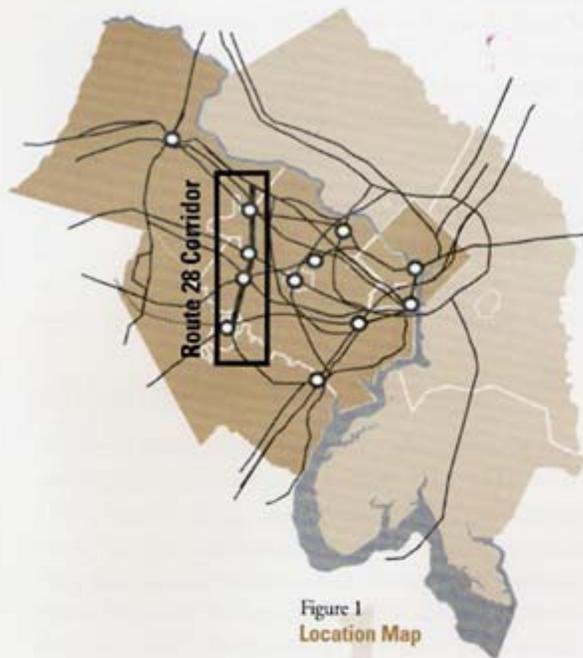


Figure 1
Location Map

From Manassas to Dulles Airport, a distance of approximately fifteen miles, Route 28 passes through different jurisdictions: the City of Manassas, Prince William County, Fairfax County, and Loudon County, the latter being the fastest growing county in the state (from 1991 to 1998 its population increased 67%). The multiple jurisdictions and the rapid development occurring in the corridor complicate efforts to coordinate growth. A light-rail system connecting Manassas to Dulles Airport, however, could offer convenient means to bypass congestion and also provide incentives to encourage growth in designated locations around stations.

A successful light-rail connection between Manassas and Dulles Airport will necessitate altered development patterns in the corridor. Within the current spread of low-density residential areas and extended commercial strips, new compact centers should emerge to benefit from and support transit patronage. Wherever possible, these activity centers should support a balance of jobs and housing opportunities, provide retail, service, and institutional facilities, particularly those needed for daily errands, and be pedestrian-oriented to reduce the number of auto trips. The emergence of activity centers should also be part of a coherent process of open space preservation as the area continues to transform from a rural landscape to an urbanized region.

goals for selection of transit route

The selection of a transit route faces conflicting demands. First, it should serve local needs and allow for frequent stops to link residential and employment centers along the route. This service requires shorter distances between stops, slower speeds, a more circuitous route, and longer overall travel times.

Second, light-rail service should allow travelers from the region to access major destinations in the corridor such as the City of Manassas where the government facilities of Prince William County are located, the planned Smithsonian Air and Space Museum Annex north of Route 50, and, most importantly, Dulles Airport. This light-rail service should feature convenience and speed.

Finally, light-rail service should provide means for people to commute rapidly and comfortably through the region, emphasizing connections to other modes of transportation—air, intercity rail, Metro and highways. As a segment of a regional transportation network, it should operate at high speeds, have rapid acceleration, and serve the most important transfer points.

While express and local transit requirements may complicate scheduling coordination, different services can coexist in the same alignment. The following goals further delineate these issues and facilitate the selection of a preferred route for transit service. These considerations along with ridership projections and estimated costs will determine the preferred route alignment.

The optimum transit route should have the following qualities:

- ▶ access to existing or potential employment centers, which typically are locations of commercial, institutional, and industrial activities,
- ▶ stations in areas with the highest existing residential population densities or growth potentials,
- ▶ stations that encourage development in areas with existing infrastructure,
- ▶ a route with the least environmental impact which thus allows for the preservation and continuity of natural systems,
- ▶ an alignment that maximizes existing, publicly owned rights-of-way or other readily obtainable routes,
- ▶ an alignment that provides timely and convenient access to regionally and locally important destinations,
- ▶ stations that connect to other modes of travel and have links to important destinations,
- ▶ stations whose surrounding area and markets warrant the enhancement or establishment of compact, mixed-use, activity centers, and
- ▶ stations whose locations coincide with the goals of the local jurisdictions.

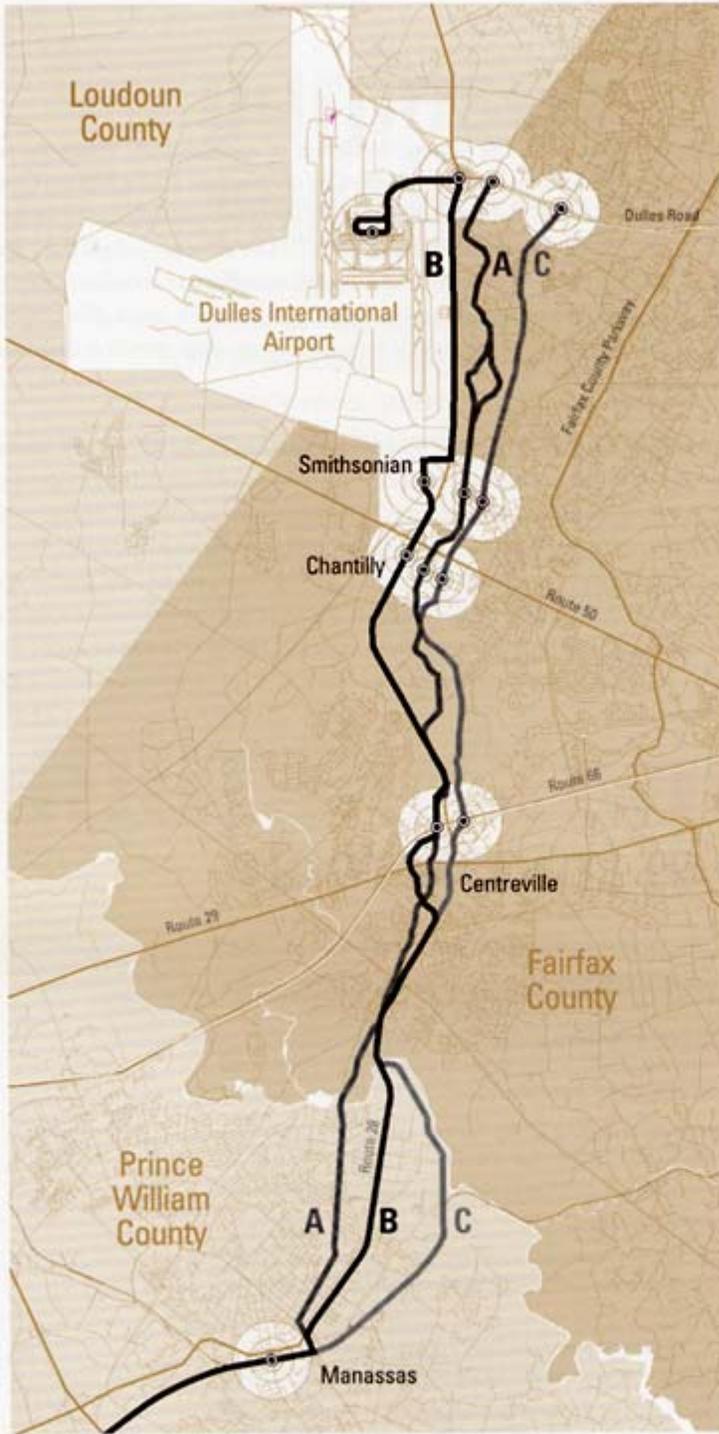


Figure 2
alternative transit alignments,
route 28 corridor

While all the alignments provide access to the major activity centers and either directly or by a secondary circulator to the Smithsonian Air and Space Museum Annex, the alternatives serve dissimilar residential populations and employment centers, cross varying types of topography, and require different rights-of-way acquisitions. They thus have different costs and benefits. The three alternative alignments are described below as they pass through the corridor from Manassas in the south to Dulles Airport in the north. From Broad Run where all use the same station with VRE and where park-and-ride facilities are located, the alignments pass along the Norfolk Southern Railway tracks to Old Town Manassas where they share the station with VRE and Amtrak. They then take different routes to reach Dulles Corner. These alternative routes are:



Figure 3 View in Manassas looking south



Figure 4 View in Manassas looking north

alternative A alignment

Originating in Manassas, Alignment A proceeds northwest along Old Centreville Road before rejoining Route 28 at Compton's Corner near the boundary of Prince William and Fairfax counties, allowing along the way access to Bull Run Regional Park. It then continues north to Centreville where it crosses Route 29, passes through the Trinity Center office park, and crosses I-66 at which point it shares a station with the extended Metro. On its route north, a new station at Chantilly would spur redevelopment and new construction on each side of Route 28. After connecting to circulator transit that would serve the Smithsonian Air and Space Museum Annex, it then goes between Route 28 and Walney Road along a route that directly serves the emerging office parks in this area. After this, it passes through the Sullyfield Business Park. It then crosses Route 50 and continues north between Route 28 and Centreville Road and along EDS Drive where it accesses the nearby office complexes. From there, it continues through Frying Pan Road and then along Horse Pen Road where it intersects the Dulles Airport Access Road. This alignment is the most circuitous and requires the most right-of-way acquisition, but would directly serve the employment-intensive office parks along the corridor.

alternative B alignment

Alignment B extends out of Manassas along the median of Route 28 to Centreville. In Centreville it diverts to the west, crossing Route 29 to serve Trinity Center and then I-66 to support new development. A station immediately west of the I-66/Centreville Road Interchange would allow commuters to transfer between the light-rail and Metro routes. Further north, the alignment returns to the Route 28 median and, after turning to the west to serve the Smithsonian Air and Space Museum Annex, it continues along Route 28 to a station at Chantilly. New development here on either side of Route 28 should transform this area into an active center. The route then proceeds north to a station at Dulles Corner. This more direct alignment from Centreville to Dulles Corner utilizes the Route 28 right-of-way and offers the most rapid access to major destinations. It would, however, serve through-travelers more successfully than local commuters.

alternative C alignment

From Old Town Manassas, Alignment C parallels the Norfolk and Southern rail line as it heads north to the point where the heavy rail line turns eastward. The light-rail alignment, instead, proceeds north to rejoin Route 28 immediately south of Compton's Corner. It then continues along Rt. 28 to Centreville where it crosses Route 29 and then I-66. A station near the I-66/Centreville Road interchange would allow transfers between light-rail and Metro. North of I-66 this route passes along Walney Road through Ellanor C. Lawrence Park, facilitating access to the park. Further north, the route goes between low-density residential areas to the east and large office and hotel complexes to the west of Walney Road. The alignment then crosses Route 50 east of Route 28. A station in Chantilly would benefit the office complexes which have developed here and other properties which could be redeveloped more intensively. Proceeding north, the route connects to circulator transit serving the Smithsonian Air and Space Museum Annex and then along Centreville Road to the intersection of the Dulles Airport Access Road. This more circuitous alignment would serve residential, employment, and commercial areas as well as commuter traffic. However, the alignment along Walney Road passes through more difficult topography and is thus costly.

Components of the different alignments can be interconnected to form different combinations and routes. Careful studies of demand, travel time, costs, and local preferences will help determine stops as well as park-and-ride locations and thus the preferred alignment. All the alignments are anchored by the primary destinations, which also serve as critical transfer points in the region.



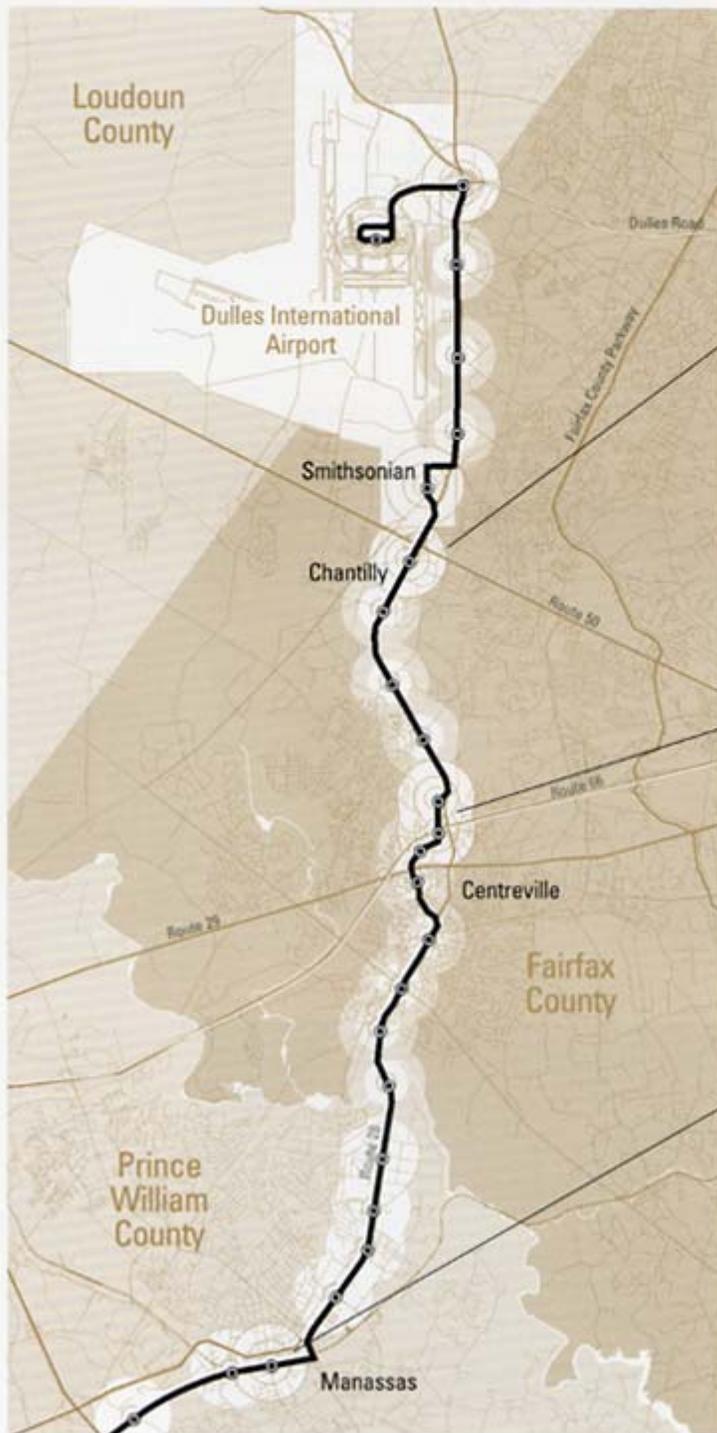
Figure 5 View between Manassas and Centreville looking north



Figure 6 View looking north along Walney Road

illustrative transit alignment route 28 corridor

Based on the criteria outlined in this report, Alternative B, an alignment which essentially follows Route 28, appears to offer the most advantages for the least costs. It utilizes existing rights-of-way, passes through the flattest topography, and connects the greatest number of activity centers. Figure 7 illustrates this route with the potential primary and secondary activity centers along it. Three of the primary activity centers are illustrated as examples to portray how these locations can accommodate light-rail and the types of development around those stations that will support and benefit from improved transit service.



Chantilly is centered on an older suburban office and light industrial park near the intersection of Route 28 and Route 50. New office developments and residential communities surround the area. Further new development based on a light-rail station could replace the obsolete warehouses and office buildings in this location with a compact, mixed-use, and pedestrian-oriented community. One mile north of the intersection along Route 28 is the site of the proposed Smithsonian Air and Space Museum Annex that anticipates approximately 10,000 visitors per day when completed in the near future.

Centreville which is a recent suburban district that spreads along a ridge and focuses on the area where Virginia Route 28, U.S. Route 29, and Interstate 66 intersect. Metro is planned to extend out to this area along I-66. The convergence of Metro, light-rail, and highways should make this area an important transportation hub for the region. Ellanor C. Lawrence Park lies to the north of this area. Although possibly controversial, the potential exists to use a small woodland section of the park west of Route 28 for a park-and-ride deck and a new mixed-use center for the area, while at the same time protecting the existing flood plain.

The **City of Manassas** which is an old rail junction and now historic district with a station serving Amtrak and VRE. Within walking distance of the station are the government and court facilities of Prince William County. Light-rail service here would facilitate intermodal connections and further revitalize the historic downtown.

Figure 7
illustrative transit alignment,
route 28 corridor

implementation



Figure 8 Chantilly

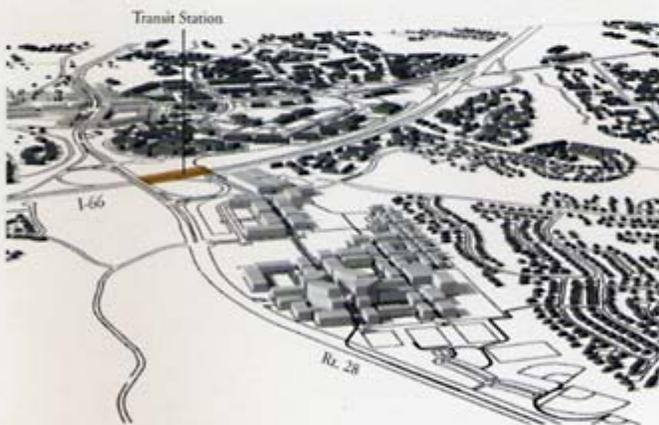


Figure 9 Centreville

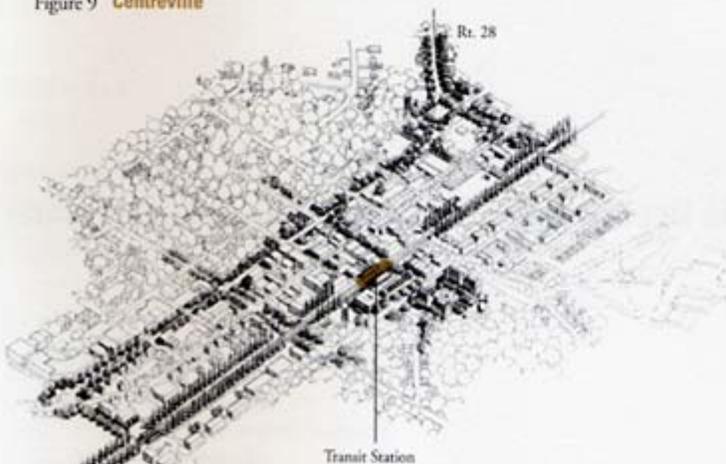


Figure 10 Manassas

The realization of development opportunities in this corridor will require the support of citizens, property owners, businesses, developers, and governments. While present development practices in Northern Virginia favor auto-dependence, as the region becomes more built-out, commuting more congested, older projects more obsolete, the market support for transit and higher density transit-oriented projects will increase. Government intervention can facilitate market acceptance and assure that land and transit are available when these conditions occur. To enhance opportunities at strategic locations through this area for transit-oriented projects, local governments should prepare plans to guide the phasing in of more compact, coordinated, mixed-use developments. To accomplish these plans, local governments should:

- organize efforts for advance land acquisition and parcel assembly and other means to enable orderly development,
- create property and sales tax incentives for the corridor at identified locations,
- tax parking spaces,
- form public/private development partnerships,
- mandate through ordinances mixed-use, higher density development, and discourage low-density development at transit stops,
- establish programs encouraging employer site location in transit stop zones and, where appropriate, employer-assisted transit passes,
- offer low interest loans to transit-oriented developers,
- confer bonuses for higher density, mixed-use developments,
- create user-friendly, streamlined approval processes for transit-oriented developers,
- install appropriate infrastructure in transit stop areas, and
- encourage comprehensive planning, architectural excellence, and development guidelines to achieve identity at transit stops and to support the ease of use for riders.

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Illustrative Transit plan
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