

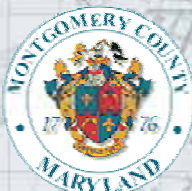
Purpose and Need

Midcounty Corridor Study

Project No. 509337

**STUDY
AREA**

JANUARY 2007



Prepared for
Montgomery County
Department of Public Works
and Transportation
101 Monroe Street
Rockville, Maryland 20850

Prepared by
Rummel, Klepper & Kahl, LLP
Consulting Engineers
81 Mosher Street
Baltimore, Maryland 21217



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EXECUTIVE SUMMARY

The purposes for transportation improvements in the Midcounty Corridor Study area are:

- To relieve projected congestion on roadway facilities between Clarksburg and Gaithersburg, east of I-270;
- to provide a north-south corridor which improves the safety and efficiency of short and moderate length trips in the study area;
- to improve vehicular, pedestrian and bicycle access to residential, commercial and employment destinations in Clarksburg and in the eastern areas of Gaithersburg and Germantown; and
- to develop all improvements in an environmentally sensitive manner using measures to avoid, minimize, and mitigate impacts.

The needs for this project are based on the following:

- *Reduce Existing and Future Congestion.* Several intersections along MD 355 and other major roadways in the study area were approaching unacceptable levels of service or were failing in the peak hours in 2005. Almost every signalized intersection will worsen over the existing condition, and in many cases, will deteriorate to LOS F by 2030. North-south travel times along the existing arterials will also significantly increase over the planning horizon.
- *Improve vehicular safety.* The accident history of MD 355 exceeds the statewide average for similar roadways. Most of the accidents are clustered around the numerous intersections on MD 355.
- *Enhance the efficiency of the roadway network and improve the connections between economic centers.* Currently, localized north-south travel is provided by MD 355, which has little to no access control. In fact, between MD 124 and MD 27 there are almost 100 access points along MD 355 over a distance of 4.3 miles. Improved network efficiency and connections between economic and residential centers in the study area are necessary to facilitate the movement of goods and people in the region.
- *Accommodate planned land use and future growth.* This region of the county is among the fastest growing for both employment and housing, with a sizable portion of the county's remaining residential growth planned within the study area.
- *Provide bicycle and pedestrian connections.* The region lacks adequate north-south, off-street bike paths necessary to provide continuity and connections between existing and future bike facilities in the region.
- *Enhance homeland security.* Improved north-south access would enhance emergency response and evacuation by providing an efficient alternative to the existing congested north-south routes. Furthermore, less congestion on the existing routes would improve emergency response along these roadways.
- *Improve the Quality of Life.* Reducing commute times and offering a safer alternative to the already congested local roads and arterials for vehicles, bicycles, and pedestrians would enhance the overall quality of life of potential users.

TABLE OF CONTENTS

	PAGE
LIST OF TABLES	ii
LIST OF FIGURES	ii
I. Background and Description of the Corridor	1
II. Purpose of the Project	4
III. Project Need	4
A. Reduce Existing and Future Congestion	4
B. Improve Vehicular Safety	14
C. Enhance Network Efficiency and Connect Economic Centers	21
D. Accommodate Planned Land Use and Future Growth	22
E. Facilitate and Provide Bicycle and Pedestrian Travel Connections	22
F. Enhance Homeland Security	22
G. Improve Quality of Life	28



LIST OF TABLES

	PAGE
Table 1	North-South Average Daily Traffic Volumes along Major Roadway Segments 5
Table 2	Programmed Transportation Improvements within the Study Area..... 8
Table 3	Number of Intersections Operating with CLV Greater than 1,450 Vehicles 10

LIST OF FIGURES

	PAGE
Figure 1	Project Location 2
Figure 2	Study Area and Roadway/Transitway Network Assumptions 3
Figure 3	Existing (2005) Average Daily Traffic Volumes 6
Figure 4	2030 No Build Average Daily Traffic Volumes 7
Figure 5	Intersections Analyzed within Study Area 11
Figure 6	Existing (2005) Critical Lane Volumes by Intersection..... 12
Figure 7	2030 No Build Critical Lane Volumes by Intersection 13
Figure 8A	Average Travel Times, AM Peak Hour..... 15
Figure 8B	Average Travel Times, PM Peak Hour 16
Figure 9A	Existing (2005) AM Peak Hour Travel Times 17
Figure 9B	2030 No Build AM Peak Hour Travel Times 18
Figure 9C	Existing (2005) PM Peak Hour Travel Times 19
Figure 9D	2030 No Build PM Peak Hour Travel Times 20
Figure 10	Land Use (2002)..... 23
Figure 11	Zoning 24
Figure 12	Existing and Projected Households 25
Figure 13	Existing and Projected Employment 26
Figure 14	Clarksburg Development Activity Map 27

I. Background and Description of the Corridor

The Montgomery County Department of Public Works and Transportation (DPWT) is performing a Phase I Facility Planning Study to determine the need for transportation improvements within a study area between the communities of Washington Grove and Clarksburg, east of I-270, in Montgomery County, Maryland (**Figure 1**). The area is a mostly residential community serving the employment areas in Washington, DC, Gaithersburg, Rockville and the I-270 Corridor.

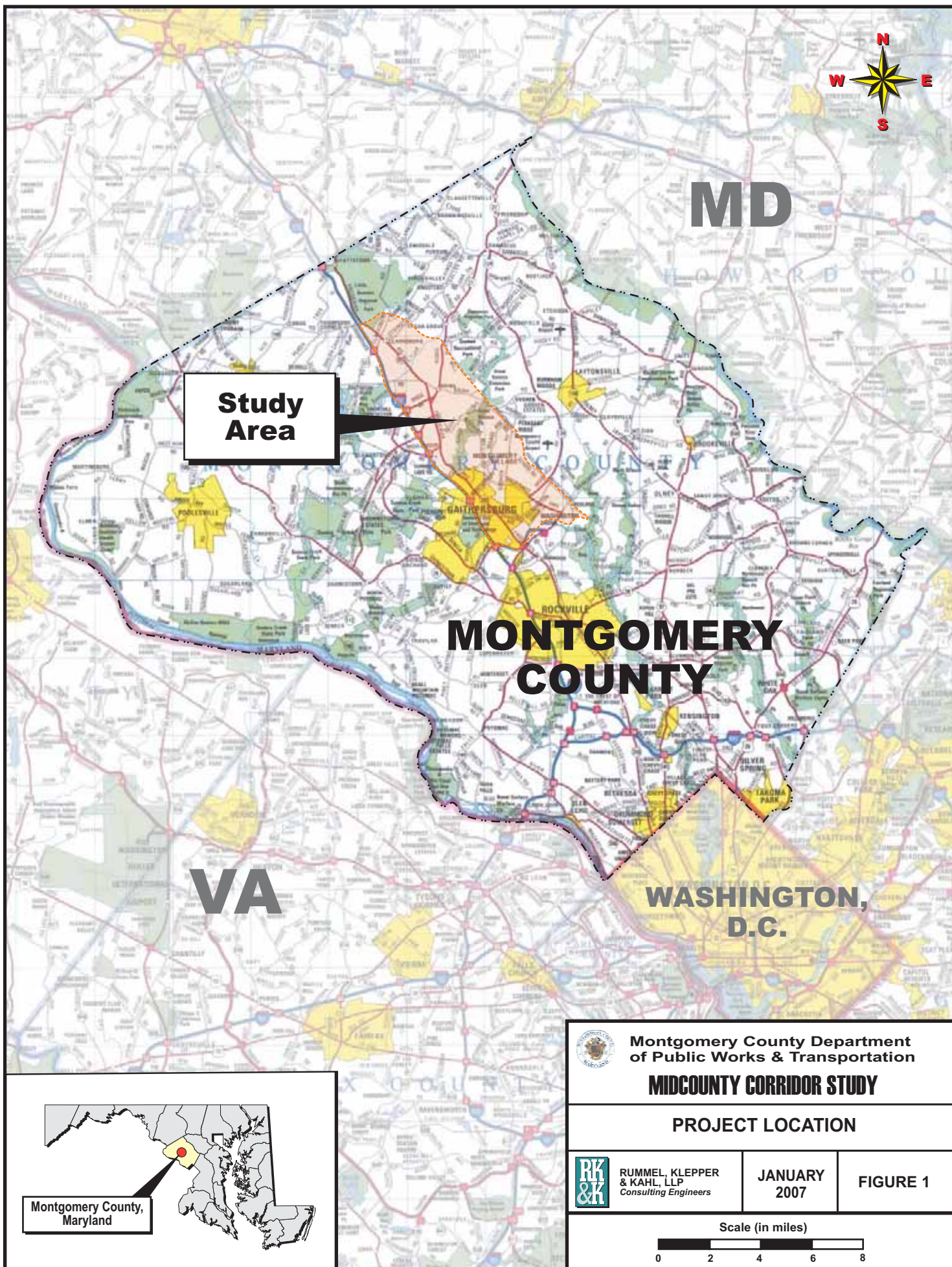
For purposes of evaluating the adequacy of public facilities such as roadways, Montgomery County is divided into numerous policy areas as described in the County's Annual Growth Policy for FY 2005-2007. The study area for the Midcounty Corridor Study is located within the Derwood, Montgomery Village/Airpark, Gaithersburg City, Germantown East and Rural (Goshen) Policy Areas.

The *Gaithersburg Vicinity Master Plan* (January 1985; Amended May 1988; Amended July 1990), the *Germantown Master Plan* (1989), and the *Clarksburg Master Plan & Hyattstown Special Study Area* (1994) identify improvements within these limits as including the extension of Midcounty Highway (roadway designation M-83) as a controlled access four- to six-lane major highway from Montgomery Village Avenue to MD 27 and also the widening of Middlebrook Road (roadway designation M-85) as six-lane highway from existing Midcounty Highway to MD 355.

Midcounty Highway and Middlebrook Road are located in the I-270 Corridor (**Figure 2**), a development corridor identified in the Montgomery County Amendment to the General Plan (1993), "On Wedges and Corridors. . ." Presently the southern terminus of Midcounty Highway is at Shady Grove Road east of Washington Grove, with its northern terminus at Montgomery Village Avenue, north of Gaithersburg. North of its intersection with Woodfield Road, Midcounty Highway carries the state route designation of MD 124.

Beginning with the *Gaithersburg Vicinity Master Plan* adopted in 1971, both Midcounty Highway (as M-83) and Great Seneca Highway (M-90) were defined as having the same purpose: to provide a controlled access major highway parallel to I-270 that will serve regional traffic in the I-270 corridor and relieve I-270 of short and moderate length trips between the area's urban centers.

The *Germantown Master Plan* (1989) states that from its planning boundary, the extension of Midcounty Highway will provide access to Montgomery Village, Gaithersburg, and the Shady Grove Metro Station, in addition to the access provided by existing MD 355. The Master Plan also recommends that the extension of Midcounty Highway parallel MD 355 through Clarksburg. Furthermore, the Master Plan states that widening Middlebrook Road in conjunction with the extension of Midcounty Highway would provide internal access for Germantown.





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MIDCOUNTRY CORRIDOR STUDY

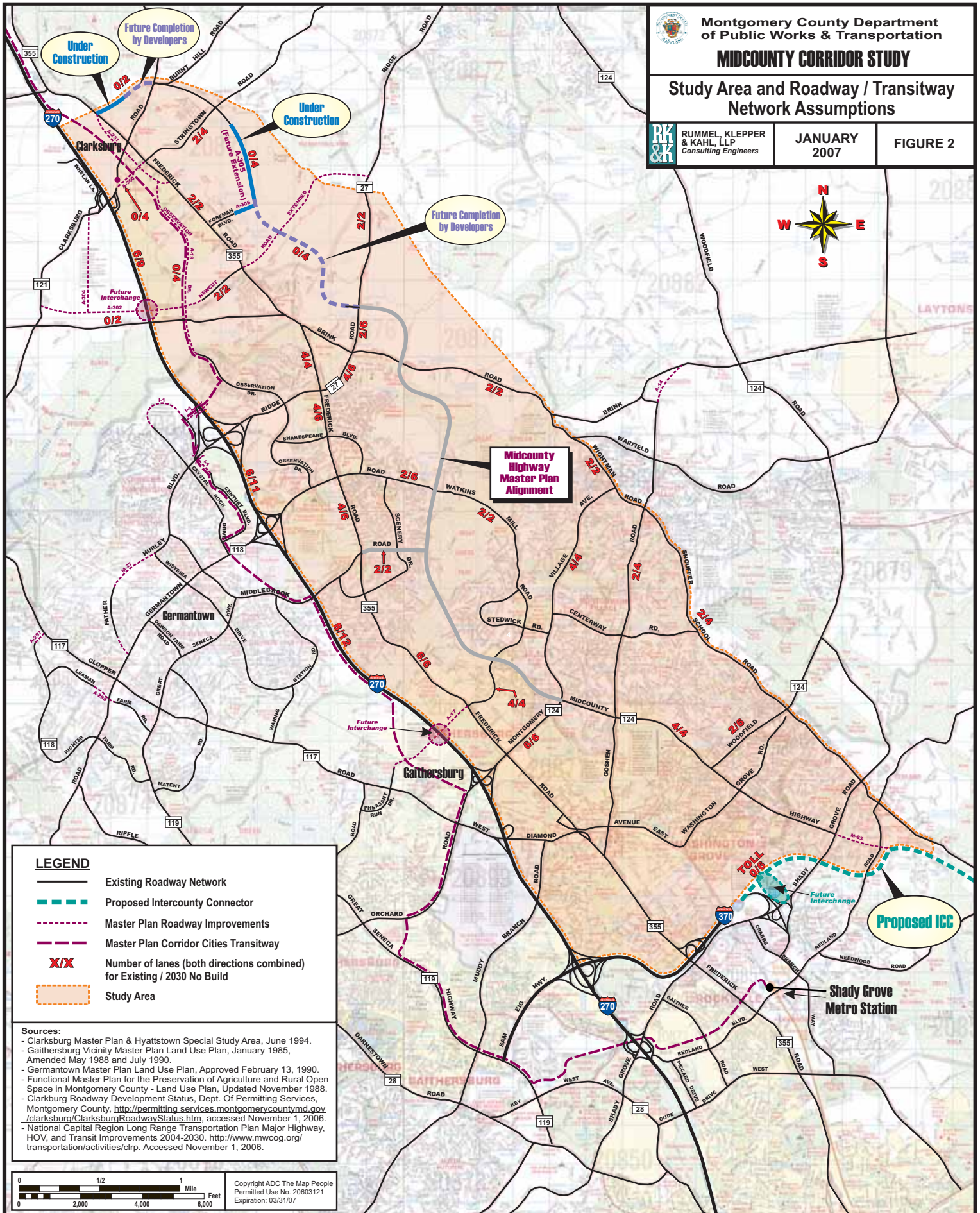
Study Area and Roadway / Transitway Network Assumptions



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2007

FIGURE 2



II. Purpose of the Project

Additional north-south traffic capacity, improved mobility, safety and efficiency for the area's roadway system would serve the planned land use and future growth in the study area and adjacent communities. The project should also improve pedestrian and bicycle access in the region, by incorporating these amenities into the proposed design. Furthermore, any improvements should be developed in an environmentally sensitive manner using measures to avoid, minimize, and mitigate impacts.

East of I-270, no existing highway is able to serve these stated purposes. Although it is projected in 2030 that I-270 will have excess capacity to accommodate short and moderate trips, the regional travel demand model predicts that some of these trips will occur on the area's arterials such as MD 355, Montgomery Village Avenue, and Goshen Road, causing these arterials and local collectors to operate unacceptably. In other words, just because there is available capacity on a nearby freeway, if it is too far out of direction of travel, it may not be the chosen route for motorists.

III. Project Need

The need for this project is based on the current and projected traffic capacity, congestion, failing intersection levels of service and accident history on MD 355 and other primary arterials within the study area and the potential to develop additional modal options for the corridor (specifically pedestrian and bicycle access). Providing additional capacity parallel to MD 355 and east of I-270, where the areas of intense household and employment growth are projected, would reduce existing and future congestion, improve vehicular safety, enhance network efficiency, accommodate planned land use and future growth, facilitate the movement of goods and people among the economic centers of the region, facilitate and provide bicycle and pedestrian connections, enhance homeland security, and improve the quality of life. Each of these needs is presented in detail below.

A. Reduce Existing and Future Congestion

Average Daily Traffic (ADT) volumes have been increasing steadily on I-270, MD 355 and other roadways in the project area over the past several years. For example, using Maryland State Highway Administration (SHA) historic data, ADT along MD 355 at Great Seneca Creek has increased from 23,875 in 2000 to 31,915 in 2005; ADT along I-270 at Great Seneca Creek has increased from 141,700 in 2000 to 174,570 in 2005; and ADT along Montgomery Village Avenue, north of existing Midcounty Highway (MD 124), has increased from 31,275 in 2000 to 35,800 in 2005. Traffic volume growth is projected to be substantial along the major corridors in the study area over the next 25 years as the region continues to develop. (See **Figures 12 and 13** for projected household and employment growth in the study area.) **Table 1** and **Figures 3 and 4** list the ADT volumes and percent change (see **Figure 4**) for the principal north-south roadways of I-270, MD 355, Brink/Wightman Road, Montgomery Village Avenue and Goshen Road.

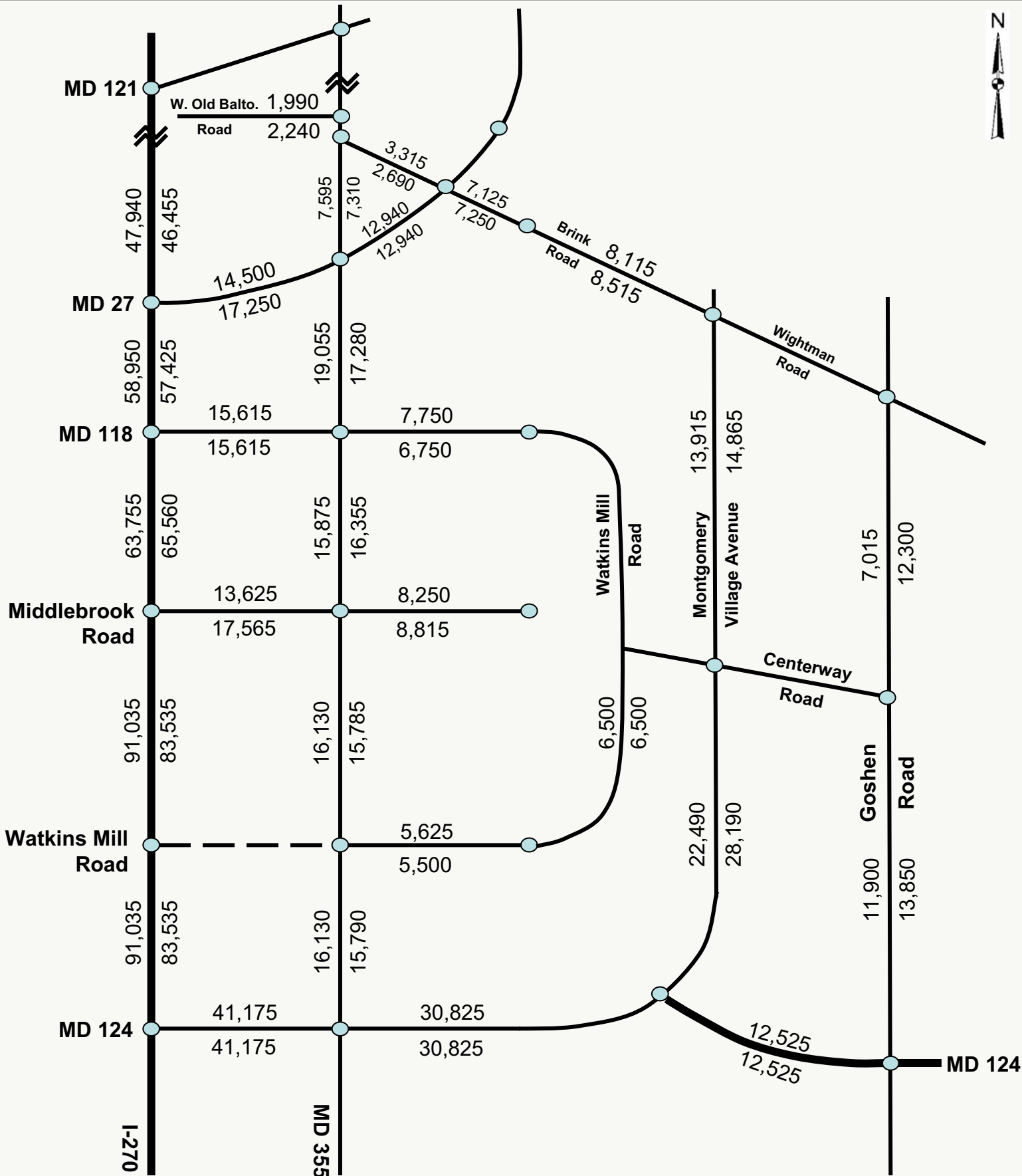
Table 1
North-South Average Daily Traffic Volumes along Major Roadway Segments

Segment	Roadway	2005	2030 No-Build	Percent Change
MD 27 to MD 118	I-270	116,000	163,000	41%
	MD 355	36,000	51,000	42%
MD 118 to Middlebrook Rd	I-270	129,000	166,000	29%
	MD 355	32,000	40,000	25%
Middlebrook Rd to Watkins Mill Rd	I-270	175,000	208,000	19%
	MD 355	32,000	46,000	44%
Watkins Mill Rd to MD 124	I-270	175,000	205,000	17%
	MD 355	32,000	45,000	41%
MD 355 to MD 27	Brink / Wightman Rd	6,000	8,000	33%
MD 27 to Montgomery Village Ave	Brink / Wightman Rd	17,000	20,000	18%
Montgomery Village Ave to Goshen Rd	Brink / Wightman Rd	17,000	20,000	18%
Wightman Rd to Centerway Rd	Montgomery Village Ave	29,000	37,000	28%
	Goshen Rd	19,000	27,000	42%
Centerway Rd to MD 124	Montgomery Village Ave	36,000	43,000	19%
	Goshen Rd	26,000	34,000	31%

Average Change:

I-270	26 %
MD 355	38 %
Brink / Wightman Rd	23 %
Montgomery Village Ave	20 %
Goshen Rd	36 %

As evident in **Table 1** and in **Figure 4**, additional demand is being placed on MD 355 and other arterial roadways in the study area east of I-270. To evaluate the level of congestion currently experienced and anticipated within the study area, intersections along MD 355, MD 27, Montgomery Village Avenue, Middlebrook Road, Goshen Road and Wightman Road were analyzed for the existing (2005) and future year (2030) conditions with all programmed improvements. This future year scenario represents the No Build Alternative. Assumed programmed improvements to be in place by 2030 and comprising the No Build Alternative include new construction projects specified in the Metropolitan Washington Council of Governments Round 6.4a of the Cooperative Land Use forecasting process. The network assumptions for 2005 (existing) and the study year (2030) are shown in **Figure 2**.



Midcounty Corridor Study

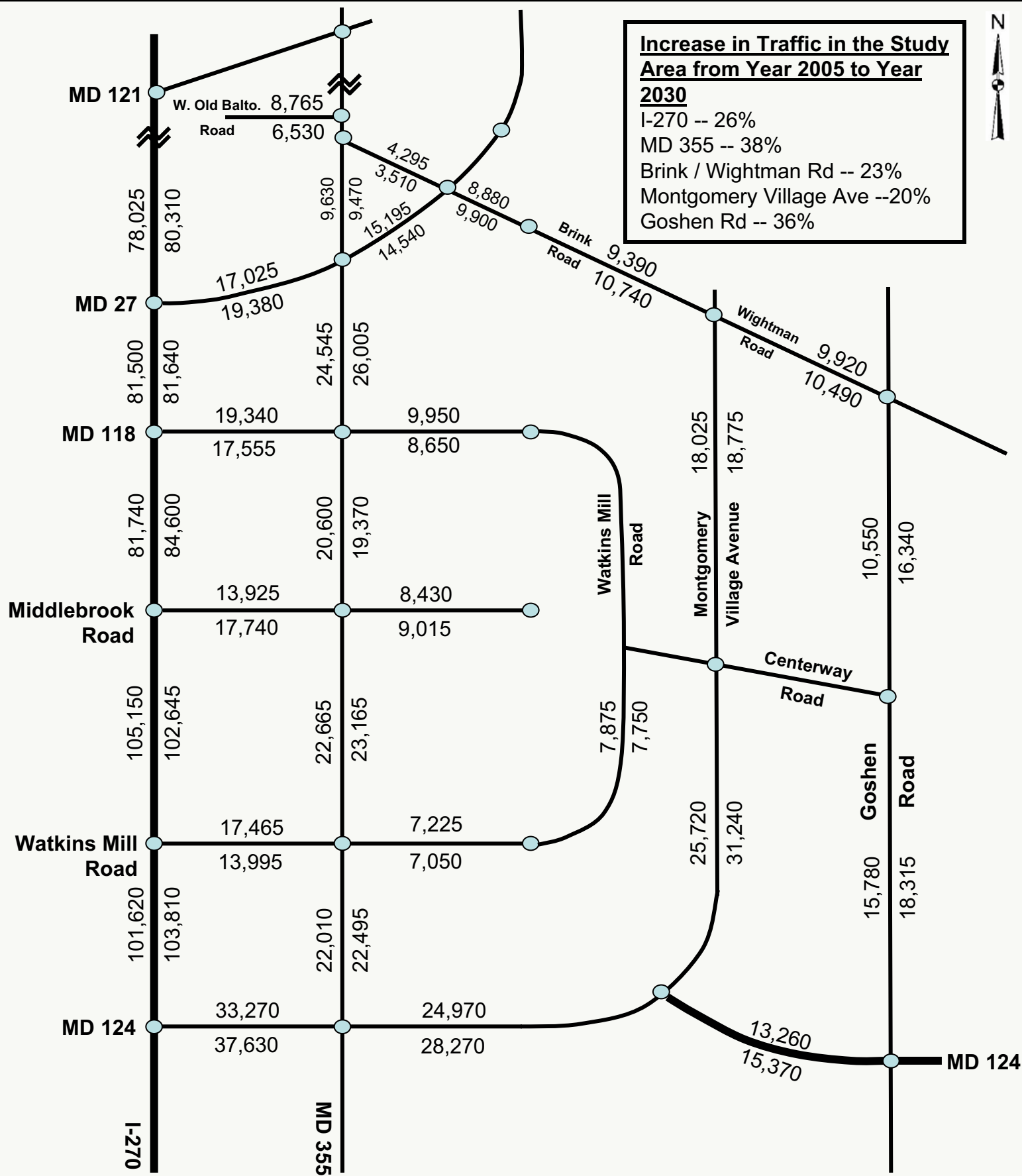
Existing (2005)
Average Daily Traffic Volumes

January 2007

Figure 3



Increase in Traffic in the Study Area from Year 2005 to Year 2030
I-270 -- 26%
MD 355 -- 38%
Brink / Wightman Rd -- 23%
Montgomery Village Ave --20%
Goshen Rd -- 36%



Midcounty Corridor Study

2030 No Build
Average Daily Traffic Volumes

January 2007

Figure 4

Table 2 summarizes the programmed improvements to the study area's transportation network. The No Build transportation network in 2030 includes improvements programmed in the region's 2004 Constrained Long Range Plan (CLRP) and improvements anticipated to occur within the near term as a result of developer Adequate Public Facilities requirements. Deviations from the CLRP more accurately reflect the roadways needed to support the trend in surrounding development (e.g., MD 27 and MD 355 from Middlebrook Road to MD 27). Projects which are not in the CLRP which are included in the No Build Alternative are consistent with the adopted Clarksburg and/or Germantown Master Plans. Several projects which are in the CLRP which are not included in the No Build Alternative were excluded from the No Build Alternative because they are potential Build Alternatives which could be evaluated in this study. Other facilities which are in the Master Plan but which are not in the CLRP were not included in the No Build Alternative because implementation is not anticipated by 2030 (e.g., Midcounty Highway from Intercounty Connector to Montgomery Village Avenue).

Table 2
Programmed Transportation Improvements within the Study Area

Facility	In Midcounty Corridor Study No Build Alternative?	Recommended in 2004 CLRP? ¹	Recommended in TIP? ²	Recommended in Master Plan? ³ (Master Plan Designation)
Intercounty Connector (I-270 to I-95/US 1)	Yes Construct new 6-lane, divided toll facility	Yes	Yes	Yes (F-9)
Corridor Cities Transitway (Shady Grove to Metropolitan Grove)	Yes Construct light rail transit	Yes	Yes	Yes
Brink Rd (MD 355 to Proposed Midcounty Hwy (M-83))	No	No	No	Yes Widen to 4 lanes (A-36)
Wightman Rd (Brink Rd. to Goshen Rd.)	No	No	No	Yes Widen to 4 lanes (A-36)
MD 124 (Woodfield Rd.) (Midcounty Hwy. to Warfield Rd.)	Yes Widen to 6 lanes	Yes	Yes	Yes (M-21)
Goshen Rd. (Odendhal Ave. to Warfield Rd.)	Yes Widen to 4 lanes	Yes	No	Yes (M-25)
Snouffer School Rd. (Goshen Rd. to MD 124)	Yes Widen to 4 lanes	Yes	No	Yes (A-16)
Centerway Rd. (Montgomery Village Ave. to Woodfield Rd.)	No	No	No	Yes Widen to 4 lanes (A-275)
Midcounty Hwy. (Intercounty Connector to Shady Grove Rd.)	No	No	No	Yes Extend 4 lanes (M-83)
Midcounty Hwy. (Shady Grove Rd to Montgomery Village Ave.)	No	No	No	Yes Widen to 6 lanes (M-83)
Midcounty Hwy. (Montgomery Village Ave. to Middlebrook Rd.)	No	Yes Construct new 4-6 lane facility	No	Yes (M-83)
Midcounty Hwy. (Middlebrook Rd. to MD 27)	No	Yes Construct new 4-6 lane facility	No	Yes (M-83)

Facility	In Midcounty Corridor Study No Build Alternative?	Recommended in 2004 CLRP? ¹	Recommended in TIP? ²	Recommended in Master Plan? ³ (Master Plan Designation)
Middlebrook Rd. (MD 355 to Midcounty Highway)	No	Yes Widen to 6 lanes	No	Yes (M-85)
MD 118 (Germantown Rd.) (MD 355 to Midcounty Hwy./Watkins Mills Rd.)	Yes Widen to 6 lanes	Yes	No	Yes (M-61)
Montgomery Village Ave. (Club House Rd. to Midcounty Hwy.)	No	No	No	Yes Widen to 6 lanes (M-24)
I-270/Watkins Mill Rd.	Yes Construct new interchange	Yes	Yes	Yes (A-17)
Watkins Mill Rd. (MD 117 to MD 355)	Yes Extend 4-lane facility	Yes	No	Yes (A-17)
Watkins Mill Rd. (Midcounty Hwy Extension north to Stedwick)	No	No	No	Yes Widen to 4 lanes (A-17)
Watkins Mill Rd. (Stedwick north to Midcounty Hwy Extension)	No	No	No	Yes Widen to 4 lanes (A-17)
I-270 (I-370 to MD 121)	Yes Extend local (collector-distributor) lanes	Yes	Yes	Yes (F-1)
I-270	Yes Bridge over I-270 between Century Blvd. and Milestone Ctr. Dr.	Yes	No	Yes
MD 355 (Middlebrook Rd. to MD 27)	Yes Widen to 6 lanes ⁴	No	No	Yes (M-6)
MD 355 (MD 27 to Brink Rd.)	No	No	No	Yes Widen to 6 lanes
MD 355 (Brink Rd. north to Snowden Farm Pkwy.)	No	No	No	Yes Widen to 4 lanes (M-6)
MD 27 (MD 355 to Snowden Farm Pkwy. (A-305))	Yes Widen to 6 lanes ⁵	No	No	Yes (M-27)
Observation Dr. (Existing terminus to MD 355 Bypass)	Yes Construct new 4-lane facility ⁶	Yes Construct new 2-lane facility	No	Yes Construct new 4-lane facility (A-19)
Snowden Farm Pkwy. (Stringtown Rd. to MD 27 (Ridge Rd.))	Yes Construct new 4-lane, divided facility	Yes	No	Yes (A-305)
Snowden Farm Pkwy. (MD 355 to Clarksburg Rd.)	Yes Construct new 2-lane facility	Yes	No	Yes (A-305)
Stringtown Rd. (I-270 to MD 355)	Yes Construct new 4-lane facility	Yes	Yes	Yes (A-260)

Facility	In Midcounty Corridor Study No Build Alternative?	Recommended in 2004 CLRP? ¹	Recommended in TIP? ²	Recommended in Master Plan? ³ (Master Plan Designation)
Stringtown Rd. (MD 355 to Piedmont Rd.)	Yes Widen to 4 lanes	Yes	No	Yes (A-260)

¹The Constrained Long Range Plan (CLRP) is the Metropolitan Washington Council of Government's financially constrained long range plan of improvements to be implemented by 2030.

²The Master Plan does not program specific years for implementation of projects.

³The Transportation Improvement Program is a 6-year program which describes the timeframe for federal funds to be obligated to state and local projects. (Source: <http://www.mwcog.org/transportation/activities/clrp/tip.asp>, accessed November 3, 2006.)

⁴Not included in CLRP; however, most of the existing facility within these limits has been constructed as a 6-lane roadway but striped as 4 lanes. Six lanes are consistent with the adopted Germantown Master Plan.

⁵Not included in CLRP but is consistent with development approval conditions in Clarksburg as well as the adopted Clarksburg Master Plan.

⁶Currently being developed as a four-lane facility.

Sources:

National Capital Region Long Range Transportation Plan, *FY 2004 Network Documentation: Highway and Transit Network Development*, Appendix A – 2004 Constrained Long Range Plan and FY 2005-2010 Transportation Improvement Program Air Quality Conformity Highway/HOV Inputs.

National Capital Region Long Range Transportation Plan Major HOV and Transit Improvements 2004-2030, http://www.mwcog.org/transportation/activities/clrp/major_hovtransit.asp, accessed January 3, 2007.

Clarkburg Master Plan & Hyattstown Special Study Area, June 1994.

Gaithersburg Vicinity Master Plan Land Use Plan, January 1985, amended May 1988 and July 1990.

Germantown Master Plan Land Use Plan, approved February 13, 1990.

Functional Master Plan for the Preservation of Agriculture and Rural Open Space in Montgomery County – Land Use Plan, updated November 1988.

Capacity analyses for each intersection were performed using the Critical Lane Volume (CLV) method, a nationally recognized standard for measuring effectiveness. With the CLV method, a CLV of 1,600 or higher represents level of service (LOS) “F”, or over-capacity, “failing” conditions. A CLV of 1,450 or above indicates that an intersection is congested with relatively high amounts of delay per vehicle. This CLV is the lower threshold for level of service “E” conditions. A CLV of 1,000 or below indicates that vehicles traveling through that intersection will experience little or no delay (*i.e.*, LOS “A”).

In Montgomery County, the Annual Growth Policy (AGP) determines what LOS is acceptable for each policy area. This project lies within Policy Areas that define an unacceptable LOS as anything greater than E, or 1,450 CLV. Therefore, any intersection with a CLV greater than 1,450 is considered unacceptable for purposes of this study.

Table 3 shows a comparison of the number of analyzed intersections that operate or will operate at an unacceptable level (critical lane volume > 1,450) during both the AM and PM peak hours, the AM peak hour only, and the PM peak hour only. By 2030, almost twice as many intersections will operate at an unacceptable level as did in 2005. **Figure 5** shows the location of the intersections analyzed. **Figures 6 and 7**, respectively, show the 2005 and 2030 No Build critical lane volumes by intersection.

Table 3 Number of Intersections Operating with CLV Greater Than 1,450 Vehicles					
Alternate	Total No. of Intersections Analyzed	> 1,450 During Both AM & PM Peak Hours	> 1,450 During AM Peak Hour Only	> 1,450 During PM Peak Hour Only	Total No. of Intersections > 1,450
Base Year 2005	42	3	4	3	10
2030 No Build	43	9	3	6	18



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INTERSECTIONS ANALYZED WITHIN STUDY AREA



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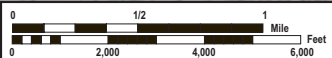
FIGURE 5



Snowden
Farm
Parkway
(A-305)

LEGEND

-  Unacceptable Level of Service, 2030, No Build
-  Midcountry Highway Study Alignment
-  Future Snowden Farm Parkway (A-305)
-  Study Area



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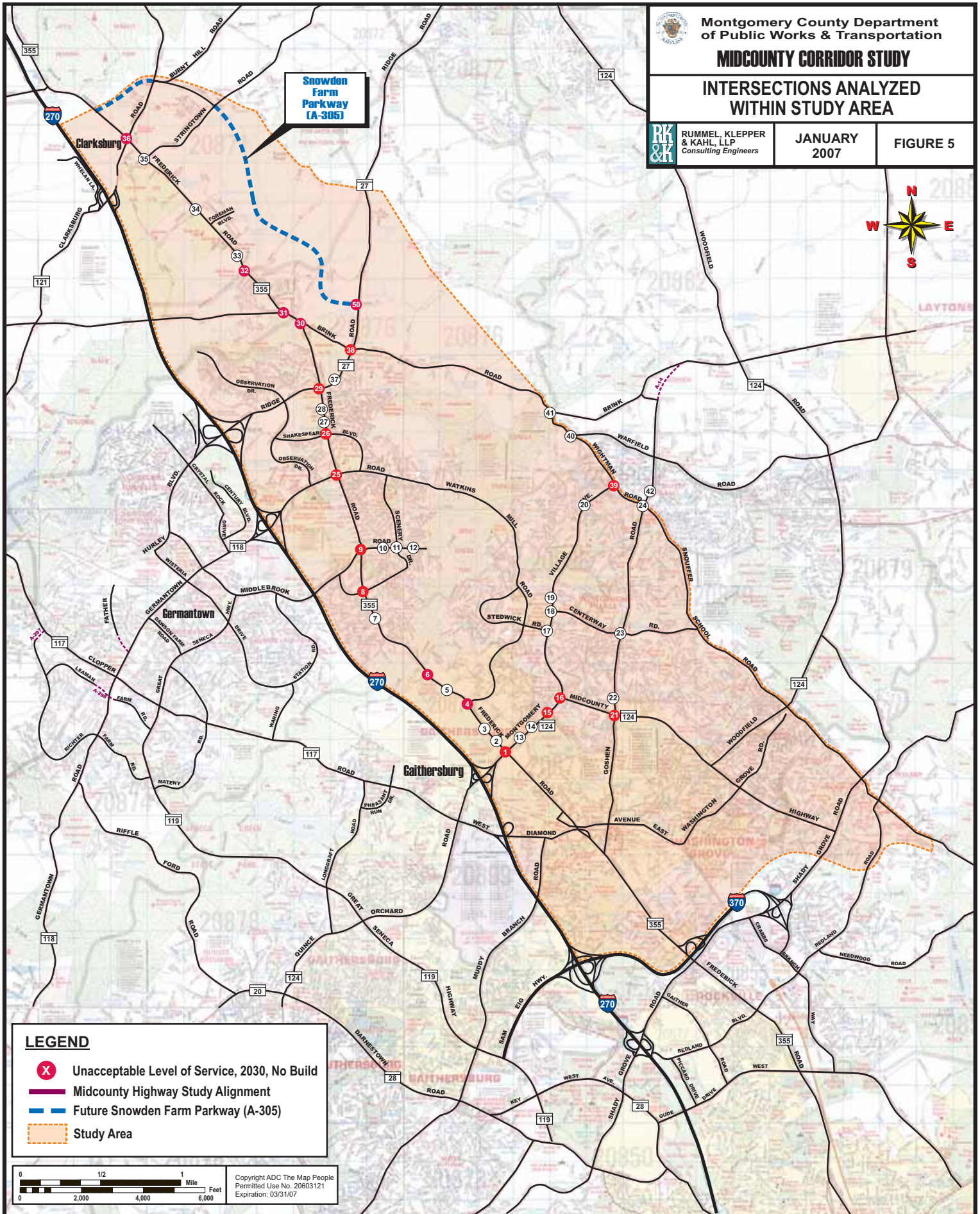


Figure 6
Existing (2005) Critical Lane Volumes by Intersection

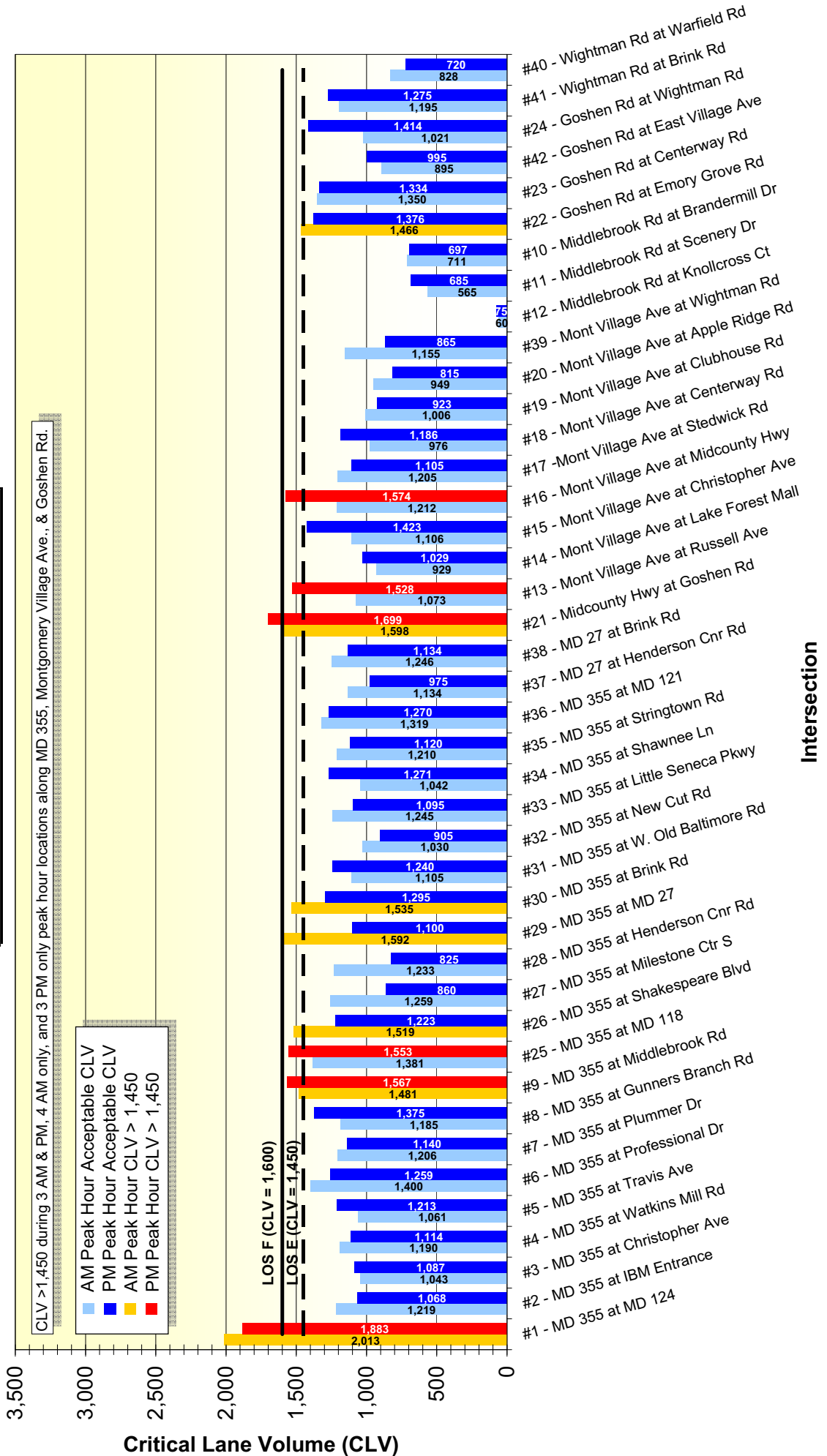
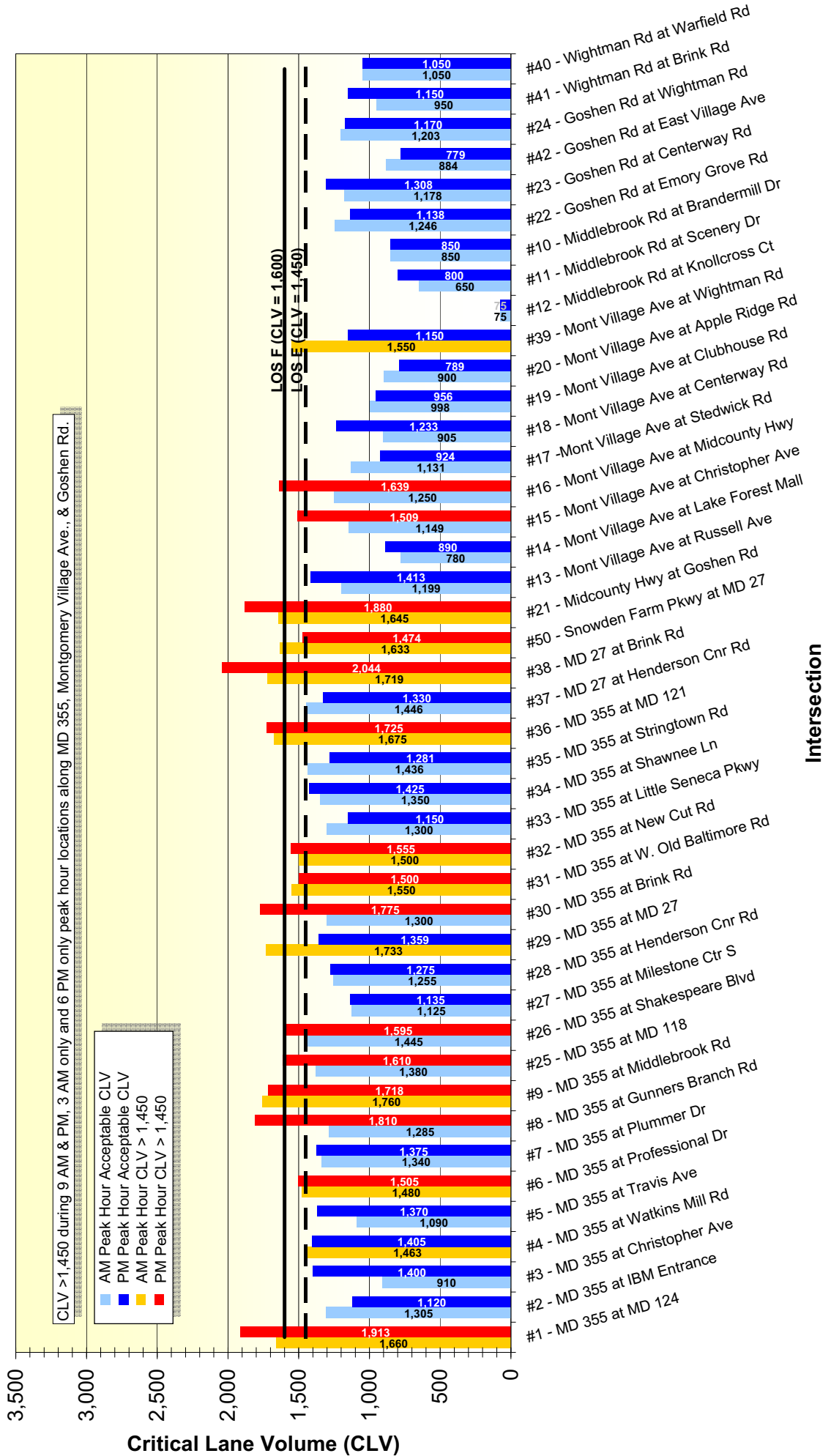


Figure 7
2030 No Build Critical Lane Volumes by Intersection



Even with planned improvements (shown in **Figure 2**), each of the major intersections along MD 355 and others along Montgomery Village Avenue and existing Midcounty Highway within the study area were congested in 2005 (LOS E or worse) and will continue to be congested under 2030 no-build conditions assuming the programmed improvements: MD 355/MD 124 (Montgomery Village Ave.); MD 355/Middlebrook Road; MD 355/MD 118 (Germantown Road); MD 355/Shakespeare Boulevard; MD 355/MD 27; MD 355/Brink Road; Montgomery Village Avenue/Midcounty Highway; and Goshen Road/Midcounty Highway. It is also important to note, as the analysis indicates, the CLV and associated level of service deteriorates for almost every intersection along MD 355, supporting the need for highway capacity in addition to the programmed improvements in the study area.

Existing and future travel time studies were performed as another measure of congestion. Using field-measurements along MD 355 performed in October 2004 (making three travel runs in the northbound and southbound directions during the AM and PM peak hours), travel times were calibrated to generate estimated travel times for 2030.

Figures 8A and 8B compare existing and future travel times among various trip endpoints depicted in **Figures 9A, 9B, 9C, and 9D**. As the figures illustrate, regardless of the route, north-south travel times across the study area will become longer by 2030. Average southbound travel times between the sampled trip endpoints in the morning peak hour increase by 6 minutes, while average northbound travel times in the afternoon peak hour increase by 5 minutes. Trips that utilize MD 355 experience travel times that increase by averages of 6.85 minutes and 5.8 minutes in the morning and afternoon peak hours, respectively.

B. Improve Vehicular Safety

Another key objective of the project is to provide a transportation facility that will safely accommodate the growing volume of traffic. Unfortunately, the two major arterials in the study area, MD 355 and MD 27, do not have exceptional safety records. For instance, between January 1, 2003 and December 31, 2005, the rate of total reported collisions on MD 355 and MD 27 was higher than the statewide average for similar state highways. The accident rate is the ratio of the number of accidents to the number of vehicle miles traveled on a certain length of roadway. MD 355's total accident rate during this period was 248.1 accidents per 100 million vehicle miles traveled versus the statewide average of 240.7 accidents per 100 million vehicle miles. MD 27's total accident rate was 302.3 accidents per 100 million vehicle miles traveled versus the statewide average of 247.9 accidents per 100 million vehicle miles.

On MD 355 between MD 124 and MD 121 (north of the study area), there were 508 accidents in 2003-2005. The types of collisions, whose rates exceeded statewide averages, include left turn crashes, angle collisions (*i.e.*, generally associated with turning movements and red-light running) and fixed object collisions. Approximately 70 percent of the accidents reported along the segment of MD 355 within the study area were clustered around intersections.

On MD 27 between MD 355 and Brink Road, there were 47 accidents in 2003-2005. Collision types with rates exceeding statewide averages include opposite direction, angle, property damage only and nighttime collisions. Approximately 70 percent occurred at or near intersections.

Figure 8A
Average Travel Times
AM Peak Hour - Southbound

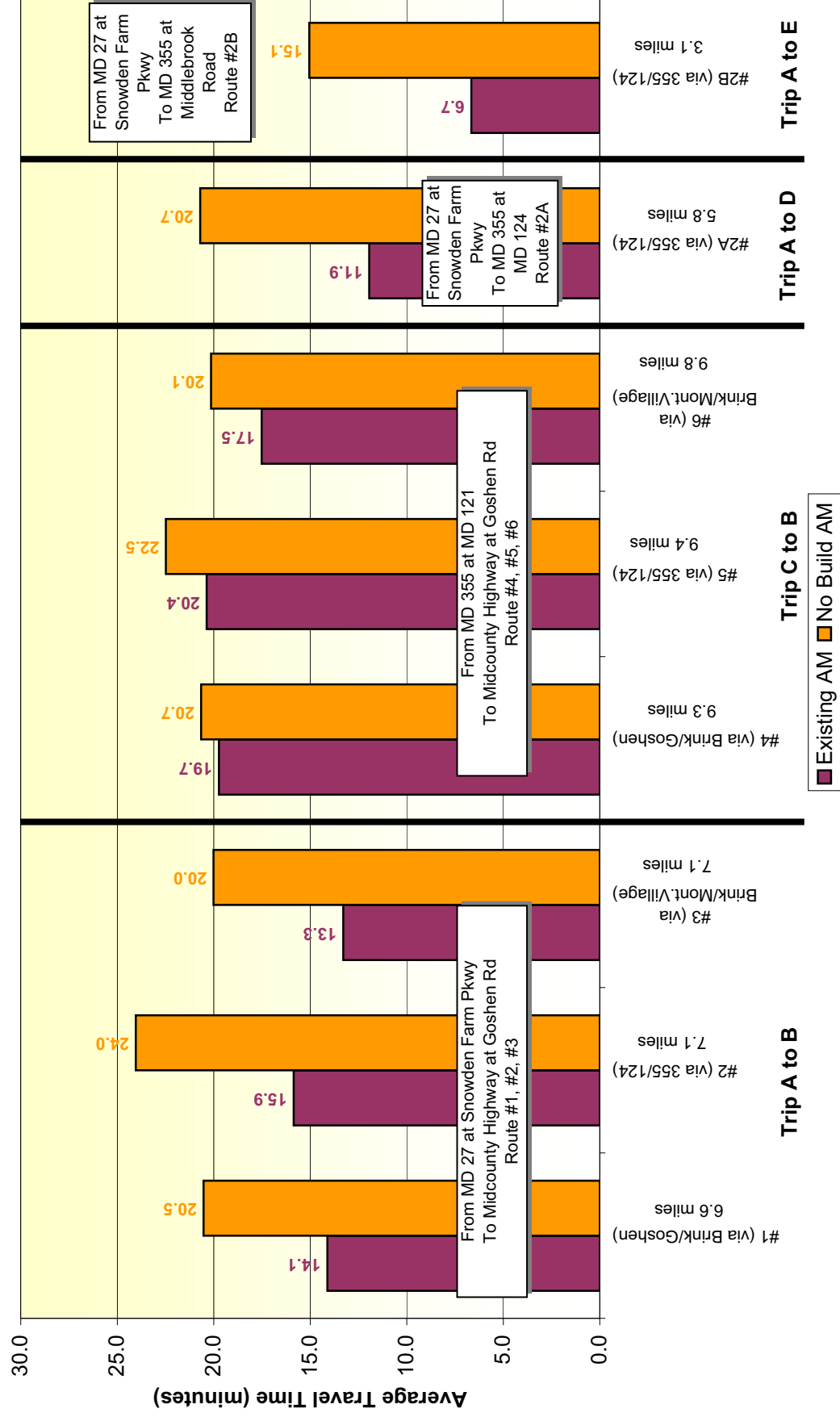
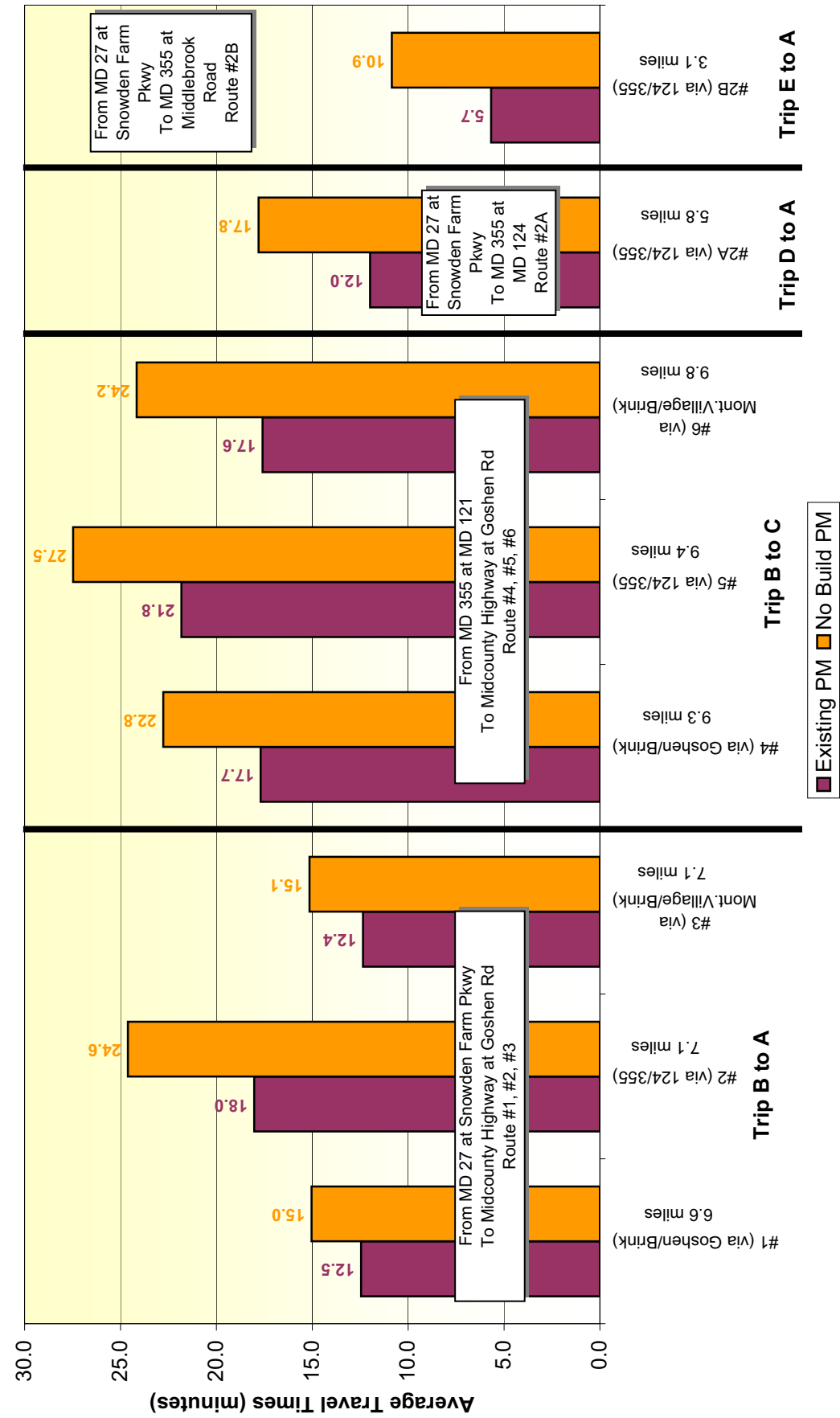


Figure 8B
Average Travel Times
PM Peak Hour - Northbound





MIDCOUNTY CORRIDOR STUDY

EXISTING (2005)
AM PEAK HOUR TRAVEL TIMES



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FIGURE 9A



Clarksburg

Germantown

Gaithersburg

Study Area

Route Key with Time (minutes)

Route Start / End Point

Trip A to B

- #1 14.1
- #2 15.9
- #3 13.3

Trip C to B

- #4 19.7
- #5 20.4
- #6 17.5

Trip A to D

- #2A 11.9

Trip A to E

- #2B 6.7



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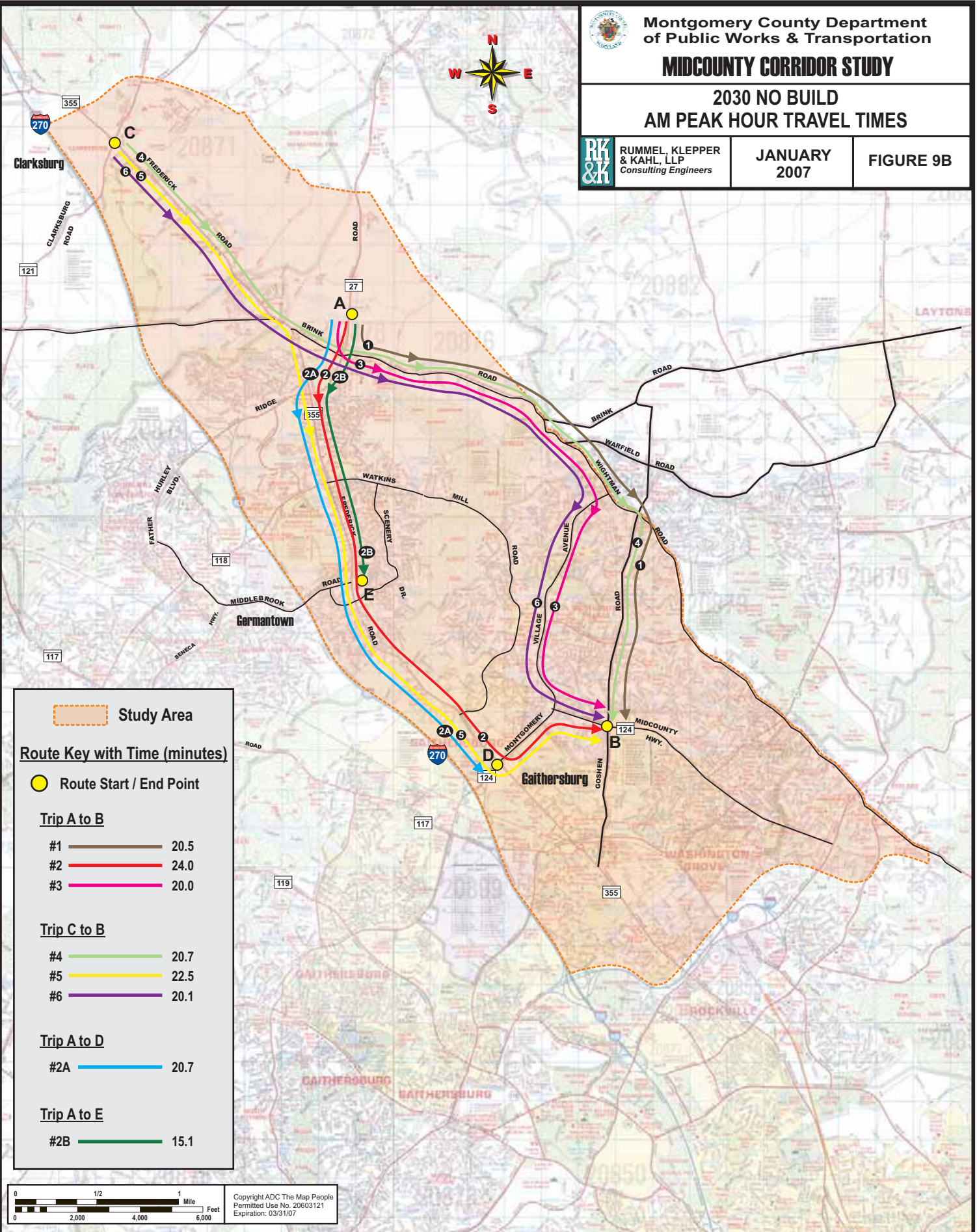
2030 NO BUILD
AM PEAK HOUR TRAVEL TIMES



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FIGURE 9B





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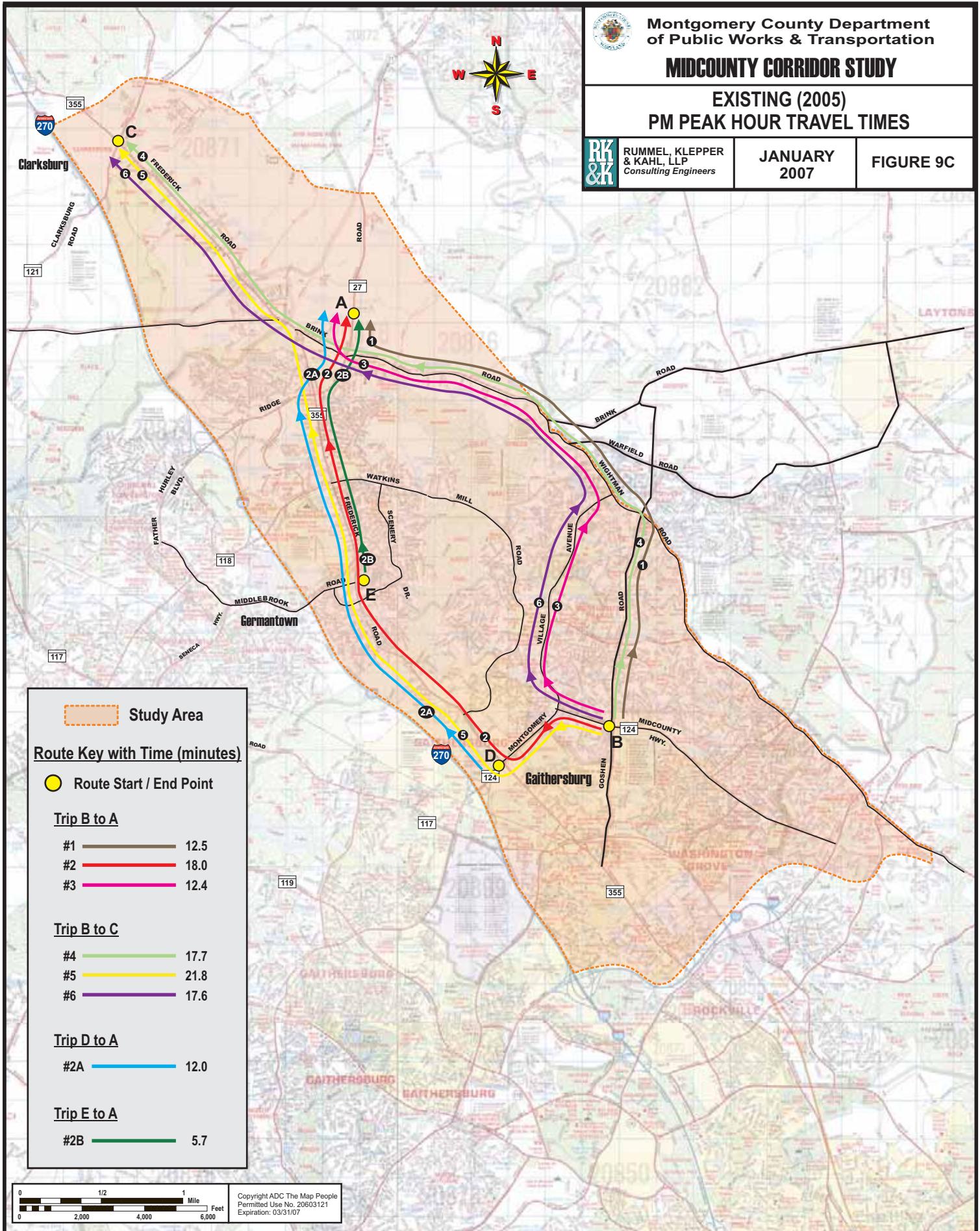
EXISTING (2005)
PM PEAK HOUR TRAVEL TIMES



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FIGURE 9C





MIDCOUNTY CORRIDOR STUDY

2030 NO BUILD
PM PEAK HOUR TRAVEL TIMES



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FIGURE 9D



Clarksburg

Germantown

Gaithersburg

Study Area

Route Key with Time (minutes)

Route Start / End Point

Trip B to A

- #1 15.0
- #2 24.6
- #3 15.1

Trip B to C

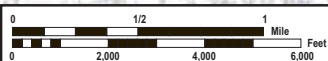
- #4 22.8
- #5 27.5
- #6 24.2

Trip D to A

- #2A 17.8

Trip E to A

- #2B 10.9



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Providing an alternative corridor to these segments of MD 355 and MD 27 would reduce congestion and should have a lower accident rate than these two roadways. In Maryland, between 2002 and 2004, suburban four-lane, divided highways with partial control of access had a statewide average accident rate of 107 accidents per 100 million vehicle miles. In contrast, between 2003 and 2005, MD 355's accident rate was 248.1 accidents per 100 million vehicle miles, and MD 27's accident rate was 302.3 accidents per 100 million vehicle miles. Typically, opposing directions of limited access control highways are divided by a median reducing the probability of opposite direction collisions. Also, with fewer access points compared to MD 355, which has over 100 access points in the study corridor, travel speeds are more consistent and there are fewer stopping and turning movements. This reduces the likelihood of rear-end, left turn and angle collisions normally associated with intersections.

C. Enhance Network Efficiency and Connect Economic Centers

I-270's primary function is to serve through traffic from northern Montgomery County and Frederick County to the Washington Metropolitan area and beyond. MD 355, which is the only major highway in the study area east of I-270, serves a similar purpose but provides direct access to local businesses, commercial centers, and residential communities. Through the study area, MD 355 has numerous intersections and driveways with little access control. In fact, between MD 124 and MD 27 there are almost 100 access points (26 signalized or unsignalized intersections or major entrances and 71 other minor entrances) over a distance of 4.3 miles. As well, Brink Road, Wightman Road and Watkins Mill Road have no access control, are only two lanes for most of their length, and require travel over a longer distance between Montgomery Village Avenue and MD 27. Furthermore, these arterials have been designated to principally serve shorter trips. Traffic from Clarksburg, east Germantown, east Gaithersburg and points south, making mid- to long-range trips, have no efficient alternative to I-270.

Even with the planned improvements of area roadways, there will still be a deficiency of major north-south thoroughfares that I-270 and MD 355 alone cannot satisfy. Only limited additional capacity can be added to MD 355 due to the land uses, number of intersections, and driveways along its length. As through traffic uses the area's two-lane arterials as an alternative to MD 355, traffic is diverted to facilities designated to principally serve shorter trips. A mix of longer and shorter trips in residential communities creates traffic safety and community concerns with potential conflicts among higher speed longer trips, lower speed shorter trips and pedestrian traffic.

The inefficiency of the roadway network is most effectively improved with a balance of the various roadway classifications. Providing a partially controlled access facility is a key component to improving the safety and efficiency of north-south travel in the study area. (See **Figure 2** for the existing conditions and the programmed improvements to the study area's roadway network.)

The I-270 High Technology Corridor is one of the most extensive areas of economic development in the region. A new, controlled access north-south highway east of I-270 is needed to support the continued attraction and retention of businesses and employment opportunities in the region. MD 355 does not satisfy this need because, as demonstrated in Section III.A. above, existing and future traffic congestion along MD 355, even with planned improvements, precludes efficient travel. As part of the I-270 High Technology Corridor, the Clarksburg area is quickly becoming an economic center. Germantown, Gaithersburg and points south have already been established as such. Additional highway capacity, which is efficient and reliable, is necessary to facilitate the movement of goods and people throughout the region.

D. Accommodate Planned Land Use and Future Growth

Montgomery County has developed as planned with intense growth in jobs and households along the I-270 corridor. **Figure 10** depicts the land use in 2002 in the study area. Within the study area, there are several pockets of medium and high density and multiple family residential land uses. These types of land uses are generally thought to be transit-supportive. **Figure 11** depicts the current zoning in the study area. As depicted, there are also numerous areas zoned for denser residential use.

Figure 12 illustrates the existing and future households in the study area. Comparing the households between 2005 and 2030, tremendous residential growth is anticipated in the northern portion of the study area, from approximately 2,200 in 2005 to over 13,400 by 2030. **Figure 13** illustrates the existing and future employment in the study area. Likewise, the sizable employment growth is projected to occur in the northern portion of the study area. **Figure 14** illustrates the extent of proposed development in Clarksburg.

A new, controlled access north-south highway east of I-270 has long been a part of local land use planning in order to support the region's growth and development patterns (see page 1 for Master Plan references). The policy areas in the region are among the county's fastest growing for both employment and housing, with a sizable portion of the remaining residential development planned for this portion of the county. To accommodate the existing and future development, adequate transportation facilities are necessary.

E. Facilitate and Provide Bicycle and Pedestrian Travel Connections

The region lacks adequate north-south, off-street bike paths necessary to provide continuity and connections among existing and future bike facilities in the region. The Germantown and Clarksburg master plans each recommend an off-street bike path as part of the extension of Midcounty Highway. More recently, the March 2005 *Countywide Bikeway Functional Master Plan* (CBFMP) designates SP-70, an off-street, shared-use bike path extending along the Snowden Farm Parkway from MD 355 (north of Clarksburg) to the Midcounty Highway extension to potentially the Intercounty Connector. The CBFMP further recommends SP-71, likewise an off-street, shared use bike path extending along Middlebrook Road to the extension of Midcounty Highway. Future bikeways would provide connections to numerous existing and proposed bike facilities such as Clarksburg Road, Ridge Road (MD 27), MD 355 and Goshen Road. Furthermore, off-street, shared-use bike and pedestrian paths along a limited access control highway would provide a safer alternative to MD 355 for bicyclists and pedestrians.

In addition, Middlebrook Road is recommended as a pedestrian connection to the extension of Midcounty Highway in the *Germantown Master Plan* (1989).

F. Enhance Homeland Security

The Washington metropolitan area is home to many government, military and community installations with unique Homeland Security concerns and responsibilities. These agencies depend on a clear, expeditious and available access and evacuation route. An alternative or improved north-south transportation facility would provide additional system capacity for military access and evacuation. It would also improve response time for fire, rescue and police emergency vehicles. With regular congestion on I-270 and MD 355 made worse by frequent accidents or other incidents, the region needs increased transportation capacity to provide reliable alternative north-south emergency vehicle access. Additional north-south highway capacity east of I-270 would enhance a grid of emergency transportation routes.



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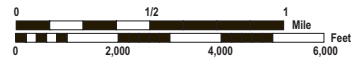
LAND USE (2002)



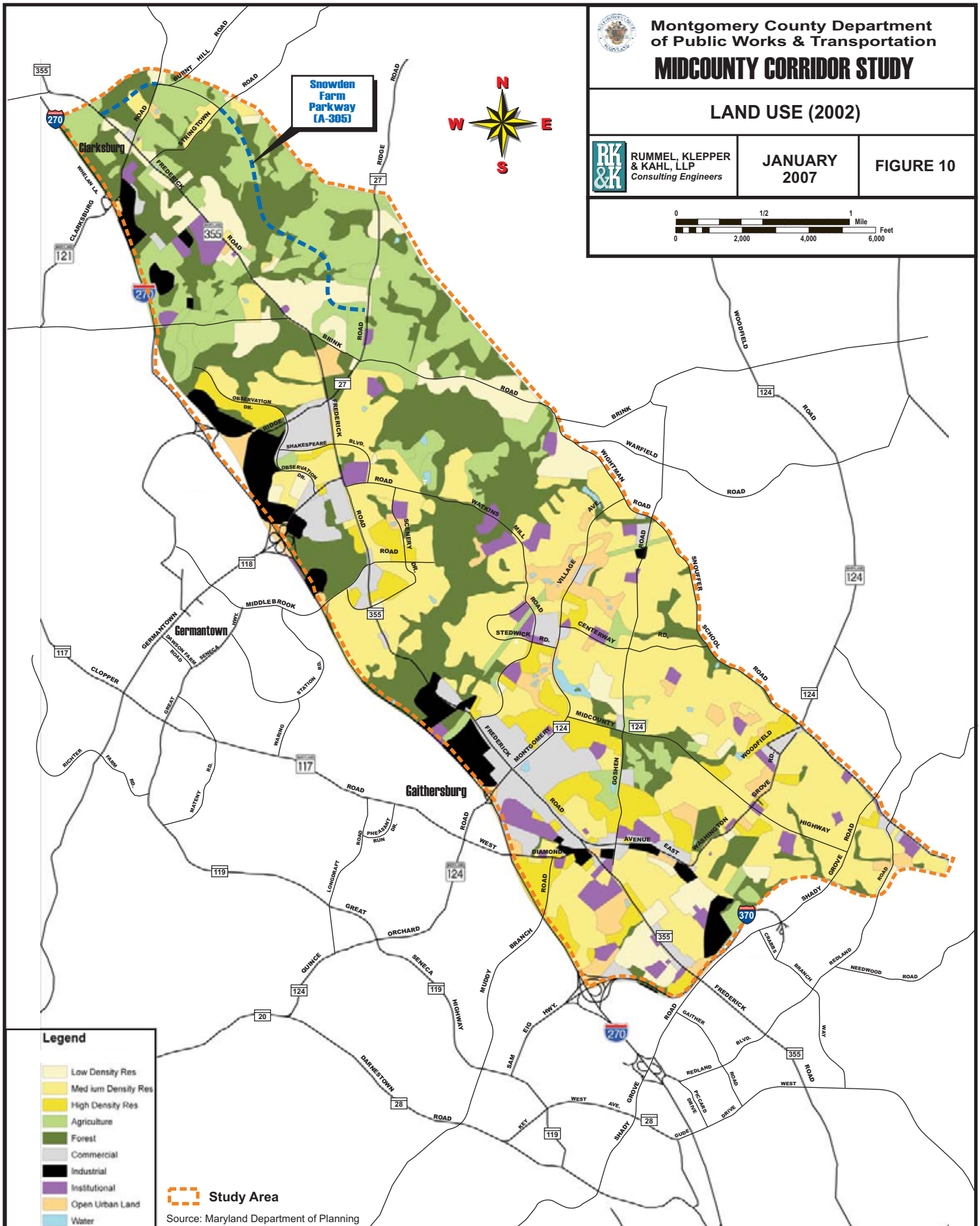
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**JANUARY
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FIGURE 10



**Snowden
Farm
Parkway
(A-305)**





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MIDCOUNTY CORRIDOR STUDY

ZONING



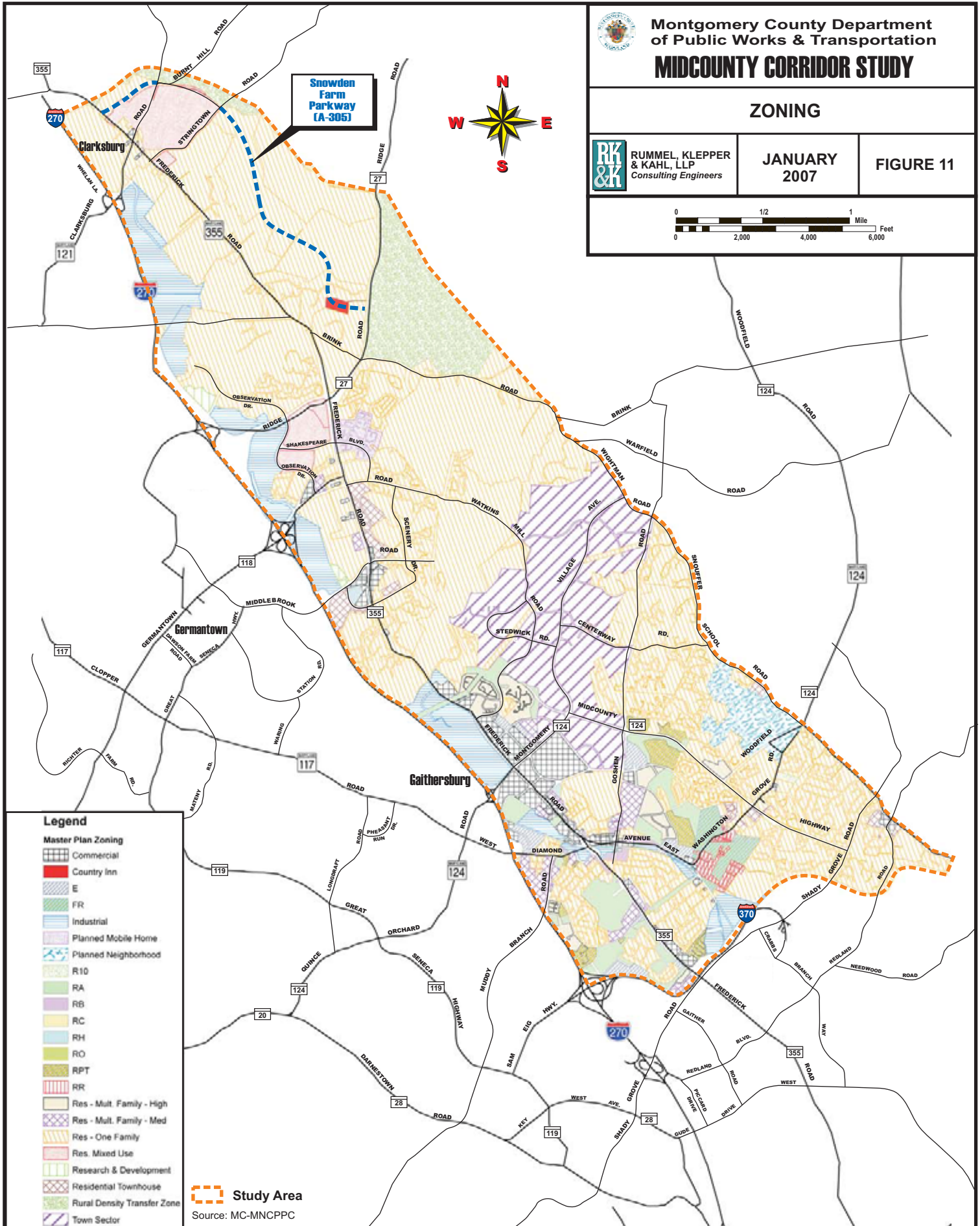
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**JANUARY
2007**

FIGURE 11



Snowden
Farm
Parkway
(A-305)



Legend

Master Plan Zoning

- Commercial
- Country Inn
- E
- FR
- Industrial
- Planned Mobile Home
- Planned Neighborhood
- R10
- RA
- RB
- RC
- RH
- RO
- RPT
- RR
- Res - Mult. Family - High
- Res - Mult. Family - Med
- Res - One Family
- Res. Mixed Use
- Research & Development
- Residential Townhouse
- Rural Density Transfer Zone
- Town Sector

Study Area

Source: MC-MNCPPC



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MIDCOUNTRY CORRIDOR STUDY

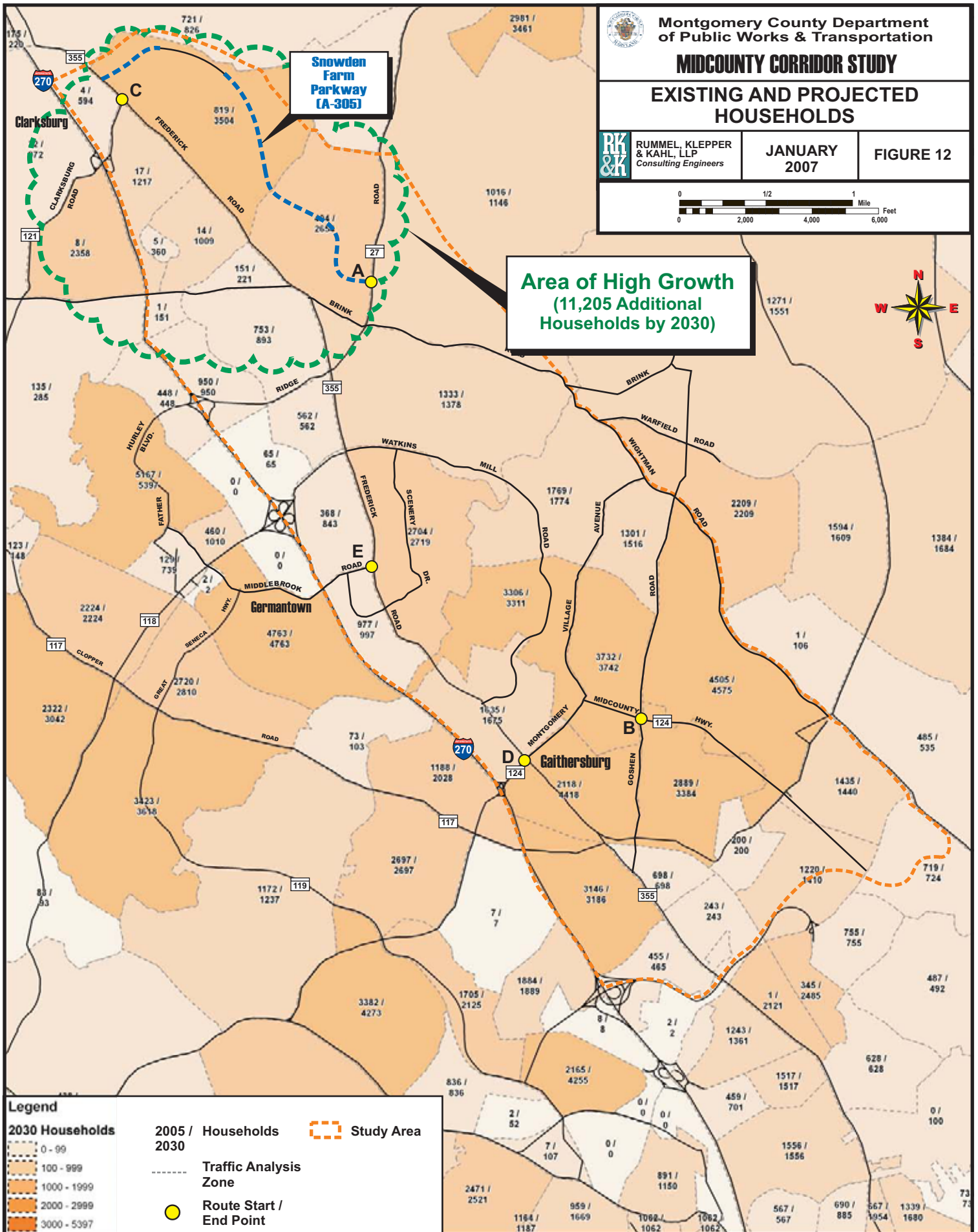
EXISTING AND PROJECTED HOUSEHOLDS



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& KAHL, LLP
Consulting Engineers

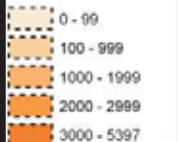
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FIGURE 12



Legend

2030 Households



2005 / Households
2030

----- Traffic Analysis
Zone

● Route Start /
End Point

--- Study Area



MIDCOUNTY CORRIDOR STUDY

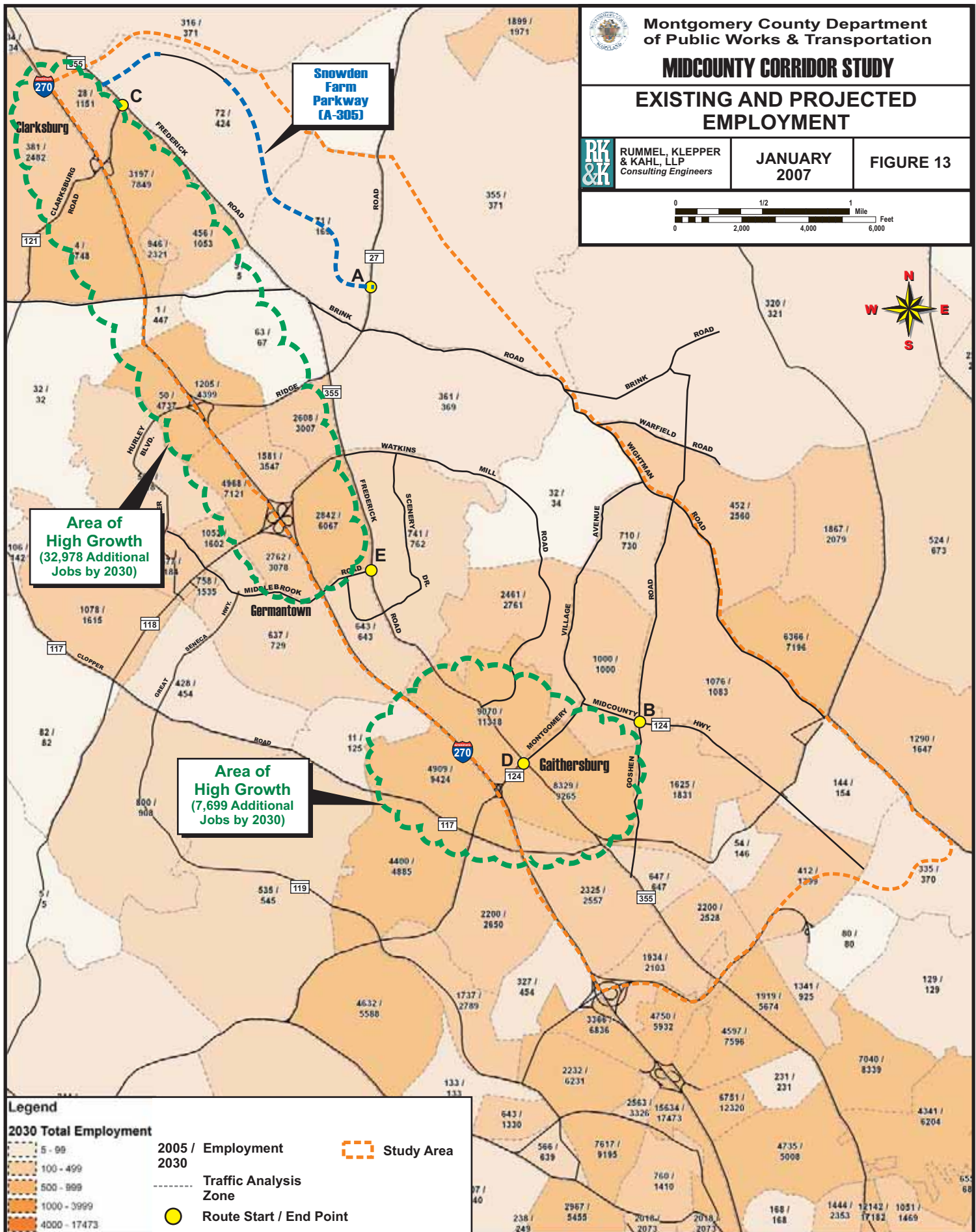
EXISTING AND PROJECTED EMPLOYMENT



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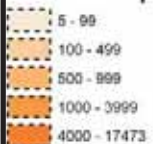
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FIGURE 13



Legend

2030 Total Employment



2005 / Employment
2030

----- Traffic Analysis
Zone

● Route Start / End Point

Study Area



Montgomery County Department
of Public Works & Transportation

MIDCOUNTRY CORRIDOR STUDY

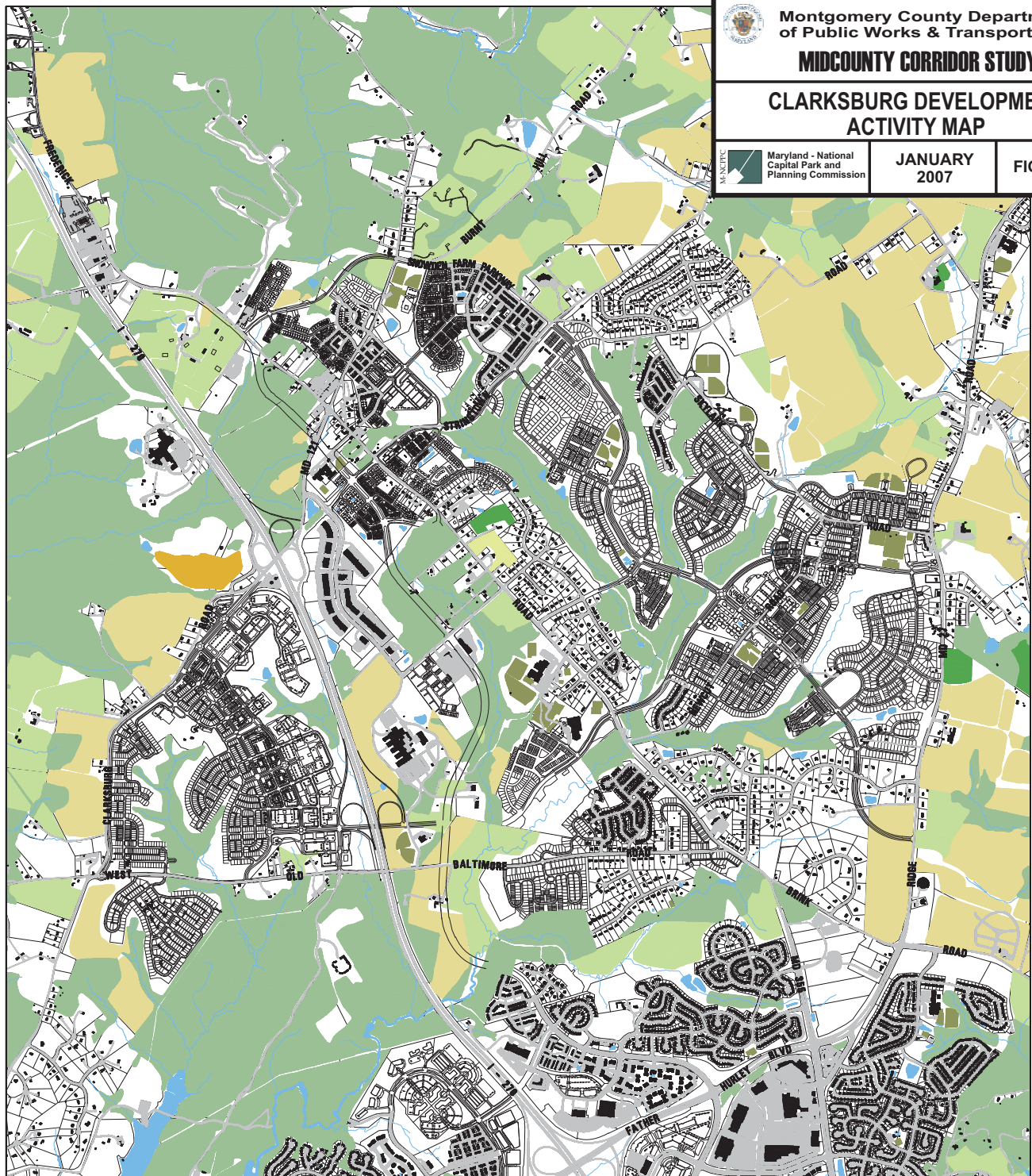
CLARKSBURG DEVELOPMENT ACTIVITY MAP



Maryland - National
Capital Park and
Planning Commission

JANUARY
2007

FIGURE 14

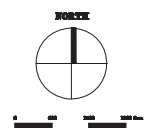


Revised 06/20/06 by Dave Fugitt
Community Based Planning

LEGEND

Road Pavement	Open Land
Proposed Road Pavement	Pasture Land
Existing Building Footprints	Woodlands
Proposed Building Footprints	Athletic Fields/Courts
Rivers, Streams, Lakes, Swimming Pools & Ponds	Landfills
Cropland	Cemeteries/Tanks/Smokestacks
Nurseries/Orchards	

**NOTE: This map IS NOT for decision-making purposes.
For informational use only.**



MONTGOMERY COUNTY DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION
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G. *Improve Quality of Life*

Many of the needs described in detail above contribute to an overall improvement in the quality of life for commuters in the study area. Traffic congestion along MD 355 and other primary north-south thoroughfares was unacceptable or approaching unacceptable levels in 2005 at several intersections in the study area and this is anticipated to worsen by 2030. This worsening congestion is forecast to result in significantly longer travel times resulting in more user costs for commuting.

By providing an alternative route to MD 355 with safer design elements such as fewer access points and a divided highway with a median, there is increased safety in accessing the highway with less likelihood of many types of collisions that occur so frequently on MD 355. Furthermore, off-street, shared-use bike and pedestrian paths along a limited access control highway would provide a safer alternative to MD 355 for bicyclists and pedestrians.

As traffic grows on MD 355 and it becomes increasingly congested, more traffic will use the area's minor arterials and local roads. This has the effect of diverting higher speed, through traffic to facilities designated to principally serve shorter trips. Providing an alternative to MD 355 would allow the lesser arterials, local roads and neighborhood streets to better and more safely serve their intended traffic and pedestrian users.