

# I-270 MULTI-MODAL CORRIDOR STUDY CORRIDOR CITIES TRANSITWAY

# **Detailed Definition of Alternatives**

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Prepared for: Federal Transit Administration Maryland Transit Administration This page intentionally blank

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# INTRODUCTION

The I-270/US 15 Multi-Modal Corridor Study is examining alternative levels of investment in transportation improvements in a north-south corridor of the Washington, DC region, from the Shady Grove Metro Station (south of I-370 in Montgomery County) to the US 15/Biggs Ford Road intersection north of the city of Frederick, as shown in Figure A.1. The I-270/US 15 Corridor provides an essential connection between the Washington, D.C. metropolitan area and both central and western Maryland and is an important corridor for carrying local and long distance trips, both within and beyond the Corridor. The I-270/US 15 area is currently served by a variety of transportation modes (including interstate highway, high-occupancy vehicle lanes, commuter rail, and bus service) and intermodal opportunities (including park-and-ride lots and Metrorail). However, even with this existing transportation system, current operating conditions are unacceptable at many locations within the project area. These problems are expected to become more severe as continued growth in both population and employment occur over the next quarter century. This joint highway/transit project is intended to relieve congestion and improve safety conditions along the I-270/US 15 Corridor due to existing and projected growth within the Corridor and help address the region's air quality issues.

The Study is examining several different alternatives, from major investments in new managed highway lanes and dedicated transit guideway, grade-separated where necessary, to more modest investments in shared use transitway, to determine which mix of highway and transit improvements achieves the greatest gain, balanced with impacts on communities and the environment. This report describes the physical and operational characteristics of the initial alternatives. These alternatives will be used to examine the general benefits, costs, and impacts from serving major market areas within the corridor.

# **GENERAL OPERATING CONCEPTS - TRANSIT**

Currently, there is bus service throughout the study corridor, with Montgomery County Ride-On providing all of the service north of the Shady Grove Metro station to the County Line. Frederick County TransIT provides service in and around the city of Frederick. The only cross county bus service is provided by the MTA, with Route 991 connecting the MARC Monocacy Station park-and-ride south of the city of Frederick with the Shady Grove Metro Station (and the Rock Spring Business Park). The alternatives described in this report enhance and expand the existing service by providing a higher speed, higher capacity trunkline transitway served by more extensive feeder bus.

The proposed alignment for the Corridor Cities Transitway is shown in Figure A-2. Two transit modes are being considered for the Corridor Cities Transitway (the transit portion of the I-270 corridor study): Bus Rapid Transit (BRT) and Light Rail Transit (LRT). The operating plans reflect the differences of the two modes.



Figure A.1 Corridor Cities Transitway



#### Fares

#### **Existing Fares**

#### <u>Ride-On</u>

The Ride-On fare structure uses a single, flat fare for all bus trips as shown in Table A.1. Twoweek and 20-trip passes are also available, providing discounted rides. Transfers between Ride-On buses and between Metrobus and Ride-On are free. Transfers from Metrorail to Ride-On are \$0.35. Passengers transferring to Metrorail from Ride-On must pay the regular Metrorail fare.

		Table A.1	
F	Ride-On Local	and Express E	Bus Fares
	1		

Service Type	One-Way Cash Fare	Day Pass	Two-Week Pass	20-Trip Pass
Regular	\$1.25	\$3.00	\$10.00	\$18.00

#### Frederick County TransIT

Frederick County TransIT uses a two zone fare structure, charging \$1.25 for trips between Emmitsburg and City of Frederick, with all other trips charged \$1.10. Ten-trip and Monthly passes are also available, as shown in Table A.2. Transfers between TransIT buses are free.

Table A.2TransIT Local Bus Fares

Service Type	One-Way Cash Fare	10-Trip Pass	Monthly Pass
Regular	\$1.10	\$10.00	\$45.00
Emmittsburg	\$1.25		

#### <u>WMATA</u>

#### Metrobus

Metrobus uses a single, flat fare for all local bus trips, with a separate single fare for express bus, as shown in Table A.3. Weekly and monthly passes are not available. Metrobus to Metrobus transfers are free, as are transfers between Metrobus and Ride-On. Transfers from Metrorail to Metrobus are \$0.35, while passengers transferring to Metrorail from Metrobus must pay the regular Metrorail fare.

Table A.3Metrobus Local and Express Bus Fares

Service Type	One-Way Cash Fare	Day Pass
Regular	\$1.25	\$3.00
Express	\$3.00	\$3.00 day pass covers \$1.25 of the \$3.00 express bus fare

#### Metrorail

Metrorail fares are based on an equation using both straight-line distance and train route distance. The resulting fare matrix is shown in Table A.4. Transfers from Metrorail to all local buses are \$0.35. Passengers transferring to Metrorail from bus must pay the regular Metrorail fare.

	Peak Period	Off-neak
	FeakFellou	
	Fare	Period Fare
Rockville	\$1.35	\$1.35
Twinbrook	\$1.70	\$1.35
White Flint	\$1.95	\$1.35
Grosvenor-Strathmore	\$2.25	\$1.85
Medical Center	\$2.65	\$1.85
Bethesda	\$2.85	\$2.35
Friendship Heights	\$3.20	\$2.35
Tenleytown-AU	\$3.35	\$2.35
Van Ness-UDC	\$3.50	\$2.35
Cleveland Park	\$3.65	\$2.35
Woodley Park-Zoo	\$3.80	\$2.35
All Other Stations	\$3.90	\$2.35

# Table A.4Metrorail Station-Station FaresFrom Shady Grove (\$2006)

#### MTA Commuter Bus 991

Trips by MTA commuter bus are based on zone of origin, with 6 zones based on trip distance.

Zone	One-Way Cash Fare	Day Pass	10-Trip Ticket	Monthly Pass	Transit Link Card
1	\$2.75	\$6.00	\$24.75	\$93.50	\$143.50
2	\$3.50	\$7.50	\$31.50	\$119.00	\$169.00
3	\$4.25	\$9.00	\$38.25	\$144.50	\$194.50
4	\$5.00	\$10.50	\$45.00	\$170.00	\$220.00
5	\$5.75	\$12.00	\$51.75	\$195.50	\$245.50
6	\$6.50	\$13.50	\$58.50	\$221.00	\$271.00

Table A.5 MTA Commuter Bus Fares

Commuter Fares apply to MTA Route 991 as follows:

Shady Grove to Rock Spring:	Zone 2
Monocacy and Urbana to Shady Grove:	Zone 2
Monocacy and Urbana to Rock Spring:	Zone 3
Hagerstown to Monocacy and Urbana:	Zone 3
Hagerstown to Shady Grove:	Zone 4
Hagerstown to Rock Spring:	Zone 5
	Shady Grove to Rock Spring: Monocacy and Urbana to Shady Grove: Monocacy and Urbana to Rock Spring: Hagerstown to Monocacy and Urbana: Hagerstown to Shady Grove: Hagerstown to Rock Spring:

#### MTA MARC Brunswick Line

MARC operates the Brunswick commuter rail line through the study area, with stations in downtown Frederick, Monacacy (south Frederick), Point of Rocks, Germantown, Rockville, and a few intermediate points. The fare structure for the Brunswick Line is shown below.

		DESTINATIONS																	
DEPARTURE POINTS	Barnesville	Boyds	Brunswick	Dickerson	Duffields	Frederick	Gaithersburg	Garrett Park	Germantown	Harpers Ferry	Kensington	Martinsburg	Metropolitan Grove	Monocacy	Point of Rocks	Rockville	Silver Spring	Washington Grove	Washington, D.C.
Barnesville		4.00	5.00	4.00	6.00	4.00	4.00	5.00	4.00	6.00	5.00	7.00	4.00	4.00	4.00	4.00	5.00	4.00	6.00
Boyds	4.00		5.00	4.00	6.00	4.00	4.00	5.00	4.00	6.00	5.00	7.00	4.00	4.00	4.00	4.00	5.00	4.00	6.00
Brunswick	5.00	5.00		5.00	4.00		6.00	7.00	6.00	4.00	7.00	5.00	6.00		4.00	6.00	7.00	6.00	8.00
Dickerson	4.00	4.00	5.00		6.00	4.00	4.00	5.00	4.00	6.00	5.00	7.00	4.00	4.00	4.00	4.00	5.00	4.00	6.00
Duffields	6.00	6.00	4.00	6.00			7.00	8.00	7.00	4.00	8.00	4.00	7.00		5.00	7.00	8.00	7.00	9.00
Frederick	4.00	4.00		4.00			5.00	6.00	5.00		6.00		5.00	4.00		5.00	6.00	5.00	7.00
Gaithersburg	4.00	4.00	6.00	4.00	7.00	5.00		4.00	4.00	7.00	4.00	8.00	4.00	5.00	5.00	4.00	4.00	4.00	5.00
Garrett Park	5.00	5.00	7.00	5.00	8.00	6.00	4.00		4.00	8.00	4.00	9.00	4.00	6.00	6.00	4.00	4.00	4.00	4.00
Germantown	4.00	4.00	6.00	4.00	7.00	5.00	4.00	4.00		7.00	4.00	8.00	4.00	5.00	5.00	4.00	4.00	4.00	5.00
Harpers Ferry	6.00	6.00	4.00	6.00	4.00		7.00	8.00	7.00		8.00	4.00	7.00		5.00	7.00	8.00	7.00	9.00
Kensington	5.00	5.00	7.00	5.00	8.00	6.00	4.00	4.00	4.00	8.00		9.00	4.00	6.00	6.00	4.00	4.00	4.00	4.00
Martinsburg	7.00	7.00	5.00	7.00	4.00		8.00	9.00	8.00	4.00	9.00		8.00		6.00	8.00	9.00	8.00	10.00
Metropolitan Grove	4.00	4.00	6.00	4.00	7.00	5.00	4.00	4.00	4.00	7.00	4.00	8.00		5.00	5.00	4.00	4.00	4.00	5.00
Monocacy	4.00	4.00		4.00		4.00	5.00	6.00	5.00		6.00		5.00			5.00	6.00	5.00	7.00
Point of Rocks	4.00	4.00	4.00	4.00	5.00		5.00	6.00	5.00	5.00	6.00	6.00	5.00			5.00	6.00	5.00	7.00
Rockville	4.00	4.00	6.00	4.00	7.00	5.00	4.00	4.00	4.00	7.00	4.00	8.00	4.00	5.00	5.00		4.00	4.00	5.00
Silver Spring	5.00	5.00	7.00	5.00	8.00	6.00	4.00	4.00	4.00	8.00	4.00	9.00	4.00	6.00	6.00	4.00		4.00	4.00
Washington Grove	4.00	4.00	6.00	4.00	7.00	5.00	4.00	4.00	4.00	7.00	4.00	8.00	4.00	5.00	5.00	4.00	4.00		5.00
Washington, D.C.	6.00	6.00	8.00	6.00	9.00	7.00	5.00	4.00	5.00	9.00	4.00	10.00	5.00	7.00	7.00	5.00	4.00	5.00	

#### Table A.6 MARC Commuter Rail Fares Brunswick Line

#### **Corridor Cities Transitway Fares**

#### <u>LRT</u>

LRT fares are assumed to be a flat fare following the regular fare schedule, shown in Table A.7. Passengers would use all doors for boarding and alighting. Proof-of-payment method of control is assumed, with tickets purchased from ticket vending machines at stations (or purchased from transit stores). Fare inspectors will be required to reduce the incidence of fare evasion, as is presently done on the Central Light Rail Line in Baltimore.

Table A.7 CCT LRT Fares

Service Type	One-Way Cash Fare	Day Pass	Two-Week Pass	20-Trip Pass
Regula	r \$1.25	\$3.00	\$10.00	\$18.00

#### <u>BRT</u>

BRT trunkline route fares are assumed to be a flat fare following the regular fare schedule shown in Table A.7. At BRT stations, tickets will be purchased from ticket vending machines as with LRT. All buses stopping at guideway stations will board only from the front door, with passengers required to show a pass or paid ticket. When buses are operating locally off the guideway, fares will be collected by the driver, with cash fares accepted. Fare inspectors are not required for BRT alternatives.

Bus routes crossing the Frederick/Montgomery County line will be considered commuter routes and for the purposes of this study will follow the MTA commuter bus fare structure.

#### Feeder Bus

A network of feeder buses is assumed to be in place for each alternative. All feeder bus routes in the Corridor Cities Transitway (CCT) corridor will operate as local service, with the standard local fare, except those routes that extend beyond the county line, which will follow the MTA commuter bus fare structure.

#### **Hours of Service**

The majority of existing routes within the corridor operate 18-20 hours a day, from 5:00 AM until 11:00 PM - 1:00 AM. For the CCT trunkline service, and those feeder routes that mimic existing routes or that serve the same geographical areas as existing routes, 20 hour service will also be assumed. Routes with low off-peak ridership will generally operate 15 hours per day, from 6:00 AM to 9:00 PM.

## **Station Facilities and Park-and-Ride**

Lot Name	Location	Spaces	Bus Routes Serving Lots
Germantown	Clopper Rd & Kingsview Village Blvd	200	71, 74, 78
Germantown/ MARC Station	MD 118 & Bowman Mill Dr.		61, 83, 97
Lakeforest Mall	Gaithersburg Lost Knife Road & Odendhal Avenue	300	54, 55, 56, 57, 58, 59, 61, J9, J7
Gaithersburg	I-270 & MD 124 (Quince Orchard Rd / Montgomery Village Ave)	517	124, J9 I-270 Express
Milestone Shopping Center	Germantown Milestone SC off of Shakespeare Blvd.	175	55, 70, 75, 79, 83, 90
Urbana	Urbana MD 80 & I-270	193	75, MTA 991
Comus	North of Clarksburg MD 355 above Comus Road	30	75
I-270 Corridor @ West Diamond Avenue	I-270 & West Diamond Rd	350	124
Germantown Transit Center (GTC)	Town Center at Aircraft Dr and Germantown Rd-MD 118	125	55, 61, 72, 74, 75, 82, 83, 97, 98, 100
Damascus	MD 108 and Woodfield Road		90

Park-and-ride lots are currently located at the following locations:

There are 12 potential stations for each CCT transit alternative. Local constraints will affect the feasibility of station locations. Table A.8 provides a description of the intended market, the assumed station facilities, and the connecting transit service for each station. See Figure A.2 for a map of the station locations.

		Park &	Kiss and	
Stations	Markets Served	Ride	Ride	Connecting Transit Service*
COMSAT	Drive-access commuters from Clarksburg, Urbana, and Frederick County	Yes	Yes	R075, 82
Dorsey Mill	Local residential market	No	Yes	RO82, 83
Cloverleaf	Local businesses	No	No	RO83
Germantown	Local residential and business	Exist	Yes	RO55, 61, 74, 75, 82, 83, 97, 98, 100
Metropolitan Grove	Local residential and business; commuters from southern Germantown and I-270	Exist	Yes	RO61, 71, 78
NIST	NIST employees and local businesses	No	No	RO56
Quince Orchard	Local residential and business; commuters from Poolesville and west Germantown	Yes	Yes	RO56, 74, 76
Decoverly	Local residential and business	Yes	Yes	RO74, 67
DANAC	Local business, connection to Shady Grove Hospital and University at Shady Grove	No	Yes	RO66, 67, 74
Washingtonian	Local residential and business	Yes	Yes	RO54
W. Gaither	Local residential and business	No	No	
E. Gaither	Local residential	No	No	
Shady Grove Metro	Transfer to Metrorail	Exist	Exist	*RO43, 46, 53, 55, 57, 58, 59, 60, 61, 63, 64, 65, 66, 67, 71, 74, 76, 78, 79, 90, 100 WMATA Q2; MTA 991

Table A.8 Proposed Station Facilities

\* Includes only existing service. New service is described in the following sections.



Figure A.2 Potential Stations

# DETAILED DEFINITION OF ALTERNATIVES

Each alternative in the I-270/US 15 Multi-Modal Study includes both a highway component and a transit component. To assess the ridership, costs, and impacts that can be expected solely from the transit component, each transit option is paired with each highway option in separate alternatives.

There are three highway alternatives, including the highway No-Build, and four transit alternatives, including the transit No-Build. The highway alternatives include the following:

- H1) Highway No-Build: only planned and programmed improvements
- H2) Highway Build 1: 4 general purpose lanes and 2 express toll lanes (ETL) on the Montgomery County portion of I-270, and 2 general purpose lanes and 1 ETL lane on the Frederick County portion of I-270
- H3) Highway Build 2: 4 general purpose lanes and 2 express toll lanes (ETL) on the Montgomery County portion of I-270, and 2 general purpose lanes and 2 ETL lanes on the Frederick County portion of I-270

The transit alternatives include the following:

- T1) Transit No-Build: only planned and programmed transit improvements
- T2) Transit TSM: additional park-and-ride lots, trunkline bus service along existing roadways following a route serving the same stations as in the Build alternatives, plus additional bus service from Frederick County
- T3) Transit Build 1: BRT along the CCT master plan alignment from Shady Grove to COMSAT, plus additional bus service from Frederick County
- T4) Transit Build 2: LRT along the CCT master plan alignment from Shady Grove to COMSAT, plus additional bus service from Frederick County

Combined there are 12 alternatives being considered in the study. Because this document is concerned with describing the transit alternatives, not all combinations are required to be modeled or evaluated. A set of 7 alternatives are included, providing a comparative basis for evaluating the expected transit ridership.

The alternatives are described in order of the magnitude of investment, from relatively low levels of investment using existing streets, to major levels of investment with light rail transit in dedicated guideway. (The labeling of alternatives in parentheses follows the labeling convention of the Environmental Assessment for which these alternatives were developed.)

## Alternative 1 (Alt. 1A): Highway No-Build with Transit No-Build

For NEPA purposes, the No-Build alternative is the baseline against which the other alternatives are compared. The No-Build alternative consists of the transit service levels, highway networks and traffic volumes, and forecasted demographics for the horizon year of 2030 that are assumed in the Metropolitan Washington Council of Government's (the MPO) Constrained Long Range Plan (CLRP). The CLRP consists of the existing highway and transit network as well as planned and programmed (committed) improvements. Table 1.1 provides a list of those improvements from the CLRP adopted in 2004.

Table 1.1Planned and Programmed Improvements1

**Transit Projects** 



<sup>&</sup>lt;sup>1</sup> 2003 Update to the Financially Constrained Long-Range Transportation Plan for the National Capital Region (Full Document), MWCOG, October 1, 2004

#### District of Columbia

- 1. Anacostia Demonstration Rail Line (CSX Shepherd Branch), 2005
- 2. K Street Busway, 2008

#### Maryland

- 3. I-270/US 15 Corridor HOV, 2025
- 4. Georgetown Branch Trolley, 2012
- 5. Bi-County Transitway, Bethesda to Silver Spring, 2012
- 6. Corridor Cities Transitway, from Shady Grove to COMSAT, 2012, 2020
- 7. Southern Maryland Bus Initiative (not shown), 2010

#### <u>Virginia</u>

- 8. I-66 HOV, includes interchange reconstruction at US 15, 2006, 2010, 2015
- 9. I-95 HOV, extend HOV lanes from Quantico Creek to Stafford County line, 2015 and restripe to 3 lanes from Quantico Creek to I-495/I-395 intersection, 2010
- 10. I-395 HOV, re-stripe to 3 lanes, 2010
- 11. I-495 HOV, 2011, 2012, 2013
- 12. US 1, widen for bus right turn lanes, 2025
- 13. US 1 Transit Improvements, 2005
- 14. Franconia/Springfield Parkway HOV, 2010
- 15. Dulles Corridor Rapid Transit, 2011, 2015
- 16. Fairfax County Parkway HOV, widen, upgrade, 6 lanes 2010, 2015
- 17. Fairfax County Parkway HOV, construct 2 lanes, 2015
- 18. Potomac Yard Metrorail, 2015
- 19. VRE Cherry Hill Station, 2006
- 20. Woodrow Wilson Bridge/I-95, HOV, 2009

# Table 1.1 (cont'd)Planned and Programmed Improvements

**Highway Projects** 



#### <u>Maryland</u>

- 1. I-70, widen to 4, 6 lanes, 2005, 2010
- 2. I-95, interchange and CD lanes at Contee Road, 2015
- 3. I-95/495, interchange at Arena Drive, 2010
- 4. I-95/495, interchange at Greenbelt Metro, 2015
- 5. I-270, reconstruct interchange at MD 117, including Park & Ride lot, 2004
- 6. I-270, interchange at Watkins Mill Rd., 2025
- 7. US 1, reconstruct, widen to 6 lanes, 2015, 2025
- 8. US 15, interchange at MD 26, 2010
- 9. US 29, upgrade, including intersections/interchanges, 6 lanes, 2005, 2006, 2015, 2020, 2025
- 10. US 50, westbound ramp to Columbia Park Road, 2025
- 11. US 301, upgrade, widen to 6+2 lanes, 2030
- 12. MD 3, upgrade, 6 lanes, 2030
- 13. MD 4 widen to 6 lanes, upgrade with interchanges at Westphalia Road, Suitland Parkway and Dower House, 2010
- 14. MD 5, upgrade, widen to 6 lanes, interchange upgrades, 2010, 2015
- 15. MD 28/MD 198, widen, construct 4, 6 lanes, 2025
- 16. M-83, construct 4, 6 lanes, 2015, 2020
- 17. MD 85, widen to 4, 6 lanes, 2025
- 18. MD 97, upgrade intersection at MD 28, 2015
- 19. MD 97, upgrade intersection at Randolph Road, 2015
- 20. MD 97, construct 2 lanes, 2015
- 21. MD 117, widen to 4-6 lanes, 2015
- 22. MD 118 widen, construct 6 lanes, 2015
- 23. MD 124, widen to 6 lanes, 2010
- 24. MD 124 extended, construct 2 lanes, 2007
- 25. MD 202, reconstruct 6+2 lanes, 2015
- 26. MD 210, upgrade 6 lanes, 2015
- 27. MD 212, construct 4 lanes, 2005
- 28. MD 223, widen to 4 lanes, 2007
- 29. MD 355, reconstruct 6 lanes, construct interchange at Montrose/Randolph Rd, 2015
- 30. MD 355/MD 80, Urbana Bypass, construct 4 lanes, 2005
- 31. MD 414 Extended, construct 4 lanes, 2008
- 32. MD 450, widen to 5 lanes, 2005
- 33. MD 450, widen to 4, 6lanes, 2006, 2025
- 34. Baltimore/Washington Parkway, southbound ramp from Greenbelt Road, 2025
- 35. Branch Avenue Metro Access, construct 8 lanes, 2010

- 36. Father Hurley Blvd., construct, widen, 4, 6 lanes, 2010, 2011
- 37. Inter-county Connector, construct 6 lanes, 2010
- 38. Middlebrook Road Extended, widen, construct 6 lanes, 2015
- 39. Montrose Parkway, construct 4 lanes, 2010, 2015
- 40. Randolph Road, widen to 5 lanes, 2015
- 41. Suitland Parkway, interchange at Rena/Forestville Road, 2025

#### <u>Virginia</u>

- 42. I-66/I-495, reconstruct interchange, 2013
- 43. I-66, reconstruct interchange at US 29, 2011
- 44. I-95, Woodrow Wilson Bridge, build 12 lane bridge, 2009
- 45. I-95, widen to 12 lanes, 2011
- 46. I-95, widen to 8 lanes, 2010
- 47. I-95, reconstruct interchange at VA 642, 2010
- 48. I-95, construct interchange at VA7900, 2015
- 49. I-95, reconstruct interchange at VA 613, 2015
- 50. I-95/I-395/I-495, interchange reconstruction with access ramps to I-495, HOV, 2007, 2015
- 51. US 1, widen to 6, 7 lanes including interchange at VA 123, 2005, 2007, 2008, 2009, 2015
- 52. US 1, widen to 8 lanes, 2025
- 53. US 1, reconstruct interchange at Russell Road, 2010
- 54. US 15, widen to 4 lanes, 2006, 2020
- 55. US 15, widen to 4 lanes, 2007
- 56. US 29, widen to 6 lanes, 2015, 2020
- 57. US 29, widen to 6 lanes, 2010, 2012
- 58. US 29, widen to 6 lanes, 2011
- 59. US 29, widen to 5, 6 lanes, 2011
- 60. US 29, interchange at VA 55, 2011
- 61. US 50, reconstruct 6 lanes including interchanges, 2007, 2010, 2015, 2020
- 62. US 50, widen to 6 lanes, 2020
- 63. US 50, widen to 3, 8 lanes, 2020
- 64. US 50, widen to 6 lanes, 2010, 2012
- 65. US 50, reconstruct intersection at VA 609, 2005
- 66. US 50, construct round-about at US 15, 2010
- 67. VA 7, Leesburg Pike, widen to 6, lanes, 2020
- 68. VA 7, Leesburg Pike, widen to 6, 8 lanes, 2005, 2009, 2012, 2013
- 69. VA 7, upgrade with interchanges, 2005, 2015
- 70. VA 7/US 15 Bypass, widen to 6 lanes, 2015

- 71. VA 7, widen, upgrade 6 lanes, 2015
- 72. VA 7, intersection improvement, 2006
- 73. VA 28, widen to 6 lanes, 2025
- 74. VA 28, widen to 6, 8 lanes, with interchanges, 2005, 2006, 2008, 2015
- 75. VA 28, widen to 6 lanes, 2015
- 76. VA 411, (Tri-County Parkway), construct 4, 6 lanes, 2015, 2020
- 77. VA 123, widen to 8 lanes, ramps at Dulles Toll Road, 2010, 2013
- 78. VA 123, widen to 6 lanes, 2010
- 79. VA 123, widen, reconstruct 4, 6 lanes, 2005, 2006, 2010, 2015, 2020
- 80. VA 123, widen to 6 lanes, 2008, 2015
- 81. VA 234, widen, upgrade to 6 lanes, including interchange at US 1, 2011
- 82. VA 234, widen to 4 lanes, 2006, 2010
- 83. VA 234, widen to 4 lanes, 2010
- 84. VA 234 Bypass, widen/upgrade, 6 lanes, 2012
- 85. VA 234 Bypass, widen, upgrade, construct 4, 6 lanes, 2010, 2012
- 86. VA 234, widen to 5 lanes, 2006
- 87. VA 236, widen to 4, 6 lanes, 2008, 2020
- 88. VA 236, reconstruct intersection at Braddock Road, 2006
- 89. VA 244, reconstruct to 4 lanes, 2010
- 90. VA 3000, widen to 6 lanes, 2025
- 91. VA 3000, construct 4 lanes, 2005
- 92. VA 7100, widen to 6 lanes, 2015
- 93. VA 7100, construct 2, 6 lanes, 2007, 2015
- 94. VA 7100, interchange at Fair Lakes Parkway, 2010
- 95. Battlefield Parkway, construct, widen, upgrade 4 lanes, 2005, 2006, 2010
- 96. Dulles Access Road, widen to 6 lanes including interchange reconstruct at I-495, 2005, 2010
- 97. Dulles Toll Road, reconstruct interchange at VA 674, 2012
- 98. Dulles Greenway, construct interchanges at VA 653, Battlefield Parkway, 2005
- 99. Dulles Greenway, widen to 6 lanes, 2005, 2006
- 100. Elden Street/Centreville Road, widen to 6 lanes, 2006
- 101. Wilson Blvd., reconstruct 4 lanes, 2010

#### **Existing Transit**

Existing transit service within the CCT corridor consists of 22 local and 2 express bus routes operated by Ride-On in Montgomery County, 16 local or shuttle routes in Frederick County operated by TransIT, one commuter bus route operated by the MTA connecting Hagerstown and southern Frederick with Shady Grove Metro station, MARC commuter rail service on the Brunswick Line, and the northern terminus of the Washington Metrorail system at Shady Grove station in south Gaithersburg. Figure 1.1 provides a graphic representation of the existing transit services. Table 1.2 provides a description of the service characteristics of those routes.

The CLRP includes the Corridor Cities Transitway and HOV lanes on I-270 as part of the planned improvements. In the analysis of the No-Build Alternative for this study, the CCT project and HOV lanes will be removed from the travel demand model networks. Headways for future No-Build routes have been improved to reflect increases in area population. Figure 1.2 provides a graphic representation of the future No-Build transit services. Table 1.3 provides a description of the service characteristics of those routes.



Figure 1.1 Existing Transit Services



Figure 1.1 Existing Transit Services

		Table 1	.2		
Existing	Bus	Service	in	ССТ	Corridor

	Current Terminals					
Route	Start	End	2006 Headways Peak	2006 Headways Off-Peak	notes	Feb. 2006 Daily Passenger Trips
43	Traville Transit Ctr	Shady Grove	15	20	notes	860
54	l ake Forest	Rockville	20	30		2.040
55	Germantown Transit Ctr	Rochville	15	30		£ 900
55	Lake Ecrect	Rockville	20	20		2.260
00	Cormontaun Tropoit Ctr	Chadu Craus	20			2,000
01	Charle Crave		30	30		2,010
03	Shauy Grove	Ruckville	30	30	- 66	000
00		Shady Grove	30	-	oπ-pk air only	120
67	Traville Transit Ctr	Shady Grove	30	-	pk dir only	140
68	MARC-German	return	eliminated			40
69	MARC	return	eliminated			20
70	Milestone	Bethesda/Med Ctr	15	-	not all stops	550
71	Kingview PnR	Shady Grove	30	-	pk dir only	310
72	Germantown Commons	Shady Grove	eliminated			
73	Milestone	Shady Grove	eliminated			
74	Germantown Transit Ctr	Shady Grove	30	30		750
75	Urbana	Germantown Transit Ctr	30	30	not all stops in off-pk	230
76	Poolesville	Shady Grove	30	-	not all stops in off-pk	570
77	Germantown Commons	Shady Grove	eliminated			
78	Kingview PnR	Shady Grove	30	-	pk dir only	210
79	Milestone	Shady Grove	30	-	pk dir only	130
82	Clarksburg	Germantown Tra Ctr/DOE	30	-	pk dir only	
83	Milestone	Germantown Transit Ctr	15	30	MARC station in pk	700
90	Milestone	Shady Grove	30	30	different routings throughout day	860
97	Germantown Transit Ctr	Germantown MARC	15	30	loop	720
98	Germantown Transit Ctr	Seabreeze Ct	15	30	loop	380
100	Germantown Transit Ctr	Shday Grove	5	15	express via l-270	1,500
124	Rt. 124 PnR (Rt 117 PnR)	Shady Grove	30	-	express via l-270	70
MTA 991	Hagerstown	Shady Grove/Rock Spring Pk	15	-		
						22,720
FT10	Frederick Towne Mall	Francis Scott Key Mall	30	40		
FT20	Francis Scott Key Mall	Frederick Transit Center	30	60		
FT30	Frederick Towne Mall	Frederick Transit Center	30	60	loop	
FT40	Frederick Towne Mall	Frederick Transit Center	30	60		
FT50	Frederick Towne Mall	Frederick Transit Center	30	60	loop	
FT60	Frederick Community College	Frederick Transit Center	30	60	loop	
FT70	College Park Plaza	Frederick Transit Center	60	60	loop	
FT80	Frederick Community College	Frederick Towne Mall	30	60		
FT-EC Shuttle	Spring Ridge Apts	Dept of Aging			4 round trips/day	
FT-BJ Shuttle	Frederick Transit Center	Brunswick MARC station	180	-	4 round trips/day	
FT-ET Shuttle	Emmitsburg	Frederick Transit Center	120	-	2 round trips/day	
FT-85 Shuttle	Bowmans Industrial Pk	Frederick Transit Center			2 round trips/day	
FT-POR Shuttle	Frederick Shopping Ctr	Point of Rocks MARC	40		pk dir only	
FT-Fd/MARC Shuttle	Frederick Towne Mall	Frederick Transit Center	60	-	pk dir only	
FT-Walk/MARC Shuttle	Walkersville	Frederick Transit Center	60	-	pk dir only	
FT-Walk Shuttle	Walkersville	Frederick Transit Center	60	120		



Figure 1.2 Alternative 1: Future No-Build Transit Service



Figure 1.2 Alternative 1: Future No-Build Transit Service

Table 1.3
Alternative 1: Future No-Build Bus Service

	Current 7	erminals					
			2006	2006		Proposed 2030 Nobuild	Proposed 2030 Nobuild
			Headways	Headways		Headway	Headway
Route	Start	End	Peak	Off-Peak	notes	Peak	Off-Peak
43	Traville Transit Ctr	Shady Grove	15	20		15	20
54	Lake Forest	Rockville	20	30		15	30
55	Germantown Transit Ctr	Rockville	15	30		10	20
56	Lake Forest	Rockville	20	30		15	30
61	Germantown Transit Ctr	Shady Grove	30	30		15	30
63	Shady Grove	Rockville	30	30		20	30
66	Traville Transit Ctr	Shady Grove	30	-	off-pk dir only	20	30
67	Traville Transit Ctr	Shady Grove	30	-	pk dir only	20	30
68	MARC-German	return	eliminated				
69	MARC	return	eliminated				
70	Milestone	Bethesda/Med Ctr	15	-	not all stops	15	
71	Kingview PnR	Shady Grove	30	-	pk dir only	20	
72	Germantown Commons	Shady Grove	eliminated				
73	Milestone	Shady Grove	eliminated				
74	Germantown Transit Ctr	Shady Grove	30	30		20	30
75	Urbana	Germantown Transit Ctr	30	30	not all stops in off-pk	20	30
76	Poolesville	Shady Grove	30	-	not all stops in off-pk	20	30
77	Germantown Commons	Shady Grove	eliminated				
78	Kingview PnR	Shady Grove	30	-	pk dir only	20	-
79	Milestone	Shady Grove	30	-	pk dir only	20	-
82	Clarksburg	Germantown Tra Ctr/DOE	30	-	pk dir only	20	-
83	Milestone	Germantown Transit Ctr	15	30	MARC station in pk	15	30
90	Milestone	Shady Grove	30	30	different routings throughout day	20	30
97	Germantown Transit Ctr	Germantown MARC	15	30	loop	15	30
98	Germantown Transit Ctr	Seabreeze Ct	15	30	loop	15	30
100	Germantown Transit Ctr	Shday Grove	5	15	express via I-270	5	15
124	Rt. 124 PnR (Rt 117 PnR)	Shady Grove	30	-	express via l-270	20	-
MTA 991	Hagerstown	Shady Grove/Rock Spring Pk	15	-		15	-
FT10	Frederick Towne Mall	Francis Scott Key Mall	30	40		30	40
FT20	Francis Scott Key Mall	Frederick Transit Center	30	60		30	60
FT30	Frederick Towne Mall	Frederick Transit Center	30	60	loop	30	60
F 14U	Frederick Towne Mall	Frederick Transit Center	30	60		30	60
F 15U	Frederick Towne Mall	Frederick Transit Center	30	60	loop	30	60
F 160	Frederick Community College	Frederick Transit Center	30	60	loop	30	60
	College Park Plaza	Frederick Transit Center	20	00	юор	00	00 00
	Prederick Community College	Dopt of Aging	30	00	4 round tripo/dou	30	00
	Eroderick Transit Conter	Pruncwick MAPC station	100		4 round trips/day	100	
ET ET Shuttle	Empitchurg	Frederick Transit Center	120	-	2 round trips/day	100	-
FT-85 Shuttle	Rowmans Industrial Pk	Frederick Transit Center	120	-	2 round trips/day	120	-
FT-POR Shuttle	Frederick Shonping Ctr	Point of Rocks MARC	<u>⊿n</u>		nk dir only	<u>⊿</u> ∩	
ET-Ed/MARC Shuttle	Frederick Towne Mall	Frederick Transit Center	80	_	nk dir only	-0	_
FT-Walk/MARC Shuttle	Walkersville	Frederick Transit Center	60	_	nk dir only	60	_
FT-Walk Shuttle	Walkersville	Frederick Transit Center	60	120	prear only	60	120
			1				
L	1	1	1	1			1

# Alternative 2 (Alt. 6.1): Highway Build 1 with Transit No-Build

Because this is a joint highway and transit study, two transit No-Build alternatives are included against which the Build alternatives can be compared. This alternative will be compared to the Build alternatives that include a highway Build component.

#### **Highway Component**

This alternative includes the Highway Build Option 1, which includes 4 general purpose lanes and 2 express toll lanes (ETL) on the Montgomery County portion of I-270 and 2 general purpose lanes and 1 ETL lanes on the Frederick County portion of I-270, as shown in Figure 2.1 and 2.2. Figure 2.3 shows a cross section of the two lane configurations.

#### **Transit Component**

The transit assumptions are identical to those described in Alternative 1.



Figure 2.1 Highway Build 1 – Montgomery County



Figure 2.2 Highway Build 1 – Frederick County



Figure 2.3 Highway Build 1 – Cross Sections

# Alternative 3 (Alt. 6.2): Highway Build 1 with Transit TSM

As described by the FTA, "Transportation system management (TSM) alternatives are relatively low cost approaches to addressing transportation problems in the corridor. The TSM alternatives provide a baseline against which all of the major investment alternatives are evaluated. The most cost-effective TSM alternative generally serves as the required "baseline" against which the proposed transit project alternative is compared during the New Starts rating and evaluation process.

"The TSM alternative represents the best that can be done for mobility without constructing a new transit guideway. Generally, the TSM alternative emphasizes upgrades in transit service through operational and small physical improvements, plus selected highway upgrades through intersection improvements, minor widenings, and other focused traffic engineering actions. A TSM alternative normally includes such features as bus route restructuring, shortened bus headways, expanded use of articulated buses, reserved bus lanes, contra-flow lanes for buses and HOVs on freeways, special bus ramps on freeways, expanded park/ride facilities, express and limited-stop service, signalization improvements, and timed-transfer operations. Outside the study corridor, the TSM should have the same transit network as the No-Build alternative. While the scale of these improvements is generally modest, TSM alternatives may cost tens of millions of dollars when guideway alternatives range up to several hundreds of millions or billions of dollars."<sup>2</sup>

#### **Highway Component**

The highway assumptions are identical to those in Alternative 2.

#### **Transit Component**

For this project, Alternative 3 generally includes additional park-and-rides where proposed in the Build alternatives and new bus service connecting those park-and-rides along existing roadways to the Shady Grove Metro station. As shown in Figure 3.1, the new bus service would begin at a new park-and-ride at COMSAT in north Germantown and operate in shared lanes (mixed traffic) on Observation Drive, turning west on Father Hurley Blvd., then left via Crystal Rock Drive and Century Blvd to the Germantown Transit Center. From there the TSM bus route would follow Germantown Road to Clopper Road, stopping at an expanded park-and-ride at the MARC Metropolitan Grove station, and follow Quince Orchard Road to a new park-and-ride facility near Great Seneca Highway.

The route continues along Great Seneca Highway, serves a new park-and-ride at Decoverly Road, turns left on Key West Avenue, left onto Omega Drive, serving a stop on Research Blvd, and traversing Shady Grove Road across I-270. On the east side of I-270, the TSM route turns right onto Gaither Road, serves two stops along King Farm Blvd. before crossing MD 355 to the west side bus bays at the Shady Grove Metro station.

<sup>&</sup>lt;sup>2</sup> From FTA Chapter 2 Definitions of Alternatives, February, 2004

In addition, the TSM Alternative includes the following general components:

- More frequent bus service
- Reconstruction of roadway surfaces only where absolutely necessary.
- Installation of new bus stops consisting of shelters and amenities comparable to those proposed for the build alternatives, plus some improvements to adjacent sidewalks for access and ADA compliance.
- The incorporation of signal priority and/ or queue jump lanes at major intersections, where feasible, if the analysis demonstrates that such priority provides significant time savings.
- Provision of park-and-ride facilities at designated locations proposed in the Build alternatives.

#### Signal Priority

Two types of signal priority are desired to improve transit operating speeds and service reliability. In addition, a typical use of protected right turns is desirable when using curb lanes marked for buses and right turning traffic only to clear the lane as quickly as possible.

- Extended green times: the green phase is extended for 5-10 seconds if a detector indicates a bus approaching the signal. This type of signal priority can significantly improve travel times by reducing the number of signals where the bus has to stop. The 5-10 seconds are deducted from the cross-street green time.
- 2. Advance green for transit queue jump/dedicated lanes. The signal would provide a special green to allow the transit vehicle to proceed in advance of general traffic. This is only necessary when the bus does not have a dedicated lane on the other side of the intersection or could not otherwise proceed with general through traffic. Such situations include when a bus in a queue jump lane must merge with general traffic on the other side of the intersection, or when the bus lanes turn left onto a roadway with shared lanes.
- 3. Where the cross street provides left-turn lanes, the use of protected right turns from the main street overlapped with protected left turns from the cross street should be analyzed.

For this alternative, extended green time signal priority is assumed for all traffic signals where cross-street traffic volumes are light. At intersections where cross-street volumes are heavy, extended green priority would be provided on a case-by-case basis.

The TSM consists of one trunkline bus route operating on existing streets and 3 new intercounty bus routes connecting Frederick County with the Corridor Cities area and the Shady Grove Metro station. The TSM incorporates the same service plan as the Build alternatives but would have slower travel times as a result of traveling in shared lanes on existing streets.

#### Trunkline Service Description

The one trunkline bus route (T1) comprising the TSM would be limited stop operating on a 6minute peak period headway from COMSAT to Shady Grove Metro, making stops at locations at or near where stations are proposed in the Build alternatives.

During off-peak periods, route T1 would operate at a 10-minute headway, augmented by existing feeder bus routes. Table 3.1 provides peak period station-station travel times for the trunkline service, station facilities, and connecting feeder service.

#### **Feeder Bus Service**

The feeder bus plan for the TSM alternative would build upon the existing route structure, extend the service area into Frederick County, and improve service frequencies where appropriate. Figure 3.2 displays the transit service assumed for the TSM alternative. Table 3.2 lists the bus services and frequencies.

Figure 3.1 Alternative 3: TSM



	Station- Station	Station- Station	Avg. Spd	Park and	Feeder
Stations	Dist	Time	w/dwell	Ride	Bus Service
COMSAT				Yes	RO75, 82
Dorsey Mill	8,881 '	4.2 min	25.3	No	RO82, 83
Cloverleaf	6,278 '	4.3 min	16.4	No	RO83
Germantown	3,638 '	2.8 min	15.1	Exist	RO55, 61, 74, 75, 82, 83, 97, 98, 100
Metro Grove	28,679 '	15.2 min	21.4	Exist	RO61, 71, 78
NIST	6,421 '	4.7 min	15.4	No	RO56
Quince Orchard	5,922 '	4.2 min	16.0	Yes	RO56, 74, 76
Decoverly	10,615 '	5.6 min	21.7	Yes	RO74, 67
DANAC	1,471 '	2.0 min	8.1	No	RO66, 67, 74
Washingtonian	3,080 '	2.6 min	13.9	Yes	RO54
West Gaither Rd	11,948 '	9.0 min	14.9	No	
E. Gaither	1,866 '	2.1 min	10.2	No	
Shady Grove	4,213 '	2.9 min	15.6	Exist	*Many bus routes
Total	93,012 '	59.6 min	17.7		

 Table 3.1

 Alternative 3: TSM Travel Time, Station Facility, and Feeder Bus



Figure 3.2 Alternative 3: TSM Transit Service

	Та	ble 3.	2		
Alternative	3:	TSM	Bus	Service	

	Current Terminals						
		<b>- - -</b>	2006 Headways	2006 Headway S		Proposed 2030 TSM Headway	Proposed 2030 TSM Headway
Route	Start Trouille Tropoit Otr	End End	Peak 15	Off-Peak	notes	Peak 15	Off-Peak
43			10	20		10	20
04 EE		Doola illo	20	0		10	
50 50	Germanuown Transit Ctr		10	30		10	20
00		Chadu Oraua	20	- JU - 00		10	3U 
01	Charle Crave		3U 00	30		10	3U 20
03	Travilla Travelà Ch		3U 90	30	- ff and a line and a	20	3U 90
00		Shady Grove	30	-	om-pk air only	20	3U 20
07		solution Silve	olinainatad	-	pk uir only	20	JU
00	MARC-German		eliminateu				
09						15	
70	Milestone	Bethesda/Med Ctr	15	-	not all stops	10	
71		Shady Grove	3U - 1::	-	pk air only	20	
72	Germantown Commons	Shady Grove	eliminated				
73		Shady Grove	eliminated				
/4	Germantown Transit Ctr	Shady Grove	30	30		20	30
75	Urbana	Germantown Transit Ctr	30	30	not all stops in off-pk	20	30
76	Poolesville	Shady Grove	30	-	not all stops in off-pk	20	30
//	Germantown Commons	Shady Grove	eliminated				
78	Kingview PnR	Shady Grove	30	-	pk dir only	20	-
79	Milestone	Shady Grove	30	-	pk dir only	20	-
82		Germantown Tractr/DOE	30		pk dir only	20	
83	Milestone	Germantown Transit Ctr	15	30	MARC station in pk	15	30
90	Milestone	Shady Grove	30	30	throughout day	20	30
97	Germantown Transit Ctr	Germantown MARC	15	30	loop	15	30
98	Germantown Transit Ctr	Seabreeze Ct	15	30	loop	15	30
100	Germantown Transit Ctr	Shday Grove	5	15	express via I-270	5	15
124 MTA 001		Shady Gruve	3U 1E	-	express via i-270	2U 1 <i>E</i>	-
MTA 991		Snauy Grove/Rock Spring r	10	-		10	-
ET10	Frederick Towne Mall	Francis Scott Key Mall	30	40		30	40
FT20	Francis Scott Key Mall	Frederick Transit Center	30	 60		30	60
FT30	Frederick Towne Mall	Frederick Transit Center	30	60 60	loon	30	60
FT40	Frederick Towne Mall	Frederick Transit Center	30	60		30	60
FT50	Frederick Towne Mall	Frederick Transit Center	30	60	qool	30	60
FT60	Frederick Community College	Frederick Transit Center	30	60	loop	30	60
FT70	College Park Plaza	Frederick Transit Center	60	60	loop	60	60
FT80	Frederick Community College	Frederick Towne Mall	30	60		30	60
FT-EC Shuttle	Spring Ridge Apts	Dept of Aging			4 round trips/day		
FT-BJ Shuttle	Frederick Transit Center	Brunswick MARC station	180	-	4 round trips/day	180	-
FT-ET Shuttle	Emmitsburg	Frederick Transit Center	120	-	2 round trips/day	120	-
FT-85 Shuttle	Bowmans Industrial Pk	Frederick Transit Center			2 round trips/day		
FT-POR Shuttle	Frederick Shopping Ctr	Point of Rocks MARC	40		pk dir only	40	
FT-Fd/MARC Shuttle	Frederick Towne Mall	Frederick Transit Center	60	-	pk dir only	60	-
FT-Walk/MARC Shuttle	Walkersville	Frederick Transit Center	60	-	pk dir only	60	-
FT-Walk Shuttle	Walkersville	Frederick Transit Center	60	120		60	120
FREDSG	Frederick Transit Center	Shady Grove	-			15	-
FREDMGSG	Frederick Transit Center	Shady Grove	-			20	30
KPTNMGSG	Kemptown	Shady Grove				30	-
COM-MG-SG	COMSAT	Shady Grove				6	10

# Alternative 4 (Alt. 6A): Highway Build 1 with LRT

#### **Highway Component**

The highway assumptions are identical those described in Alternative 2.

#### **Transit Component**

As shown in Figure 4.1, this alternative is nearly identical to Alternative 3 except the mode is LRT and the majority of feeder bus service terminates at a guideway station, requiring passengers to transfer. All the stations and facilities are the same. Because the frequency of service is less than with BRT, signal preemption is assumed at intersections with low cross-street volumes, allowing the LRT to continue through the intersection without stopping. Analyses to be conducted during the course of the study will determine which if any intersections warrant preemption.

#### **Rail Operations Plan**

For initial operating assumptions, one trunkline route is proposed:

LRT – COMSAT to Shady Grove with a 6-minute headway during peak periods and a 10-minute headway during off-peak periods.

Table 4.1 provides the peak period station-station run times for the LRT service, station facilities, and connecting feeder service.

#### **Feeder Bus Service**

The feeder bus service provides identical geographical coverage and frequencies as in Alternative 3, but with the majority of corridor routes terminating at an LRT station. Figure 4.2 displays the transit service assumed for this alternative. Table 4.2 lists the bus services and frequencies.



Figure 4.1 Alternative 4: LRT

	Station- Station	Station- Station	Avg. Spd	Park and	Feeder
Stations	Dist	Time	w/dwell	Ride	Bus Service
COMSAT				Yes	RO75, 82
Dorsey Mill	6,800 '	3.8 min	20.2	No	RO82, 83
Cloverleaf	5,100 '	3.0 min	19.6	No	RO83
Germantown	4,600 '	3.8 min	13.9	Exist	RO55, 61, 74, 75, 82, 83, 97, 98, 100
Metro Grove	16,900 '	5.8 min	33.4	Exist	RO61, 71, 78
NIST	6,500 '	3.3 min	22.2	No	RO56
Quince Orchard	4,500 '	2.9 min	17.5	Yes	RO56, 74, 76
Decoverly	9,900 '	3.9 min	29.2	Yes	R074, 67
DANAC	1,600 '	1.5 min	12.2	No	RO66, 67, 74
Washingtonian	4,000 '	2.1 min	22.0	Yes	RO54
West Gaither Rd	4,300 '	2.5 min	19.7	No	
E. Gaither	3,200 '	1.7 min	21.3	No	
Shady Grove	2,850 '	1.8 min	17.8	Exist	*Many bus routes
Total	70,250 '	36.0 min	22.2		

 Table 4.1

 Alternative 4: LRT Travel Time, Station Facility, and Feeder Bus



Figure 4.2 Alternative 4: LRT Transit Service

Table 4.2
Alternative 4: LRT Bus Service

	Current Te	rminals			Pronosed Te	rminals		
	Current rei		2006 Headways	2006 Headways			Proposed 2030 TSM Headway	Proposed 2030 TSM Headway
Route	Start	End	Peak	Off-Peak	Start	End	Peak	Off-Peak
43	Traville Transit Ctr	Shady Grove	15	20	same		15	20
54	Lake Forest	Rockville	20	30	same		15	30
55	Germantown Transit Ctr	Rockville	15	30	same		10	20
56	Lake Forest	Rockville	20	30	same		15	30
58	Lake Forest	Shady Grove			same			
59	Montgomery Village	Rockville	15	30	same		10	20
61	Germantown Transit Ctr	Shady Grove	30	30	same		15	30
63	Shady Grove	Pochville	30	30	same		20	30
66	Travilla Transit Ctr	Shady Group	20		Decoverty	Shadu Grava	20	20
00	Traville Transit Ctr	Charly Crove		-	Decoveriy	Deserved	20	
07		Snady Grove	30	-		Decoveriy	20	30
70	Milestone	Betnesda/Med Ctr	15	-	same		15	
	Kingview PnR	Shady Grove	30	-	Germantown	Metro Grove	20	
74	Germantown Transit Ctr	Shady Grove	30	30	Germantown Transit Ctr	Quince Orchard	20	30
75	Urbana	Germantown Transit Ctr	30	30	Urbana	COMSAT	20	30
76	Poolesville	Shady Grove	30	-	Poolesville	Quince Orchard	20	30
78	Kingview PnR	Shady Grove	30	-	Kingview PnR	Metro Grove	20	-
79	Milestone	Shady Grove	eliminated		eliminated			
82	Clarksburg	Germantown Tra Ctr/DOE	30	-	same		20	-
83	Milestone	Germantown Transit Ctr	15	30	same		15	30
90	Milestone	Shady Grove	30	30	Germantown Transit Ctr	Shady Grove	20	30
97	Germantown Transit Ctr	Germantown MARC	15	30	same		15	30
98	Germantown Transit Ctr	Seabreeze Ct	15	30	same		15	30
100	Germantown Transit Ctr	Shady Grove	5	15	same		5	15
124	Rt. 124 PnR (Rt 117 PnR)	Shady Grove	30	-	same		20	-
MTA 991	Hagerstown	Shady Grove/Rock Spring I	15	-	Hagerstown	Shady Grove/Rock Spring F	15	-
FT10	Frederick Towne Mall	Francis Scott Key Mall	30	40	same		30	40
FT20	Francis Scott Key Mall	Frederick Transit Center	30	60	same		30	60
FT30	Frederick Towne Mall	Frederick Transit Center	30	60	same		30	60
FT40	Frederick Towne Mall	Frederick Transit Center	30	60	same		30	60
FT50	Frederick Towne Mall	Frederick Transit Center	30	60	same		30	60
FT60	Frederick Community College	Frederick Transit Center	30	60	same		30	60
FT70	College Park Plaza	Frederick Transit Center	60	60	same		60	60
FT80	Frederick Community College	Frederick Towne Mall	30	60	same		30	60
FT-EC Shuttle	Spring Ridge Apts	Dept of Aging			same			
FT-BJ Shuttle	Frederick Transit Center	Brunswick MARC station	180	-	same		180	-
FT-ET Shuttle	Emmitsburg	Frederick Transit Center	120	-	same		120	-
FT-85 Shuttle	Bowmans Industrial Pk	Frederick Transit Center			same			
FT-POR Shuttle	Frederick Shopping Ctr	Point of Rocks MARC	40		same		40	
FT-Fd/MARC Shuttle	Frederick Towne Mall	Frederick Transit Center	60	-	same		60	-
FT-Walk/MARC Shuttle	Walkersville	Frederick Transit Center	60	-	same		60	-
FT-Walk Shuttle	Walkersville	Frederick Transit Center	60	120	same		60	120
FREDSG					Frederick Transit Center	Shady Grove	15	-
FRED-COM	-				Frederick Transit Center	COMSAT	20	30
KPTN-COM					Kemptown	COMSAT	30	

# Alternative 5 (Alt. 6B): Highway Build 1 with BRT

#### **Highway Component**

The highway assumptions are identical those described in Alternative 2.

#### **Transit Component**

Alternative 5 includes a BRT using dedicated guideway along the CCT Master Plan alignment from COMSAT to Shady Grove. As shown in Figure 5.1, the BRT guideway would begin at a new park-and-ride at COMSAT in north Germantown and continue within the median of Observation Drive, via new alignment across I-270, then via the median of Century Blvd to the Germantown Transit Center. From there the BRT guideway follows new alignment through the US Department of Energy campus then along the west side of I-270 to an expanded park-andride at the MARC Metropolitan Grove station. After crossing Clopper Road at MD 124, the guideway continues along the south side of Quince Orchard Road to a new station and parkand-ride facility near Great Seneca Highway.

The guideway continues along the east side of Great Seneca Highway, crossing over to the west side on aerial structure at Muddy Branch Road, serves a new park-and-ride at Decoverly Road, turns left to cross over Great Seneca Highway again to the median of Decoverly Road, serving the DANAC station, turning east into the median of Fields Road, and crossing I-270 on aerial structure. On the east side of I-270, the guideway follows the median of King Farm Boulevard, crossing MD 355 at-grade or on aerial structure to new bus ways on the west side of the Shady Grove Metro station.

The BRT consists of one trunkline bus route operating on the guideway augmented with many feeder bus routes joining the guideway at appropriate stations and continuing to Shady Grove.

#### **Trunkline Service Description**

The one trunkline BRT bus route (B1) in this alternative would operate on a 6-minute peak period headway from COMSAT to Shady Grove Metro, making all guideway stops. During off-peak periods, route B1 would operate at a 6-minute headway, augmented by existing feeder bus routes. Table 5.1 provides peak period station-station travel times for the trunkline service, station facilities, and connecting feeder service.

#### **Feeder Bus Service**

BRT offers the opportunity to provide one-seat rides for many passengers, with feeder bus routes joining the guideway and running to an appropriate terminal station. During peak periods, most of the radial feeder bus routes will operate locally when off the guideway. Once on the guideway, they will operate as limited stop service, making stops only at proposed BRT guideway stations. Figure 5.2 displays the transit service assumed for this alternative. Table 5.2 lists the bus services and frequencies.

During off-peak periods, some of the feeder bus routes may terminate at a guideway stop, requiring a transfer to the trunkline service. This can reduce operating costs by tailoring capacity to demand. The final operating plan will be based on the results of the travel demand modeling to be performed in later phases of this study.

Figure 5.1 Alternative 5: BRT



01-11-1-1	Station- Station	Station- Station	Avg. Spd	Park and	Feeder
Stations	Dist	lime	w/dwell	Ride	Bus Service
COMSAT				Yes	R075, 82
Dorsey Mill	6,800 '	3.9 min	22.4	No	RO82, 83
Cloverleaf	5,100 '	3.3 min	17.5	No	RO83
Germantown	4,600 '	3.9 min	15.6	Exist	RO55, 61, 74, 75, 82, 83, 97, 98, 100
Metro Grove	16,900 '	5.9 min	32.7	Exist	RO61, 71, 78
NIST	6,500 '	3.4 min	21.5	No	RO56
Quince Orchard	4,500 '	3.1 min	19.9	Yes	RO56, 74, 76
Decoverly	9,900 '	4.0 min	29.3	Yes	RO74, 67
DANAC	1,600 '	1.5 min	11.8	No	RO66, 67, 74
Washingtonian	4,000 '	2.4 min	18.8	Yes	RO54
West Gaither Rd	4,300 '	2.5 min	19.2	No	
E. Gaither	3,200 '	2.0 min	18.3	No	
Shady Grove	2,850 '	2.0 min	15.8	Exist	*Many bus routes
Total	70,250 '	38.1 min	21.0		

Table 5.1Alternative 5: BRT Travel Time, Station Facility, and Feeder Bus



Figure 5.2 Alternative 5: BRT Transit Service

Table 5.2
Alternative 5: BRT Bus Service

	Current Terminals						
						Proposed	Proposed
						2030	2030
			2006	2006		TSM	TSM
Pouto	Stort	End	Headways	Headways	notos	Headway	Headway
13	Statt Traville Transit Ctr	Shady Grove	15	20	notes	15	20
43 54		Bookvillo	20	20		15	20
54		Bookville	20	30		10	30
55	Germantown Transit Ctr	Rockville	15	30		10	20
56	Lake Forest	ROCKVIIIE	20	30		15	30
61	Germantown Transit Ctr	Shady Grove	30	30		15	30
63	Shady Grove	Rockville	30	30		20	30
66	Traville Transit Ctr	Shady Grove	30	-	off-pk dir only	20	30
67	Traville Transit Ctr	Shady Grove	30	-	pk dir only	20	30
68	MARC-German	return	eliminated				
69	MARC	return	eliminated				
70	Milestone	Bethesda/Med Ctr	15	-	not all stops	15	
71	Kingview PnR	Shady Grove	30	-	pk dir only	20	
72	Germantown Commons	Shady Grove	eliminated				
73	Milestone	Shady Grove	eliminated				
74	Germantown Transit Ctr	Shady Grove	30	30		20	30
75	Urbana	Germantown Transit Ctr	30	30	not all stops in off-pk	20	30
76	Poolesville	Shady Grove	30	-	not all stops in off-pk	20	30
77	Germantown Commons	Shady Grove	eliminated			20	00
70	Kinggiour Bab	Shady Grove	20		nk dir only	20	
70		Shady Grove	30	-	pk dir only	20	-
79	Milestone	Shady Grove	30	-	pk dir only	20	-
82		Germantown Tra Ctr/DOE	30	-	pk air only	20	-
83	Milestone	Germantown Transit Ctr	15	30	MARC station in pk	15	30
90	Milestone	Shady Grove	30	30	different routings throughout day	20	30
97	Germantown Transit Ctr	Germantown MARC	15	30	loop	15	30
98	Germantown Transit Ctr	Seabreeze Ct	15	30	loop	15	30
100	Germantown Transit Ctr	Shday Grove	5	15	express via I-270	5	15
124	Rt. 124 PnR (Rt 117 PnR)	Shady Grove	30	-	express via I-270	20	-
MTA 991	Hagerstown	Shady Grove/Rock Spring F	15	-		15	-
FT10	Frederick Towne Mall	Francis Scott Key Mall	30	40		30	40
FT20	Francis Scott Key Mall	Frederick Transit Center	30	60		30	60
FT30	Frederick Towne Mall	Frederick Transit Center	30	60	loop	30	60
FT40	Frederick Towne Mall	Frederick Transit Center	30	60		30	60
FT50	Frederick Towne Mall	Frederick Transit Center	30	60	loop	30	60
FT60	Frederick Community College	Frederick Transit Center	30	60	loop	30	60
FT70	College Park Plaza	Frederick Transit Center	60	60	loop	60	60
FT80	Frederick Community College	Frederick Towne Mall	30	60		30	60
FT-EC Shuttle	Spring Ridge Apts	Dept of Aging			4 round trips/day		
FT-BJ Shuttle	Frederick Transit Center	Brunswick MARC station	180	-	4 round trips/day	180	-
FT-ET Shuttle	Emmitsburg	Frederick Transit Center	120	-	2 round trips/day	120	-
FT-85 Shuttle	Bowmans Industrial Pk	Frederick Transit Center			2 round trips/day		
FT-POR Shuttle	Frederick Shopping Ctr	Point of Rocks MARC	40		pk dir only	40	
FT-Fd/MARC Shuttle	Frederick Towne Mall	Frederick Transit Center	60	-	pk dir only	60	-
FT-Walk/MARC Shuttle	Walkersville	Frederick Transit Center	60	-	pk dir only	60	-
FT-Walk Shuttle	Walkersville	Frederick Transit Center	60	120		60	120
FREDSG	Frederick Transit Center	Shady Grove	-			15	-
FREDMGSG	Frederick Transit Center	Shady Grove	-			20	30
KPTNMGSG	Kemptown	Shady Grove				30	-
COM-MG-SG	COMSAT	Shady Grove				6	10

# Alternative 6 (Alt. 7A): Highway Build 2 with LRT

#### **Highway Component**

This alternative includes the Highway Build Option 2, which includes 4 general purpose lanes and 2 express toll lanes (ETL) on the Montgomery County portion of I-270 and 2 general purpose lanes and 2 ETL lanes on the Frederick County portion of I-270, as shown in Figure 6.1 and 6.2. Figure 6.3 shows a cross section of the two lane configurations.

#### **Transit Component**

The transit assumptions are identical to those described in Alternative 4.

## Alternative 7 (Alt. 7B): Highway Build 2 with BRT

#### **Highway Component**

The highway assumptions are identical those described in Alternative 6.

#### **Transit Component**

The transit assumptions are identical to those described in Alternative 5.



Figure 6.1 Highway Build 2 – Montgomery County



Figure 6.2 Highway Build 2 – Frederick County



Figure 6.3 Highway Build 2 – Cross Sections