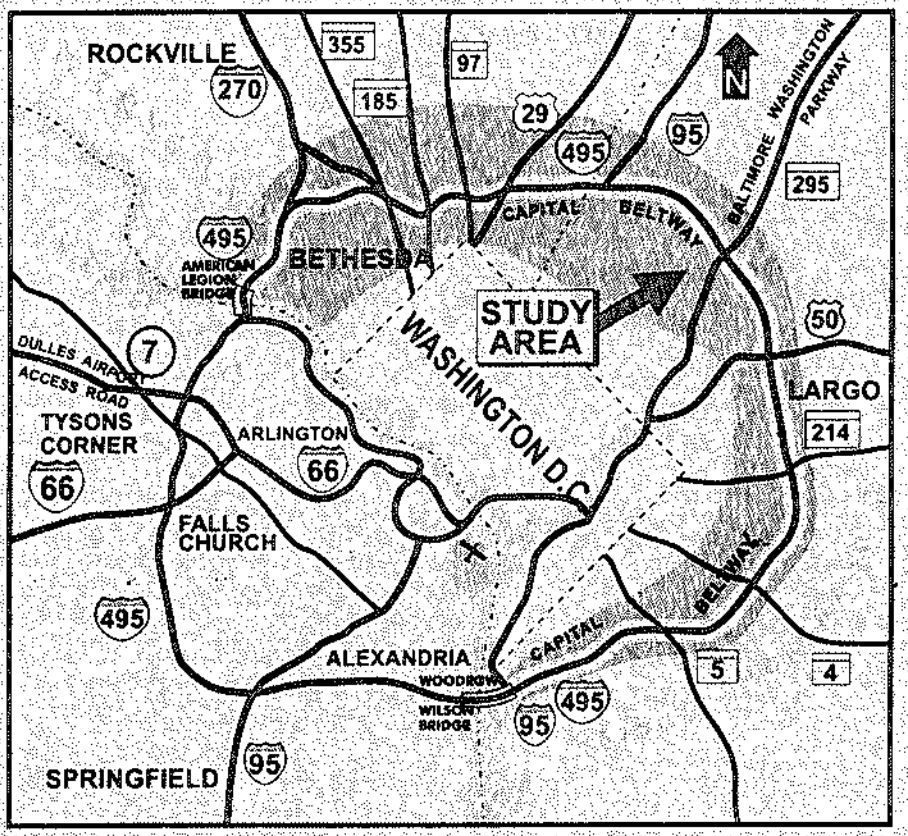
CAPITAL BELTWAY CORRIDOR
Transportation Study

ALTERNATES
Public Workshops



Project # AW518B11

Tuesday
April 18, 2000

6:00 PM - 9:00 PM

Forestville High School
7001 Beltz Drive
Forestville, MD 20747

Wednesday
April 26, 2000

6:00 PM - 9:00 PM

Bethesda - Chevy Chase
High School
at Northwood Center
919 University Boulevard
Silver Spring, MD 20901

Federal Highway Administration and Federal Transit Administration in cooperation with
The Maryland State Highway Administration and Maryland Mass Transit Administration
will conduct Alternates Public Workshops

US Department of Transportation
FEDERAL HIGHWAY ADMINISTRATION

MTA
MASS TRANSIT ADMINISTRATION
Maryland Department of Transportation

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION

metro

Public Workshop Locations

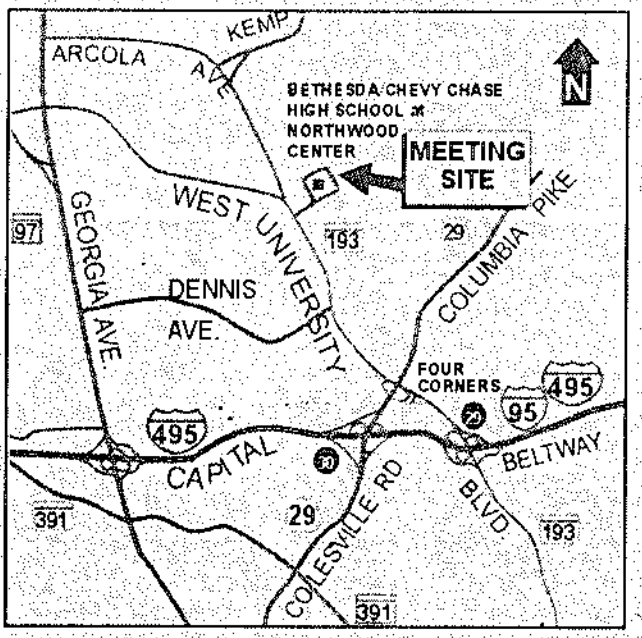
Montgomery County

Site:

Northwood Center
(Bethesda-Chevy Chase High School)
919 University Boulevard West
Silver Spring, MD 20901

6:00 PM - 9:00 PM

(Please note that Northwood Center is a holding facility for Bethesda-Chevy Chase High School while that school is reconstructed.)



Transit Directions: Nearest Metrorail station: Wheaton Station (Red Line)

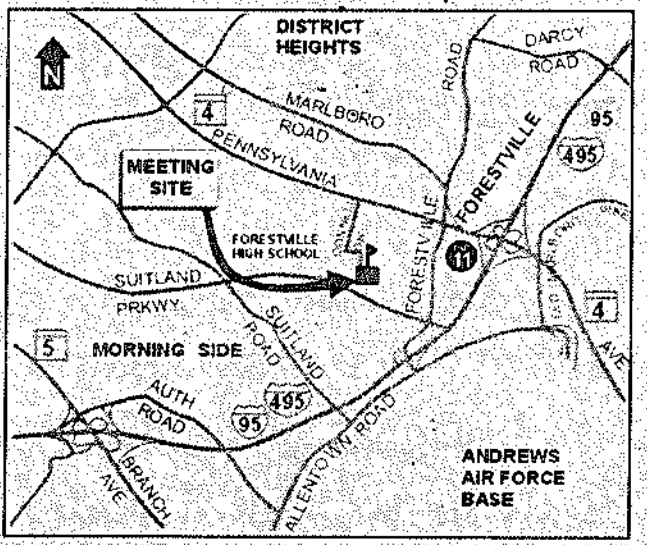
Bus Service: Metrobus Routes C2 and C4; Montgomery County Ride-On Route 8. The bus stop is approximately 1/2 mile from the school.

Prince George's County

Site:

Forestville High School
7001 Beltz Drive
Forestville, MD 20747

6:00 PM - 9:00 PM



Transit Directions: Nearest Metrorail Station: Addison Road Station (Blue Line)

Bus Service: Metrobus Route M11; The Bus Route 20. The bus stop is approximately 1/2 mile from the school.

Additional information on transit directions can be found on WMATA's web site at "www.wmata.com" or on the Montgomery County Department of Public Works Transit Service Division web page at "www.dpwt.com/TransSvcDiv".

Alternatives Public Workshop

Welcome

The Maryland State Highway Administration (SHA), the Maryland Mass Transit Administration (MTA) and the Washington Metropolitan Area Transit Authority (WMATA) welcome you to this Alternatives Public Workshop for the Maryland Capital Beltway Corridor Transportation Study. We appreciate you taking the time to read this material and attend the workshop.

In the early 1990s, the Maryland Department of Transportation initiated the Capital Beltway High Occupancy Vehicle (HOV) Lane Study to investigate the feasibility of introducing HOV lanes on Maryland's 42-mile section of the I-95/I-495 Capital Beltway from the American Legion Bridge to the Woodrow Wilson Bridge. The study was reinitiated in late 1994 with a new focus on multimodal transportation improvements. In October 1995, an introductory public workshop was held for the project to discuss its "Purpose and Need" and to present 17 alternative strategies proposed for initial screening and analysis. Public/agency involvement and input following that workshop resulted in the refinement of the initial 17 strategies into four distinct alternative packages: Base Case (No-Build), Transportation System Management (TSM)/Transportation Demand Management (TDM), High Occupancy Vehicle Lanes (HOV) and Transit.

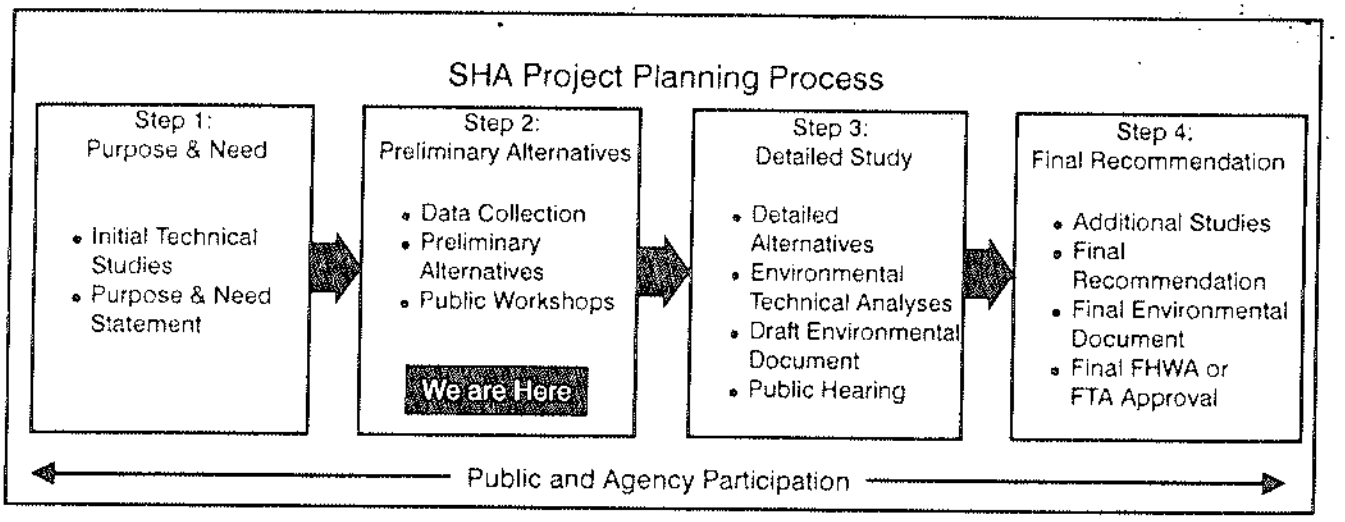
Public workshops were also held in December, 1996 and March/April, 1998 to update the public on the continued development of the four alternative packages, including potential mass transit alignment corridors in the vicinity of the Beltway. Following the December 1996 workshops, the name of the study was changed from "The Capital Beltway HOV Study" to "The Capital Beltway Corridor Transportation Study" to reflect the expansion of the project scope to include multimodal transportation options. The March/April 1998 public workshops were held to update the public on early study results for the potential transit corridor alignments.

The development of the "Purpose and Need" and the preliminary alternatives represent Steps 1 and 2 of MDOT's four-step project planning process. We are currently in Step 2 of that process. The purpose of this brochure and workshop is to present SHA's, MTA's and WMATA's continued development of the preliminary alternatives, emphasizing the projected ridership and costs of the transit alternatives. This is considered a multimodal study.

This project is included in the Interstate Development and Evaluation portion of the FY 2000-2005 Maryland Department of Transportation's Consolidated Transportation Program, and is currently funded for planning only.

Your Opinion Matters—These workshops are intended to provide an opportunity to discuss with our project team your thoughts and concerns about the project and to provide written comments to us. The project team will carefully review and consider the concerns and preferences expressed by the public during these public meetings. To assist you in providing comments, we have provided a pre-paid postage mailer as well as team member addresses and telephone numbers.

Agency Coordination—This study is closely coordinated with federal, state, and local government agencies. Maryland and Virginia continue to coordinate their respective studies for the Capital Beltway corridor in an effort to provide a coordinated transportation planning process between the two states.



Purpose and Need

Traffic Congestion—The Capital Beltway is the busiest highway in the State. Traffic conditions on the Capital Beltway include regular occurrences of very congested (or gridlock) conditions, particularly during rush hour periods. This condition will continue to worsen as traffic volumes increase due to the growing number of households and jobs in the region.

Traffic Congestion

Transportation planners use Level of Service (LOS), expressed as "A" through "F", as a qualitative measure of a highway's operating conditions. LOS "A" describes free-flow vehicular movements. Vehicles occupying the maximum capacity of a roadway occurs at LOS "E" and gridlock is described at LOS "F".

Traffic projections as measured by Average Daily Traffic (ADT) volumes for the year 2020 indicate that circumstances will worsen considerably, extending LOS "F" conditions beyond the current peak hours and to additional locations. Table I highlights the measured (1999) ADT volumes and projected (2020) ADT volumes for segments of the Beltway.

Regional Transportation/Growth Trends and Regional Mobility—The Capital Beltway is an element in the national highway network and the local metropolitan transportation system, which serves a substantial amount of interstate, regional and local traffic. The eastern half of the Capital Beltway, designated I-95, is part of the U.S. Department of Transportation's National Highway System and functions as a link in the Maine to Florida interstate route.

The Capital Beltway also provides the highway link to many of the region's other transportation services including Baltimore-Washington International, Reagan National and Dulles airports, rail and port terminals, the Metrorail and Metrobus services operated by WMATA and the Maryland Rail Commuter (MARC) Train Service. Because of the extensive linkage to other transportation facilities in the region, severe traffic congestion on the Capital Beltway has cumulative effects on regional mobility. Projected increases in population and employment will place considerable pressure on the regional transportation network to provide improved accessibility between suburban residential and business communities.

Safety—SHA accident statistics show that the Maryland portion of the Capital Beltway experienced over 16,000 police-reported accidents during a five-year period between 1995 and 1999. These accidents resulted in an average rate of 58.9 accidents per 100 million vehicle miles of travel, which is significantly higher than the statewide average of 44.3 for a similarly designed highway.

Table I
Existing and Projected Volumes (ADT and Levels of Service (LOS)) along the Maryland Capital Beltway

	1999		2020		Volume Increase
Beltway Segment	ADT Volume	LOS AM/PM	ADT Volume	LOS AM/PM	
Montgomery County					
American Legion Bridge to I-270	239,700	E/F	291,000	F/F	21%
MD 355 to MD 97	212,300	F/F	273,000	F/F	29%
MD 97 to I-95	217,600	E/F	313,000	F/F	44%
Prince George's County					
I-95 to US 50	185,200	F/F	289,000	F/F	56%
US 50 to MD 4	186,000	E/F	271,000	F/F	46%
MD 4 to Woodrow Wilson Bridge	172,400	E/F	283,000	F/F	64%

In 1998, 26 sections along the Maryland portion of the Capital Beltway were identified as high accident sections by SHA. Most of the accidents occur at interchanges or approaching interchanges, with rear-end and sideswipe collisions being among the most prevalent types of accidents occurring on the Beltway. These types of accidents are symptoms of stopping and slow moving traffic.

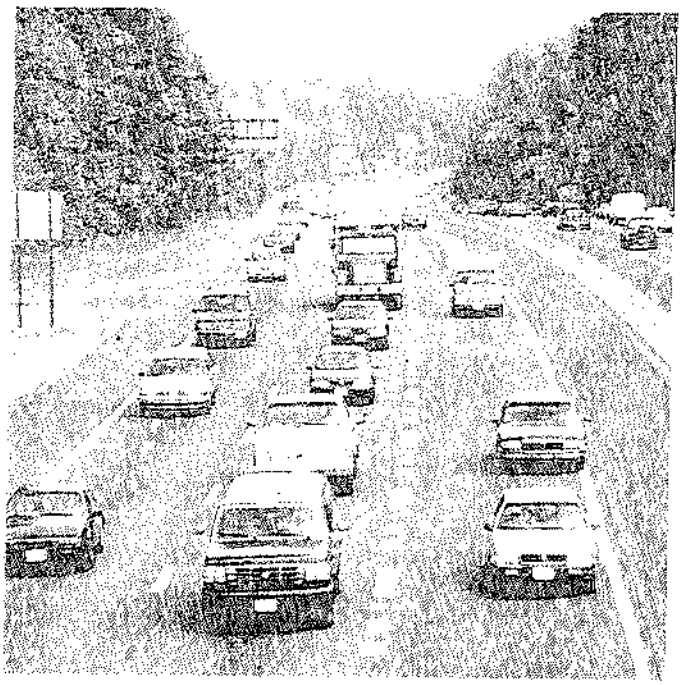
Alternatives Under Consideration

Transportation infrastructure improvements are currently being considered to address the needs of the Capital Beltway. Though these improvements may not "fix" the Beltway, they would provide additional mobility and modal options within the region.

Alternative 1: Base Case—The Base Case, also known as the No-Build option, includes all projects in the most recent Constrained Long Range Transportation Plan for the Washington region adopted by the Metropolitan Washington Transportation Planning Board. It also includes routine maintenance and safety improvements along the Beltway. This will serve as the basis for comparison of all other alternatives.

Alternative 2 :Transportation System Management/Transportation Demand Management (TSM/TDM)- - The TSM/TDM strategies are relatively low capital cost options. The TSM strategies are facility improvements that increase safety and enhance operation. Options include interchange reconfiguration, ramp metering, enhanced parallel roadway network, and enhanced traveler information. TDM strategies focus on system demand and ways to change drivers' behavior. Options include park-and-ride lots, flexible work hours, and transit subsidies. TDM strategies are most effective on a regional basis and are commonly implemented through private employers. One or more of these options could be combined with other alternatives to increase their effectiveness.

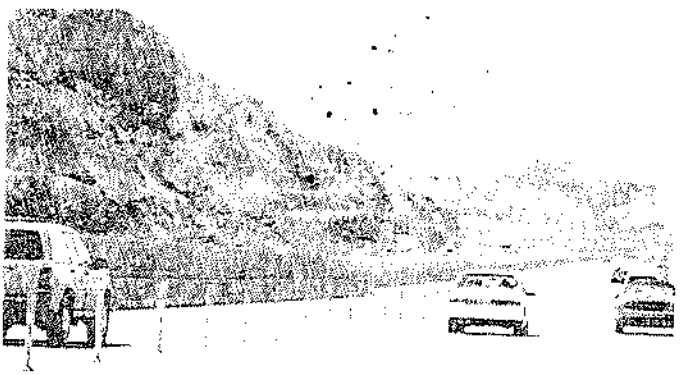
Alternative 3 : High Occupancy Vehicle (HOV) Lanes—An HOV could be a bus, vanpool, carpool or any vehicle meeting minimum passenger requirements such as "2 or more", "3 or more", or "4 or more" passengers per vehicle. Three HOV options are proposed for the Capital Beltway.



Concurrent Flow HOV Lane

The **Concurrent Flow** lane configuration consists of an additional lane in each direction that would be designated for HOV use only. HOV usage would be during the peak periods only and the lane would revert to general use during non-peak periods. The lane would not be physically separated from general purpose traffic. Access into the HOV lanes could be provided with or without direct ramp connections. Maryland's I-270 is an example of a concurrent flow HOV facility.

The **Barrier Separated** option consists of an additional lane in each direction for HOV, separated



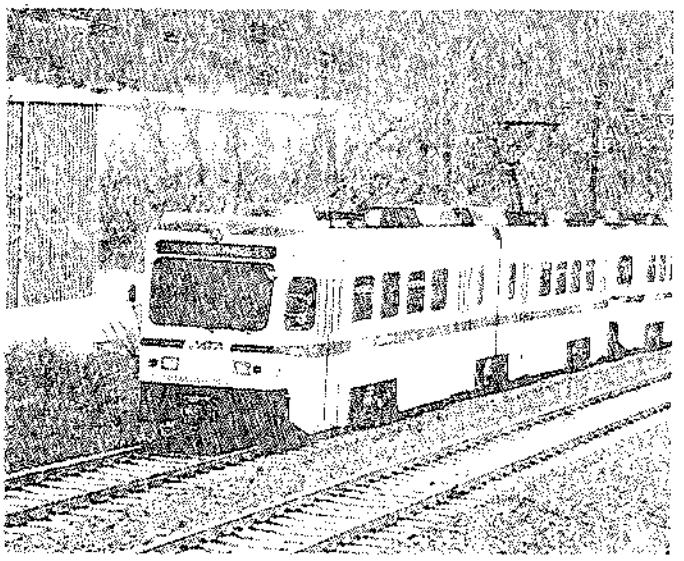
Barrier Separated HOV Lane

from general purpose traffic by a concrete barrier or plastic pylons. HOV would operate on a 24-hour basis. Access for this type of facility would be provided with direct ramp connections. SR 91 in Orange County, California is an example of a barrier separated HOV facility.

The **High Occupancy Toll (HOT)** Lane option is a modified HOV lane option that would allow single occupant vehicles to use the HOV lane for a toll. The toll would be collected using non-stop electronic fare technologies already in use elsewhere in the U.S. and cost could vary according to the level of congestion and time of day. A study to investigate the potential of value pricing strategies, such as HOT lanes, is currently underway in Maryland and its results will be incorporated into the Capital Beltway Corridor Transportation Study. HOT lanes, if implemented, will only result from the addition of new lanes. Existing lanes will not be converted for managed use. For more information on the Value Pricing study, contact Ms. Michelle Hoffman at SHA (1-800-548-5026) or view the project website at www.mdotvaluepricing.com

Alternative 4 : Transit—The transit alternative includes both rail transit and express bus service. The original rail transit alternative developed for the Capital Beltway consisted of a single circumferential rail corridor along the Beltway referred to as the "Purple Line." As the study progressed, additional alternatives were included. At present, there are six corridors being considered under the transit alternative. Though each of these six corridors differs from the original Purple Line, they are referred to as corridors "P1", "P2", "P3", "P4", "P5", and "P6". Each corridor is a circumferential line that would connect key residential and employment areas as well as radial transportation facilities such as the existing Metro. These transit corridors are in areas both inside and outside of the Capital Beltway.

Washington Metro system (Heavy Rail)

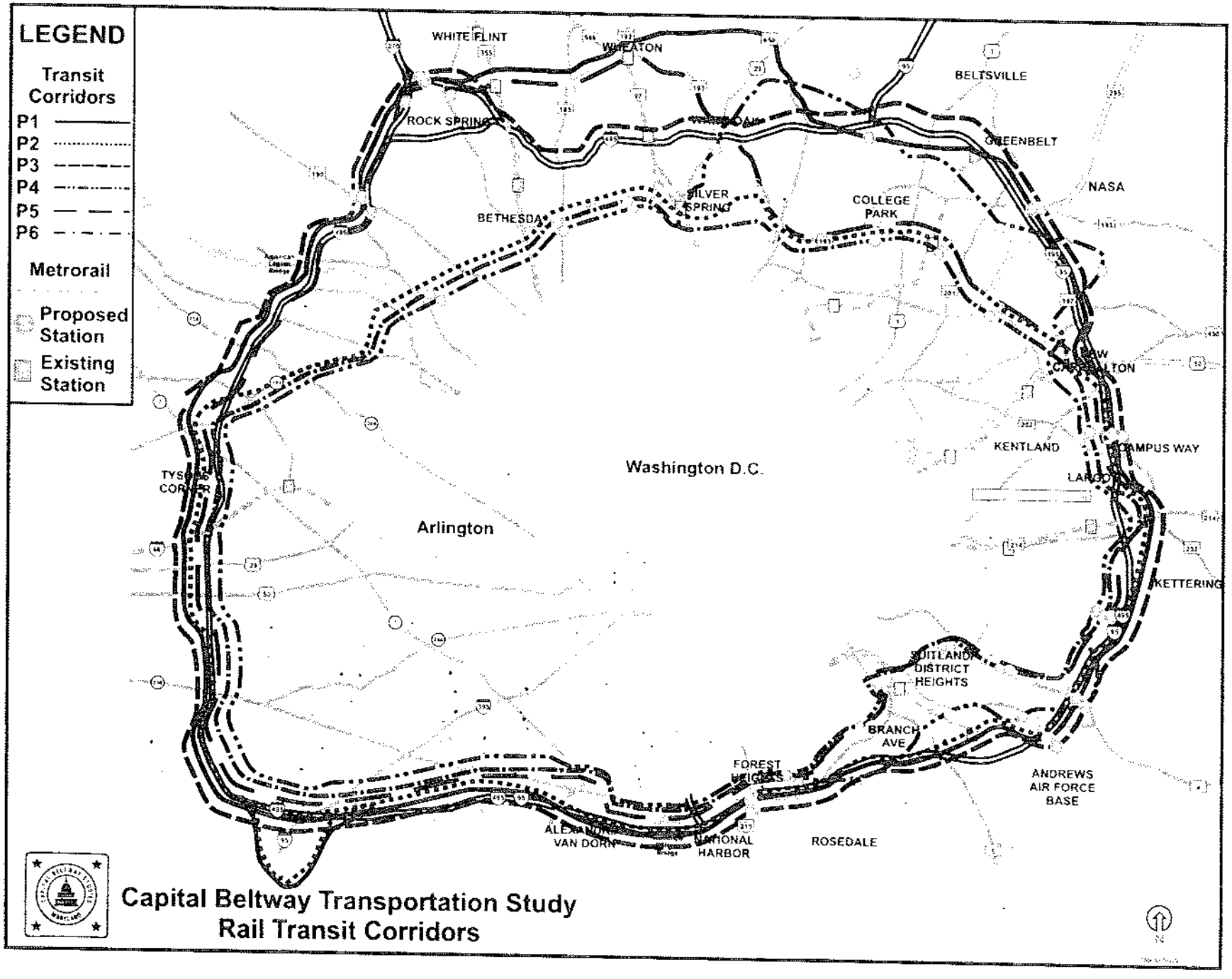


Baltimore Light Rail system

Both heavy and light rail are being considered in this study. Monorail and other forms of rail transit were considered but were dropped for analysis purposes. The primary reasons are: (1) integration and compatibility with the existing local rail system, (2) our local planning tools allow us to model and predict potential ridership on a heavy or light rail system; and, (3) though monorails are an existence in several locations, they are not applied on such a large system. Therefore, we have focused our attention on heavy and light rail technologies.

Heavy rail differs from light rail in a number of ways including power source, separation from traffic, speed, and station spacing. Heavy rail, for example the Washington Metro system, is typically powered by an electrified "third rail," while light rail, such as the Baltimore Light Rail system, is typically powered by an overhead catenary system. The inclusion of the "third rail" requires that heavy rail be separated from other traffic for safety reasons. However, light rail often operates on streets mixing with vehicle traffic. In addition, heavy rail typically runs at higher speeds than light rail because stations are usually farther apart and the system is physically separated from traffic. A description of each of the six corridors follows.

Corridor P1 (Heavy Rail-Outside Beltway)—Corridor P1 consists of a heavy rail transitway that connects key locations along and mostly outside the Capital Beltway. Corridors P1, P2 and P3


LEGEND
Transit Corridors
P1
P2
P3
P4
P5
P6
Metrorail
Proposed Station
Existing Station
WHITE FLINT
WHEATON
ROCK SPRING
BELTSVILLE
GREENBELT
NASA
SILVER SPRING
BETHESDA
COLLEGE PARK
KENTLAND
LARGO
KETTERING
Washington D.C.
Arlington
TYSONS CORNER
SUITLAND
DISTRICT HEIGHTS
BRANCH AVE
FOREST HEIGHTS
ANDREWS AIR FORCE BASE
ALEXANDRIA
VAN DORN
NATIONAL HARBOR
ROSEDALE
Capital Beltway Transportation Study
Rail Transit Corridors

follow the same alignment from the Woodrow Wilson Bridge to the New Carrollton Metro station. This corridor crosses the Potomac River on the Woodrow Wilson Bridge with the first Maryland station being in the National Harbor/MD 210 area. From here, it follows the Beltway through the Suitland area to the Branch Avenue Metro station. The corridor then connects to the Beltway and, after a stop at Pennsylvania Avenue, heads towards the future Largo Town Center Metro station. It again follows the Beltway to the Landover Mall continuing to the New Carrollton and Greenbelt Metro stations. From Greenbelt, the corridor heads west connecting to the I-95 parkand-ride lot before turning northwest connecting to White Oak (New Hampshire Avenue), the Wheaton Metro station, the Grosvenor Metro Station and Montgomery Mall/Rock Spring Technology Park. The alignment follows I-270 to the Beltway where it follows the Beltway across the Potomac River adjacent to the American Legion Bridge into Virginia. The American Legion Bridge either would have to be widened or a new parallel bridge constructed to accommodate the crossing.

Corridor P2 (Heavy Rail - Inside Beltway)—Corridor P2 consists of a heavy rail transitway that connects key locations along and inside the Capital Beltway. Corridors P1, P2 and P3 follow the same alignment from the Woodrow Wilson Bridge to the New Carrollton Metro station. From the New Carrollton Metro Station, the corridor continues to the College Park Metro station. It then heads west on University Boulevard before turning toward and connecting to the Silver Spring Metro station. The corridor then follows the proposed Georgetown Branch transitway to the Bethesda Metro station. From Bethesda, the corridor heads directly into Virginia.

Corridor P3 (Heavy Rail - Along the Beltway)—Corridor P3 consists of a heavy rail transitway that connects key locations mostly along and outside the Beltway. Corridors P1, P2 and P3 follow the same alignment from the Woodrow Wilson Bridge to the New Carrollton Metro station. From New Carrollton, the corridor continues to Greenbelt and, from Greenbelt, the corridor heads west along the Beltway connecting to the Forest Glen Metro station. The alignment proceeds west towards the WMATA Metrorail Red Line where it turns northwest. It then stops at the Montgomery Mall/Rock Spring Technology Park before following I-270 back to the Beltway and across the Potomac River adjacent to the American Legion Bridge. Corridors P1 and P3 follow the same alignment from Montgomery Mall to Virginia.

Corridor P4 (Light Rail - Outside to Inside the Beltway)—Corridor P4 consists of a light rail transitway that connects key locations from outside and inside the Beltway. This corridor crosses the Potomac River on the Woodrow Wilson Bridge. The first station is located at the National Harbor/MD 210 area. From here, it follows Livingston Road and Eckerley Road and, then, travels through the Rosecroft area before connecting to the Branch Avenue Metro station. The corridor then connects with Suitland Parkway, Andrews Air Force Base, Pennsylvania Avenue and Ritchie Marlboro Road before returning to the Beltway. It then continues along the Beltway to the proposed Largo Town Center Metro station, Landover Mall and the New Carrollton Metro station. From New Carrollton, the corridor heads north through the Studebaker area, NASA/Goddard and Greenbelt to the Greenbelt Metro Station. It then travels through the National Agricultural Research Center and the Naval Surface Weapons Center and then into the White Oak community before heading south along US 29 into Silver Spring where it connects to the Silver Spring Metro station. The corridor then follows the proposed Georgetown Branch transitway to the Bethesda Metro station. From Bethesda, the corridor heads directly into Virginia along the same routes as Corridor P2.

Corridor P5 (Light Rail - Inside to Outside the Beltway)—Corridor P5 consists of a light rail transitway that connects key locations along, inside, and outside the Beltway. The corridor crosses the Potomac River on the Woodrow Wilson Bridge with the first Maryland station being at the National Harbor/MD 210 area. From here, it follows St. Barnabas Road to the Suitland Metro station and then follows Silver Hill Road to Pennsylvania Avenue to the Beltway. The corridor follows the Beltway as it heads towards the future Largo Town Center Metro station and then to the Landover Mall and into the New Carrollton Metro station. The corridor continues westward to the Kensington and Grosvenor Metro stations and Montgomery Mall/Rock Spring Technology Park. From here, the corridor follows the I-270 back to the Beltway and across the Potomac River adjacent to the American Legion Bridge.

Corridor P6 (Light Rail Inside and Outside the Beltway)—Corridor P6 is the same as corridor P5 from the Woodrow Wilson Bridge to the Takoma Park area. The corridor crosses the Potomac River on the Woodrow Wilson Bridge with the first Maryland station being at the National Harbor/MD

210 area. From here, it follows St. Barnabas Road to the Suitland Metro station and then follows Silver Hill Road to Pennsylvania Avenue to the Beltway. The corridor follows the Beltway as it heads towards the proposed Largo Town Center Metro station and then to the Landover Mall and into the New Carrollton Metro station. It then continues northwest on the inside of the Beltway to connect to College Park and then to Silver Spring. The corridor then follows the proposed Georgetown Branch transitway to the Bethesda Metro station and continues directly into Virginia. From Silver Spring to The American Legion Bridge, corridor P6 is the same as corridor P4.

Express Bus—As part of the Transit alternative, consideration is also being given to adding Express Bus Service to provide additional connections between major residential and employment areas. It should be noted that bus service could be included in all improvement packages as a TSM measure but that the addition of HOV lanes allows the most efficient operation of the service. HOV lanes could be used exclusively for bus service and direct ramp connections could be provided into and out of the HOV lanes to enhance their operation. Two options, Express Bus Service with and without the addition of HOV lanes, are being evaluated to determine the approximate ridership. This evaluation assumes that a particular bus network is in place. The portion of the bus network that utilizes the Beltway is evaluated assuming HOV lanes are present and that buses are using only this lane. The same portion of the bus network is then evaluated assuming HOV lanes are not present. Currently, both of these options are under consideration.

Travel Demand

Transit—Estimates of future ridership on each of the potential transit alternatives being studied were developed using the Metropolitan Washington Council of Governments' (MWCOG) travel demand model. The model uses forecasts of population and employment, along with transit service patterns, to estimate the number of people who would use transit in each alternative.

Population and employment forecasts are developed by the counties and Washington D.C. through a cooperative effort with MWCOG. The locations and densities of future development affects the number and length of daily trips of metro Washington residents.

Transit service parameters in the model include travel speeds, frequency of service, number of stations and parking availability, provision and extent of feeder bus, and fares. The attractiveness of transit improves as travel speeds and frequency of service increase, stations and parking are added, and feeder bus services are provided to stations.

The results of the ridership forecasting for each alternative shown in Table II shows that the implementation of rail transit would increase daily regional transit ridership by an average of 6.4%.

Due to the magnitude of a circumferential transit line around Washington D.C., the implementation of transit in any of the proposed corridors would be completed on a segment by segment basis. Those segments that would best support transit would be the first constructed and, as the region continues to grow, additional segments would be added.

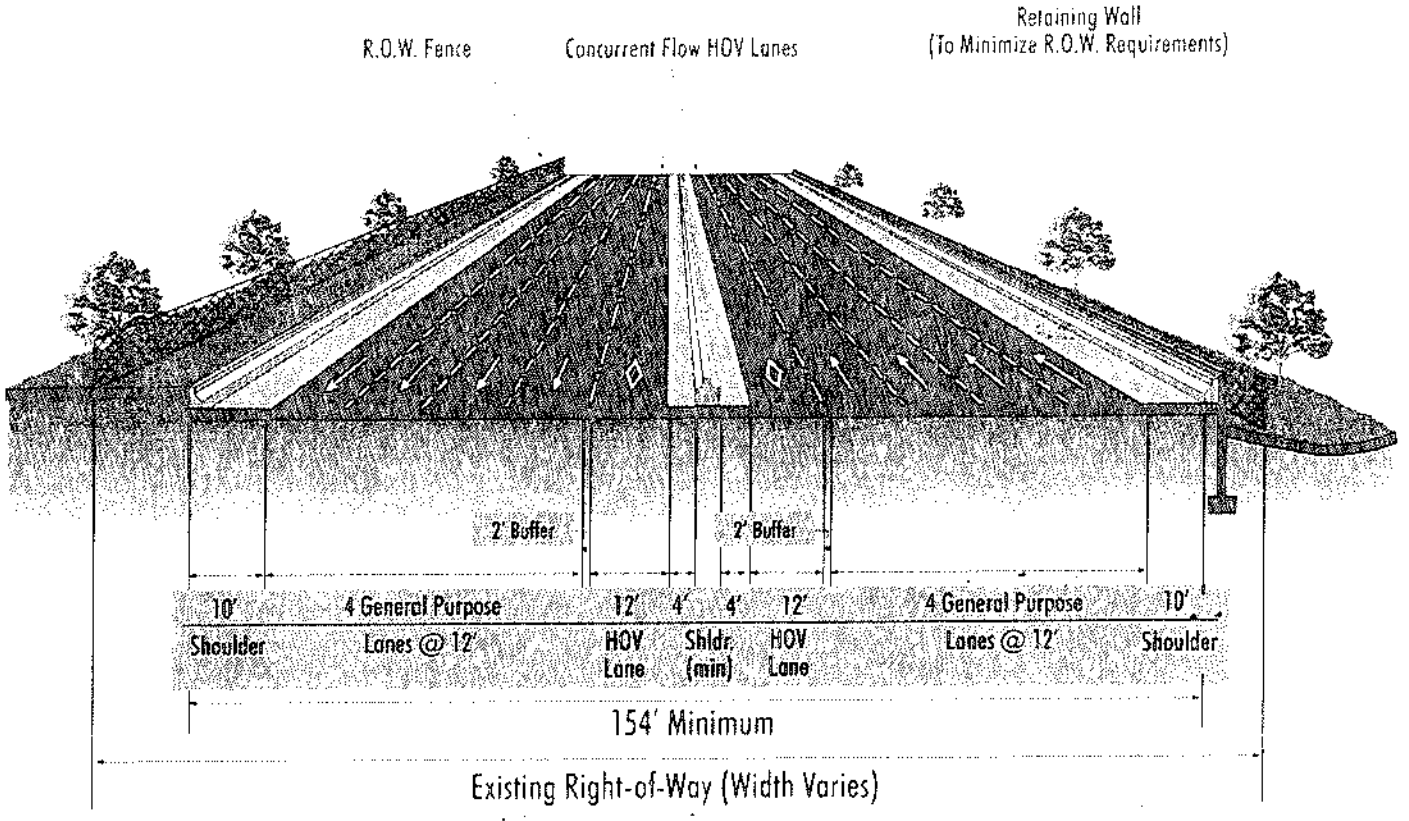
Those segments that had the highest overall ridership included the Wheaton to Grosvenor segment of corridor P1 and the Silver Spring to Bethesda segment of corridor P2. The Silver

Table II
Daily Regional Patronage Estimates

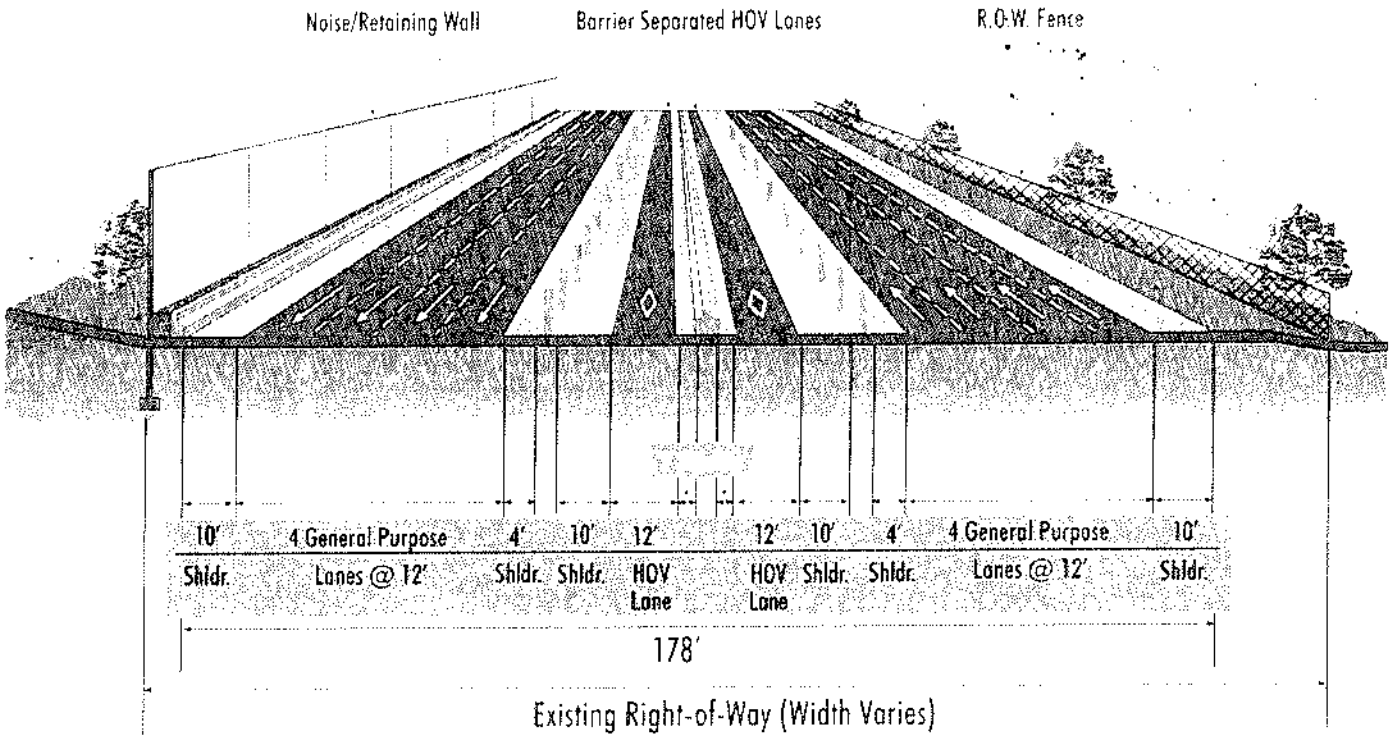
	2020 No-Build	P1	P2	P3	P4	P5	P6	Exp. Bus	TSM
Total Metrorail Trips	977,000	1,058,000	1,039,000	1,049,500	1,025,850	1,044,900	1,017,100	976,400	982,900
New Metrorail Trips	N/A	81,000	62,000	72,500	48,850	67,900	40,100	-600	5,900
% Increase	N/A	8.3%	6.3%	7.5%	5.0%	7.0%	4.2%	-0.1%	0.1%
Total New Transit Trips on New Line	N/A	63,970	53,770	58,700	45,890	52,270	34,000	22,200	12,000

Total Metrorail Trips = number of daily trips from origin station to destination station; transfers are not counted as additional trip.
New Metrorail Trips = Alternative Line Metrorail Trips minus No-Build Metrorail Trips
Total New Transit Trips on New Line = number of person trips diverted from automobile.

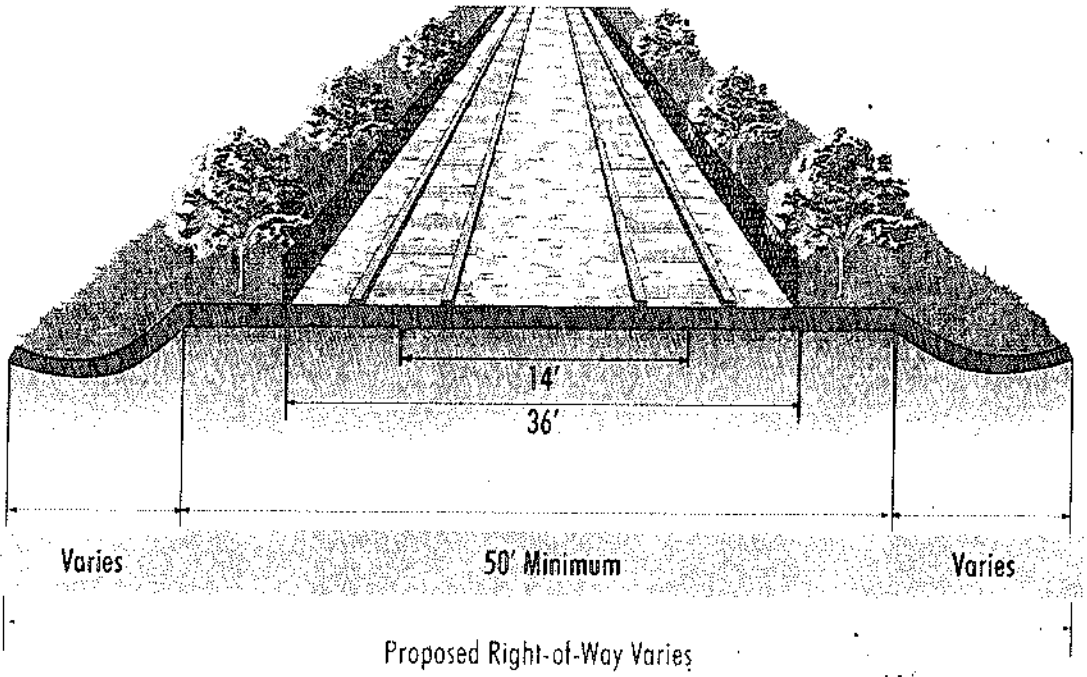
CONCURRENT FLOW HOV/BUSWAY



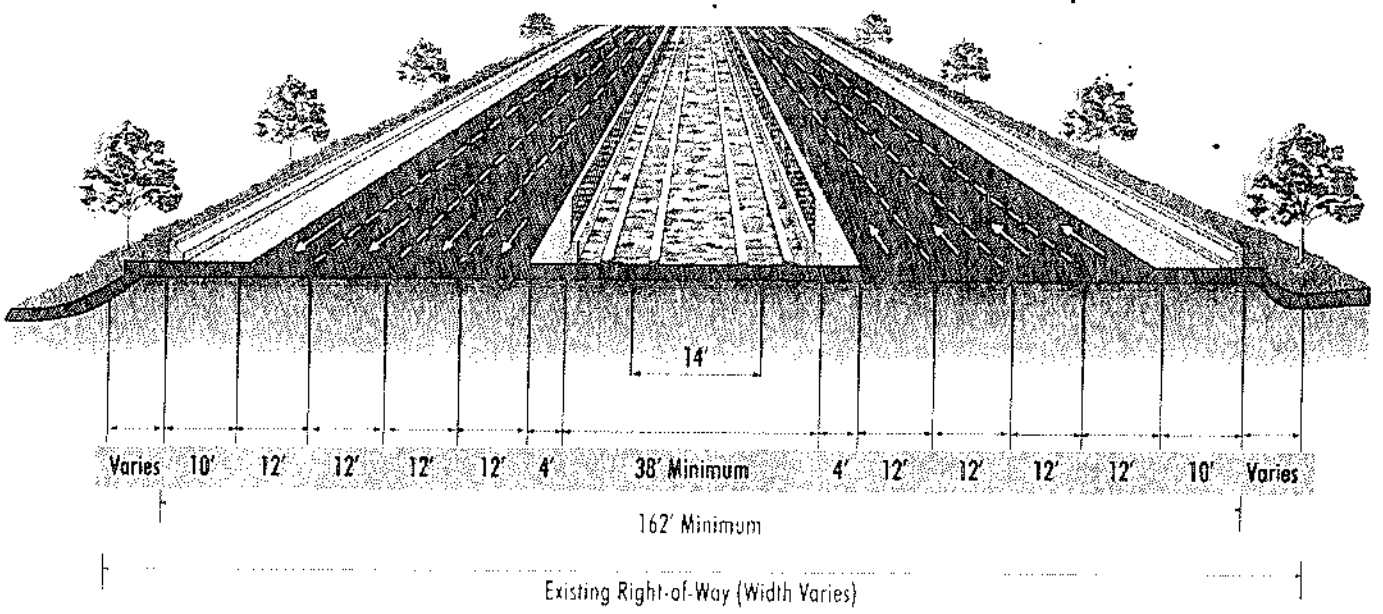
BARRIER SEPARATED HOV/BUSWAY



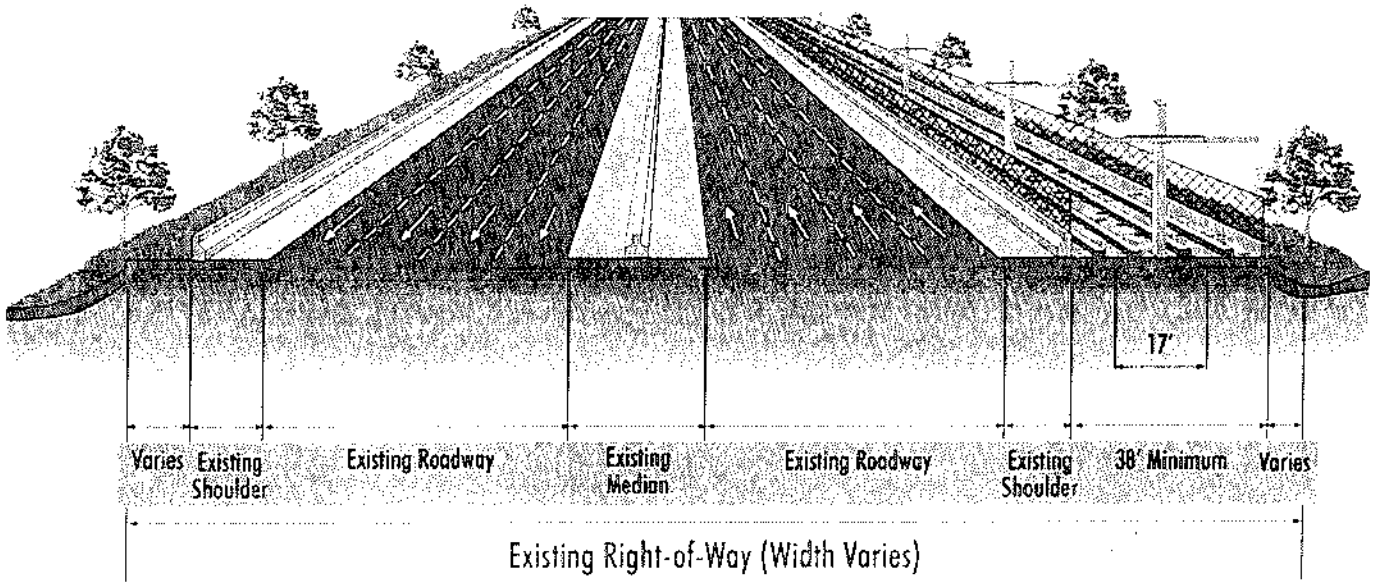
HEAVY RAIL TRANSIT ON SEPARATE RIGHT-OF-WAY



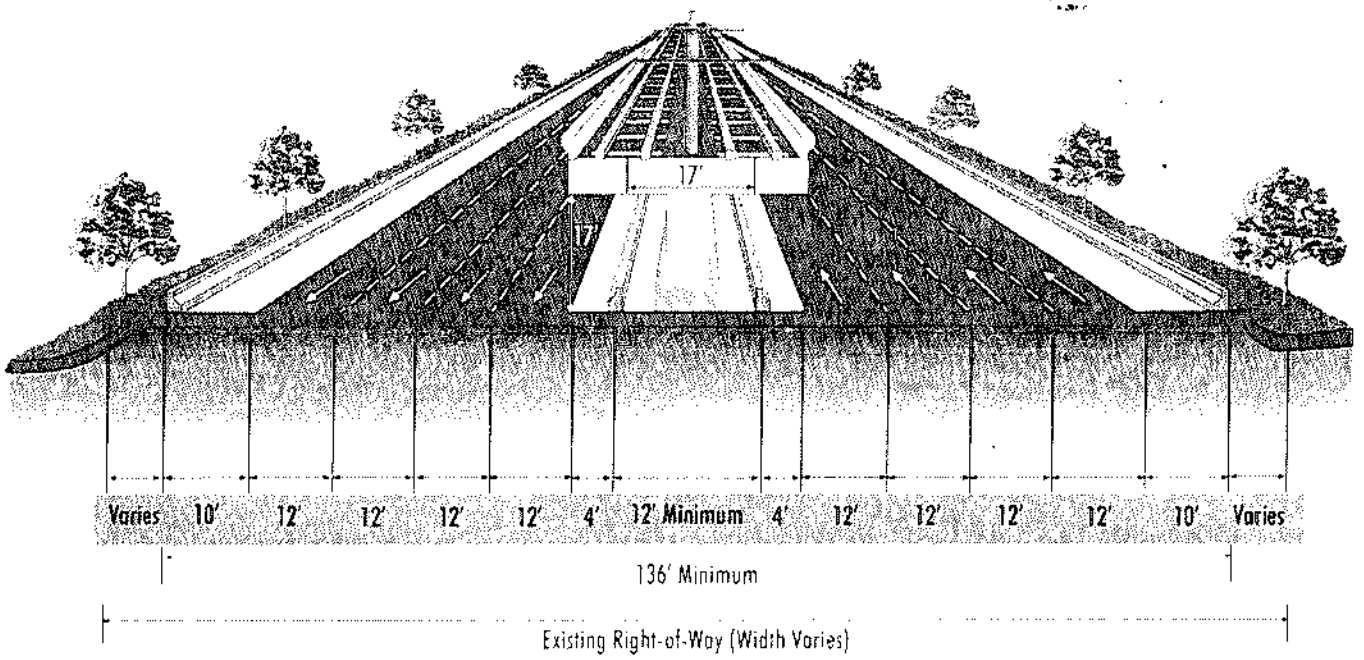
HEAVY RAIL TRANSIT IN MEDIAN OF EXISTING HIGHWAY (AT-GRADE)



LIGHT RAIL TRANSIT ADJACENT TO EXISTING HIGHWAY



LIGHT RAIL TRANSIT IN MEDIAN OF EXISTING HIGHWAY (GRADE SEPARATED)



Spring to Bethesda segment also had the highest ridership throughout corridors P4 and P6. The Pooks Hill to Rock Spring Technology Park segment and the Kensington to Grosvenor segment had the highest ridership throughout corridors P3 and P5, respectively. In general, the segments that had the highest projected ridership figures were all located near the northernmost portion of the Beltway.

Many factors and criteria are considered while developing and evaluating transportation improvements. These factors can include, but are not necessarily limited to, mobility improvements, environmental benefits, public opinion/acceptance, operating efficiencies, and cost effectiveness. Consideration is also given to other issues such as transit-supportive land use, local policies, programs and national priorities.

Using the information available, capital and operating costs and projections of new riders were developed for each transit alternative.

Using the model results and preliminary engineering developed to date, the project team has analyzed the rail transit alternatives for ridership, costs, and cost-effectiveness. As expected at this level of study detail, the analysis is necessarily general due to the number of alternatives and segments, but the results are useful for making general observations.

The implementation of any potential transit alignment corridors would provide an alternative to driving on adjacent, congested highways. While transit may not significantly improve conditions on the Beltway itself, it would provide additional mobility on a regional scale. The potential rail transit alignments as well as Express Bus and TSM measures are forecasted to decrease the Average Weekly Traffic (AWDT) on the Beltway by an average of 0.82%. Individual rail transit corridors ranged from a 0.77% reduction to a 1.15% reduction. Express Bus and TSM measures reduced the AWDT by 0.57% and 0.30%, respectively.

HOV – In addition to the transit ridership forecasting, projections for HOV lane usage were also completed (see Table III). Traffic in the potential HOV lane was forecasted for the year 2020 based on HOV 3+ (vehicles with a minimum of 3 passengers) standards. The volumes were projected for 7 segments of the Beltway on both the inner and outer loops and for both the AM and PM peak periods. The forecasted volumes of the individual segments ranged from 550 to 1,370 vehicles in the AM peak hour and from 450 to 1,460 vehicles in the PM peak hour. The projected volumes for the Beltway based on HOV 3+ standards are comparable to current HOV lane volumes on I-270 based on HOV 2+ standards. Though these projections were made based on HOV 3+ standards, the HOV lanes on the Beltway could potentially open using HOV 2+ standards. As the system grows and becomes more utilized, it could be then upgraded to HOV 3+.

Table III
Peak Hour Vehicle Demand (2020)

	Proposed # of Lanes		AM				PM			
			General Purpose Lanes		HOV 3+ (Additional Lane)		General Purpose Lanes		HOV 3+ (Additional Lane)	
Segment	IL	OL	IL	OL	IL	OL	IL	OL	IL	OL
American Legion Bridge to I-270 West Spur	5	5	9,480	9,800	1,330	1,370	7,790	9,220	1,240	1,460
I-270 West Spur to I-270 East Spur	5	5	4,990	5,240	600	630	3,290	5,700	450	780
I-270 East Spur to I-95	5	5	10,000	10,110	900	910	8,570	9,310	860	950
I-95 to US 50	5	5	10,310	9,000	700	610	7,640	10,000	570	750
US 50 to MD 4	5	5	7,200	8,620	560	680	8,500	8,100	630	600
MD 4 to MD 210	5	5	5,000	5,890	550	640	5,750	6,060	570	610
MD 210 to Woodrow Wilson Bridge	6	6	7,900	5,180	1,100	740	5,900	6,660	870	970

IL - Inner Loop
OL - Outer Loop

Notes: An average general purpose lane is able to carry approximately 2,000 vehicles per hour. In order to provide more consistent travel times, an HOV lane is generally considered "full" at 1,800 vehicles per hour.
This table displays the demand for the HOV 3+ scenario. If HOV lanes are implemented, the new lane would open at HOV 2+ and then be converted to HOV 3+ at a later time.

Cost Assessment

Initial cost estimates have been prepared for each of the alternatives. A range (shown in Table IV) has been provided for comparison purposes.

Table IV
Alternative Package Cost Estimates

Alternative Package	Range of Cost
Base Case	N/A
TSM/TDM	$500,000 to $50 Million
HOV	$750 Million to $1.2 Billion
Transit (HRT)	
P1	$6.3 Billion to $7.5 Billion
P2	$5.5 Billion to $6.6 Billion
P3	$6.0 Billion to $7.3 Billion
Transit (LRT)	
P4	$2.7 Billion to $3.2 Billion
P5	$3.1 Billion to $3.6 Billion
P6	$2.5 Billion to $3.0 Billion
Transit (Express Bus)	$750 Million to $1.2 Billion

Environmental Summary

An environmental inventory of the study area was conducted which identified socio-economic, cultural and natural environmental resources. The impacts of the proposed alternatives on the environment will be assessed in greater detail in subsequent environmental studies and documentation.

No environmental impacts are anticipated to result from Alternative 1, the Base Case/No-Build option, given that it proposes only routine maintenance and minor safety improvements.

The Transportation Systems Management (TSM)/Transportation Demand Management (TDM) alternative (Alternative 2) would result in few measurable impacts to the existing manmade or natural environment in the study area. There may be limited impacts due to reconfigurations and minor modifications to the existing infrastructure.

Socio-Economic/Land Use Impacts of HOV and Transit Alternatives—Potential impacts to communities, community facilities, and services vary with each of the HOV and transit alternatives under consideration. Generally, the proposed HOV improvements along the Beltway corridor would have less impact on these resources since it is assumed that the HOV lanes would be contained within or near the existing Capital Beltway right-of-way. The potential for residential/business displacements and right-of-way acquisition impacts is greater with the transit options given the new alignments inside or outside the Beltway corridor.

Approximately 136 parks have been identified within the study area, including stream valley parks, regional parks and a large number of neighborhood/community parks. The proposed action may result in impacts to some of these parks. Publicly-owned public parks and recreation areas are protected by Section 4(f) of the US DOT Act of 1966, which requires avoidance of these areas unless it can be demonstrated that there is no prudent or feasible alternative to use of the resources and that all possible planning has been considered to minimize harm.

Existing land use within the study area is varied. The uses include residential, commercial, parkland, light industrial, and military. Future land use plans indicate similar development in the vicinity of the Beltway.

Cultural Resource Impacts of HOV and Transit Alternatives—Initial investigations are currently underway to identify, evaluate and document historic resources within the project's Area of Potential Effect. The implementation of the transit alternative would require significant amounts of new right-of-way that are not adjacent to the Capital Beltway. There is the potential for numerous historic resources to be present in the study area. However, since the potential transit alignments are not restricted to a specific corridor, avoidance options could reduce potential impacts. An assessment of archaeological potential has determined that a Phase I archaeological investigation would be necessary for the project area contingent on potential areas of ground disturbance.

Natural Environmental Impacts of HOV and Transit Alternatives—The Capital Beltway and potential transit alignment corridors are adjacent to or cross several 100-year floodplains, such as the Potomac River, Booze Creek, Rock Creek, Northwest Branch, Paint Branch and Little Paint Branch. In addition, 12 major stream crossings have been identified within the study area including Cabin John Creek, Thomas Branch, Indian Creek, and Henson Creek, as well as several smaller tributaries. Floodplains and wetlands associated with these crossings may be affected by the proposed HOV and transit alternatives. Wetlands

and their associated vegetation and wildlife habitats are known to exist in the study area. Specific locations and boundaries will be identified during the next stage of the study.

The Potomac River in Montgomery County is a state-designated Scenic River under the Maryland Wild and Scenic Rivers Program. This designation brings with it a requirement to protect/enhance the qualities of the river. The Potomac River, at both crossing locations (American Legion Bridge and Woodrow Wilson Bridge), supports a large variety of resident game fish and non-game fish species.

The Maryland Department of Natural Resources has identified approximately 44 state-listed rare, threatened and endangered plant or animal species existing near the American Legion Bridge and two state endangered species in the vicinity of the I-95/Greenbelt Road interchange. In addition, the federally threatened bald eagle is present within the designated study corridor. Coordinated efforts between state and federal agencies will continue to be made to avoid impacts to these species.

Only preliminary assessments of air quality and noise conditions have been completed during this phase of the study. Detailed air quality and noise analyses will be completed during later stages of the project.

Potential Impact Rating—The environmental impact matrix (see Table V) provides additional information on specific environmental features and their relative potential for impact under each alternatives package. Specific impacts were not quantified in this phase of the study. However, each resource was assigned a rating of major, moderate, or minor that describes each alternative's potential to impact that resource. Should a "build alternative" be recommended at the conclusion of this phase of the study, more detailed environmental studies will be undertaken in the next phase.

FAQs

How does the "vision" become a reality?

As we look forward to the future, there are many possibilities for transportation improvements including a transit line serving key origins and destinations in the communities and employment centers around the Capital Beltway. Though there is still much work involved in making this vision a reality, we began by selecting a corridor. This could be one of the proposed corridors or a combination of several of those corridors. Transit would then be implemented in those segments of the corridor that will best support it. As these segments are identified, Montgomery and Prince George's counties will begin to fit the new transit facilities into their master planning processes, whereby land uses could be planned that would support the existing transit services.

Is this study meant to determine the single most effective alternative or could more than one strategy be recommended?

Given that congestion in the metropolitan area is severe, it is unlikely that any one strategy alone will adequately address the transportation issues. It is more likely that both highway and transit improvements are needed to address long term congestion and mobility issues. The study is intended to evaluate reasonable alternatives and recommend those strategies that show the most promise to be carried forward toward possible implementation. A possible scenario is that the highway improvements recommended in this study will be further advanced by SHA while either MTA or WMATA concurrently advances the transit improvements.

Will the recommended improvements solve the Beltway's problems?

Given the existing traffic levels and the projected growth in the region, improvements in the Beltway corridor will not solve traffic congestion on the Beltway. However, the proposed HOV lanes provide improved travel options in the Beltway corridor with free-flow conditions and consistent travel times. The circumferential transit alternatives provide additional transportation options. These transportation infrastructure additions could provide mobility improvements to the region. The improvement may not be evident on the Beltway itself, but on parallel arterial and local streets where trips can be diverted back onto the major roads.

Would sufficient parking be provided at transit stations?

When developing transit alternatives at this initial stage of the study, it is a general practice to provide reasonable assumptions for parking to determine possible effectiveness. One of these is to assume "unconstrained parking." This term means that at locations of proposed stations, there is no parking limitation. Existing stations are constrained by the parking currently available or by the amount

Table V
Potential Environmental Impacts of Alternatives

Resource	No Build		TSM/ TDM		HOV		Transit* P1		P2		P3		P4		P5		P6		Exp. Bus	
Socio-Economic Environment	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
Open Space/Parkland	N/A	N/A	○	○	⊙	○	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	○
Historic/Archaeological Resources	N/A	N/A	○	○	○	○	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	○	○
Right-of-Way Impacts	N/A	N/A	○	○	⊙	○	○	○	○	○	⊙	○	●	●	●	●	●	●	⊙	○
Displacements	N/A	N/A	○	○	○	○	○	○	○	○	⊙	○	●	●	●	●	●	●	○	○
Natural Environment																				
Floodplain	N/A	N/A	○	○	●	⊙	●	⊙	○	⊙	⊙	⊙	●	⊙	●	⊙	●	⊙	●	⊙
Stream Crossings	N/A	N/A	○	○	⊙	⊙	⊙	⊙	○	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
Wetlands	N/A	N/A	○	○	●	⊙	⊙	⊙	○	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
Water Quality	N/A	N/A	○	○	⊙	○	○	○	○	○	○	○	○	○	○	○	○	○	●	⊙
Air Quality	⊙	⊙	○	○	⊙	⊙	○	○	○	○	○	○	○	○	○	○	○	○	⊙	○
Increased Noise Level	○	○	○	○	⊙	⊙	○	⊙	○	⊙	●	⊙	●	●	●	●	●	●	⊙	⊙
Rare, Threatened, & Endangered Species	N/A	N/A	○	○	⊙	○	⊙	○	⊙	○	⊙	○	⊙	○	⊙	⊙	⊙	⊙	⊙	○
Overall Environmental Impact Rating	○		○		⊙		⊙		⊙		⊙		●		●		●		⊙	

A - American Legion Bridge to Montgomery County Line
B - Prince George's County Line to Woodrow Wilson Bridge

○ Minor Potential
⊙ Moderate Potential
● Major Potential

* The determination of Potential Impact Ratings for transit alternatives does not include station area impacts.

expected to be in place by the year 2020. The model predicts how many riders will come to a station by car and thus create a parking demand. Sometimes this demand can be quite high and require a significant number of parking spaces. The question arises in areas where little or no land exists in a proposed station area, "can you build enough parking to support the projected demand?" If the answer is "No," then the model is rerun using what is a reasonable assumption for the amount of parking that could be provided. In some areas of our study, it appears it will be unreasonable to provide the necessary parking spaces. As a result, the projected ridership could be high as the stations can not support the required parking. During the next stage of the study parking assumptions will be revised based on right-of-way constraints at existing and proposed station locations.

Next Steps

The next step of this multimodal study is to determine the most reasonable alternative or package of alternatives. All alternatives will be compared to each other on the basis of ridership, vehicle demand, cost, environmental impacts, and existing and future land uses. It is important to note that a combination of several of the alternatives under consideration could be carried forward and that the selection of one mode does not necessarily preclude the selection of another mode. Once the most reasonable package of improvements has been chosen, the alternative descriptions will be further refined to assess different location and design options for each type of improvement carried forward. The next phase of the study will include detailed engineering and environmental analysis and will conclude with the preparation of an environmental document.

Right-of-Way and Relocation Assistance

The proposed project may require additional right-of-way. Residential and commercial relocations may be required.

For information regarding right-of-way and relocation assistance, please contact:

Mr. Richard Ravenscroft
District 3, Office of Real Estate
State Highway Administration
P.O. Box 327 9300 Kenilworth Avenue
Greenbelt, MD 20770
(301) 513-7455

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Mr. Walter Owens, Jr., Director
Office of Equal Opportunity
State Highway Administration
707 N. Calvert Street
Baltimore, MD 21202
(410) 545-0315

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Journal Newspapers (Montgomery and Prince George's Counties)
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QUESTIONS AND/OR COMMENTS

Capital Beltway Corridor Transportation Study
Project No. AW518B11

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6:00 p.m. to 9:00 p.m.

Forestville High School
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Forestville, MD 20747

April 26, 2000
6:00 p.m. to 9:00 p.m.

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