Chapter 3 -- Highway Mobility

SUMMARY

- The congestion trends that were shown in the 2004 Annual Development Approval and Congestion (ADAC) report have been confirmed with 2005 data. In general, the overall location, extent, and duration of congestion in Montgomery County have not significantly changed over the past year.

- At the most congested locations, the County and State are actively making improvements to provide congestion relief.

- The areas of greatest concern in the County where more resources are needed to develop and implement congestion relief solutions on a timely basis are:
    - Clarksburg
    - Rockville Pk / Hungerford Drive / Frederick Road (MD 355)
        - Between the Bethesda CBD and the Beltway
        - From Randolph Road to Shady Grove Road
    - R&D Village and adjacent sections of southwest Gaithersburg
    - Key East-West Corridors
        - Norbeck Road (MD 28)
        - Randolph Road
        - River Road (MD 190) from Seven Locks Road to Goldsboro Road (MD 614)

- Far more resources are needed to provide travel time data useful for full analytic purposes; the current resources are sufficient to provide a snapshot of congestion in the County.

FINDINGS

The Bad News

Analysis of two key performance measures shows that in general, mobility as reflected in speeds and travel times and intersection critical lane volumes (CLVs) on the County's arterial network is decreasing -- except in those areas immediately surrounding locations that have had recent improvements, either physical or operational. The increased sample of signalized intersection turning movement counts when compared with last year (59% of all intersections compared with 40% last year) combined with the increase in intersections with CLVs exceeding their LATR congestion standards (22% compared with 16-19% last year) clearly indicates that intersection congestion is worsening throughout the designated growth areas of the county. Comparison of travel times and travel speeds along major arterial corridors between this year and previous years indicates that congestion along those corridors is also worsening, a combination of both intersection congestion and link congestion.

The Good News

However, the prevailing story is not all negative. The analysis of these measures over time also points to the effectiveness of improvements where they have been implemented. Both physical and operational improvements at signalized intersections have either reduced the CLV or slowed the rate of CLV growth at those locations. In several cases, the improved intersection operations have also had a positive effect on the surrounding links. There are clearly areas that should be targeted for system improvements in this summer's recommendations to the County's Capital Improvement Program (CIP) and this fall's recommendations to the State's Consolidated Transportation Program (CTP), and the analysis contained in this chapter should be used as a resource to inform and shape those recommendations.

The Rest of the News

The rest of the congestion story is mixed. Improvements do help travel conditions when implemented, but resources to make improvements are scarce and come nowhere near the levels required to address all the locations in the County that need congestion relief. Resources are also scarce when it comes to measuring and analyzing current conditions along the transportation system, and the inability to provide a higher level of data sampling and measurement makes it more difficult to pass the best available information on to decision-makers to identify and prioritize future system investments. A logical corollary to the demonstrated effect of system improvements is the question of how long the effect of the improvement lasts before conditions worsen again to the point where another (likely larger and more costly) improvement is needed. Considered another way, how much benefit (both in terms of the intensity of improvement and the duration of the benefit) can be derived from a lower-cost operational improvement before a physical improvement is necessary; how effective is the improvement and how does its effectiveness change over time? Unfortunately, these questions cannot be fully answered with the current level of data sampling.

Data Issues: Critical Lane Volumes

There is an ongoing question of variability in travel conditions and how to account for it in these types of analysis. The analysis has acknowledged that within a dynamic area like Montgomery County one should expect a normal level of variability in travel conditions, both day-to-day and over longer periods of time. For CLVs a normal variability of 10% is reasonable for locations sampled every 2-3 years, but further analysis of seasonal variation, off-peak travel conditions, and other factors of variability is desirable to paint a clearer picture of intersection conditions in the County. To fully investigate the nature of intersection congestion in the County requires both longer and more frequent count samples. It is worth noting that the Maryland State Highway Administration (SHA) now requires all of its turning movement counts to be 13 hours in duration (6:00 am-7:00 pm), while the Department requires only six-hour counts (6:30 am – 9:30 am, 4:00 pm – 7:00 pm) for traffic studies. Staff has been coordinating with SHA and the Montgomery County Department of Public Works and Transportation (DPWT) on a Memorandum of Understanding where all three agencies agree to use the SHA count guidelines. More work will need to be done to improve developer counts submitted for LATR in order to meet this standard.

Data Issues: Travel Time and Travel Speeds

For travel speeds and travel times the issues are more complex. At issue is whether the variability encountered at a one-year interval represents significant changes in the prevailing travel conditions along the study corridor, or if the changes represent noise within the normal variability of travel time and speed in an area as dynamic as Montgomery County. This issue has been addressed for the purpose of this report, to highlight problem locations; however, increasing the sample size for future data collection is highly desirable. It is not merely enough to report out travel times and speeds or even changes in travel times and speeds; the metropolitan areas in the United States and the world that are at the leading edge of transportation system performance measurement report not only travel times and speeds but also how reliable those times and speeds are based on their knowledge of variability within the system. Making reliability claims for a consistency of travel times on the number of repeated trips a typical traveler will make over their commuting route, for instance, is not appropriate with the very small sample sizes the Department can obtain with the limited data collection resources available at this time; the samples do not capture enough of the data variability to substantiate a reliability estimate.

To overcome some of the issues associated with data variability, the Metropolitan Washington Council of Governments (MWCOG) spaces their travel time and speed samples over three year intervals; however, within Montgomery County the desire for adequate temporal sampling intervals must be balanced with the desire to receive updates on the performance of the transportation network on a more frequent basis than every three years. One solution would be to sample the same corridors more frequently within a one-year period, as the increased sample size would reduce the risks associated with high levels of variability; this would require a greater commitment of data collection resources.

Addressing the Data Issues Through Technology

Advances in data collection methods and technology may be able to overcome these issues in part. The potential 24/7/365 availability of data from electronic archives like those maintained by the University of Maryland Center for Advanced Transportation Technology (UMD-CATT) for SHA's Coordinated Highways Response Action Team (CHART) system and coming on-line for the DPWT Traffic Management Center (TMC) allows a much more detailed investigation of variability in arterial traffic volumes and freeway travel speeds and travel times; in fact, some of this data was shown in the 2004 ADAC Report. However, neither field device electronic monitoring of travel times and travel speeds along the County's arterial network nor intersection turning movement counts are available through these sources or any other type of source, save the data collection methods used in this chapter at this time – turning movement counts require sending people into the field to count the intersection, and travel time and travel speed data requires sending people into the field to drive the study corridors.

Emerging technologies and initiatives at the state, county, and regional level are changing the nature of data collection – deriving travel times from the movement of mobile phones, using video cameras to conduct an intersection turning movement count, and more. And while these technologies have the potential to lower the overall cost of acquiring data about the transportation system, they still require resources to build and operate the devices and the

systems and people behind them. Taking the data analysis of the County transportation network to a higher level of significance and conclusiveness is more expensive in terms of staff and outside resources, but may be necessary in the future to respond to decision-makers.

BACKGROUND

The current AGP regulations do not contain an annual area-wide test for transportation capacity, such as the former Policy Area Transportation Review (PATR) process. Transportation system adequacy is tested at the time of subdivision through the Local Area Transportation Review (LATR) process. However, section F4 of the current AGP regulations provides for an annual report of development approvals and transportation system conditions. In 2004 this requirement was fulfilled by the Annual Development Approval and Congestion (ADAC) report. Rather than producing another lengthy stand-alone document, this year the results of tracking the County's transportation system and the corresponding data on system performance measures have been incorporated into this chapter of the AGP Policy Element. This synthesis allows the information on transportation system performance to be considered along with the rest of the AGP.

In order to sharpen the focus of the Department's congestion tracking program, only two system performance measures have been retained from the 2004 ADAC Report and included in this chapter: intersection critical lane volumes (CLVs) and arterial travel times and travel speeds. Both of these measures are relatively easy to understand, capture a significant snapshot of transportation system performance at a particular time and location, and provide a useful decision-support foundation for prioritizing future transportation investment.

These measures also focus exclusively on the County's arterial (non-freeway) network. Since the County's existing and master-planned freeway network is currently the subject of one of three major project planning studies by the Maryland Department of Transportation (MDOT) – The I-270 / US 15 Draft Environmental Impact Statement (DEIS), the Capital Beltway (I-495) Study, and the Intercounty Connector (ICC) DEIS, it is safe to say that the County's freeways are being scrutinized and monitored at a level that far exceeds what the Department can meet with its limited resources for tracking congestion. It is more prudent to focus our efforts on the arterial network, where the decisions of the Planning Board and County Council can have a more immediate impact on improving mobility. Readers who wish to see an evaluation of the entire Washington regional transportation network that is weighted heavily toward freeways should refer to the 2005 Urban Mobility Study (UMS) published by the Texas Transportation Institute (TTI).

This is not to say that other measures from the 2004 ADAC Report are being discarded or ignored. At some point in the future it may be useful to once again report on the performance of the freeway network using either global positioning system (GPS) based travel time runs, data from MDOT's Coordinated Highways Response Action Team (CHART) system archived by the University of Maryland Center for Advanced Transportation Technology (UMD-CATT), or the aerial freeway monitoring reports produced by Skycomp for the Metropolitan Washington Council of Governments (MWCOG). The same is true for the archived arterial traffic volumes from the County's Traffic Management Center (TMC), which are temporarily unavailable while the archiving operation is transitioned from the Department's internal Data Acquisition Software

and Hardware (DASH) system to a more robust web-accessible archived maintained by UMD-CATT. The transition to the UMD-CATT system is expected to be complete by the end of this calendar year, so information from that archive could be included in the transportation sections of subsequent AGP documents.

The Department's travel forecasting process is also in transition from the current TRAVEL/2 model to the updated TRAVEL/3 model, which applies the MWCOG model set to an enhanced network and traffic analysis zone system for Montgomery County. Validation and calibration of the TRAVEL/3 model will conclude by the fall of 2005. If a forecasting element is included in future AGP work, the TRAVEL/3 tool will be applied for those tests. The TRAVEL/2 model runs that were included in the 2004 ADAC Report did not prove as helpful to the decision-making process as the measures utilizing observed data that are replicated in this chapter. In addition, caution must be taken to not fall back into using the forecasting tool to the point where the reliance on it begins to mimic the old PATR test. Short-term local congestion forecasts (e.g., the "future" condition) will continue as part of the LATR test, but areawide forecasts are not considered here in favor of on-the-ground, areawide *observed* congestion measures.

Finally, information on development approvals that previously appeared in the 2004 ADAC Report appears in a separate appendix to the AGP. Readers may wish to consult the 2004 ADAC Report for its primer on measuring and tracking traffic congestion. That section provides a useful introduction on the issues faced trying to measure congestion in a large urbanized area, how measures are selected, and why data sampling is used in the measurement process. The 2004 ADAC Report may found on the Department website at the following address: http://www.mc-mncppc.org/transportation/ADAC_doc/index.shtm.

CRITICAL LANE VOLUMES AT SIGNALIZED INTERSECTIONS

The Department's intersection database currently contains recent (later than January 1, 2001) turning movement counts for 435 of the 740 signalized intersections in the County, providing 59% coverage. The counts are focused in the designated growth areas of the county: 405 of the recently counted intersections are within the Priority Funding Areas (PFAs), out of a total of 664 located in the PFAs (61% coverage of PFAs). The counts are becoming more current as well: 81% of the recent counts were taken after January 1, 2003. As the database becomes more current and provides fuller coverage, older counts are archived so that some analysis of CLVs over time may be performed. There are 114 intersections in the database where there are multiple counts taken at least one year apart so that CLVs can be compared. Some of the intersections have more than two count data points; there are a total of 122 archived counts at least one year apart. Much of the expansion of the database can be attributed to the enhanced monitoring efforts of the Maryland State Highway Administration (SHA): 178 (41%) of the current counts and 32 (26%) of the archived counts are imported from SHA. A standard SHA turning movement count is now a 13-hour (6 am to 7 pm) count; by contrast, the Department requires only 6-hour counts (6:30 am to 9:30 am, 4-7 pm) for traffic impact studies to satisfy LATR.

There are 95 intersections (22%) where the CLV during the morning or evening peak period exceeds the LATR standard for the corresponding policy area; that is, the intersections are

congested. Table 3.1 shows the LATR standards for each policy area; tables 3.2 through 3.5 rank these 96 congested intersections from highest (most congested) CLV to lowest CLV (least congested) in groups of 25 intersections (1-25, 26-50, etc). *Italicized* entries in the tables indicate special notes regarding that intersection located at the bottom of the table.

Table 3.1: LATR Congestion Standards

Congestion (CLV) Standard	Policy Area
1400	Rural Areas (Poolesville, Damascus, Goshen, Patuxent, Darnestown / Travilah)
1450	Clarksburg, Damascus, Gaithersburg City, Germantown East, Germantown Town Center, Germantown West, Montgomery Village / Airpark
1475	Cloverly, Derwood, Olney, North Potomac, Potomac, R&D Village
1500	Aspen Hill, Fairland / White Oak, Rockville City
1550	North Bethesda
1600	Bethesda / Chevy Chase, Kensington / Wheaton, Silver Spring / Takoma Park
1800	Bethesda CBD, Friendship Heights CBD, Glenmont, Grosvenor, Shady Grove, Silver Spring CBD, Twinbrook, Wheaton CBD, White Flint

Table 3.2: Congested Intersections (1-25)

Rank	Intersection	Count Date	CLV	LATR Standard	Policy Area	2004 Rank
1	*Key West Ave at Darnestown Rd*	*05/08/01*	*2225*	*1475*	*North Potomac*	*3*
2	*Georgia Ave at Forest Glen Rd*	*08/28/03*	*2106*	*1600*	*Kensington/Wheaton*	*
3	*Rockville Pike at W Cedar Ln*	*04/05/05*	*2103*	*1600*	*Bethesda/Chevy Chase*	*1*
4	*Montrose Rd at E Jefferson St*	*05/22/03*	*2061*	*1550*	*North Bethesda*	*5*
5	Rockville Pike at South/Wood/NNMC	06/09/04	2022	1600	Bethesda/Chevy Chase	*
6	Columbia Pike at Southwood	10/28/04	2015	1600	Kensington/Wheaton	11
7	Frederick Rd at Ridge Rd	09/08/04	1981	1450	Germantown East	81
8	Connecticut Ave at Jones Bridge Rd	06/11/03	1974	1600	Bethesda/Chevy Chase	9
9	*Shady Grove Rd at Midcounty Hwy*	*05/10/01*	*1961*	*1475*	*Derwood*	*10*
10	Frederick Rd at King Farm Blvd	04/15/04	1952	1800	Shady Grove	*
11	*Great Seneca Hwy at Muddy Branch Rd*	*03/16/04*	*1940*	*1450*	*Gaithersburg City*	*64*
12	*Colesville Rd at Dale Dr*	*06/09/04*	*1938*	*1600*	*Silver Spring/Takoma Pk*	*23*
13	Rockville Pike at Pooks Hill Rd	06/08/04	1923	1600	Bethesda/Chevy Chase	53
14	*Colesville Rd at University Blvd (N)*	*10/28/04*	*1917*	*1600*	*Kensington/Wheaton*	*66*
15	University Blvd at Dennis Ave	07/31/01	1902	1600	Kensington/Wheaton	12
16	*Georgia Ave at Norbeck Rd*	*09/11/03*	*1896*	*1500*	*Aspen Hill*	*
17	Montgomery Village Ave at Russell Ave	12/13/01	1891	1450	Gaithersburg City	13
18	*Columbia Pike at Milestone/Stewart*	*01/29/03*	*1890*	*1500*	*Fairland/White Oak*	*14*
19	*Rockville Pike at Jones Bridge/Center*	*06/08/04*	*1886*	*1600*	*Bethesda/Chevy Chase*	*2*
20	Randolph Rd at New Hampshire Ave	10/23/02	1882	1500	Fairland/White Oak	16
21	Georgia Ave at East-West/Burlington/13th	11/04/04	1868	1800	Silver Spring CBD	*
22	Georgia Ave at Dennis Ave	05/01/01	1863	1600	Kensington/Wheaton	18
23	*Columbia Pike at E Randolph/Cherry Hill*	*12/18/02*	*1860*	*1500*	*Fairland/White Oak*	*67*
24	River Rd at Beechtree / Nevis	09/26/02	1853	1600	Bethesda/Chevy Chase	20
25	*Columbia Pike at Stewart/NB Slip Ramp*	1/29/03	1849	1500	Fairland / White Oak	*

*Indicates intersection did not appear in 2004 ADAC Report due to lack of data

Notes for Table 3.2
Intersection #1: Roadway has been improved since the count was taken
Intersection #2: Signal phasing has changed since the count was taken
Intersection #3: Grade-separated interchange in master plan
Intersection #4: Intersection improvements completed since the count was taken
Intersection #9: Roadway has been improved since the count was taken
Intersection #11: Roadway has been improved since the count was taken
Intersection #12: Upstream construction zone existed during count
Intersection #14: Downstream construction zone existed during count
Intersection #16: Grade-separated interchange in project planning
Intersection #18: Grade-separated interchange under study
Intersection #19: Intersection improvements completed since the count was taken
Intersection #23: Grade-separated interchange under construction
Intersection #25: Grade-separated interchange under study

Table 3.3: Congested Intersections (26-49)

Rank	Intersection	Count Date	CLV	LATR Standard	Policy Area	2004 Rank
26	*Great Seneca Hwy at Sam Eig Hwy*	*03/16/04*	*1839*	*1450*	*Gaithersburg City*	*
27	Norbeck Rd at Bauer Dr	02/01/01	1836	1500	Aspen Hill	21
28	*Connecticut at East West Hwy*	*03/18/04*	*1831*	*1600*	*Bethesda/Chevy Chase*	*30*
29	*Veirs Mill Rd at First St*	*03/18/03*	*1818*	*1500*	*Rockville City*	*32*
30	*Colesville Rd at University Blvd (S)*	*10/28/04*	*1810*	*1600*	*Kensington/Wheaton*	*55*
31	Frederick Rd at Indianola/Watkins Pond	10/06/04	1789	1500	Rockville City	139
32	River Rd at Wilson Ln	09/18/02	1779	1600	Bethesda/Chevy Chase	25
33	River Rd at Whittier/Winston	10/02/02	1776	1600	Bethesda/Chevy Chase	27
34	*Columbia Pike at Briggs Chaney Rd*	*02/04/04*	*1770*	*1500*	*Fairland/White Oak*	*89*
35	*Darnestown Rd at Riffle Ford Rd*	*11/09/04*	*1769*	*1475*	*North Potomac*	*92*
36	Georgia Ave at Old Baltimore Rd	09/09/03	1759	1475	Olney	31
37	Norbeck Rd at Baltimore	10/29/02	1755	1500	Aspen Hill	*
38	*Veirs Mill Rd at Twinbrook Pkwy*	*06/09/04*	*1743*	*1500*	*Aspen Hill*	*77*
39	Georgia Ave at Emory Ln	09/09/03	1741	1475	Olney	*
40	Hungerford Dr at N Washington St	07/08/04	1736	1500	Rockville City	*
41	*Colesville Rd at Sligo Crk Pkwy/St Andre*	*06/09/04*	*1721*	*1600*	*Silver Spring/Takoma Pk*	*
42	Georgia Ave at Columbia Blvd/Seminary Ln	06/10/04	1720	1600	Silver Spring/Takoma Pk	29
43	*Connecticut Ave at Veirs Mill Rd*	*03/03/04*	*1717*	*1600*	*Kensington/Wheaton*	*8*
44	River Rd at I-495 (E)	11/07/02	1703	1600	Bethesda/Chevy Chase	*
45	Columbia Pike at Lockwood Dr	10/26/04	1699	1500	Fairland/White Oak	35
46	Norbeck Rd at Bel Pre Rd	01/31/01	1695	1500	Aspen Hill	36
47	University Blvd at Piney Branch Rd	05/27/03	1693	1600	Silver Spring/Takoma Pk	37
48	*Old Georgetown Rd at Tuckerman La*	*02/13/03*	*1679*	*1550*	*North Bethesda*	*43*
49	Rockville Pike at Wilson/NIH	06/10/04	1675	1600	Bethesda/Chevy Chase	51

*Indicates intersection did not appear in 2004 ADAC Report due to lack of data

Notes for Table 3.3
Intersection #26: Roadway has been improved since the count was taken
Intersection #28: Intersection improvements completed since the count was taken
Intersection #29: Intersection improvements under study
Intersection #30: Downstream construction zone existed during count
Intersection #34: Grade-separated interchange under construction

Intersection #35: Roadway has been improved since the count was taken
Intersection #38: Intersection improvements completed since the count was taken
Intersection #41: Upstream construction zone existed during count
Intersection #43: Intersection improvements completed since the count was taken
Intersection #48: Intersection improvements completed since the count was taken

Table 3.4: Congested Intersections (50-74)

Rank	Intersection	Count Date	CLV	LATR Standard	Policy Area	2004 Rank
50	Old Georgetown Rd at Beech St	10/05/04	1675	1600	Bethesda/Chevy Chase	145
51	Randolph Rd at Lauderdale	03/06/01	1663	1550	North Bethesda	41
52	*Hungerford Dr (MD 355) at Gude Dr*	*10/26/04*	*1656*	*1500*	*Rockville City*	*7*
53	*Georgia Ave at Randolph Rd*	*01/08/03*	*1654*	*1600*	*Kensington/Wheaton*	*44*
54	Old Georgetown Rd at W Cedar Ln	04/30/03	1639	1600	Bethesda/Chevy Chase	47
55	*Connecticut Ave at Randolph Rd*	*03/03/04*	*1631*	*1600*	*Kensington/Wheaton*	*17*
56	*Columbia Pk at Burtonsville Xing SC*	*06/02/04*	*1628*	*1500*	*Fairland/White Oak*	*
57	Georgia Ave at Plyers Mill Rd	11/18/03	1626	1600	Kensington/Wheaton	52
58	*Woodfield Rd at Fieldcrest/Hadley Farms*	*03/10/05*	*1620*	*1450*	*Montgomery Village/Airpark*	*80*
59	Muncaster Rd at MD 108	12/10/03	1618	1400	Patuxent	56
60	*Mont. Village Ave at Chris/Lost Knife*	*11/04/04*	*1613*	*1450*	*Montgomery Village/Airpark*	*269*
61	*Randolph Rd at Veirs Mill Rd*	*10/31/02*	*1613*	*1600*	*Kensington/Wheaton*	*58*
62	Connecticut Ave at University Blvd	04/10/01	1609	1600	Kensington/Wheaton	59
63	*Veirs Mill Rd at Aspen Hill Rd*	*03/22/03*	*1608*	*1500*	*Aspen Hill*	*60*
64	Randolph Rd at Glenallen Ave	01/15/03	1604	1600	Kensington/Wheaton	95
65	Ridge Rd at Kings Valley Rd	09/06/01	1599	1400	Goshen	62
66	Midcounty Hwy at Washington Grove Ln	04/30/03	1593	1450	Montgomery Village/Airpark	61
67	Cherry Hill Rd at Broad / Calv	11/05/03	1569	1500	Fairland/White Oak	*
68	Frederick Rd at Christopher St	11/09/04	1566	1450	Gaithersburg City	*
69	River Rd at Seven Locks Rd	09/17/02	1565	1475	Potomac	72
70	Rockville Pike at Strathmore Ave	05/27/04	1564	1550	North Bethesda	46
71	Great Seneca Hwy at Key West Ave	02/11/03	1556	1475	R&D Village	76
72	Rockville Pike at Edmondston Ln	03/20/03	1556	1500	Rockville City	75
73	*Midcounty Hwy at Montgomery Village Ave*	*03/09/04*	*1553*	*1450*	*Montgomery Village / Airpark*	*
74	Seven Locks Rd at Tuckerman Ln	05/28/02	1552	1475	Potomac	78

*Indicates intersection did not appear in 2004 ADAC Report due to lack of data

Notes for Table 3.4
Intersection #52: Grade-separated interchange in Rockville master plan
Intersection #53: Grade-separated interchange in project planning
Intersection #55: Intersection improvements completed since the count was taken
Intersection #56: Grade-separated interchange under construction at MD 198
Intersection #58: Roadway improvement under study
Intersection #60: Intersection improvements completed since the count was taken
Intersection #61: Intersection improvements completed since the count was taken; grade-separated interchange in master plan
Intersection #63: Intersection has been improved since count was taken
Intersection #73: Intersection has been improved since count was taken

Table 3.5: Congested Intersections (75-95)

Rank	Intersection	Count Date	CLV	LATR Standard	Policy Area	2004 Rank
75	E Gude Dr at Southlawn Ln	09/28/04	1545	1500	Rockville City	71
76	Frederick Rd at Redland Rd	10/19/04	1542	1500	Rockville City	85
77	*Columbia Pike at Fairland Rd*	*11/20/03*	*1541*	*1500*	*Fairland/White Oak*	*38*
78	Frederick Rd at Montgomery Village Ave	03/03/04	1540	1450	Gaithersburg City	*
79	Rockville Pike at Congressional Ln	06/03/04	1538	1500	Rockville City	113
80	*Columbia Pike at MD 198*	*04/03/01*	*1535*	*1500*	*Fairland/White Oak*	*83*
81	Columbia Pike at Prelude Dr	10/26/04	1533	1500	Fairland/White Oak	65
82	New Hampshire Ave at Ednor Rd	12/11/01	1524	1400	Patuxent	86
83	*Columbia Pike at Greencastle Rd*	*02/05/04*	*1524*	*1500*	*Fairland/White Oak*	*
84	*Great Seneca Hwy at Quince Orchard Rd*	*03/09/04*	*1507*	*1450*	*Gaithersburg City*	*149*
85	Darnestown Rd at Muddy Branch Rd	02/24/04	1505	1475	North Potomac	302
86	Hungerford Dr at Manakee St	10/27/04	1504	1500	Rockville City	*
87	Hungerford Dr at Campus Dr	10/28/04	1496	1475	Derwood	*
88	*Frederick Rd at Germantown Rd*	*12/04/02*	*1495*	*1450*	*Germantown East*	*167*
89	Snouffer School Rd at Centerway Rd	09/11/02	1483	1450	Montgomery Village/Airpark	94
90	Shady Grove Rd at Metro (N)	12/04/01	1478	1475	Derwood	96
91	New Hampshire Ave at Bonifant/Good Hope	05/25/04	1476	1475	Cloverly	247
92	Great Seneca Hwy at Kentlands Blvd	06/14/01	1473	1450	Gaithersburg City	*
93	Frederick Rd at Clarksburg Rd	10/21/04	1472	1450	Clarksburg	68
94	River Rd at Piney Meetinghouse Rd	10/29/02	1404	1400	Darnestown/Travilah	108
95	Sandy Spring Rd at Mcknew	09/10/03	1401	1400	Patuxent	*

*Indicates intersection did not appear in 2004 ADAC Report due to lack of data

Notes for Table 3.5
Intersection #77: Grade-separated interchange in design
Intersection #80: Grade-separated interchange under construction
Intersection #83: Grade-separated interchange under study
Intersection #84: Intersection has been improved since count was taken

Table 3.6 compares historical CLVs across time for those intersections where the Department database contains multiple values. The notes column for each intersection contains information that may point to the cause of the change (either up or down) of the CLV at that particular location. In some cases, the change may be due to normal variability in traffic conditions in the county. Of the 122 distinct counts in the database archives, 70 counts (56%) registered a change in CLV over time of less than 10%; the change is considered to be within normal variation and those entries are excluded from the table. Intersections with CLVs less than 1400, the lowest LATR standard, are also excluded. Due to the limited number of samples (one count a year at a given location every 2-3 years or longer) it is difficult to further speculate about the change in conditions at many intersections in the absence of additional information. Where information is available to support a hypothesis regarding the cause of the change in conditions (other than general traffic growth) or the possibility of future improvements, it is included in the notes.

Table 3.6: Comparison of Historic CLVs

Intersection	Recent Count	CLV	Previous Count	CLV	LATR Standard	Notes
Colesville Rd at Fenton St	06/09/04	1117	05/22/03	1429	1800	Downtown Silver Spring construction
Colesville Rd at University Blvd (N)	10/28/04	1917	10/03/02	1575	1600	Construction on US 29
Colesville Rd at University Blvd (S)	10/28/04	1810	10/02/02	1619	1600	Construction on US 29
Columbia Pike at Burnt Mills Ave	10/07/04	1374	10/01/02	1620	1500	Database updated prior to 2004 count
Columbia Pike at E Randolph/Cherry Hill	12/18/02	1860	04/10/01	1574	1500	Interchange Under Construction
Connecticut Ave at Knowles Ave	09/04/02	1433	04/03/01	1757	1600	Intersection improved prior to 2002 count
Connecticut Ave at Randolph Rd	03/03/04	1631	04/11/01	1880	1600	Intersection improved following count date
Connecticut Ave at Veirs Mill Rd	03/03/04	1717	09/19/01	1975	1600	Intersection improved following count date
Darnestown Rd at Riffle Ford Rd	11/09/04	1769	04/24/01	1493	1475	Darnestown Rd widened to the east
Frederick Rd at Indianola/Watkins Pond	10/06/04	1789	06/14/01	1315	1500	Growth in area
Frederick Rd at Middlebrook (N)	04/29/04	1351	12/03/02	1702	1450	
Frederick Rd at Old Hundred Rd (MD 109)	10/12/04	708	02/01/01	1631	1400	2001 count unusually high
Frederick Rd at Old Hundred Rd (MD 109)	10/12/04	708	08/01/02	1354	1400	2002 count unusually high
Frederick Rd at Ridge Rd	09/08/04	1981	05/09/01	1542	1450	Growth in Clarksburg / Germantown
Georgia Ave at Columbia Blvd/Seminary Ln	06/10/04	1720	06/03/03	1926	1600	New signal at Beltway "metering" flow; intersection improved prior to 2004 count
Georgia Ave at East-West/Burlington/13th	11/04/04	1868	05/22/02	1607	1800	Growth in SS CBD
Georgia Ave at University Blvd	05/29/03	1317	03/07/01	1540	1800	
Hungerford Dr at Middle Ln/Park Rd	10/21/04	1370	04/12/01	2040	1500	Intersection improved prior to 2004 count
Hungerford Ln (MD 355) at Gude Dr	10/26/04	1656	04/18/01	2028	1500	Intersection improved following 2001 count: grade-separated interchange in Rockville Master Plan
Layhill Rd at Ednor Rd/Norwood Rd	06/12/03	1366	12/12/01	1574	1475	Intersection improved prior to 2003 count
New Hampshire Ave at Lockwood Dr	02/10/04	1345	12/04/02	1614	1500	Intersection improved
Old Georgetown Rd at Beech St	10/05/04	1675	12/13/01	1290	1600	Growth in North Beth.
Old Georgetown Rd at Rock Spring Dr	02/24/04	1107	07/23/02	1506	1550	I-270 / Rockledge interchange completed
Randolph Rd (W) at Parklawn Dr	06/09/04	1244	05/21/03	1452	1550	Intersection improvement under study
Randolph Rd (W) at Parklawn Dr	06/09/04	1244	02/27/01	1527	1550	Intersection improved following 2001 count; intersection improvement under study
River Rd at Royal Dominion/Holton Arms	02/24/04	1591	09/25/02	1858	1600	Intersection improved prior to 2004 count
Rockville Pike at Jones Bridge/Center	06/08/04	1886	04/24/03	2299	1600	Intersection improved following 2004 count
Rockville Pike at Pooks Hill Rd	06/08/04	1923	04/25/01	1625	1600	Traffic growth, increased security at Federal sites

Intersection	Recent Count	CLV	Previous Count	CLV	LATR Standard	Notes
Rockville Pike at W Cedar Ln	04/05/05	2103	05/01/03	2391	1600	Interchange in MP
Veirs Mill Rd at First St	03/18/03	1818	04/04/01	2361	1500	Intersection improved prior to 2003 count; further improvements under study
Veirs Mill Rd at Twinbrook Pkwy	06/09/04	1743	03/20/03	1553	1500	Intersection improved following 2004 count

CRITICAL LANE VOLUMES: DISCUSSION

Following the 2004 ADAC Report, the Department conducted an audit of the intersection database for all 2002 and 2003 turning movement counts. The purpose of the audit was to confirm that database information on intersection geometry and signal phasing was being correctly captured at the time of each count in order to accurately reflect intersection improvements over time. Staff reviewed SHA signal plans and verified intersection geometry in the field or using traditional aerial photography or oblique angle imagery. A few intersections in the database were corrected as a result of the audit and their CLVs recalculated to reflect the updated information; however, the new values have no significant impact on the findings of the 2004 ADAC Report, nor on the information in this document. The Planning Board is confident that the intersection database contains the most up-to-date and accurate information on geometrics and phasing possible based on what is received from developer-submitted turning movement counts and data from SHA and DPWT.

A separate discussion of the intersection conditions in the White Flint policy area and its immediate surrounding area in the North Bethesda policy area is contained in the consideration of issues associated with changing the boundaries of the White Flint policy area in Chapter 4 of the AGP. A complete, alphabetized list of all signalized intersections in the county showing where the Department does or does not have recent counts may be found in Appendix 3A.

Countywide, the location of congested intersections looks remarkably similar to the information conveyed in the 2004 ADAC Report. Some of this is due to a lack of updated turning movement counts, but many of the same congested intersections shown in the 2004 report remain congested *after updated turning movement counts were taken at those locations*. As with the previous report, the congested intersections are frequently arrayed along major north-south and east-west commuting routes in the County, with the congestion occurring at the gateway points to major job centers or other destinations. These corridors and areas are listed moving from downcounty to upcounty and include:

- **Rockville Pike (MD 355)** between the Capital Beltway and the Bethesda Central Business District, where five signalized intersections in between (Pooks Hill Road / Bellevue Drive, Cedar Lane / West Cedar Lane, South Drive / Wood Road, Wilson Drive, and Jones Bridge Road / Center Drive) all have CLVs exceeding their LATR standard. The intersection at Jones Bridge Road was recently improved, but an updated count is not yet available.

- **Connecticut Avenue (MD 185) inside the Beltway**, where the intersections at Jones Bridge Road and East-West Highway (MD 410) experience CLVs that exceed their LATR standards. A geometric improvement at the East-West Highway intersection which added a second eastbound (away from the Bethesda CBD) to northbound (toward the Beltway) left turn lane was completed during the second half of 2004 and is expected to improve conditions, but a new count following the completion of the improvements is not yet available. Improvements in travel times and speeds through this intersection were observed during 2005 data collection performed for this report and are discussed in the next section of the report.

- **Colesville Road / Columbia Pike (US 29)**, where 15 of the 21 signalized intersections from the Howard County line to Spring Street in the Silver Spring CBD have CLVs exceeding their LATR standards. Included in those intersections are the three grade-separated interchanges currently under construction at Sandy Spring Road / Spencerville Road (MD 198), Briggs Chaney Road, and Randolph / Cherry Hill Roads.

- **Georgia Avenue (MD 97)** between the Wheaton and Silver Spring CBDs, where the intersections at Plyers Mill Road, Dennis Avenue, Forest Glen Road, and Seminary Road have CLVs exceeding their LATR standards. Further north on Georgia Avenue toward Glenmont and Olney, the intersections at Randolph Road, Norbeck Road (MD 28), Emory Lane, and Old Baltimore Road also have CLVs exceeding their LATR standards. The intersections at Randolph Road and Norbeck Road have grade-separated interchanges currently in project planning. The Forest Glen Road intersection had its signal phasing plan updated following its most recent count and conditions have improved following the new phasing plan, but a new count with a current CLV is not available.

- Five of the seven signalized intersections along **River Road (MD 190) from Seven Locks Road to Goldsboro Road (MD 614)** have CLVs that exceed their LATR standards. However, most of the subject intersections have counts from 2002 and need updated information. The intersection of River Road at the entrance to the Holton-Arms School, which lies within this corridor, was counted in 2002 and had a CLV that exceeded its LATR standard; when it was counted again in 2004 following an intersection improvement, the CLV had fallen back below the LATR standard.

- The intersection of **Montrose Road and East Jefferson Street** had a CLV that exceeded its LATR standard during a 2003 count. A geometric improvement to this intersection was just completed this year as part of the improvements for the North Bethesda Conference Center, but an updated count is not yet available. The essential solution for congestion relief in this area is the construction of Montrose Parkway West.

- The intersections of **Veirs Mill Road (MD 586) at Connecticut Avenue (MD 185)** and **Connecticut Avenue (MD 185) at Randolph Road** both had CLVs that exceeded LATR standards during counts in the first half of 2004. Both of these

intersections had improvements completed during the second half of 2004, but updated counts are not yet available.

- **Routes to and through the City of Rockville**, including **Rockville Pike (MD 355)** approaching from the south (CLVs at intersections at Congressional Lane and Edmonston Drive exceed the LATR standard) and **Frederick Road / Hungerford Drive (MD 355)** from the north (CLVs at intersections at King Farm Boulevard / Shady Grove Metro exit, Redland Road / Boulevard, Indianola Drive / Watkins Pond Boulevard, Gude Drive, Campus Drive, and North Washington Street exceed the LATR standard), **Veirs Mill Road (MD 586)** (intersections at Aspen Hill Road, Twinbrook Parkway, and First Street (MD 911) have CLVs that exceed the congestion standard), and **Norbeck Road (MD 28)** (intersections at Georgia Avenue (MD 97), Bel Pre Road / Emory Lane, Bauer Drive, Baltimore Road, and Veirs Mill Road (MD 586) have CLVs that exceed their congestion standards).

The City of Rockville has its own review procedures and is not subject to the County's LATR guidelines; however, several of the congested intersections listed above are not in the City of Rockville and therefore are subject to the County's LATR guidelines. The City of Rockville master plan recommends a grade-separated interchange at the intersection of MD 355 and Gude Drive. Outside the City of Rockville, the intersection of Veirs Mill Road and Aspen Hill Road was recently improved: a second protected left turn lane from eastbound (away from Rockville) Veirs Mill Road to northbound (toward Georgia Avenue) Aspen Hill Road was added, and an updated count at this location is expected to show a lower CLV when it is taken. The intersection of Veirs Mill Road and Twinbrook Parkway was also recently improved and should show improved travel conditions when a new count is taken.

- A collection of adjacent intersections in the northwestern section of the **R&D Village** policy area and on into the **City of Gaithersburg** all have CLVs exceeding their LATR standards: Darnestown Road (MD 28) at Key West Avenue (MD 28), Great Seneca Highway (MD 119) at Key West Avenue (MD 28), Great Seneca Highway (MD 119) at Sam Eig Highway, Darnestown Road (MD 28) at Muddy Branch Road, Great Seneca Highway (MD 119) at Muddy Branch Road, Great Seneca Highway (MD 119) at Kentlands Boulevard / Orchard Ridge Road, and Great Seneca Highway (MD 119) at Quince Orchard Road (MD 124). The counts at Great Seneca / Kentlands and Darnestown / Key West are both from 2001 and are the latest available counts, but updated counts are expected to show reductions in CLVs at both locations, since improvements have been made after 2001.

- The areas around the intersection of **Frederick Road (MD 355) and Montgomery Village Avenue (MD 124)** contain a series of intersections where the CLVs exceed their LATR standards: Frederick Road (MD 355) at Christopher Avenue / IBM north driveway, Frederick Road (MD 355) at Montgomery Village Avenue (MD 124), Montgomery Village Avenue at Russell Avenue, Montgomery Village Avenue at Christopher Avenue / Lost Knife Road, and Montgomery Village Avenue at Midcounty Highway. The count at Montgomery Village Avenue and Russell is from 2001 and is due for an update. The intersection at Lost Knife was recently improved. Updated counts for most of these intersections were taken for DPWT's ongoing

Midcounty Highway facility planning study, but those counts do not yet appear in the Department's database.

Several of the intersections noted in the above bullet are within the City of Gaithersburg. Like the City of Rockville, the City of Gaithersburg has its own development review procedures and is not subject to the County AGP.

- The major intersections along **Frederick Road (MD 355) in Germantown and Clarksburg** – at Germantown Road (MD 118), Ridge Road (MD 27), and Clarksburg Road (MD 121), all have CLVs that exceed their LATR standards. These values are particularly troubling given the amount of approved but unbuilt development in the area, especially in Clarksburg. There is a significant amount of additional transportation infrastructure planned for these areas, both developer-funded and through traditional funding sources, but travel conditions will likely worsen until those facilities are actually constructed.

In the time series analysis, much of the change in CLVs over 2-3 years is within normal variability of 10%; however, it is important to remember that in some cases, the fact that a CLV has grown only 10% or less in two years may be in fact due to an intersection improvement during the intervening time, so while the change itself may not be significant, the relative *lack* of change can be highly significant if it is known that the intersection was improved, either by changing the geometry through physical improvements or restriping (e.g., adding lanes or changing lane uses) or by changing the signal timing or phasing. At these locations, it is not immediately clear what the CLV at that intersection would be had that improvement not been constructed, although it clearly would be higher than the result post-improvement. In other locations where an intersection *has* been improved, there is a significant reduction in CLV as a result of the improvement. And still in other locations there have been significant increases in CLV due to growth in traffic and an improvement is clearly needed and may be planned, under study, or not yet considered. A list of recently completed and ongoing State and County transportation improvements may be found in Appendix 3B.

Several of the intersections that are experiencing CLVs that exceed LATR standards also have associated long travel times and slow travel speeds on their surrounding links. This relationship between intersection congestion and link congestion will be explored in the section on arterial travel times and travel speeds.

ARTERIAL TRAVEL TIMES AND TRAVEL SPEEDS

This performance measure was introduced in the 2004 ADAC Report and was accurately perceived as an indicator that can be easily understood by transportation system users. People are usually very aware of the travel times and speeds they experience as they journey from place to place at different times of the day and on different days of the week. Using GPS-equipped probe vehicles, structured data samples of different roadways at specific times are collected to yield measures such as representative speeds and travel times, variations in speeds and travel times, and average speed and travel times over specific sampling periods. Because roadway users experience and internalize those types of measurement of traffic congestion in their own

travel, they can immediately understand how well the results of sampling and characterization of congestion levels agrees with their own experience and along specific routes at particular times.

The Planning Board believes that the cumulative summary of the collected data provide a good representation of overall traffic congestion patterns in the County; however, very few people drive most of the routes in the County during many different times. Therefore, the sampled routes include many commonly used routes and results are reported on a route-by-route basis so readers can check the range of results against their own travel experience. The summaries tend to emphasize the variations in congestion in terms of its duration over time, extent along the route, and its intensity at different places and times. The analysis is less concerned with average conditions and also recognizes that congestion can have many causes. A significant amount of congestion does not recur from day-to-day; rather, it is associated with incidents that occur somewhat randomly as well as periodic events that take place from time-to-time. Such non-recurring, incident-based congestion was often observed in the speed and travel time samples.

In 2004, the Department analyzed the performance of the County's arterial network by reviewing travel times and travel speeds along the network as observed by a series of GPS-equipped probe vehicles. Through the assistance of the consultant Motion Maps LLC and the subcontractor MCV, the freeways, a series of major arterial corridors, and a few minor arterials over most of the County were sampled during weekday AM and PM peak periods. Those samples were structured to emphasize greater geographic coverage rather than having more samples over the peak period for a particular roadway, although some repeated sampling was done along certain routes. Additional secondary GPS-based travel time and speed data was obtained from the Metropolitan Washington Council of Governments (MWCOG) from speed and travel time samples they perform on a three-year cycle on a selected set of arterials in the region, including a handful or so in Montgomery County.

In 2005, the Department conducted a similar set of speed and travel time samples using the same consultant team. However, based upon feedback from the 2004 report, the sampling focused on: (a) selected County and State arterials, (b) getting more frequent samples within each peak period, and (c) the ability to track year-to-year changes in congestion patterns based on speed and travel time. Table 3.7 shows the fourteen route corridors sampled in 2005 and gives the extent of the route sampled, the dates, and day-of-the-week of each sample. The sequence of the routes in the table reflects the dates on which they were sampled. Each of these route corridors also had speed and travel time samples in 2004, although some just had a few samples at that time.

Table 3.7: Corridors Sampled in 2005 for Travel Time and Travel Speed

Road Name	From	To	Sample Date (Day of Week)
Darnestown Rd / Key West Ave / West Montgomery Ave (MD 28)	Riffle Ford Rd	Rockville Pk / Hungerford Dr (MD 355)	04/18/2005 (M)
Veirs Mill Rd (MD 586)	Georgia Ave (MD 97)	Rockville Pk / Hungerford Dr (MD 355)	04/18/2005 (M)
Great Seneca Hwy (MD 119)	Darnestown Rd	Middlebrook Rd	04/19/2005 (TU)
Shady Grove Rd / Airpark Rd	Piney Meetinghouse Rd	Woodfield Rd (MD 124)	04/19/2005 (TU)

Colesville Rd / Columbia Pk (US29)	16th St (MD 390) / DC Line	Howard County Line	04/26/2005 (TU)
Muncaster Mill Rd (MD 115) / Snouffer School Rd	Norbeck Rd (MD 28)	Brink Rd	04/27/2005 (W)
Clopper Rd / West Diamond Ave (MD 117)	Clarksburg Rd (MD 121)	Summit Ave (City of Gaithersburg)	04/28/2005 (TH)
Montgomery Village Ave (MD 124)	Frederick Rd (MD 355)	Midcounty Hwy	04/28/2005 (TH)
Midcounty Hwy	Montgomery Village Ave (MD 124)	Shady Grove Rd	04/28/2005 (TH)
Norbeck Rd (MD 28) / Spencerville Rd (MD 198)	Rockville Pk (MD 355)	Prince George's County Line	05/09/2005 (M)
Briggs Chaney Rd	New Hampshire Ave (MD 650)	Fairland Rd	05/10/2005 (TU)
Fairland Rd	Randolph Rd	Briggs Chaney Rd	05/10/2005 (TU)
Connecticut Ave (MD 185)	Georgia Ave (MD 97)	District of Columbia Line	05/11/2005 (W)
Montrose Rd / Randolph Rd / Cherry Hill Rd	Falls Rd (MD 189)	Prince George's County Line	05/12/2005 (TH)

In 2005 more secondary data sources (data collected by other agencies) of GPS-based travel time runs in Montgomery County were available; that secondary data adds four additional corridors to the fourteen ones associated with the primary data collection. The availability of the secondary data also enabled the primary data collection to cover a few different corridors that might have otherwise been excluded due to resource limitations:

- **SHA**: Within the past year or so the Office of Traffic and Safety of SHA has begun to have some of their contractors use GPS-based probes in their studies used in traffic signal timing. Through Motion Maps the Department obtained data for the following roads (sampled in 2004 and some in 2005): Georgia Avenue (MD 97) from the District of Columbia line to Goldmine Road north of Olney, River Road (MD 190) from Western Avenue to Piney Meetinghouse Road, and MD 355 from Western Avenue to Ridge Road (MD 27). These samples were structured to best serve the needs of the SHA, so the data has a different range of observations during different times of the day.

- **DPWT**: Special GPS-based travel time studies were conducted for the Division of Transit Services on Veirs Mill Road (MD 586) for a project planning study of bus rapid transit along the corridor.

- **MWCOG**: The Department received COG's 2005 GPS data for Montgomery County just before publication of the AGP; therefore the data were not available in time to be analyzed and included herein.

Readers should recognize that there is a high degree of variability in congestion along a route during the peak periods of congested or slow traffic – at any given time some segments may be congested and others not, and at any given place the congestion may peak at a time different than other places along a corridor. In other words, congestion, particularly on arterials, can be localized and intense, yet at other locations along that arterial the congestion may be most intense at a different time or for a different duration. For some arterials, the slowness can be very directional and others more even in both directions. For that reason and the practicality of

conducting the probe samples, each corridor was sampled in both directions during both the AM and the PM peak periods to capture both the peak and off-peak directional flows according to the following procedures:

- **Sample Frequency per Hour**: The more speed and travel time samples that are made the easier it is to capture such variability and the full range of congested conditions. Yet more samples require more resources to collect the data and given the general limitations of resources, there is a limit to the number of observations that can be performed. The sampling approach tried to get between two and four observations per hour per direction for the corridors. Between one and three probes were used to sample each corridor and direction, generally by driving back and forth along the route and minimizing the turn-around at each end. The field supervision tried to have a somewhat even time spacing between the probes when more than one probe was used.

- **Sampling Duration per Peak Period**: All three probes were used on longer, more congested routes, and usually only one probe was used on shorter, less congested routes. However, to get to the start or return from the end of a particular route, it was sometimes feasible to use a route that was being sampled on a different day, a so-called deadhead sample. The sampling duration per peak period was generally about two and a half to three hours. The field supervision generally tried to stop the last run as a full sample of the corridor.

For the primary routes surveyed in 2005, the above methodology and available data collection resources yielded about 375 valid directional samples and somewhat more than 25 deadhead route segment samples (about 7% of the main samples). The secondary data summarized to date added about 150 additional directional sample speed and travel time runs, for an overall total of about 550 speed and travel time sample runs. Thus for the typical route corridor sampled there were a total of about 28 travel time runs ((375+25)/14) on average, which is about seven travel time runs per direction and time period. This level of data would not satisfy rigorous statistical sampling procedures, but does provide information at a level the Planning Board feels is acceptable for reporting purposes.

These aspects of the sampling and data collection procedures are important for understanding a main focus of this report: a combination of a trend analysis and an impact analysis of observed changes in congestion conditions on a corridor-by-corridor basis. The challenge is whether the data supports each of the following activities:

- **Trend Analysis**: Measure and analyze significant changes and trends in congestion for a corridor over a period of time in a consistent and reliable fashion.

- **Impact Analysis**: Relate and analyze the impact of the direction and magnitude of those changes to development and growth in a corridor and/or to specific transportation improvements that may have been made in the interim.

- **Inform Recommendations**: Use the knowledge of the trend of such changes as a resource when recommending specific capital and operating improvements that could be made to the transportation system.

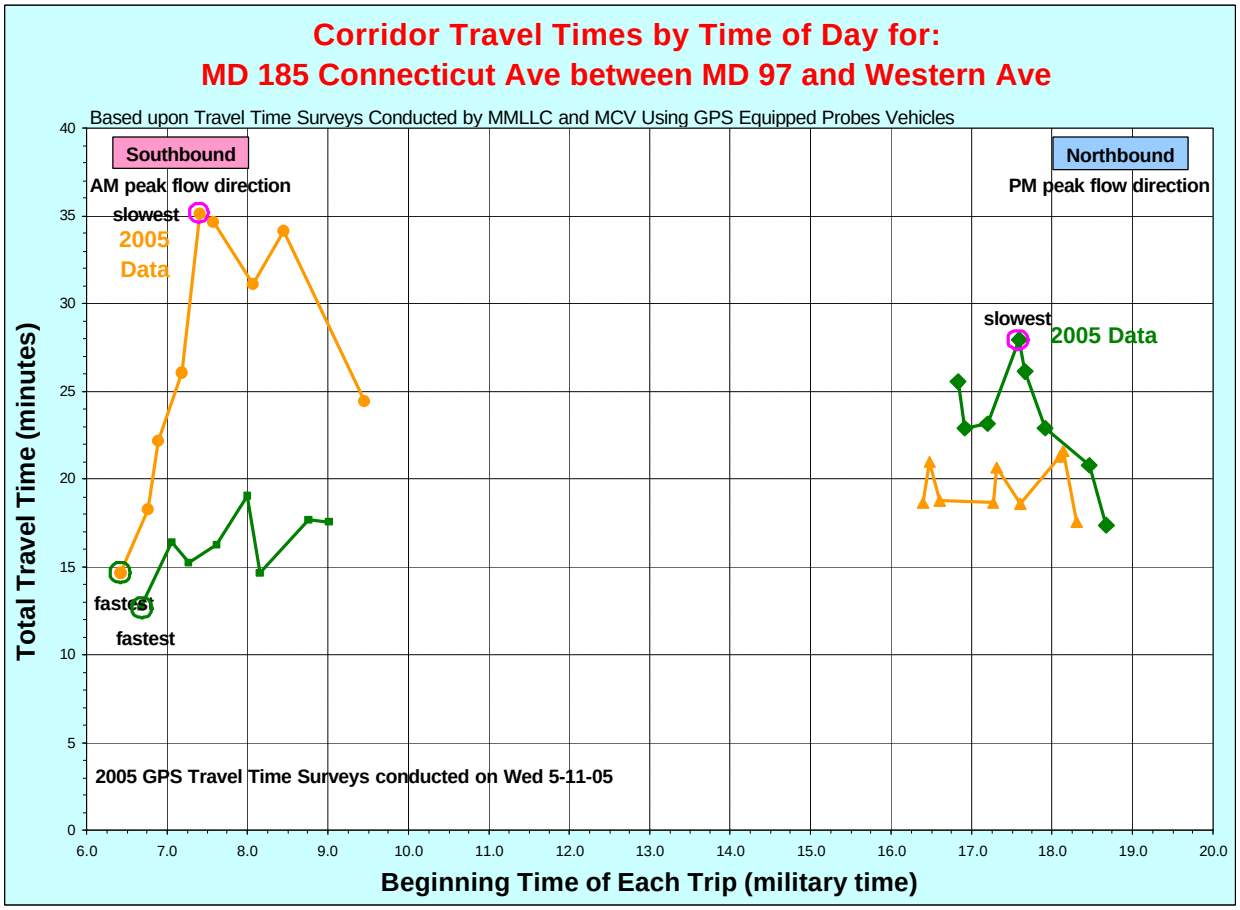
The following analysis uses the results of the GPS-based travel time and speed samples to in part explore these important policy issues. Similar observed changes in the other measure of CLVs discussed in the preceding section are also used in addressing this set of policy issues.

TRAVEL TIMES AND TRAVEL SPEEDS: DISCUSSION

Travel Time Trends for Connecticut Avenue (MD 185)

As previously noted, a key aspect of understanding traffic congestion is to recognize that there is a high degree of variability in congestion along a route during the peak periods of congested or slow traffic. Figure 3.8 presents the route travel time profile of the variation by time of day for Connecticut Avenue from Western Avenue at the District of Columbia line to Georgia Avenue (MD 97) in Aspen Hill, a distance of 8.3 miles. The four curves shown are for the four combinations of time period and direction: AM peak (southbound), AM non-peak direction (northbound), PM peak (northbound), and PM non-peak direction (southbound). The graph emphasizes when and for how long during the day overall congested conditions are observed along a route or corridor.

Figure 3.8: 2005 Travel Time Profile for Connecticut Avenue



Analysis of the data in Figure 3.8 yields the following information:

- **AM peak, southbound**: The morning southbound direction of traffic is the peak flow direction on Connecticut Avenue. Among the three probes there were nine observed travel time runs with the earliest starting at about 6:25 am and the last at about 9:27 am, with an average sampling of about once every 20 minutes. The first run was the fastest observed at just under 15 minutes while the slowest observed started the trip at about 7:24 am and took just over 35 minutes. Another trip about ten minutes later that started about 7:34 am took just under 35 minutes. Although the individual points in this graph represent discrete data, they have been connected with lines and treated as continuous data because the Planning Board believes that with two or three times the number of probes that morning the travel time results would have fallen generally in line with the resulting curve. However, due to missing or catching one or more traffic signals on green and other factors, there would likely be some natural variability in any event. Even if there were many more samples there would be jaggedness rather than smoothness to the curve of total corridor travel time. The analysis shows that on that day that the duration of congested conditions southbound was about three hours, from about 6:45 to about 9:45 am. Another characteristic of the curve is the travel time ratio, the value of the slowest observed time to the fastest observed time and in this example is about 35 minutes divided by about 15 minutes, or a 2.3 travel time ratio.

- **AM non-peak northbound**: That morning there were eight observations of the northbound, non-peak travel time which ranged from just over 12 minutes on the first trip to about 19 minutes for a trip that started at about 8 am. The variability in this curve reflects normal traffic signal delay and very little congestion was observed in that direction.

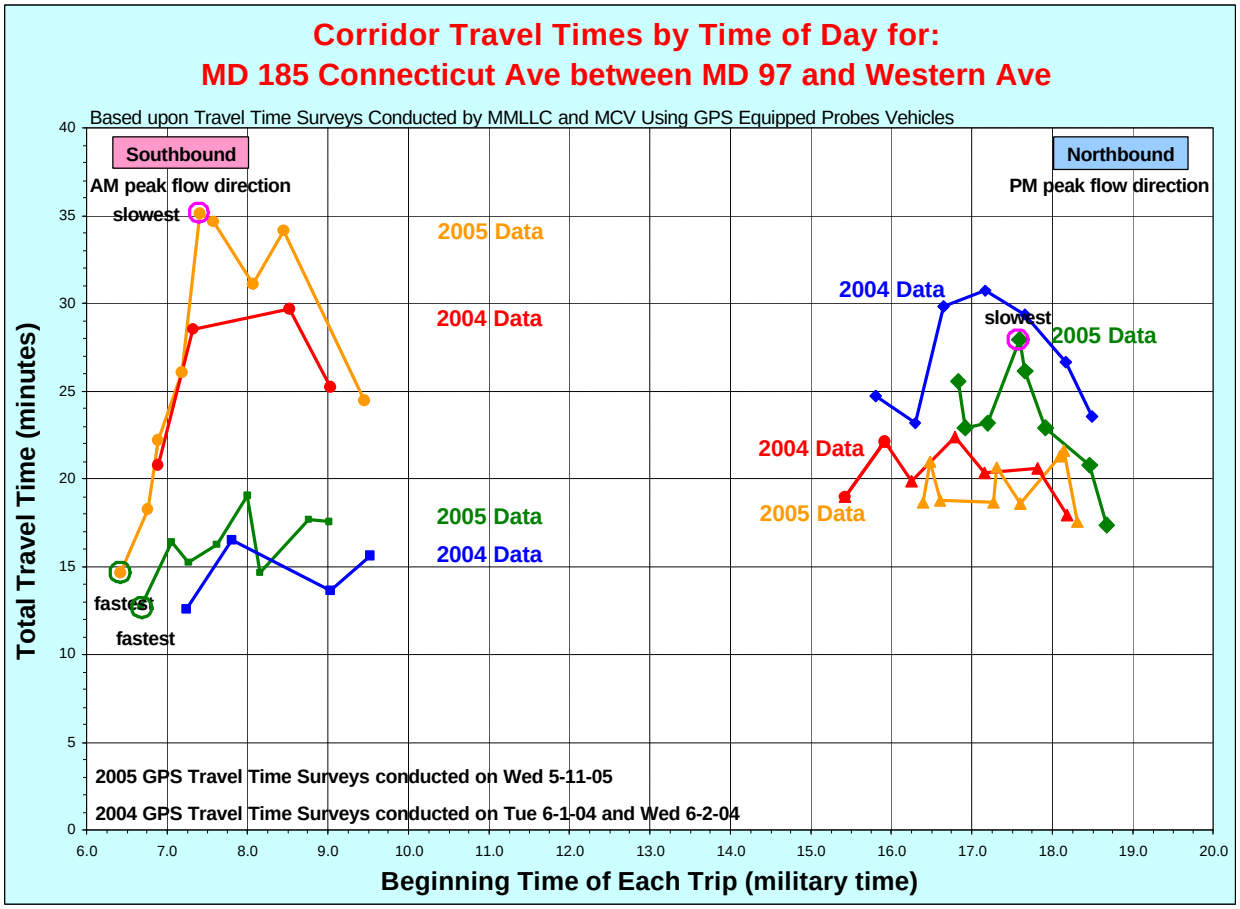
- **PM peak, northbound**: That afternoon there were eight observations of the northbound, peak travel time which ranged from just over 17 minutes on the last trip to almost 28 minutes for a trip that started at about 5:35 pm. To have captured the full duration of the congested conditions likely would have required starting the sampling earlier in the afternoon, perhaps 4 pm and perhaps gone at the end until 7 pm (the peak period analysis required for LATR). The speed of the probe vehicle relative to the prevailing speed of traffic can also induce variability in the data, and that may be reflected in these runs.

- **PM non-peak, southbound**: That afternoon there were nine observations of the southbound, non-peak travel time which ranged from about 17.5 minutes to about 21.5 minutes. Overall there is some variability to this curve that just reflects normal traffic signal delay and only some congestion or slowing was observed in that direction.

Figure 3.9 adds to the previous graphic the similar travel times that were observed in 2004 for the same route by just one probe driver, but on two consecutive days. Only four observations were made in each direction in the morning and seven observations were made in each direction in the afternoon. The lower number of observations means this may not be the best example to use in a trend analysis, yet it is representative of the situation that some of the sampling rates from a prior year may be less than desirable, such as for the morning observations

in 2004. This situation will continue to persist due to limited resources for collecting and analyzing enough travel time and speed samples.

Figure 3.9: Travel Time Trend Comparison for Connecticut Avenue



For the morning non-peak northbound direction the two respective curves for 2004 and 2005 seem fairly similar and it is hard to discern much difference. For the morning peak southbound direction, on the other hand, there appears to be some similarities yet differences between the two respective 2004 and 2005 travel time curves. At the beginning and end of the morning peak the two curves appear to be similar but for the peak hour the 2005 data appears to be significantly slower than the 2004 observations. Yet, the differences may be more the result of a small number of samples in 2004 than reflective of actual trend differences. For example, if there had been an observation at a trip start time of about 8:00 am in 2004, perhaps it may have had a value of about 35 minutes, in which case the two curves would have been very similar – there is simply not enough data in this example to know the true situation.

For the PM non-peak northbound direction the curves for 2004 and 2005 show a lot of similarity, with perhaps the average for the nine observations in 2005 being somewhat faster than the average for the seven observations in 2004, of 19.6 minutes versus 20.3 minutes, respectively. However, for the PM peak northbound direction the trend differences for the two curves may be significant. The overall observations in 2005 appear to have faster travel times

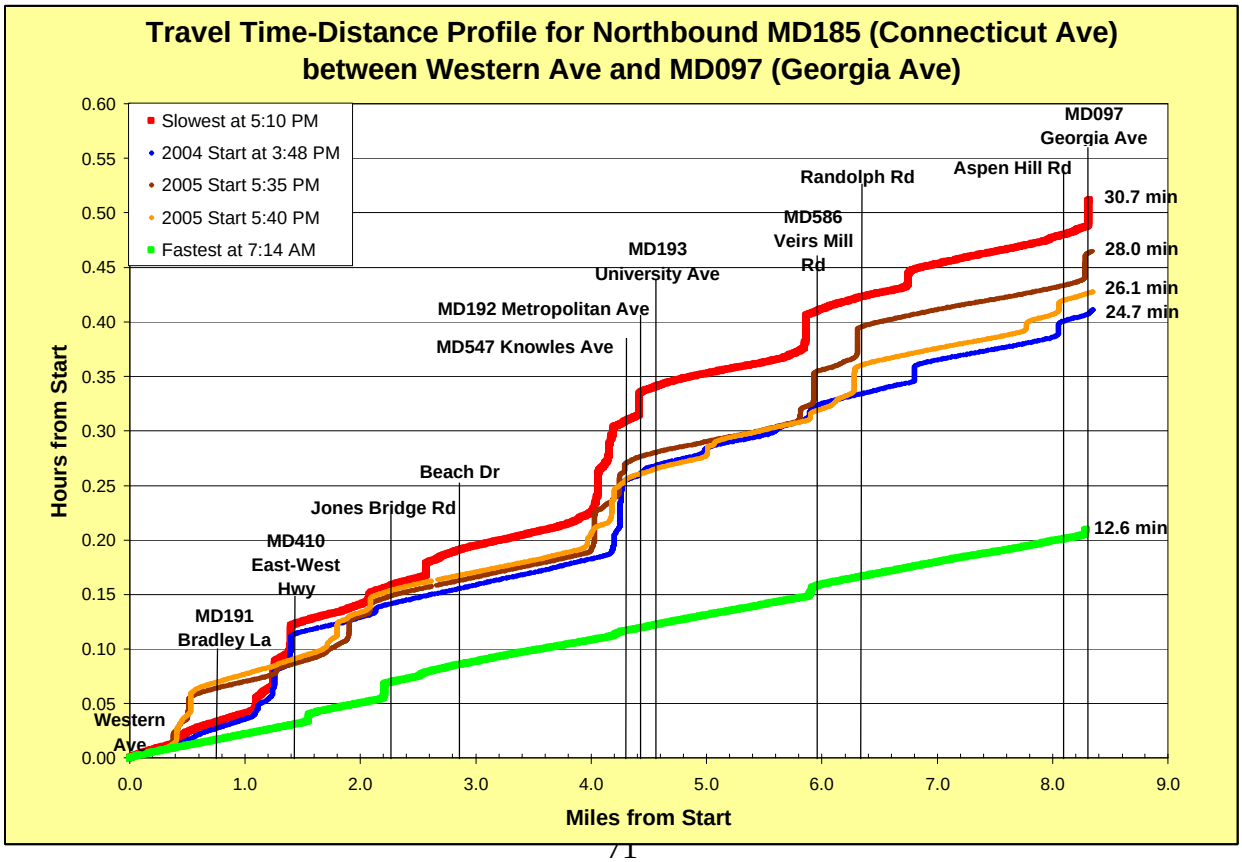
for the comparable times of the day observed in 2004, with respective values being about 28 versus about 31 minutes, or about 10% faster. At other trip start times the difference appears to be even more pronounced, sometimes in the range of 20-30% faster, even when taking into account that some of the 2005 observations were slower than that of average traffic. While the trend points to an improvement in overall travel time in the PM peak direction, it is also important to analyze the data in more depth to see what factors might be contributing to this change in conditions.

One of the important features of the GPS-based travel time and speed data collection is a detailed record of the second-by-second movement of the probe vehicle that enables calculation of the incremental distances and spot speeds experienced by each probe along the route or corridor. The subsequent analysis emphasizes where along a route the slow speeds and congestion are encountered and how slow or intense is that congestion.

Impact Analysis Based on Observed Travel Times and Speeds: Improvements

Figure 3.10 gives an example of the variation in speeds for the PM peak northbound direction that combines data from the 2004 and the 2005 data collection samples for Connecticut Avenue. In this graphic the total travel time (expressed in hours) is the y-axis and the distance in miles from Western Avenue is the x-axis. Three 2004 samples are shown, the fastest (green line) and slowest (red line) travel time runs as well that for the first northbound PM run (the blue line) that started about 3:48 and took about 24.7 minutes. The profiles of these lines indicate locations of the relative congestion experienced by travelers along the route.

Figure 3.10: Travel Time-Distance Profile for Connecticut Avenue



The fast time, the green line, has a more gentle and uniform slope with few jumps up. The travel distance of 8.4 miles divided by the travel time of 12.6 minutes, or 0.21 hours, results in an average speed of 40.0 mph for the fastest run. The relative uniformity of the slope of the line also indicates a rather uniform speed. This is especially noticeable in contrast to the two other lines for the slowest, the red line, and the first run of the afternoon, the blue line. Those lines have several steep slopes that indicate that the traveler experienced significant time with little forward movement – congestion and slow speed. The slowest travel time run observed during the two years, the red line, had an average speed of 16.4 mph. There are also many short jumps, which are associated with stopping for traffic signals but not necessarily being delayed for too long at any one. Long queues of traffic can also be seen in this graphic, particularly on the approach to East-West Highway (MD 410) and to Knowles Avenue (MD 547) in the Town of Kensington.

The results of two of the 2005 travel time and speed samples are also shown in Figure 3.10. The brown line is the slowest observed sample from the 2005 data and had a total travel time of about 28.0 minutes, while the orange line is the next slowest one and had an overall travel time of about 26.1 minutes. The travel time-distance profiles for these two of the nine 2005 samples show many similarities but also some differences as to where and with what intensity congestion was experienced between the two years. For example, the two slowest observed trips in 2005 were not delayed much at the approach to East-West Highway, compared to the two slow trips from 2004, which experienced significant queuing and congestion on that approach. Instead, the 2005 samples experienced more congestion on the approach to Bradley Lane (MD 191). The two 2005 samples also experienced less congested conditions approaching the group of intersections in Kensington: Knowles Avenue, Metropolitan Avenue (MD 192), and University Boulevard (MD 193). At the approach to the next main intersection of Veirs Mill Road (MD 586) the two 2005 and the two 2004 samples seemed to have similar congestion, while at the approach to Randolph Road the 2005 samples seemed to experience more congestion.

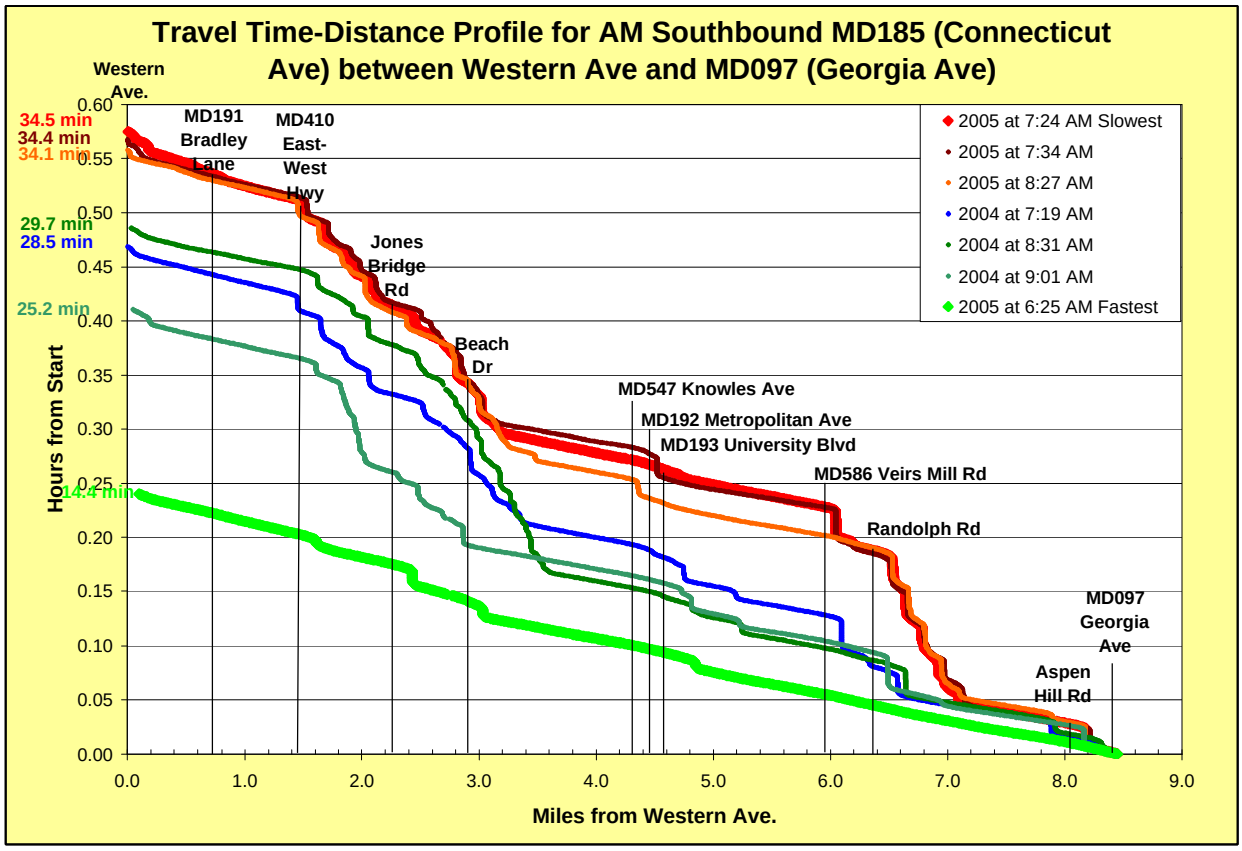
The preceding is part of an impact analysis of the location and magnitude of the differences in travel time and speed along northbound Connecticut Avenue. The next part of an impact analysis is the question of whether there were some changes in the demand for transportation (growth), and/or in the supply of transportation (improvements), that can help explain the observed differences in speed and travel time. During the intervening year between the two sets of samples, there were intersection geometric improvements made at two of the intersections along Connecticut Avenue: East-West Highway (MD 410), and Veirs Mill Road (MD 586). The nature of the improved northbound travel times at the first of those intersections is consistent with improvements that were made at the East-West Highway intersection with Connecticut Avenue. However, more sample comparisons should probably be made to confirm that finding. The changes in travel time and speed at the Veirs Mill Road intersection approach are not significantly different and no impact conclusion can be made based just upon that observation.

This question can be further analyzed using a chart similar to the previous one but in this case for the AM Peak southbound congestion conditions for Connecticut Avenue, shown in Figure 3.11. In this chart the travel time-distance profiles slope from lower right to upper left to keep the reference distance of miles from Western Avenue, same as in Figure 3.10. The fastest

southbound time observed in 2005 (the bright-green line), starting at about 6:25 am had a travel time of about 14.4 minutes, while the slowest time observed in 2005 (the red line) had a travel time of about 34.5 minutes. The two other slow 2005 samples at 7:34 and 8:27 am, the brown and orange lines respectively, had overall travel times and congestion patterns that are very similar to the slowest sample. In all three there were long queues approaching Randolph Road and then again for the two-mile distance from the approach to East-West Highway all the way back to before Beach Drive.

Three samples from 2004 are also shown in Figure 3.11 and they seem to be fairly similar in their profiles to the three slower samples from 2005, but they have faster overall travel times. The three 2004 samples also show long queues approaching East-West Highway for the two mile distance all the way back between Beach Drive and Knowles Avenue. In 2004 the southbound queues approaching Randolph Road are less intensive and congested compared to those observed in 2005, which alone explains the overall differences in observed travel times. The queues approaching Veirs Mill Road seem similar in both years as do the traffic conditions through the three intersections in the Kensington area. Benefits of the intersection improvement at Connecticut Avenue and Veirs Mill Road are not apparent in this limited analysis.

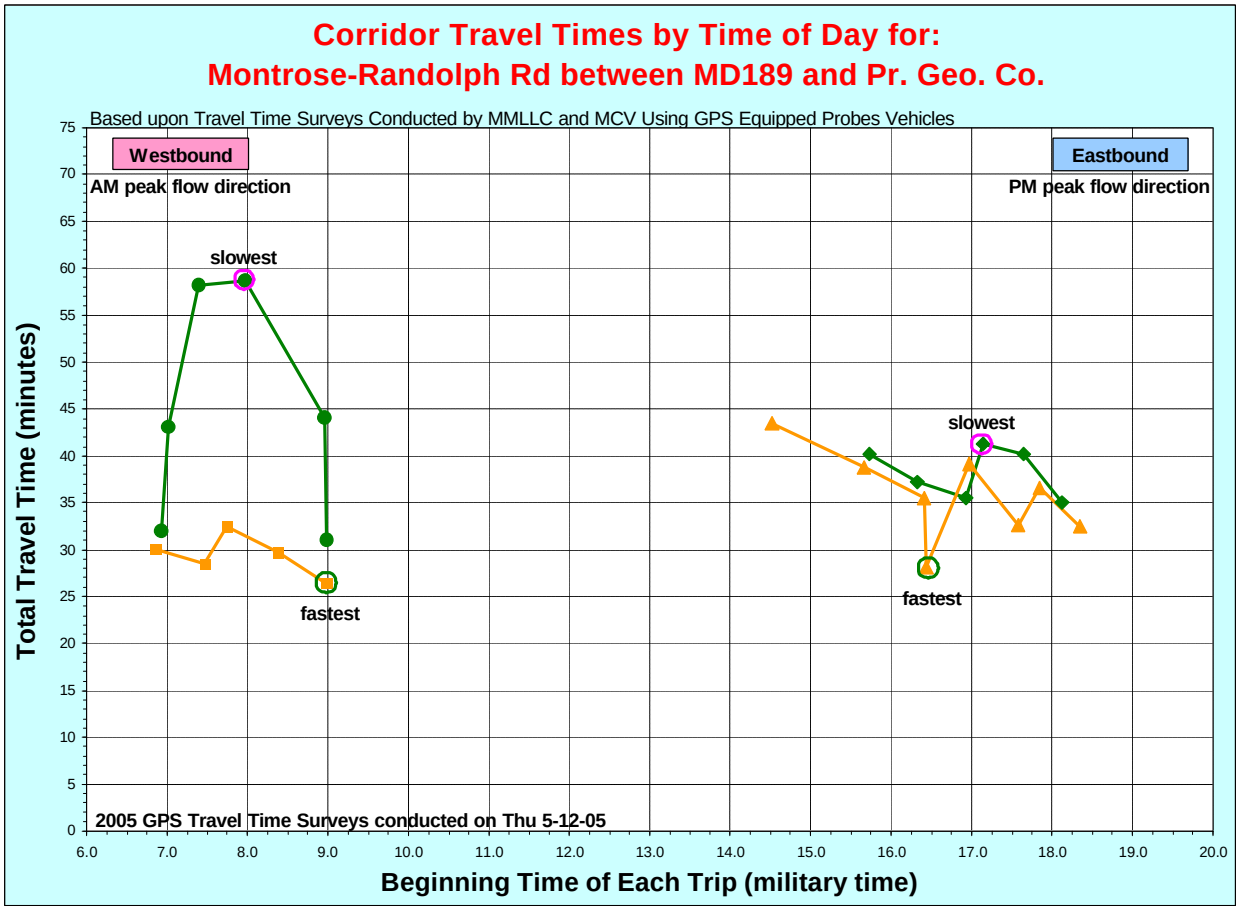
Figure 3.11: Travel Time-Distance Profile for Southbound Connecticut Avenue



Impact Analysis Based on Observed Travel Times and Speeds: Incidents

Figure 3.12 uses a travel time profile by time of day graph to show the impact of incidents that were observed during the sampling. The graph shows Montrose-Randolph-Cherry Hill Roads between Falls Road (MD 189) and the Prince George's County line, a distance of 14.2 miles. The peak flows are westbound in the AM and eastbound in the PM. In the AM on the day of the sampling there was a minor incident in the peak westbound direction through much of the peak period. There was a disabled vehicle just west of Beach Drive that blocked the right hand travel lane for more than two hours. County police assisted and the vehicle was eventually moved. Estimated delays ranged from 15 to 20 minutes and queued traffic back to Connecticut Avenue. Peak travel times would have been in the 40 to 45 minute range without the incident.

Figure 3.12: Travel Time-by Time of Day Profile for Montrose-Randolph-Cherry Hill Road



Two incidents occurred during the afternoon, the first of which affected the westbound non-peak flow. A work crew was putting the finishing lines on an intersection improvement and repaving at the Montrose Road intersection with East Jefferson Street that had about a ten-minute delay during the early part of the peak period until the work was completed for the day. Later that sampling day there was a minor crash in the eastbound direction along Randolph Road just prior to Kemp Mill Road that blocked the right hand lane. Police were again shortly on the scene

and the incident was cleared perhaps an hour or more later. Estimated delays were in the range of five to ten minutes. Thus during this one sampling day on Montrose-Randolph-Cherry Hill Roads there were four different types of incidents that were observed, each having a significant effect on the overall travel time in the corridor and localized impacts on the intensity of congestion. The net effect of such incidents results in an unreliable supply of roadway capacity. The management of incidents is an issue and a concern to users that is not accounted for in the activities associated with the Annual Growth Policy.

The preceding example for Montrose and Randolph Roads partially illustrated the impact on congestion levels of a range of incidents on one of the few east-west travel corridors in the county. The next example of Norbeck Road (MD 28) and Spencerville Road (MD 198) shows impacts associated with having a sparse transportation network resulting in: (a) limited travel choices and excessive congestion, and (b) having travelers being severely impacted when parts of the system break down due to incidents. Figure 3.13 gives the results of the travel time data collected in 2005 in a time-of-day graph for the 14.1 mile east-west route of MD 28 / MD 198 between MD 355 in Rockville to Riding Stable Road just before the Prince George's County Line. The overall route consists of three segments: First Street, Norbeck Road, and Spencerville Road.

Figure 3.13: Travel Time Trend Profile in 2005 for MD 28 and MD 198

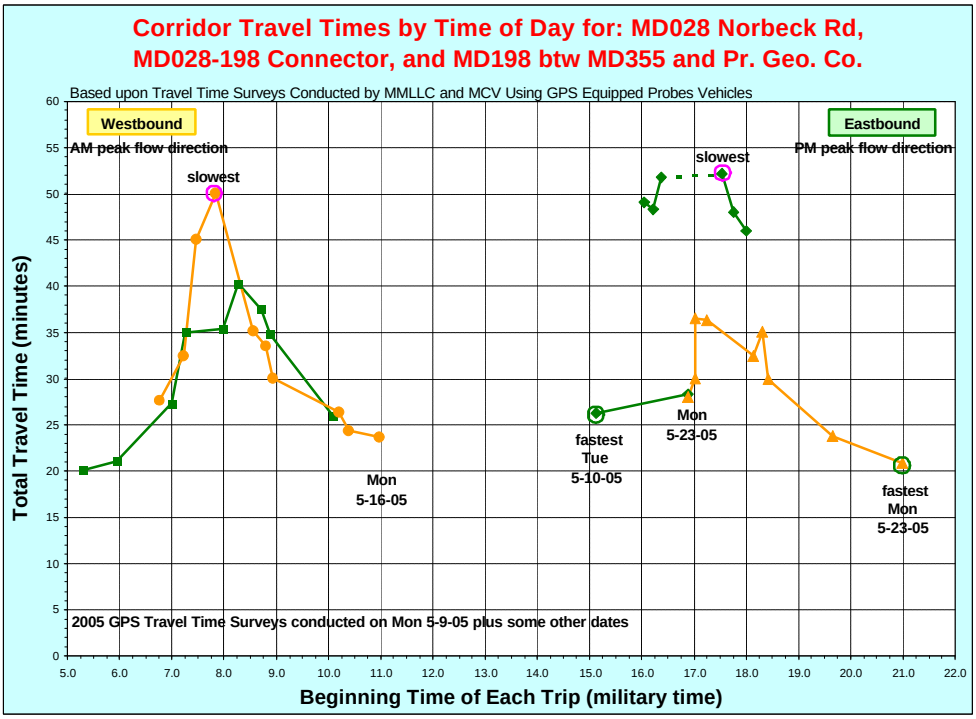


Figure 3.13 shows that the slowest westbound AM peak travel time was about 50 minutes while the slowest eastbound PM peak travel time was about 52 minutes. The ten AM westbound travel time samples show a very distinct, consistent, and peaked bell-shaped curve while the nine AM eastbound time by time of day samples also has somewhat of a bell shape to it, but not quite as peaked or consistent. Samples collected at very early and very late times showed that

ambient, uncongested travel times are about 20 to 21 minutes for this 14.1 mile travel corridor, or an average speed of about 41 to 42 miles per hour. The observed peak time of about 50 minutes is about 2.5 times more than the ambient travel time, which is very peaked and indicates excessive congestion. The duration of the peak slower travel times of about 25 minutes or more lasts from about 7 to 10 AM.

Figure 3.14 shows travel time versus distance profiles for the fastest and slowest of the observed AM and PM westbound data sets. Even an ambient observation of a fast westbound trip that began about 9 PM shows some normal delay due to signal timing. For the slowest of the observed westbound trips of about 50 minutes that began at about 7:51 AM, there where three general locales where most of the congestion occurred: between Columbia Pike (US 29) and Peach Orchard Road; from east of Norbeck Boulevard to Bauer Drive; and approaching Veirs Mill Road (MD 586). The average speeds and amount of delay for each of those three congested segments shown in Figure 3.14 are, respectively: 15.9 mph and 4.8 minutes; 5.1 mph and 16.6 minutes; and 5.1 mph and 4.2 minutes. Most of the delay along this route was encountered along these three segments that add up to about 5 miles of the 14-mile route. The remaining 9 miles had heavy but freer flowing traffic.

Figure 3.14: Travel Time-Distance Profile for MD 29 and MD 198 Westbound in the AM

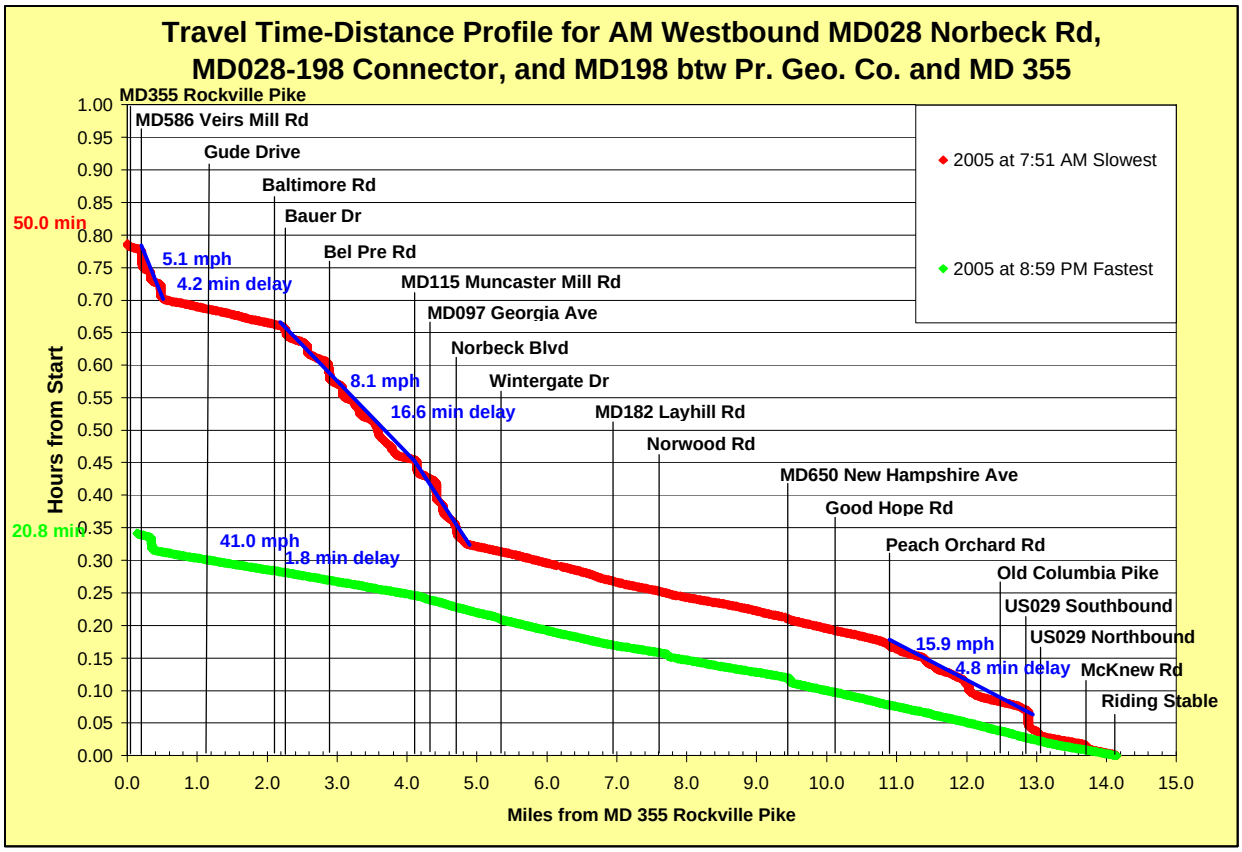
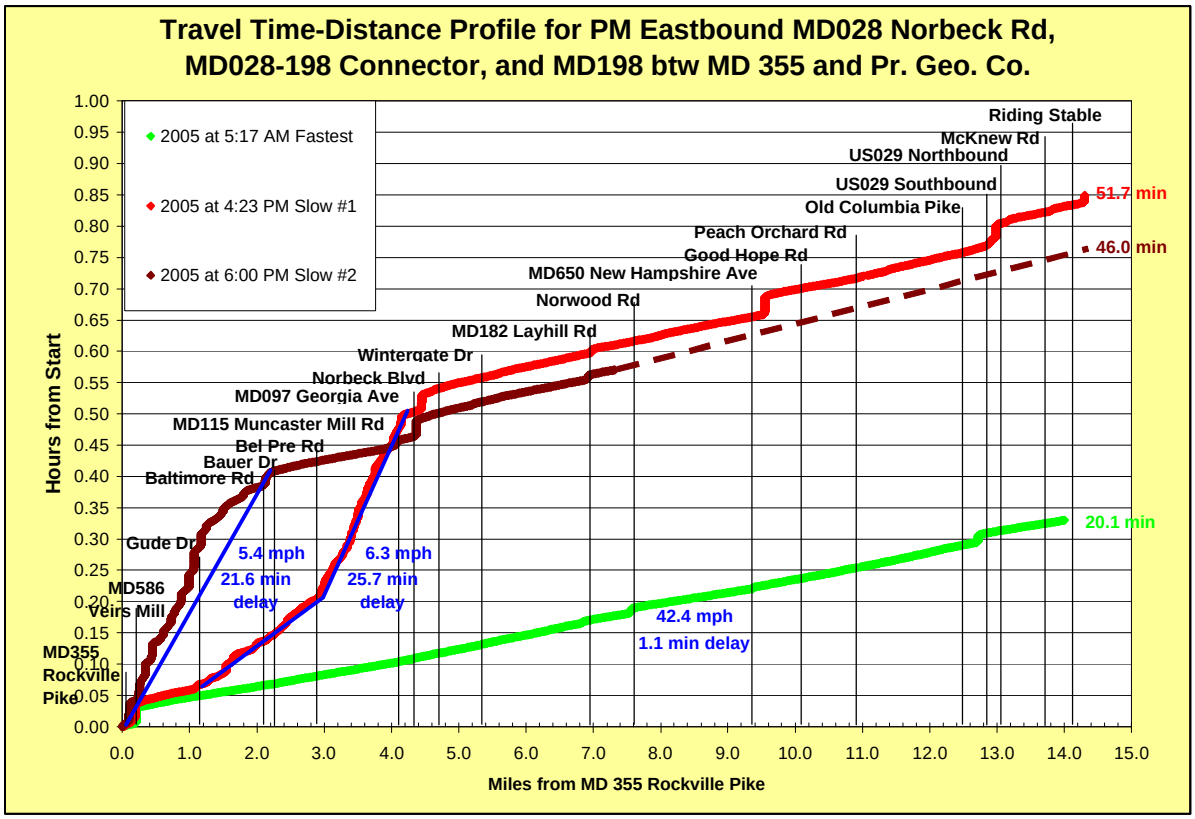


Figure 3.15 for the eastbound data sets first shows an ambient observation of 20.1 minutes travel time at 42.4 mph and 1.1 minutes of delay due to stopping for three of the traffic signals along the route. Secondly, the two samples of slow travel time show the impact of two

separate incidents that occurred during the afternoon of the sampling. The first of the two slow samples was for a trip that started about 4:22 PM and shortly into the trip near Gude Drive encountered a long queue of very slow traffic that stretched back from and incident that occurred earlier on the road segment between Muncaster Mill Road (MD 115) and Georgia Avenue (MD 97), some 3.3 miles ahead that blocked one of the two lanes in that section. It took about 30 minutes to pass the incident, which by then had just been cleared, traveling at an average speed of about 6.3 mph and having over 25 minutes of delay. If one or two more travel time probes had been scheduled that afternoon an even slower set of travel time conditions might have been observed, but the three available probes got bunched in the east end of the corridor and were unable to make any observations for about an hour in the eastbound direction.

Figure 3.15: Travel Time-Distance Profile for MD 29 and MD 198 Eastbound in the PM



By the time the next eastbound sample started at about 5:30 PM, a second eastbound incident, a multi-vehicle crash, had occurred at the Baltimore Road intersection with Norbeck Road and it was already in the process of being cleared. That backed traffic up the approximate 2 miles to MD 355. The sample that started at about 6 PM experienced about a 5.4 mph average speed and a delay of about 21.6 minutes getting past the location of the incident. As shown in Figure 3.15 while the total travel times for the two slow samples shown were about as equally as slow, the locations at which the congestion was experienced were indeed different. However, all of the delay experienced that afternoon was not just due to the two incidents but was also in part due to the normally very heavy traffic flows that use that corridor at those times of the day. If more samples had been taken on that day and on another day without incidents, the normally

congested PM eastbound traffic probably would have shown slow travel times that would have somewhat mirrored those experienced in the AM westbound direction.

This example of MD 28 / MD 198 has shown the impacts of having a sparse transportation network that gives travelers a limited number of route choices; it tends to result in excessive congestion when people want to travel in that direction. Further, those travelers can be severely impacted when parts of the system break down due to incidents resulting in even more extremely congested conditions over a significant portion of the corridor for a prolonged amount of time.

Impact Analysis Based on Observed Travel Times and Speeds: Growth

While the preceding examples Montrose Road and Randolph Road and MD 28 / MD 198 illustrated the impact on congestion levels of a range of incidents and a limited number of travel route choices, the next example is intended to be one that shows impacts associated with growth and development. Figure 3.16 gives the results of the travel time data collected in 2005 by time-of-day in a graph, similar to ones previously shown, for an 8.4 mile segment of Frederick Road (MD 355) between Montgomery Village Avenue (MD 124) and Comus Road in northern Clarksburg. This roadway segment passes through the Gaithersburg, Germantown, and Clarksburg areas on the east side of the I-270 Corridor, which is an area of the county that has and will continue to experience a significant pace of new growth and development, especially in the past year in parts of the Clarksburg area. Included in Figure 3.16 is some secondary travel time data that was collected for the Maryland SHA as part of a traffic signal timing project.

The graphic shows that from the 2005 data collection the slowest southbound AM peak travel time was about 21 minutes while the slowest northbound PM peak travel time was about 25 minutes. It should be noted that for that slowest AM southbound trip that most of the slow speeds and congestion was experienced in the north end of this corridor from Comus Road south to just past Stringtown Road. For the slowest PM northbound trip, and the others before and after, that the slow speeds and congestion was experienced starting at Ridge Road (MD 27) and continued as a rolling delay until the intersection with Clarksburg Road (MD 121) was cleared. That distance is about 3.2 miles and it took about 15 minutes to travel that distance, or an average speed of about 12.8 mph.

In 2004 similar travel time and speed data was collected for this segment of MD 355 but short of Comus Road. To compare the 2004 data to the 2005 data some adjustment was made to the 2004 data to represent it covering the same distance. Figure 3.17 adds the adjusted data for 2004 to the results from the 2005 data sampling, which are shown as the red and blue lines in the graph. In 2004 there were four independent samples each in the AM and PM peak periods with the PM samples being collected on a Monday and the AM samples on a Tuesday. Those samples in 2004 did not find the degree of congestion and slow travel times that were found by the 2005 samples. There did not appear to be any incidents either in the corridor or reported on the radio for I-270 the sample days in 2005. A significant amount of approved development in the Clarksburg area has proceeded to construction and is being occupied, while various transportation improvements programmed to serve that growth are not quite on the same schedule. The samples for this roadway segment are an example of new development causing a significant year-to-year change in congestion levels.

Figure 3.16: Travel Time Trend Profile in 2005 for a Segment of MD 355

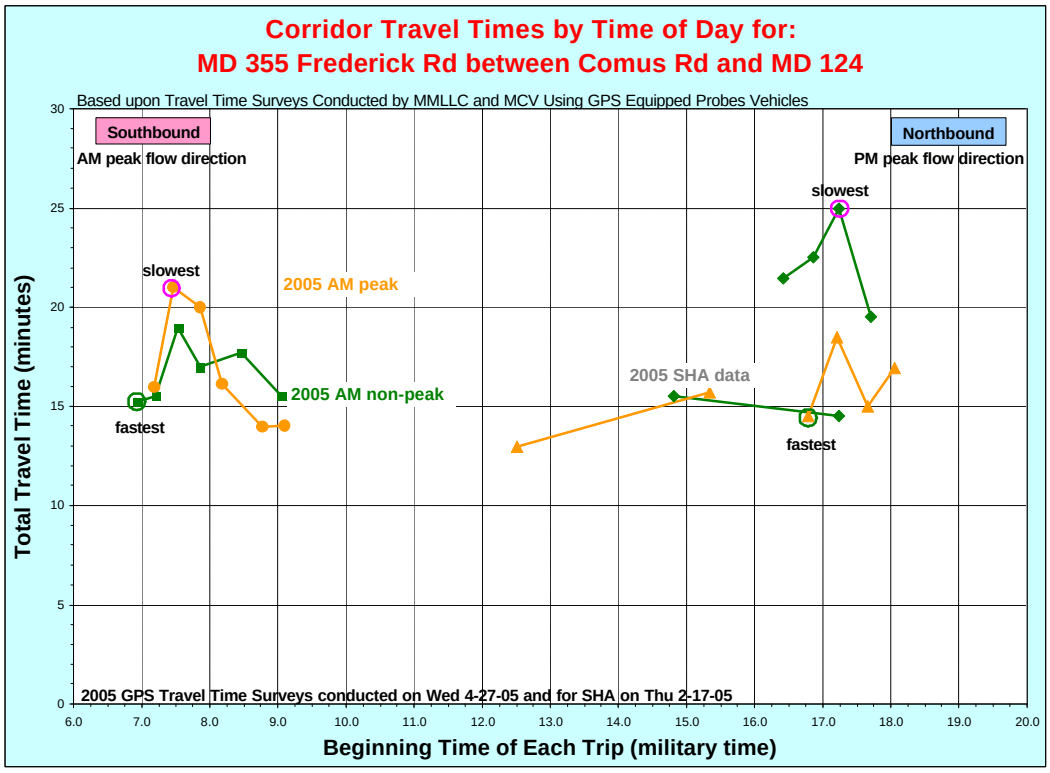
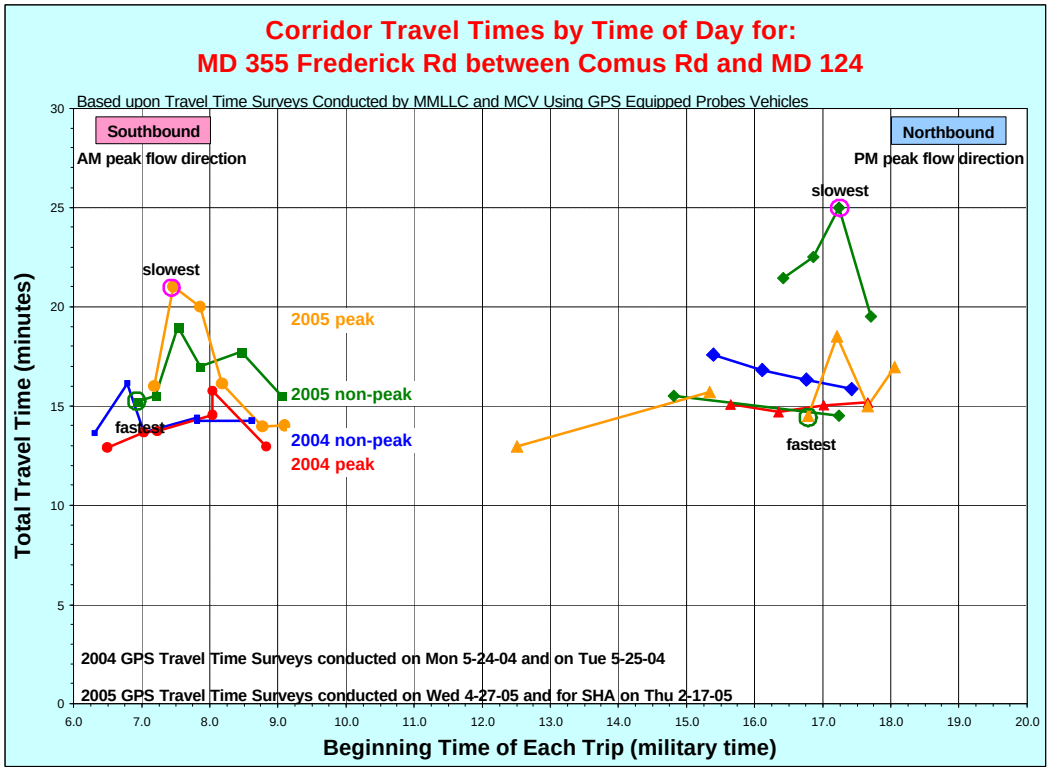


Figure 3.17: Travel Time Trend Profile for 2004 and 2005 for a Segment of MD 355



Appendix 3A: Signalized Intersections and Counts

Intersection	INT_ID	Count Date	AM CLV	PM CLV	Policy Area	LATR Standard
Airpark Rd at Stratos / Antares	741				Montgomery Village/Airpark	1450
Arcola Ave at Amherst Ave	673				Kensington/Wheaton	1600
Arcola Ave at Kemp Mill Rd	431	05/11/04	1020	1290	Kensington/Wheaton	1600
Arcola Ave at Lamberton Dr	432				Kensington/Wheaton	1600
Arlington Rd at Bethesda Ave	433	04/09/03	841	1039	Bethesda CBD	1800
Arlington Rd at Edgemoor Ln	261				Bethesda CBD	1800
Arlington Rd at Elm St	434	04/17/03	863	1220	Bethesda CBD	1800
Arlington Rd at Little Falls Pkwy	267	10/31/03	420	552	Bethesda/Chevy Chase	1600
Arlington Rd at Moorland Ave	435				Bethesda CBD	1800
Aspen Hill Rd at Arctic Ave	49				Aspen Hill	1500
Aspen Hill Rd at Parkland Dr	43				Aspen Hill	1500
Bauer Dr at Recreation Center	687				Aspen Hill	1500
Beach Dr at Knowles Ave	470				Kensington/Wheaton	1600
Beach Drive at Cedar Ln	463				Kensington/Wheaton	1600
Bel Pre Rd at Beaverwood Dr	483				Aspen Hill	1500
Bel Pre Rd at Homecrest Dr	128				Aspen Hill	1500
Bel Pre Rd at Mercado	404				Aspen Hill	1500
Bonifant Rd at Notley St	545				Cloverly	1475
Bou Ave at Chapman Ave	116				North Bethesda	1550
Bradley Blvd at Aldershot / Kentsdale	598				Potomac	1475
Bradley Blvd at Arlington Rd	265	04/10/03	1041	1146	Bethesda CBD	1800
Bradley Blvd at Burdette	599				Bethesda/Chevy Chase	1600
Bradley Blvd at Fairfax	264				Bethesda CBD	1800
Bradley Blvd at Fernwood Rd	409				Bethesda/Chevy Chase	1600
Bradley Blvd at Glenbrook Ln	263				Bethesda/Chevy Chase	1600
Bradley Blvd at Goldsboro Rd	262	06/10/03	1052	1091	Bethesda/Chevy Chase	1600
Bradley Blvd at Hill/Leland	266	04/01/03	752	875	Bethesda CBD	1800
Bradley Blvd at Huntington Pkwy	410	06/11/03	980	1321	Bethesda/Chevy Chase	1600
Bradley Blvd at Wilson Ln	422	06/10/03	1404	1455	Bethesda/Chevy Chase	1600
Briggs Chaney Rd at Automobile/Castle	283	01/06/04	1005	1182	Fairland/White Oak	1500
Briggs Chaney Rd at Fairdale Rd	736				Fairland/White Oak	1500
Briggs Chaney Rd at Good Hope Rd	354				Cloverly	1475
Briggs Chaney Rd at Old Columbia Pk	285	02/05/04	1237	1115	Fairland/White Oak	1500
Briggs Chaney Rd at Plz Drwy	284				Fairland/White Oak	1500
Calverton Blvd at Galway Dr	591				Fairland/White Oak	1500
Capitol View Ave at Forest Glen/Seminary	225	02/12/04	937	900	Kensington/Wheaton	1600
Carroll Ave at Flower Ave	641				Silver Spring/Takoma Park	1600
Carroll Ave at Laurel Ave	513				Silver Spring/Takoma Park	1600
Carroll Ave at Tulip Ave	537	08/05/04	512	553	Silver Spring/Takoma Park	1600
Cedar Ln at Saul Rd	444				Kensington/Wheaton	1600
Cedar St at Pershing Ln	310	06/04/03	304	422	Silver Spring CBD	1800
Cherry Hill Rd at Broad / Calv	402	11/05/03	971	1569	Fairland/White Oak	1500
Cherry Hill Rd at Plum Orch/Clover Patch	717				Fairland/White Oak	1500
Cherry Hill Rd at Prosperity Dr	686	12/17/02	851	1051	Fairland/White Oak	1500

Intersection	INT_ID	Count Date	AM CLV	PM CLV	Policy Area	LATR Standard
Clopper Rd at Firstfield Rd	120				Gaithersburg City	1450
Clopper Rd at Great Seneca Hwy	287	03/30/04	1053	1169	Germantown West	1450
Clopper Rd at Hopkins Ln	683	11/19/03	1039	751	Germantown West	1450
Clopper Rd at Kingsview Rd	722	02/05/04	962	1037	Germantown West	1450
Clopper Rd at Kingsview Village Dr	731				Germantown West	1450
Clopper Rd at Liberty Mill Rd	493				Germantown West	1450
Clopper Rd at Longdraft Rd	374	03/16/04	914	1069	Gaithersburg City	1450
Clopper Rd at Mateney Rd	453	03/30/04	1041	1026	Germantown West	1450
Clopper Rd at Metropolitan Grove Rd	381	04/19/05	819	1069	Gaithersburg City	1450
Clopper Rd at Quince Orchard Rd	12	03/04/04	1350	1152	Gaithersburg City	1450
Clopper Rd at Waring Station Rd	509				Germantown West	1450
Clopper Rd at Watkins Mill/Pheasant	556	03/11/04	726	1017	Gaithersburg City	1450
Colesville Rd at 2nd/Wayne Ave	323	06/10/04	849	803	Silver Spring CBD	1800
Colesville Rd at Dale Dr	302	06/09/04	1938	1709	Silver Spring/Takoma Park	1600
Colesville Rd at East West Hwy	325	06/02/04	1022	1061	Silver Spring CBD	1800
Colesville Rd at Fenton St	304	06/09/04	991	1117	Silver Spring CBD	1800
Colesville Rd at Franklin Ave	300	06/09/04	1103	1421	Silver Spring/Takoma Park	1600
Colesville Rd at Georgia Ave	314	06/08/04	1305	1145	Silver Spring CBD	1800
Colesville Rd at Sligo Crk Pkwy/St Andrew's	301	06/09/04	1721	1701	Silver Spring/Takoma Park	1600
Colesville Rd at Spring St	303	06/09/04	1203	1308	Silver Spring/Takoma Park	1600
Colesville Rd at University Blvd (N)	331	10/28/04	1917	1561	Kensington/Wheaton	1600
Colesville Rd at University Blvd (S)	332	10/28/04	1810	1370	Kensington/Wheaton	1600
Columbia Pike at Briggs Chaney Rd	288	02/04/04	1770	1538	Fairland/White Oak	1500
Columbia Pike at Burnt Mills Ave	474	10/07/04	1374	1246	Fairland/White Oak	1500
Columbia Pike at E Randolph/Cherry Hill	291	12/18/02	1520	1860	Fairland/White Oak	1500
Columbia Pike at Fairland Rd	289	11/20/03	1541	1485	Fairland/White Oak	1500
Columbia Pike at Greencastle Rd	346	02/05/04	1524	1321	Fairland/White Oak	1500
Columbia Pike at Industrial Pkwy	292	10/08/03	1379	1323	Fairland/White Oak	1500
Columbia Pike at Lockwood Dr	473	10/26/04	1699	1374	Fairland/White Oak	1500
Columbia Pike at MD 198	515	04/03/01	1535	1308	Fairland/White Oak	1500
Columbia Pike at Milestone/Stewart	293	01/29/03	1890	1849	Fairland/White Oak	1500
Columbia Pike at Musgrove Rd	290	12/04/02	1378	1194	Fairland/White Oak	1500
Columbia Pike at Prelude Dr	594	10/26/04	1533	1262	Fairland/White Oak	1500
Columbia Pike at Southwood	182	10/28/04	2015	1483	Kensington/Wheaton	1600
Columbia Pike at Stewart/NB Slip Ramp	294	01/29/03	1831	1849	Fairland/White Oak	1500
Columbia Pike at Tech Rd	589	03/17/04	1461	1366	Fairland/White Oak	1500
Columbia Pk at Burtonsville Xing SC	403	06/02/04	1628	1310	Fairland/White Oak	1500
Connecticut Ave at Adams	168	03/11/04	1362	859	Kensington/Wheaton	1600
Connecticut Ave at Aspen Hill Rd	145	03/03/04	1481	1276	Aspen Hill	1500
Connecticut Ave at Beach Dr	177				Kensington/Wheaton	1600
Connecticut Ave at Bel Pre Rd	129				Aspen Hill	1500
Connecticut Ave at Bradley Ln	186	03/13/03	1382	1400	Bethesda/Chevy Chase	1600
Connecticut Ave at Chevy Chase Lake Dr	181	04/28/04	950	1080	Bethesda/Chevy Chase	1600
Connecticut Ave at Denfield	169	02/12/04	1273	1173	Kensington/Wheaton	1600
Connecticut Ave at Dunlop St	681	04/29/04	1138	1045	Bethesda/Chevy Chase	1600
Connecticut Ave at I-495 (N)	178	03/09/04	1283	1245	Kensington/Wheaton	1600
Connecticut Ave at I-495 (S)	680	03/10/04	1515	1100	Bethesda/Chevy Chase	1600
Connecticut Ave at Independence	146	10/08/02	1063	880	Aspen Hill	1500

Intersection	INT_ID	Count Date	AM CLV	PM CLV	Policy Area	LATR Standard
Connecticut Ave at Jones Bridge Rd	179	06/11/03	1533	1974	Bethesda/Chevy Chase	1600
Connecticut Ave at Knowles Ave	174	09/04/02	1433	1274	Kensington/Wheaton	1600
Connecticut Ave at Manor Rd	180	04/27/04	1324	1299	Bethesda/Chevy Chase	1600
Connecticut Ave at Perry	674	02/11/04	1188	1018	Kensington/Wheaton	1600
Connecticut Ave at Plyers Mill Rd	173				Kensington/Wheaton	1600
Connecticut Ave at Randolph Rd	166	03/03/04	1631	1550	Kensington/Wheaton	1600
Connecticut Ave at Raymond/Rosemary	185	04/14/04	1126	860	Bethesda/Chevy Chase	1600
Connecticut Ave at Saul Rd	176	02/05/04	1002	990	Kensington/Wheaton	1600
Connecticut Ave at University Blvd	172	04/10/01	1609	1038	Kensington/Wheaton	1600
Connecticut Ave at Veirs Mill Rd	167	03/03/04	1717	1404	Kensington/Wheaton	1600
Connecticut Ave at Washington St	737				Kensington/Wheaton	1600
Connecticut Ave at Weller Rd	165	12/07/04	1286	1175	Kensington/Wheaton	1600
Connecticut at East West Hwy	183	03/18/04	1732	1831	Bethesda/Chevy Chase	1600
Crabbs Branch Way at Indianola Dr	486	06/11/03	1275	995	Shady Grove	1800
Dale Dr at Wayne Ave	308	06/03/04	918	797	Silver Spring/Takoma Park	1600
Darnestown Rd at Beallsville Rd	506				Poolesville	1400
Darnestown Rd at Darnestown-Germantn Rd	542				Darnestown/Travilah	1400
Darnestown Rd at Glen Mill Rd	135				Rockville City	1500
Darnestown Rd at Muddy Branch Rd	446	02/24/04	1505	1262	North Potomac	1475
Darnestown Rd at Potomac Valley Drwy	697				Gaithersburg City	1450
Darnestown Rd at Quince Orchard HS	652				North Potomac	1475
Darnestown Rd at Quince Orchard Rd	392	03/16/04	1190	1080	North Potomac	1475
Darnestown Rd at Riffle Ford Rd	701	11/09/04	1558	1769	North Potomac	1475
Darnestown Rd at Seneca Rd (MD 112)	543				Darnestown/Travilah	1400
Darnestown Rd at Shady Grove Rd	88	02/17/04	1304	1127	Rockville City	1500
Darnestown Rd at Travilah Rd	134				North Potomac	1475
Darnestown Rd at Tschiffely Square Rd	704	03/14/02	1345	1177	Gaithersburg City	1450
Deer Park Dr at Railroad Ave	448	05/06/03	1060	1034	Derwood	1475
Democracy Blvd at Falls Rd/S Glen Rd	525	12/09/03	1390	1204	Potomac	1475
Democracy Blvd at Fernwood Rd	148	02/26/04	1052	1199	North Bethesda	1550
Democracy Blvd at Fire House	657				North Bethesda	1550
Democracy Blvd at Gainsborough Rd	514				Potomac	1475
Democracy Blvd at I-270	441				Potomac	1475
Democracy Blvd at Rockledge Dr	149	02/26/04	650	646	North Bethesda	1550
Democracy Blvd at Seven Locks Rd	411	06/03/03	977	1311	Potomac	1475
Democracy Blvd at Westfield Mont. Mall	590				Potomac	1475
Democracy Blvd at Westlake Terr	419	02/26/04	880	736	Potomac	1475
Dennis Ave at Inwood Ave	561				Kensington/Wheaton	1600
Diamondback Dr at Bickerstaff / Story	571	06/09/04	714	742	Gaithersburg City	1450
E Gude Dr at Calhoun Dr	583	06/08/04	1148	1045	Derwood	1475
E Gude Dr at Crabbs Branch/Cecil	580	06/03/03	1317	1190	Derwood	1475
E Gude Dr at Rothgeb Dr	595				Rockville City	1500
E Gude Dr at Southlawn Ln	582	09/28/04	1545	1211	Rockville City	1500
E Randolph Rd at Fairland Rd/Octagon La	648	12/09/03	1045	1333	Fairland/White Oak	1500
E Randolph Rd at Old Columbia Pike	281	12/04/02	1171	1012	Fairland/White Oak	1500
E Randolph Rd at Serpentine Way	723	12/03/02	704	713	Fairland/White Oak	1500
E Randolph Rd at Tamarack Ln	522	10/29/03	633	589	Fairland/White Oak	1500
E Wayne Ave at Flower Ave	461				Silver Spring/Takoma Park	1600

Intersection	INT_ID	Count Date	AM CLV	PM CLV	Policy Area	LATR Standard
East Diamond Ave at Chesnut	611				Gaithersburg City	1450
East Diamond Ave at Girard St	443	05/12/04	573	521	Gaithersburg City	1450
East Diamond Ave at Summit Ave	118	04/24/03	840	1051	Gaithersburg City	1450
East West Hwy at Jones Mill/Beach	189				Bethesda/Chevy Chase	1600
East West Hwy at Newell/Blair Mill	440	06/08/04	550	752	Silver Spring CBD	1800
East-West Hwy at 16th St	193	11/03/04	1388	1219	Silver Spring/Takoma Park	1600
East-West Hwy at Chelton	250	04/18/02	619	403	Bethesda CBD	1800
East-West Hwy at Grubb Rd	191	11/05/03	1249	1177	Silver Spring/Takoma Park	1600
East-West Hwy at Meadowbrook Ln	190	02/13/02	1091	1268	Silver Spring/Takoma Park	1600
East-West Hwy at Pearl St	249	04/08/03	1104	899	Bethesda CBD	1800
East-West Hwy at Rosemary Hills Dr	644				Silver Spring/Takoma Park	1600
East-West Hwy at Sundale/Washington	192				Silver Spring/Takoma Park	1600
East-West Hwy at Waverly	248	10/30/03	823	978	Bethesda CBD	1800
Edgemoor Ln at Woodmont Ave	481				Bethesda CBD	1800
Ethan Allen Ave at Carroll Ave	558				Silver Spring/Takoma Park	1600
Executive Blvd at Business Park Drwy	581				North Bethesda	1550
Executive Blvd at Marinelli Rd	147				White Flint	1800
Executive Blvd at Nicholson Ln	109	09/02/04	662	659	White Flint	1800
Fairland Rd at Old Columbia Pike	286				Fairland/White Oak	1500
Falls Rd at Bells Mill Rd	507	05/29/03	885	995	Potomac	1475
Falls Rd at Dunster/Falls Chapel	520	10/23/01	1030	1026	Rockville City	1500
Falls Rd at Glen Rd	524				Potomac	1475
Falls Rd at I-270 Ramp	501				Rockville City	1500
Falls Rd at Kersey	620	10/18/01	1068	1009	Rockville City	1500
Falls Rd at Maryland Ave/Pot. Valley	405				Rockville City	1500
Falls Rd at Promenade/S.C.Drwy	552				Potomac	1475
Falls Rd at Tuckerman Ln/Falls Chapel	523	04/27/04	1338	1388	Potomac	1475
Falls Rd at Wootton Pkwy	400	10/20/04	1309	835	Rockville City	1500
Father Hurley Blvd at Crystal Rock Dr	690				Germantown West	1450
Father Hurley Blvd at Middlebrook Rd	617	03/11/03	1070	1275	Germantown West	1450
Father Hurley Blvd at Waters Landing Ln	616				Germantown West	1450
Fenton St at Bonifant St	55	06/02/04	612	926	Silver Spring CBD	1800
Fenton St at Burlington Ave	59	06/09/04	686	861	Silver Spring CBD	1800
Fenton St at Cameron St	51	05/21/03	438	656	Silver Spring CBD	1800
Fenton St at Pershing Ln	53				Silver Spring CBD	1800
Fenton St at Silver Spring Ave	57	06/09/04	729	1201	Silver Spring CBD	1800
Fenton St at Sligo Ave	58	05/20/03	542	770	Silver Spring CBD	1800
Fenton St at Thayer Ave	56	06/15/04	670	893	Silver Spring CBD	1800
Fenton St at Wayne Ave	54	06/08/04	861	1175	Silver Spring CBD	1800
Fern St at Reedie Dr	730				Wheaton CBD	1800
Fernwood Dr at Marriott Driveway	406				North Bethesda	1550
Fernwood Rd at Greyswood Dr	421				North Bethesda	1550
Fernwood Rd at Rock Spring Dr/Marriott	618				North Bethesda	1550
Fernwood Rd at Rockledge Dr/Westlake Ter	667				North Bethesda	1550
Fields Rd at Rio Blvd	568				R&D Village	1475
Fields Rd at Washingtonian Blvd	567				R&D Village	1475
First St at Baltimore Rd	125				Rockville City	1500
Forest Glen Dr at Dameron Dr	705				Kensington/Wheaton	1600

Intersection	INT_ID	Count Date	AM CLV	PM CLV	Policy Area	LATR Standard
Franklin Ave at Flower Ave	475				Silver Spring/Takoma Park	1600
Frederick Ave at Education Blvd	526	10/27/04	1324	944	Gaithersburg City	1450
Frederick Ave at Plummer Dr	725	01/07/04	1095	855	Germantown East	1450
Frederick Ave at Travis	709	10/13/04	1056	1212	Gaithersburg City	1450
Frederick Rd at Chestnut St	6	09/30/04	1260	1204	Gaithersburg City	1450
Frederick Rd at Christopher St	3	11/09/04	1237	1566	Gaithersburg City	1450
Frederick Rd at Clarksburg Rd	633	10/21/04	1284	1472	Clarksburg	1450
Frederick Rd at Darnestown-Germantown Rd	639	12/04/02	1217	1495	Germantown East	1450
Frederick Rd at Deer Park Dr	14	03/10/04	1381	1192	Gaithersburg City	1450
Frederick Rd at Gunners Branch Rd	480	10/19/04	940	937	Germantown East	1450
Frederick Rd at Henderson Corner Rd	662	11/04/04	1088	854	Germantown East	1450
Frederick Rd at Indianola/Watkins Pond	579	10/06/04	1789	1522	Rockville City	1500
Frederick Rd at King Farm Blvd	739	04/15/04	1639	1952	Shady Grove	1800
Frederick Rd at Lakeforest/Perry	4	03/10/04	995	974	Gaithersburg City	1450
Frederick Rd at Lockheed / IBM	2	11/16/04	991	876	Gaithersburg City	1450
Frederick Rd at Middlebrook (N)	477	04/29/04	992	1351	Germantown East	1450
Frederick Rd at Milestone Ctr S	661	10/14/04	1054	955	Germantown East	1450
Frederick Rd at Montgomery Village Ave	1	03/03/04	1409	1540	Gaithersburg City	1450
Frederick Rd at Odenhal Ave	5	11/10/04	1049	1372	Gaithersburg City	1450
Frederick Rd at Old Hundred Rd (MD 109)	666	10/12/04	708	613	Goshen	1400
Frederick Rd at Professional	407	10/20/04	1232	1184	Gaithersburg City	1450
Frederick Rd at Redland Rd	17	10/19/04	1542	1418	Rockville City	1500
Frederick Rd at Ridge Rd	663	09/08/04	1790	1981	Germantown East	1450
Frederick Rd at S_Westland	15	01/06/04	1224	1283	Gaithersburg City	1450
Frederick Rd at Shady Grove Rd	16	03/16/04	1700	1754	Shady Grove	1800
Frederick Rd at Shakepeare Blvd	660	04/15/04	1269	1018	Germantown East	1450
Frederick Rd at Solid Waste Drwy	74	09/21/04	1280	1102	Shady Grove	1800
Frederick Rd at Summit Ave	13	03/09/04	1194	1246	Gaithersburg City	1450
Frederick Rd at Watkins Mill Rd	377	03/16/04	784	1057	Gaithersburg City	1450
Georgia Ave at 16th St	196	05/21/03	680	1173	Silver Spring/Takoma Park	1600
Georgia Ave at Arcola Ave	208	05/11/04	1377	1552	Kensington/Wheaton	1600
Georgia Ave at Aspen Hill Rd	143				Aspen Hill	1500
Georgia Ave at August Dr	200	11/19/03	1221	1002	Kensington/Wheaton	1600
Georgia Ave at Bel Pre Rd	141				Aspen Hill	1500
Georgia Ave at Blueridge	207	05/29/03	1301	1302	Wheaton CBD	1800
Georgia Ave at Bonifant St	316	06/10/04	942	940	Silver Spring CBD	1800
Georgia Ave at Cameron St	313	06/10/04	1000	927	Silver Spring CBD	1800
Georgia Ave at Columbia Blvd/Seminary Ln	197	06/10/04	1720	1549	Silver Spring/Takoma Park	1600
Georgia Ave at Connecticut Ave	142				Aspen Hill	1500
Georgia Ave at Dennis Ave	201	05/01/01	1863	1585	Kensington/Wheaton	1600
Georgia Ave at East-West/Burlington/13th	320	11/04/04	1868	1433	Silver Spring CBD	1800
Georgia Ave at Emory Ln	362	09/09/03	1741	1568	Olney	1475
Georgia Ave at Forest Glen Rd	199	08/28/03	2106	1643	Kensington/Wheaton	1600
Georgia Ave at Glenallen Ave	573	01/09/03	963	1232	Glenmont	1800
Georgia Ave at Gold Mine Rd	696	05/24/01	938	845	Olney	1475
Georgia Ave at Hathaway Dr	216	12/08/04	1142	940	Kensington/Wheaton	1600
Georgia Ave at Hewitt Ave	144	09/20/01	960	1145	Aspen Hill	1500
Georgia Ave at Hines/Prince Phillip	631	11/18/03	1210	1315	Olney	1475

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Georgia Ave at I-495 ramps	718	11/20/03	1142	1206	Kensington/Wheaton	1600
Georgia Ave at International	361	12/18/03	931	1012	Aspen Hill	1500
Georgia Ave at King William Dr	360	12/09/03	1192	1095	Olney	1475
Georgia Ave at Layhill Rd	211	01/09/03	1109	1143	Glenmont	1800
Georgia Ave at MD 108	358				Olney	1475
Georgia Ave at Morningwood/Spartan	131	01/08/02	1069	1293	Olney	1475
Georgia Ave at New Hampshire Ave	619	01/25/05	1369	1218	Patuxent	1400
Georgia Ave at Norbeck Rd	139	09/11/03	1896	1774	Aspen Hill	1500
Georgia Ave at Old Baltimore Rd	630	09/09/03	1759	1238	Olney	1475
Georgia Ave at Plyers Mill Rd	202	11/18/03	1626	1248	Kensington/Wheaton	1600
Georgia Ave at Prince Phillip/Queen Eliz	659	11/18/03	1123	1100	Olney	1475
Georgia Ave at Randolph Rd	210	01/08/03	1654	1644	Kensington/Wheaton	1600
Georgia Ave at Reedie Dr	205	06/03/03	1042	1009	Wheaton CBD	1800
Georgia Ave at Rossmoor Ln	140	11/18/03	1468	1401	Aspen Hill	1500
Georgia Ave at Sandy Spring VFD Drwy	586				Olney	1475
Georgia Ave at Seminary Rd	198	06/10/04	1426	1541	Silver Spring/Takoma Park	1600
Georgia Ave at Shorefield Ln	209				Kensington/Wheaton	1600
Georgia Ave at Silver Spring Ave	318				Silver Spring CBD	1800
Georgia Ave at Sligo Ave	319	11/06/03	828	1022	Silver Spring CBD	1800
Georgia Ave at Spring St	312	06/10/04	1107	1058	Silver Spring/Takoma Park	1600
Georgia Ave at Thayer St	317	11/18/03	882	974	Silver Spring CBD	1800
Georgia Ave at University Blvd	206	05/29/03	1317	1313	Wheaton CBD	1800
Georgia Ave at Urbana Ln	716	11/19/03	783	778	Glenmont	1800
Georgia Ave at Veirs Mill Rd	204	06/03/03	1703	1635	Wheaton CBD	1800
Georgia Ave at Wayne Ave	315	11/18/03	1225	1210	Silver Spring CBD	1800
Georgia Ave at Windham Ln	203	09/10/03	1196	1145	Kensington/Wheaton	1600
Germantown Rd at Aircraft Dr	371				Germantown Town Center	1450
Germantown Rd at Clopper Rd	712	11/18/03	880	899	Germantown West	1450
Germantown Rd at Crystal Rock Dr	372	02/12/02	1035	1212	Germantown Town Center	1450
Germantown Rd at Dawson Farm Rd	711	02/14/02	1244	1108	Germantown West	1450
Germantown Rd at Goldenrod Rd	546				Germantown East	1450
Germantown Rd at I-270 NB Rmp	693				Germantown East	1450
Germantown Rd at I-270 SB Rmp	692				Germantown West	1450
Germantown Rd at Middlebrook	373	03/20/03	1089	1195	Germantown Town Center	1450
Germantown Rd at Observation	640	12/03/02	867	762	Germantown East	1450
Germantown Rd at Richter Farm	748				Germantown West	1450
Germantown Rd at Wisteria Dr	376	03/13/03	894	1356	Germantown Town Center	1450
Goldsboro Rd at Massachusetts Ave	425				Bethesda/Chevy Chase	1600
Goshen Rd at Centerway Rd	386	09/19/02	1214	1212	Montgomery Village/Airpark	1450
Goshen Rd at Emory Grove Rd	387				Montgomery Village/Airpark	1450
Goshen Rd at Girard/Odenhal	389	12/09/03	893	1210	Montgomery Village/Airpark	1450
Goshen Rd at Snouffer School/Wightman	424	03/25/04	1087	1193	Montgomery Village/Airpark	1450
Goshen Rd at Warfield Rd	576	03/25/04	1078	1105	Montgomery Village/Airpark	1450
Great Seneca Hwy at Clopper Mill/Richter	719	12/14/04	1082	836	Germantown West	1450
Great Seneca Hwy at Darnestown Rd	368	12/10/03	1370	1024	R&D Village	1475
Great Seneca Hwy at Kentlands Blvd	651	06/14/01	1473	1230	Gaithersburg City	1450
Great Seneca Hwy at Key West Ave	369	02/11/03	1556	1109	R&D Village	1475
Great Seneca Hwy at Lakeland Blvd	732				Gaithersburg City	1450

Intersection	INT_ID	Count Date	AM CLV	PM CLV	Policy Area	LATR Standard
Great Seneca Hwy at Longdraft Rd	557				Gaithersburg City	1450
Great Seneca Hwy at Mateney Rd (S)	682	03/31/04	1146	1288	Germantown West	1450
Great Seneca Hwy at Middlebrook Rd	228	05/13/03	950	1274	Germantown West	1450
Great Seneca Hwy at Muddy Branch Rd	370	03/16/04	1940	1829	Gaithersburg City	1450
Great Seneca Hwy at Quince Orchard Rd	397	03/09/04	1507	1286	Gaithersburg City	1450
Great Seneca Hwy at Sam Eig Hwy	572	03/16/04	1131	1839	Gaithersburg City	1450
Great Seneca Hwy at Wisteria Dr	282	05/14/03	729	930	Germantown West	1450
Greencastle Rd at Wexhall Dr	726				Fairland/White Oak	1500
Gude Dr at Dover	547	06/17/03	1148	1436	Derwood	1475
Gude Dr at Taft	544				Rockville City	1500
Hungerford Dr at Beall St	96	10/14/04	839	965	Rockville City	1500
Hungerford Dr at Campus Dr	91	10/28/04	1496	980	Derwood	1475
Hungerford Dr at College Pkwy	90	10/27/04	1382	958	Derwood	1475
Hungerford Dr at Frederick Ave	93	10/26/04	1035	1063	Rockville City	1500
Hungerford Dr at Manakee St	92	10/27/04	1504	1027	Rockville City	1500
Hungerford Dr at Middle Ln/Park Rd	97	10/21/04	1352	1370	Rockville City	1500
Hungerford Dr at Monroe Pl/Church St	98	10/21/04	1217	1055	Rockville City	1500
Hungerford Dr at N Washington St	94	07/08/04	1345	1736	Rockville City	1500
Hungerford Ln (MD 355) at Gude Dr	18	10/26/04	1656	1447	Rockville City	1500
I-270 NB ramp at Father Hurley Blvd	688				Germantown East	1450
I-270 SB ramp at Father Hurley Blvd	689				Germantown West	1450
Jones Bridge Rd at Glenbrook Ln/Gunnell	549				Bethesda/Chevy Chase	1600
Jones Bridge Rd at Grier	455				Bethesda/Chevy Chase	1600
Jones Bridge Rd at Jones Mill Rd	188				Bethesda/Chevy Chase	1600
Jones Bridge Rd at Manor Rd	187	11/19/02	679	676	Bethesda/Chevy Chase	1600
Jones Bridge Rd at Platt Ridge Dr	613	11/19/02	773	963	Bethesda/Chevy Chase	1600
Kemp Mill Rd at Hermleigh Rd	707				Kensington/Wheaton	1600
Key West Ave at Broschart/Diamondback	415				R&D Village	1475
Key West Ave at Darnestown Rd	479	05/08/01	2225	1127	North Potomac	1475
Key West Ave at Medical Ctr/Omega Dr	466				R&D Village	1475
Key West Ave at Shady Grove Rd	86	10/29/02	1222	990	R&D Village	1475
Knowles Ave at Summit Ave	175	09/05/02	1078	1492	Kensington/Wheaton	1600
Layhill Rd at Belpre/Bonifant	476	01/08/03	1205	1143	Aspen Hill	1500
Layhill Rd at Briggs Rd	647				Glenmont	1800
Layhill Rd at Ednor Rd/Norwood Rd	578	06/12/03	1366	1049	Olney	1475
Layhill Rd at Glenallen Ave	222	01/14/03	1085	1116	Kensington/Wheaton	1600
Layhill Rd at Middlevale	654				Kensington/Wheaton	1600
Laytonsville Rd at Brink/Sundown	587	05/25/04	1273	1375	Goshen	1400
Liberty Mill Rd at Dawson Farm Rd	713				Germantown West	1450
Little Falls Pkwy at Dorset Ave	269				Bethesda/Chevy Chase	1600
Little Falls Pkwy at Hillandale	268				Bethesda/Chevy Chase	1600
MacArthur Blvd at Sangamore/Madaket	528				Bethesda/Chevy Chase	1600
MacArthur Blvd at Sangamore/Madaket Rd	539				Bethesda/Chevy Chase	1600
MacArthur Blvd at Union Arch Bridge	527				Bethesda/Chevy Chase	1600
Main St Damascus at Woodfield Rd	530				Damascus	1450
Massachsetts Ave at Sangamore Dr	426				Bethesda/Chevy Chase	1600
Massachusetts Ave at Biltmore	429	03/03/05	1201	856	Bethesda/Chevy Chase	1600
Massachusetts Ave at Cromwell	423	03/02/05	675	530	Bethesda/Chevy Chase	1600

Intersection	INT_ID	Count Date	AM CLV	PM CLV	Policy Area	LATR Standard
Massachusetts Ave at Little Falls Pkwy	428	03/02/05	1176	883	Bethesda/Chevy Chase	1600
Massachusetts Ave at Westbard Ave	427	03/04/04	1276	1045	Bethesda/Chevy Chase	1600
Midcounty Hwy at Goshen Rd	490	03/16/04	1140	1255	Montgomery Village/Airpark	1450
Midcounty Hwy at Montgomery Village Ave	489	03/09/04	1110	1553	Montgomery Village/Airpark	1450
Midcounty Hwy at Washington Grove Ln	491	04/30/03	1593	1186	Montgomery Village/Airpark	1450
Midcounty Hwy at Woodfield/Saybrooke	559	03/16/04	1150	838	Gaithersburg City	1450
Middlebrook Rd at Crystal Rock Dr	227				Germantown Town Center	1450
Middlebrook Rd at I-270 (W)	623				Germantown West	1450
Middlebrook Rd at Observation Dr	596				Germantown East	1450
Middlebrook Rd at Waring Station Dr	637	10/28/04	959	1081	Germantown West	1450
Mont. Village Ave at Arrowhead/Shadowoak	401				Montgomery Village/Airpark	1450
Mont. Village Ave at Chris/Lost Knife	10	11/04/04	1249	1613	Montgomery Village/Airpark	1450
Mont. Village Ave at Lakeforest Mall	9	11/10/04	876	999	Montgomery Village/Airpark	1450
Montgomery Ave at Waverly St	229	06/03/03	703	1051	Bethesda CBD	1800
Montgomery Ln at East Ln	560				Bethesda CBD	1800
Montgomery Ln at Pearl St	632	04/15/03	655	1046	Bethesda CBD	1800
Montgomery Village Ave at Apple Ridge Rd	615	01/16/02	752	784	Montgomery Village/Airpark	1450
Montgomery Village Ave at Centerway Rd	384	09/18/02	1012	1171	Montgomery Village/Airpark	1450
Montgomery Village Ave at Club House Rd	385				Montgomery Village/Airpark	1450
Montgomery Village Ave at I-270	492				Gaithersburg City	1450
Montgomery Village Ave at Russell Ave	8	12/13/01	1266	1891	Gaithersburg City	1450
Montgomery Village Ave at Stedwick	383				Montgomery Village/Airpark	1450
Montrose Rd at E Jefferson St	23	05/22/03	1453	2061	North Bethesda	1550
Montrose Rd at Falls Rd	395	06/04/02	1026	1014	Potomac	1475
Montrose Rd at Hebrew Home	655				North Bethesda	1550
Montrose Rd at Hitching Post/Monroe	21				North Bethesda	1550
Montrose Rd at I-270 NB Ramp	20				Grosvenor	1550
Montrose Rd at Old Old Georgetown Rd	24				North Bethesda	1550
Montrose Rd at Seven Locks Rd	19	05/30/02	1260	1032	Potomac	1475
Montrose Rd at Tildenwood Ln	22				North Bethesda	1550
Montrose Rd at Tower Oaks Blvd	555	06/05/02	1521	1388	North Bethesda	1550
Montrose Rd at Whites Ford Rd	622				Potomac	1475
Motor City Dr at Westfield Mont Mall	668				Potomac	1475
Muddy Branch Rd at Diamondback Dr	393	01/15/02	805	827	Gaithersburg City	1450
Muddy Branch Rd at W Deer Park Dr	380				Gaithersburg City	1450
Muddy Branch Rd at West Side Dr	394				Gaithersburg City	1450
Muncaster Mill Rd at Avery Rd	553				Rock Creek	1400
Muncaster Mill Rd at Bowie Mill Rd	510				Rock Creek	1400
Muncaster Mill Rd at Muncaster/Redland	83				Derwood	1475
Muncaster Mill Rd at Needwood Rd	728	01/17/01	955	939	Rock Creek	1400
Muncaster Rd at MD 108	597	12/10/03	1618	1079	Patuxent	1400
N Washington St at Martins	89				Rockville City	1500
New Hampshire Ave at Adelphi/Dilston	306	01/13/04	1253	1450	Silver Spring/Takoma Park	1600
New Hampshire Ave at Bonifant/Good Hope	357	05/25/04	1476	1227	Cloverly	1475
New Hampshire Ave at Briggs Chaney Rd	355	05/25/04	776	1092	Cloverly	1475
New Hampshire Ave at Brighton Dam Rd	714				Patuxent	1400
New Hampshire Ave at Cape May Rd	378				Cloverly	1475
New Hampshire Ave at Chalmers	297	09/19/01	1347	1184	Fairland/White Oak	1500

Intersection	INT_ID	Count Date	AM CLV	PM CLV	Policy Area	LATR Standard
New Hampshire Ave at Columbia Pk Ramps	691	10/23/01	1121	1452	Fairland/White Oak	1500
New Hampshire Ave at Ednor Rd	521	12/11/01	1524	1277	Patuxent	1400
New Hampshire Ave at I-495/Elton Rd	299	12/02/03	1193	1377	Fairland/White Oak	1500
New Hampshire Ave at Jackson	612				Fairland/White Oak	1500
New Hampshire Ave at Lockwood Dr	295	02/10/04	1345	1320	Fairland/White Oak	1500
New Hampshire Ave at MD 108	502	05/27/04	1302	1334	Patuxent	1400
New Hampshire Ave at Midland Dr	708	02/01/01	972	973	Fairland/White Oak	1500
New Hampshire Ave at Northampton	367				Silver Spring/Takoma Park	1600
New Hampshire Ave at Norwood Rd	356	05/26/04	1019	1121	Cloverly	1475
New Hampshire Ave at Oakview	305	12/02/03	1553	1509	Silver Spring/Takoma Park	1600
New Hampshire Ave at Powder Mill Rd	298	11/20/03	1421	1237	Fairland/White Oak	1500
New Hampshire Ave at Schindler/Mahan	296	02/12/04	1270	872	Fairland/White Oak	1500
New Hampshire Ave at Spencerville Rd	550	04/24/03	883	1103	Cloverly	1475
New Hampshire Ave at Valleybrook	347				Fairland/White Oak	1500
New Hampshire Ave at Venice	348				Fairland/White Oak	1500
New Hampshire Ave at Wolf	349	03/02/05	1144	1180	Fairland/White Oak	1500
Nicholson Ln at Huff Ct	31	09/15/04	579	752	White Flint	1800
Nicholson Ln at Nebel St	33	06/02/04	706	1211	North Bethesda	1550
Nicholson Ln at White Flint	32				White Flint	1800
Nicholson Ln at Woodglen	398	09/08/04	586	665	White Flint	1800
Norbeck Rd at Avery Rd	743				Rockville City	1500
Norbeck Rd at Baltimore	127	10/29/02	1491	1755	Aspen Hill	1500
Norbeck Rd at Bauer Dr	136	02/01/01	1836	1685	Aspen Hill	1500
Norbeck Rd at Bel Pre Rd	137	01/31/01	1695	1496	Aspen Hill	1500
Norbeck Rd at E Gude Dr	126	06/11/02	1287	1295	Rockville City	1500
Norbeck Rd at Layhill Rd	624				Cloverly	1475
Norbeck Rd at Muncaster Mill Rd	138	09/11/03	1446	1383	Olney	1475
Norbeck Rd at Norbeck Blvd	710				Aspen Hill	1500
Norbeck Rd at Owens Glen/Manor Care	554				Gaithersburg City	1450
Norfolk Ave at St Elmo Ave	259				Bethesda CBD	1800
Observation Dr at Royal Crown	671				Germantown East	1450
Odendhal Ave at Lost Knife Rd	487				Montgomery Village/Airpark	1450
Odenhal at Russell Ave	488				Gaithersburg City	1450
Oiney-Laytonsville Rd at Olney Mill Rd	359	10/30/03	978	842	Olney	1475
Old Columbia Pk at Spencerville Rd	742	06/02/04	1114	1306	Patuxent	1400
Old G'town Rd (MD 187) at Mid Pike Plz	110				Grosvenor	1800
Old Georgetown Rd at Auburn St	252				Bethesda CBD	1800
Old Georgetown Rd at Battery Ln	251	04/29/03	1192	1325	Bethesda/Chevy Chase	1600
Old Georgetown Rd at Beech St	159	10/05/04	1675	1668	Bethesda/Chevy Chase	1600
Old Georgetown Rd at Center St	161				Bethesda/Chevy Chase	1600
Old Georgetown Rd at Cheshire Ln	154	10/29/03	1076	1264	North Bethesda	1550
Old Georgetown Rd at Commerce	255				Bethesda CBD	1800
Old Georgetown Rd at Democracy Blvd	153	02/24/04	1384	1338	North Bethesda	1550
Old Georgetown Rd at Edson/Poindexter	494				North Bethesda	1550
Old Georgetown Rd at Executive Blvd	111	05/22/03	1341	1295	White Flint	1800
Old Georgetown Rd at Huntington Pkwy	164	02/10/05	1289	953	Bethesda/Chevy Chase	1600
Old Georgetown Rd at I-270 (N)	601	05/27/04	775	962	North Bethesda	1550
Old Georgetown Rd at I-495 (N)	156				North Bethesda	1550

Intersection	INT_ID	Count Date	AM CLV	PM CLV	Policy Area	LATR Standard
Old Georgetown Rd at I-495 (S)	157				Bethesda/Chevy Chase	1600
Old Georgetown Rd at Lincoln St	163				Bethesda/Chevy Chase	1600
Old Georgetown Rd at Lone Oak	155	06/07/01	1146	984	North Bethesda	1550
Old Georgetown Rd at McKinley	636				Bethesda/Chevy Chase	1600
Old Georgetown Rd at Nicholson/Tilden	112	05/22/03	821	1119	White Flint	1800
Old Georgetown Rd at Rock Spring Dr	152	02/24/04	1029	1107	North Bethesda	1550
Old Georgetown Rd at Ryland	158				Bethesda/Chevy Chase	1600
Old Georgetown Rd at South/Greentree	162	08/19/04	980	957	Bethesda/Chevy Chase	1600
Old Georgetown Rd at Tilden MS	694				North Bethesda	1550
Old Georgetown Rd at Tuckerman Ln	150	02/13/03	1679	1518	North Bethesda	1550
Old Georgetown Rd at W Cedar Ln	160	04/30/03	1358	1639	Bethesda/Chevy Chase	1600
Old Georgetown Rd at Wilson/Arlington	253	05/01/03	1347	1452	Bethesda CBD	1800
Old Georgetown Rd at Woodmont Ave	254	09/09/03	717	818	Bethesda CBD	1800
Old.Georgetown Rd at I-270 (S)	151	05/26/04	968	1160	North Bethesda	1550
Olney-Laytons Rd at Queen Elizabeth Dr	634				Olney	1475
Olney-Sandy Spg Rd at Old Baltimore Rd	635				Olney	1475
Olney-Sandy Sprg Rd at Prince Philip D	462				Olney	1475
Olney-Sandy Spring Rd at Doctor Bird Rd	516	06/12/03	786	904	Olney	1475
Olney-Sandy Spring Rd at Norwood Rd	665	04/29/04	1328	1295	Olney	1475
Olney-Sandy Spring Rd at Olney Vil. Mart	390				Olney	1475
Olney-Sandy Spring Rd at Sherwood HS	676	02/12/02	1205	1163	Patuxent	1400
Olney-Sandy Spring Rd at Spartan	593	11/10/04	1062	1072	Olney	1475
Parklawn Dr at Boiling Brook Pkwy	34				North Bethesda	1550
Parklawn Dr at Braxfield	114	03/01/01	784	603	North Bethesda	1550
Parklawn Dr at Twinbrook Pkwy	46	06/09/04	1003	1112	Twinbrook	1800
Parklawn Dr at Wilkens (N)	48				North Bethesda	1550
Parklawn Dr at Wilkens (S)	113				North Bethesda	1550
Philadelphia Ave at Carroll Ave	498	06/02/04	853	1108	Silver Spring/Takoma Park	1600
Philadelphia Ave at Maple Ave	534	06/09/04	879	1280	Silver Spring/Takoma Park	1600
Philadelphia Ave at Takoma Ave	504				Silver Spring/Takoma Park	1600
Piney Branch Rd at Philadelphia Ave	503	05/27/03	1291	1502	Silver Spring/Takoma Park	1600
Piney Branch Rd at Arliss St	341				Silver Spring/Takoma Park	1600
Piney Branch Rd at Barron St	342	06/24/03	1048	1044	Silver Spring/Takoma Park	1600
Piney Branch Rd at Carroll Ave	344	09/16/03	706	774	Silver Spring/Takoma Park	1600
Piney Branch Rd at Dale Dr/Devon Rd	337	12/18/01	873	1067	Silver Spring/Takoma Park	1600
Piney Branch Rd at Flower Ave	339	07/18/02	885	966	Silver Spring/Takoma Park	1600
Piney Branch Rd at Greenwood	340				Silver Spring/Takoma Park	1600
Piney Branch Rd at Ray Dr/TPMS	642	12/18/01	841	963	Silver Spring/Takoma Park	1600
Piney Branch Rd at Sligo Ave/Hilltop	336	05/08/03	922	917	Silver Spring/Takoma Park	1600
Piney Branch Rd at Sligo Creek Pkwy	338				Silver Spring/Takoma Park	1600
Plyers Mill Rd at Metropolitan Ave	720				Kensington/Wheaton	1600
Quince Orchard Rd at Bank/North	408	02/05/03	758	1056	Gaithersburg City	1450
Quince Orchard Rd at Firstfield Rd	11				Gaithersburg City	1450
Quince Orchard Rd at Hillstone Rd	698				Gaithersburg City	1450
Quince Orchard Rd at I-270 SB Ramp	738	09/13/01	808	975	Gaithersburg City	1450
Quince Orchard Rd at Longdraft Rd	625	02/20/02	562	1022	Gaithersburg City	1450
Quince Orchard Rd at Quince Orchard Blvd	279				Gaithersburg City	1450
Quince Orchard Rd at Sioux	132	12/10/03	734	768	Gaithersburg City	1450

Intersection	INT_ID	Count Date	AM CLV	PM CLV	Policy Area	LATR Standard
Quince Orchard Rd at Twinlakes	382	05/21/03	765	1363	Gaithersburg City	1450
Randolph Rd (E) at Parklawn Dr	28				North Bethesda	1550
Randolph Rd (W) at Parklawn Dr	27	06/09/04	1244	1229	North Bethesda	1550
Randolph Rd at Colie Dr	670	05/06/04	919	949	Kensington/Wheaton	1600
Randolph Rd at Dalewood	454				Kensington/Wheaton	1600
Randolph Rd at Dewey	61				Kensington/Wheaton	1600
Randolph Rd at Garden Gate Dr	220				Kensington/Wheaton	1600
Randolph Rd at Gaynor/Rockinghorse	60	05/13/03	1234	1469	North Bethesda	1550
Randolph Rd at Glenallen Ave	219	01/15/03	1604	1203	Kensington/Wheaton	1600
Randolph Rd at Glenmont Cir	218				Glenmont	1800
Randolph Rd at Kemp Mill Rd	221	01/15/03	1130	1256	Kensington/Wheaton	1600
Randolph Rd at Lauderdale	29	03/06/01	1388	1663	North Bethesda	1550
Randolph Rd at Locksley	485				Fairland/White Oak	1500
Randolph Rd at Maple Ave	25				North Bethesda	1550
Randolph Rd at Nebel St	26	05/22/03	667	988	North Bethesda	1550
Randolph Rd at New Hampshire Ave	353	10/23/02	1882	1548	Fairland/White Oak	1500
Randolph Rd at Selfridge Dr	223				Kensington/Wheaton	1600
Randolph Rd at Tivoli	451	01/09/03	1107	889	Kensington/Wheaton	1600
Randolph Rd at Veirs Mill Rd	67	10/31/02	1613	1380	Kensington/Wheaton	1600
Redland Rd at Crabbs Branch Way	445	07/11/01	1511	1658	Shady Grove	1800
Redland Rd at Needwood Rd	363				Derwood	1475
Redland Rd at Piccard Dr	495				Rockville City	1500
Redland Rd at Somerville	350				Shady Grove	1800
Ridge Rd at Bethesda Church Rd	508	10/19/04	874	1183	Damascus	1450
Ridge Rd at Brink Rd	536				Germantown East	1450
Ridge Rd at Henderson Corner Rd	675				Germantown East	1450
Ridge Rd at High Corner St/Shop Ctr	584				Damascus	1450
Ridge Rd at Kings Valley Rd	747	09/06/01	1599	1322	Goshen	1400
Ridge Rd at Lewis Dr/Locust Dr	585				Damascus	1450
Ridge Rd at Main St (MD 108)	529				Damascus	1450
Ridge Rd at Observation Dr	672	04/24/03	1049	1299	Germantown East	1450
Ridge Road at Sweepstakes/Marlboro	531	12/03/03	1301	1369	Damascus	1450
Ridgefield Ave at Westbard Ave	465				Bethesda/Chevy Chase	1600
River Rd at Beechtree / Nevis	271	09/26/02	1853	1465	Bethesda/Chevy Chase	1600
River Rd at Bradley Blvd	535	09/26/02	1421	1282	Potomac	1475
River Rd at Brookside/Ridgefield	276	11/04/03	1202	1071	Bethesda/Chevy Chase	1600
River Rd at Cabin John Co 10	496				Potomac	1475
River Rd at Congressional/Norwood	602	09/17/02	1475	1142	Potomac	1475
River Rd at Counselman	460	10/03/02	1417	926	Potomac	1475
River Rd at Falls Rd	450				Potomac	1475
River Rd at Goldsboro Rd	274	09/19/02	1566	1393	Bethesda/Chevy Chase	1600
River Rd at I-495 (E)	729	11/07/02	1703	1503	Bethesda/Chevy Chase	1600
River Rd at I-495 ramp	517				Potomac	1475
River Rd at Little Falls Pkwy	277	06/11/03	1484	1537	Bethesda/Chevy Chase	1600
River Rd at Piney Meetinghouse Rd	564	10/29/02	1404	1135	Darnestown/Travilah	1400
River Rd at Royal Dominion/Holton Arms	270	02/24/04	1591	1358	Bethesda/Chevy Chase	1600
River Rd at Seneca Creek	740				Poolesville	1400
River Rd at Seven Locks Rd	512	09/17/02	1565	1103	Potomac	1475

Intersection	INT_ID	Count Date	AM CLV	PM CLV	Policy Area	LATR Standard
River Rd at Springfield-Kc	275	10/03/02	1134	883	Bethesda/Chevy Chase	1600
River Rd at Whittier/Winston	273	10/02/02	1776	1329	Bethesda/Chevy Chase	1600
River Rd at Willard Ln/Greenway	278	06/08/04	1003	1191	Bethesda/Chevy Chase	1600
River Rd at Wilson Ln	272	09/18/02	1779	1594	Bethesda/Chevy Chase	1600
Rock Spring Dr at Rockledge Dr	540				North Bethesda	1550
Rockville Pike at Bou Ave	104	05/25/04	1175	1315	North Bethesda	1550
Rockville Pike at Congressional Ln	100	06/03/04	1108	1538	Rockville City	1500
Rockville Pike at Dodge St	115				Rockville City	1500
Rockville Pike at E Jefferson/Veirs Mill	99	10/26/04	1438	1305	Rockville City	1500
Rockville Pike at East-West/Old G'town	238	05/27/04	1109	1345	Bethesda CBD	1800
Rockville Pike at Edmondston Ln	121	03/20/03	1556	1437	Rockville City	1500
Rockville Pike at Edson/White Flint Mall	38	09/21/04	1128	1292	North Bethesda	1550
Rockville Pike at First St/Wootton Pkwy	484				Rockville City	1500
Rockville Pike at Grosvenor/Beach	42	05/18/04	1244	977	North Bethesda	1550
Rockville Pike at Halpine	101	03/20/03	1181	1342	Rockville City	1500
Rockville Pike at Hubbard	105	05/18/04	936	1415	North Bethesda	1550
Rockville Pike at Jones Bridge/Center	234	06/08/04	1266	1886	Bethesda/Chevy Chase	1600
Rockville Pike at Marinelli Rd	35	09/09/04	1106	1071	White Flint	1800
Rockville Pike at Mid Pike Plz	107	06/03/04	1023	1119	Grosvenor	1800
Rockville Pike at Montrose/Randolph	106	05/21/03	1263	1392	North Bethesda	1550
Rockville Pike at Nicholson Ln	36	11/30/04	1234	1456	White Flint	1800
Rockville Pike at Old Georgetown Rd	108	05/22/03	1126	1314	White Flint	1800
Rockville Pike at Pooks Hill Rd	230	06/08/04	1621	1923	Bethesda/Chevy Chase	1600
Rockville Pike at Security Ln	37	09/15/04	966	1130	North Bethesda	1550
Rockville Pike at South/Wood/NNMC	233	06/09/04	1507	2022	Bethesda/Chevy Chase	1600
Rockville Pike at Strathmore Ave	39	05/27/04	1292	1564	North Bethesda	1550
Rockville Pike at Templeton Pl	117	06/08/04	1272	1214	Rockville City	1500
Rockville Pike at Tuckerman (S)	41	05/18/04	995	919	Grosvenor	1800
Rockville Pike at Tuckerman Ln (N)	40	05/19/04	1081	1311	Grosvenor	1800
Rockville Pike at Twinbrook / Rollins	102	03/20/03	1010	1228	Rockville City	1500
Rockville Pike at W Cedar Ln	231	04/05/05	1833	2103	Bethesda/Chevy Chase	1600
Rockville Pike at Wilson/NIH	232	06/10/04	1424	1675	Bethesda/Chevy Chase	1600
Rockville Pike at Woodmont CC/Best Buy	695	06/08/04	1229	1155	Rockville City	1500
Russell Ave at Christopher St	626				Gaithersburg City	1450
Russell Ave at Lakeforest Blvd	7				Gaithersburg City	1450
Sam Eig Hwy at Diamondback Dr	570				Gaithersburg City	1450
Sam Eig Hwy at Fields Rd	569	02/20/02	1100	898	Gaithersburg City	1450
Sam Eig Hwy at Washingtonian Blvd	724				Gaithersburg City	1450
Sandy Spring Rd at Mcknew	628	09/10/03	1401	1260	Patuxent	1400
Sangamore Rd at Overlea Dr	533				Bethesda/Chevy Chase	1600
Second Ave at Apple Ave/Cameron St	679	06/01/04	396	532	Silver Spring CBD	1800
Second St at Fenwick Ln	322	06/08/04	285	335	Silver Spring CBD	1800
Seminary Rd at 2nd Ave/Linden Ln	456	03/25/04	741	1054	Silver Spring/Takoma Park	1600
Seven Locks Rd and Wootton Pkwy	562	06/06/02	970	910	Rockville City	1500
Seven Locks Rd at Bells Mill Rd	735				Potomac	1475
Seven Locks Rd at Bradley Blvd	464				Potomac	1475
Seven Locks Rd at Gainsborough	413	10/29/03	1355	1328	Potomac	1475
Seven Locks Rd at Post Oak Rd	414				Potomac	1475

Intersection	INT_ID	Count Date	AM CLV	PM CLV	Policy Area	LATR Standard
Seven Locks Rd at Tuckerman Ln	412	05/28/02	1552	1529	Potomac	1475
Shady Grove Rd and Crabbs Branch Way	76	12/04/01	1194	1362	Shady Grove	1800
Shady Grove Rd at Briardale	79				Derwood	1475
Shady Grove Rd at Choke Cherry Ln	70				Rockville City	1500
Shady Grove Rd at Comprint Ct	72				Rockville City	1500
Shady Grove Rd at Corporate Dr	84				R&D Village	1475
Shady Grove Rd at Epsilon/Tupelo	194				Derwood	1475
Shady Grove Rd at Gaither Rd	71				Rockville City	1500
Shady Grove Rd at I-270 Ramp NB/Redland	69				Rockville City	1500
Shady Grove Rd at I-270 Ramp SB/Fields	68				Gaithersburg City	1450
Shady Grove Rd at I-370 Ramp / Pleasant	548	03/05/03	1277	1017	Shady Grove	1800
Shady Grove Rd at Medical Center Dr	87	10/12/03	503	819	Rockville City	1500
Shady Grove Rd at Metro (N)	78	12/04/01	1250	1478	Derwood	1475
Shady Grove Rd at Metro (S)	77	12/04/01	990	1192	Derwood	1475
Shady Grove Rd at Midcounty Hwy	80	05/10/01	1961	1242	Derwood	1475
Shady Grove Rd at Mill Run	81				Derwood	1475
Shady Grove Rd at Muncaster Mill/Airpark	82				Derwood	1475
Shady Grove Rd at Oakmont	75	12/04/01	1220	1081	Derwood	1475
Shady Grove Rd at Research Blvd	85				R&D Village	1475
Shady Grove Rd at Solid Waste	73				Derwood	1475
Sixteenth St at 2nd Ave/Elkhart	195	06/08/04	906	749	Silver Spring/Takoma Park	1600
Sixteenth St at Spring St	345	06/10/04	732	954	Silver Spring/Takoma Park	1600
Sligo Creek Pkwy at Forest Glen Rd	452				Kensington/Wheaton	1600
Sligo Creek Pkwy at Wayne Ave	472				Silver Spring/Takoma Park	1600
Snouffer Schl Rd at Cherry Laurel/Mooney	649				Montgomery Village/Airpark	1450
Snouffer School Rd at Centerway Rd	733	09/11/02	1483	844	Montgomery Village/Airpark	1450
Snouffer School Rd at Chesley Knoll Dr/L	756				Montgomery Village/Airpark	1450
Spring St at 2nd Ave	321	06/09/04	674	851	Silver Spring CBD	1800
Spring St at Cameron St	50	06/01/04	671	1032	Silver Spring/Takoma Park	1600
Spring St at Cedar/Ellsworth	311	06/11/03	251	400	Silver Spring/Takoma Park	1600
Strathmore Ave at Kenilworth Ave	715	05/24/01	827	999	North Bethesda	1550
Summit Ave at Brookes	119				Gaithersburg City	1450
Tuckerman Ln at Angus	430				Potomac	1475
Tuckerman Ln at Gainsborough Rd	551	04/27/04	996	964	Potomac	1475
Tuckerman Ln at Sugarbush Ln	734				North Bethesda	1550
Tuckerman Ln at Westlake Terr	416				Potomac	1475
Twinbrook Pkwy at Ardennes Ave	44	09/11/03	959	762	Twinbrook	1800
Twinbrook Pkwy at Chapman Ave	47	06/09/04	926	1182	Rockville City	1500
Twinbrook Pkwy at Fishers Ln	45	06/09/04	701	1048	Twinbrook	1800
University Blvd at Amherst Ave	217	06/05/03	716	1214	Wheaton CBD	1800
University Blvd at Arcola Ave	328	12/04/03	1029	1280	Kensington/Wheaton	1600
University Blvd at Buckingham/Wayne	658	10/29/03	773	760	Silver Spring/Takoma Park	1600
University Blvd at Carroll Ave	335	02/07/01	1573	1083	Silver Spring/Takoma Park	1600
University Blvd at Dennis Ave	330	07/31/01	1528	1902	Kensington/Wheaton	1600
University Blvd at East Ave	471	04/25/01	597	837	Wheaton CBD	1800
University Blvd at East Spur (4 Corners)	702				Kensington/Wheaton	1600
University Blvd at Franklin Ave	334	06/08/04	1361	1311	Silver Spring/Takoma Park	1600
University Blvd at Grandview Ave	215	06/04/03	719	914	Wheaton CBD	1800

Intersection	INT_ID	Count Date	AM CLV	PM CLV	Policy Area	LATR Standard
University Blvd at Inwood	326	09/09/03	577	846	Kensington/Wheaton	1600
University Blvd at Lexington	703	02/17/05	749	918	Kensington/Wheaton	1600
University Blvd at Midvale	351	06/04/03	387	421	Wheaton CBD	1800
University Blvd at Newport Mill/Lexingto	171				Kensington/Wheaton	1600
University Blvd at Piney Branch Rd	343	05/27/03	1693	1567	Silver Spring/Takoma Park	1600
University Blvd at Reedie Dr	727				Kensington/Wheaton	1600
University Blvd at Sligo Creek Pkwy	327				Kensington/Wheaton	1600
University Blvd at Veirs Mill Rd	213	03/16/04	1065	1254	Wheaton CBD	1800
University Blvd at Williamsburg	333	05/23/02	676	712	Kensington/Wheaton	1600
University at Caddington/Gable	329	12/04/03	896	940	Kensington/Wheaton	1600
Veirs Mill Rd at Aspen Hill Rd	63	03/22/03	1476	1608	Aspen Hill	1500
Veirs Mill Rd at Atlantic Ave	124				Rockville City	1500
Veirs Mill Rd at Edmonston Dr	123				Rockville City	1500
Veirs Mill Rd at Ferrara Ave	212				Kensington/Wheaton	1600
Veirs Mill Rd at First St	122	03/18/03	1598	1818	Rockville City	1500
Veirs Mill Rd at Gaynor/Parkland	65				Aspen Hill	1500
Veirs Mill Rd at Gridley	66				Kensington/Wheaton	1600
Veirs Mill Rd at Newport	214				Kensington/Wheaton	1600
Veirs Mill Rd at Reedie Dr	447	06/05/03	666	882	Wheaton CBD	1800
Veirs Mill Rd at Robindale	64	09/12/01	976	1185	Aspen Hill	1500
Veirs Mill Rd at Twinbrook Pkwy	62	06/09/04	1508	1743	Aspen Hill	1500
Veirs Mill Rd at Westfield Wheaton Drwy	352	03/23/04	600	909	Wheaton CBD	1800
W Cedar Ln at Locust Ave	678				Bethesda/Chevy Chase	1600
W Diamond Ave at Bureau Dr	379				Gaithersburg City	1450
W Diamond Ave at Muddy Branch/Chestnut	388	03/09/04	1039	1227	Gaithersburg City	1450
W Diamond Ave at Perry Pkwy	645				Gaithersburg City	1450
W Montgomery Ave at Hurley	518	09/22/04	830	998	Rockville City	1500
W Montgomery Ave at I-270 SB Ramp	574				Rockville City	1500
W Montgomery Ave at I-270-Nelson	600				Rockville City	1500
W Montgomery Ave at Research	519				Rockville City	1500
Washington Grove La at Emory Grove	391				Montgomery Village/Airpark	1450
Washington Grove Ln at Railroad St	449				Gaithersburg City	1450
Watkins Mill Rd at Apple Ridge Rd	577				Montgomery Village/Airpark	1450
Watkins Mill Rd at Stedwick	745				Montgomery Village/Airpark	1450
Wayne Ave at Cedar St	309	06/03/04	527	562	Silver Spring/Takoma Park	1600
Wayne Ave at Mansfield St	307				Silver Spring/Takoma Park	1600
Wayne Ave at Ramsey	324	05/28/03	368	585	Silver Spring CBD	1800
Westlake Dr at Westfield Mont Mall	418				Potomac	1475
Westlake Terr at Mall Drwy/Auto Park	669				Potomac	1475
Westlake Terr at Westlake Dr	417				Potomac	1475
Willard Ave at Friendship Blvd	650				Friendship Heights	1800
Wilson Ln at Whitter Blvd	442				Bethesda/Chevy Chase	1600
Wisconsin Ave at Battery/Rosedale	235	06/11/03	858	785	Bethesda CBD	1800
Wisconsin Ave at Bethesda/Willow	241	06/05/03	968	929	Bethesda CBD	1800
Wisconsin Ave at Bradley Blvd	243	04/16/03	1564	1432	Bethesda CBD	1800
Wisconsin Ave at Cheltenham	237	06/02/04	935	1039	Bethesda CBD	1800
Wisconsin Ave at Cordell	236	05/27/04	859	930	Bethesda CBD	1800
Wisconsin Ave at Dorset Ave	244	06/19/03	825	777	Bethesda/Chevy Chase	1600

Intersection	INT_ID	Count Date	AM CLV	PM CLV	Policy Area	LATR Standard
Wisconsin Ave at Elm St (S)	247				Bethesda CBD	1800
Wisconsin Ave at Elm/Waverly	240	06/02/04	762	841	Bethesda CBD	1800
Wisconsin Ave at Leland St	242	09/09/03	917	961	Bethesda CBD	1800
Wisconsin Ave at Montgomery Ln	239	04/23/03	1136	1489	Bethesda CBD	1800
Wisconsin Ave at Montgomery St/S Park Av	245	06/01/04	490	794	Friendship Heights	1800
Wisconsin Ave at Somerset Ter	467	06/03/04	1013	801	Friendship Heights	1800
Wisconsin Ave at Willard / Wisconsin Cir	246	06/10/04	951	1280	Friendship Heights	1800
Wisconsin Ave at Woodmont Ave	226	06/10/04	787	1160	Bethesda/Chevy Chase	1600
Wisteria Dr at Walter Johnson Dr	133				Germantown Town Center	1450
Woodfield Rd at Airpark Rd	365	02/28/02	1048	1341	Montgomery Village/Airpark	1450
Woodfield Rd at Brink Rd	588				Goshen	1400
Woodfield Rd at Emory Grove Rd	684				Gaithersburg City	1450
Woodfield Rd at Fieldcrest/Hadley Farms	592	03/10/05	1390	1620	Montgomery Village/Airpark	1450
Woodfield Rd at Flower Hill Way	469				Montgomery Village/Airpark	1450
Woodfield Rd at Lindbergh Dr	706				Montgomery Village/Airpark	1450
Woodfield Rd at Muncaster Mill Rd	364	09/17/02	1038	1127	Montgomery Village/Airpark	1450
Woodfield Rd at Sweepstakes Rd	677	12/04/03	1128	1076	Damascus	1450
Woodfield Rd at Warfield Rd	656				Montgomery Village/Airpark	1450
Woodmont Ave at Battery Ln	258	04/22/03	1097	1083	Bethesda CBD	1800
Woodmont Ave at Bethesda Ave	438	04/08/03	691	924	Bethesda CBD	1800
Woodmont Ave at Cheltenham/Norfolk	646				Bethesda CBD	1800
Woodmont Ave at Cordell Ave	257	04/09/03	790	873	Bethesda CBD	1800
Woodmont Ave at Elm St	437	09/09/03	499	777	Bethesda CBD	1800
Woodmont Ave at Hampden Ln	436				Bethesda CBD	1800
Woodmont Ave at Montgomery Ln	744	06/10/03	396	461	Bethesda CBD	1800
Woodmont Ave at North Ln	482				Bethesda CBD	1800
Woodmont Ave at St Elmo Ave	256				Bethesda CBD	1800

Appendix 3B: Active or Recently Completed Transportation Improvements

As of June 8, 2005
Sources: SHA & DPW&T monthly status reports (CTP, CIP) - 4/29/05, Mont. Co. 10-yr Transportation Plan - Summer 2004

Construction Projects (State & County) - capacity, intersection, and spot improvements

PROJECT NAME	LOCATION/LIMITS	TYPE	DETAILS	Percent Completed
MD 119	Muddy Branch Rd to Sam Eig	State	widening, reconstruction	97%
E. Jefferson St @ Montrose Rd	intersection vicinity	County	addition of SB and EB turn lanes	90%
US 29 N of Dustin Rd	MD 198 to N of Dustin Rd	State	new interchange	78%
MD 195	MD 193 to Garland Ave	State	neighborhood conservation project	77%
MD 547	Kenilworth Ave to Weymouth	State	neighborhood conservation project	77%
MD 586 @ Randolph/MD 185	Randolph Rd to MD 185	State	intersection reconstruction	74%
US 29 at I-495	at I-495	State	bridge reconstruction	67%
US 29 @ Cherry Hill/Randolph Rd	intersection vicinity	State	new interchange	65%
MD 117 @ MD 124	intersection vicinity	State	intersection reconstruction	64%
MD 320	MD 193 to MD 650	State	safety, resurfacing	61%
MD 650/FDA	Powder Mill Rd to N of US 29	State	intersection improvements	55%
MD 115 @ Avery Rd	intersection vicinity	State	geometric improvements	36%
MD 586	N of Randolph Rd to Parkland Cemetary	State	safety, resurfacing	29%
US 29 @ Briggs Chaney Rd	intersection vicinity	State	new interchange	29%
MD 115	MD 28 to Muncaster Rd/Redland Rd	State	safety, geometrics	28%
US 29	MD 97 to I-495	State	safety, resurfacing	23%
MD 187	I-495 to Rock Spring, Tuckerman to MD 355	State	safety, resurfacing	10%
Briggs Chaney Rd	Automobile Blvd to E of Ashton Manor Dr	County	widen from 2 to 4 lanes	0%

Development and Evaluation Projects (State) - capacity, intersection, and spot improvements

PROJECT NAME	LOCATION/LIMITS	TYPE	DETAILS	Status
I-270 @ MD 124	interchange vicinity	State	interchange reconstruction	Project Planning
I-270 @ Watkins Mill - ext	future interchange @ Watkins Mill - ext	State	new interchange	Project Planning
I-270/US 15 multi-modal study	Shady Grove Rd to N Biggs Rd	State	multi-modal improvements	Project Planning
I-495/I-95 HOV-lane study	Wilson Bridge to American Legion Bridge	State	widening for HOV-lanes	Project Planning
InterCounty Connector	I-270 to Rt. 1 (Laurel)	State	new freeway facility	Project Planning
MD 117 intersection improvements	Great Seneca Pk to I-270	State	intersection improvements	Project Planning
MD 124	Midcounty Hwy to Warfield Rd (no. of Fieldcrest, so. of Airpark)	State	road reconstruction	Project Planning
MD 124	Main St to MD 27	State	extension to MD 27	Project Planning
MD 124	So. of Airpark Rd to No. of Fieldcrest Dr	State	widen to 6-lane divided highway	Project Planning
MD 124 (Quince Orchard Rd)	MD 28 to Horse Center Way	State	safety improvments, traffic calming	Project Planning
MD 185 @ Armory Ave	intersection vicinity	State	geometric improvements	Project Planning
MD 28/MD 355/MD 586/MD 911	intersection vicinity	State	new interchange	Project Planning
MD 28/MD198 corridor study	MD 355 to US 29	State	widening, upgrade, etc.	Project Planning
MD 355 @ CSX crossing	intersection vicinity	State	grade seperation	Project Planning
MD 355 @ Randolph Rd	intersection vicinity	State	new interchange	Project Planning
MD 355 @ Twinbrook Pkwy	intersection vicinity	State	NB right turn lane addition	Project Planning
MD 97 (Brookeville Bypass)	MD 97 to N of Town of Brookeville	State	new bypass facility	Project Planning
MD 97 @ Arcola Ave	intersection vicinity	State	SB left turn lane addition	Project Planning
MD 97 @ Randolph Rd	intersection vicinity	State	new interchange	Project Planning
MD 97 @ MD 28	intersection vicinity	State	new interchange	Project Planning
US 29 @ Blackburn Rd	intersection vicinity	State	new interchange	Project Planning
US 29 @ Fairland/Musgrove Rd	intersection vicinity	State	new interchange	Project Planning
US 29 @ Greencastle La	intersection vicinity	State	new interchange	Project Planning
US 29 @ MD 198/Blackburn Rd	intersection vicinity	State	new interchange	Project Planning
US 29 @ Stewart La	intersection vicinity	State	new interchange	Project Planning
US 29 @ Tech Rd	intersection vicinity	State	new interchange	Project Planning

Facility Planning (County) - capacity, intersection, and spot improvements

PROJECT NAME	LOCATION/LIMITS	TYPE	DETAILS	Status
Montrose Pkwy West	E. of Tildenwood Dr to MD 187	County	new 4-lane divided highway	To be advertised
Old Columbia Pike	at Perrywood Dr	County	safety improvements, traffic calming	To be advertised
Arcola Ave @ MD 97	intersection vicinity	County	intersection improvements	To be advertised
Valley Park Dr	1130' section	County	extension	To be advertised
Nebel Street	Chapman Ave to Randolph Rd	County	extension to Randolph Rd	Property acquisition
Park Lane	Battery La and Maple Ridge Rd	County	reconstruction	Property acquisition
MD 355 @ Twinbrook Pkwy	intersection vicinity	County	intersection improvements	Property acquisition
Century Blvd	Father Hurley Blvd to Crystal Rock Dr	County	extension to Crystal Rock Dr	Design
Citadel Ave	Marinelli Rd to Nicholson La	County	extension to Nicholson La	Design
Fairland Rd	US 29 to County line	County	widen from 2 to 3 lanes	Design
Greencastle Rd	Greencastle Ridge Terrace to Fairland Park	County	widen from 2 to 4 lanes	Design
Muncaster Rd	Rock Creek Bridge vicinity	County	road, bridge reconstruction	Design
Randolph Rd	Gaynor Rd to Charles Rd	County	safety improvements	Design
Redland Rd	Crabbs Branch Way to Needwood Rd	County	intersection improvements	Design
Shady Grove Rd spur/Wooton Pkwy	Glen Mill Rd to MD 28	County	widen Wooton to 6 lanes, new spur	Design
Stringtown Rd	MD 355 to I-270	County	extension to I-270	Design
Travilah Rd - phase 1	MD 28 to Dufief Mill Rd	County	reconstruction, improvements	Design
Burtonsville Access Rd	MD 198 to School Access Rd	County	new 2-lane road	Design
Chapman Ave	N of MD 187 to Randolph Rd	County	extension to Randolph Rd	Phase II Facility Plng
Father Hurley Blvd	Wisteria Dr to MD 118	County	extension to MD 118	Phase II Facility Plng
Goshen Rd	Odendhal Ave to Warfield Rd	County	widen from 2 to 4/6 lanes	Phase II Facility Plng
Montrose Pkwy East	MD 187 to MD 586	County	new 4-lane divided highway	Phase II Facility Plng
MD 650 @ Oakview Dr	intersection vicinity	County	intersection improvements	Phase II Facility Plng
Redland Rd/Crabbs Branch Way @ Needwood Dr	intersection vicinity	County	intersection improvements	Phase II Facility Plng
Warfield Rd @ Plum Creek Dr	intersection vicinity	County	intersection improvements	Phase II Facility Plng
Quince Orchard Rd	MD 28 to Horse Center Way	County	safety spot improvements	Phase II Facility Plng
Longdraft Rd	MD 124 to MD 117	County	widen from 2 to 4 lanes	Phase I Facility Plng
Midcounty Hwy @ Middlebrook Rd	Montgomery Village Ave to MD 27	County	new 4/6 lane divided highway	Phase I Facility Plng
Observation Dr	Water Discover Rd to S of Stringtown Rd	County	extension to S of Stringtown Rd	Phase I Facility Plng
Snouffer School Rd	Goshen Rd to MD 124	County	widen from 2 to 4 lanes	Phase I Facility Plng
Watkins Mill Rd	E of I-270 to W of I-270	County	extension E/W of I-270	Phase I Facility Plng

Skylark Dr	adjacent to Ovid Hazen Wells Park	County	road reconstruction	Developer-Funded
Completed Projects (State & County)				
PROJECT NAME	**LOCATION/LIMITS**	**TYPE**		
new roads:				
Bordly Dr	extension to MD 97	County		
MD 118	Scenary Dr to Watkins Mill Rd	State		
road widenings:				
MD 28	MD 119 to Riffle Ford Rd	State		
Shady Grove Rd	Briardale Rd to MD 115	County		
grade-separated interchange impr:				
I-270 @ Democracy Blvd		State		
I-270 @ Fernwood Rd		State		
I-270 @ MD 117		State		
I-270 @ MD 187/Rockledge Dr		State		
I-270 @ Democracy/Westlake Terr		State		
I-495 @ MD 187		State		
intersection improvements:				
Father Hurley Blvd @ Waters Landing Dr		*County*		
MD 124 (M.V. Ave) @ Lost Knife Rd		State		
MD 124 @ Midcounty Hwy		State		
MD 187 @ Democracy Blvd		State		
MD 187 @ Tuckerman La		State		
MD 189 @ MD 190		State		
MD 355 @ Jones Bridge Rd		State		
MD 355 @ MD 187		*State*		
MD 355 @ Shady Grove Rd		State		
MD 410 @ MD 185		State		
MD 410 @ MD 390		State		
MD 586 @ Aspen Hill Rd		State		
MD 97 @ Tilton Dr		State		
resurfacing/rehabiliation:				
MD 117	I-270 to Summit Ave	State		

MD 189	MD 190 to north of Glenolden Dr	State		
Wilson La	MD 190 to Moorland La	State		
PROJECT NAME	**LOCATION/LIMITS**	**TYPE**		
safety/spot improvements:				
MD 119 @ MD 124 (turn lanes)		State		
Projects in italics are assumed to be intersection improvements				