

May 25, 2004

MEMORANDUM

TO: Karen Kumm, Lead Planner, Shady Grove Sector Plan

VIA: Jeff Zyontz, Chief, Countywide Planning

FROM: Tanya Schmieler, Planning Supervisor, Park Planning and Resource Analysis,
Mark Wallis, Senior Planner, Park Planning and Resource Analysis

SUBJECT: Park Needs in the Shady Grove Sector Plan Area

Staff has re-evaluated the required park facilities and related population projections as requested by the Planning Board at the May 6, 2004 worksession. Staff has concluded that the Shady Grove ballfield needs can be met by parks currently recommended in the Shady Grove Sector Plan and those proposed in the approved Upper Rock Creek Area Master Plan which are adjacent to Shady Grove and can help meet deficiencies in the Gaithersburg Area.

The issue raised was that the attached table included a population for the Gaithersburg Planning Area that remained constant instead of increasing along with the potential population increase for the Shady Grove Sector Area. Because of this, it was suggested that the anticipated local park needs might be higher than indicated in the table.

Estimating exact numbers of ballfields needed is an extremely difficult task and subject to many future variables. Estimates should be considered as guidelines only and may be revised in the future to accommodate changes in population projections and field participation rates. In an attempt to respond to this issue, staff re-calculated the potential Shady Grove Park needs, increasing the Gaithersburg population to include the Shady Grove additional residents. Because ballfields are the greatest land users, and drive the need for local parks, the analysis concentrated on these needs.

The analysis looked at the Shady Grove "worksession 6 highest potential population, 19,170, and estimated that there could potentially be between 5.6 and 6.7 additional fields needed to serve long range needs of Shady Grove residents. The current Shady Grove Plan field proposals (Jeremiah Park (2 fields plus 1 new field at the new Elementary School on the Casey Property, plus the potential of providing 1-2 additional fields at

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Blueberry Hill) would satisfy most, but not all of the park and field demand. However, although the 1998 PROS Plan estimated that there were no additional field needs in Upper Rock Creek for the year 2010, the recently approved Upper Rock Creek Master Plan includes park proposals with the potential for up to 6 additional local park fields to help serve adjacent areas such as Gaithersburg. These fields would be very close to Shady Grove and could help serve any remaining unmet needs. A summary of the analysis is included below:

- The analysis used the 1998 PROS Plan estimated unmet net needs for PA 20, Gaithersburg (12 additional ballfields) as a base number. These fields are in addition to the 34.5 existing fields for a total gross need of 46.5 fields. Of the unmet needs, Shady Grove's share based on a population of 10,612 used in the PROS Plan, would be 1.6.
- To project Shady Grove ultimate field needs the Worksession 6 highest number of new potential dwelling units (6380) was used. This would generate a potential Shady Grove population of 19,170 and would increase the total Gaithersburg Population from the 77,742 to 86,300 people, or 11%. If the total gross Gaithersburg field need was calculated proportionally it would result in a 51.6 gross need or a net unmet need of 17.1. This is an increase of 5.1 over the current PROS estimate of 12.
- If one assumes that the entire field need increase for Gaithersburg should be added to the originally calculated PROS ballfield need for Shady Grove of 1.6, (as that is where the population increase is coming from), it would result in a total of 6.7 additional fields needed in Shady Grove. This number may be high because the sports participation rate in the new Shady Grove metro station area is most probably going to be considerably lower than average, because there will likely be less large families.
- Another way of looking at field needs is by considering a level of service approach. If the total County 2010 PROS ballfield needs are divided by the projected 2010 population, it indicated that there is one field needed for every 1800 persons. If this ratio is applied to the Shady Grove potential population of 19,170, it would result in a field need of 10.6. As there are 5 existing fields, there would be a remaining unmet need of 5.6 fields.
- Field needs will be accommodated by the proposals in the Shady Grove Sector Plan and the Upper Rock Creek Area Master Plan. There are 3-5 potential fields to be provided in Shady Grove (Jeremiah Park-2; New elementary at Casey-1; and 1-2 potentially at Blueberry Hill Park.) *Additionally, there are up to 6 additional local park*

fields that will become available in the adjacent Upper Rock Creek Planning Area, which are near enough to meet any remaining needs.

July 1, 2004

MEMORANDUM

TO: Karen Kumm, Lead Planner, Shady Grove Sector Plan
Community Based Planning Division

FROM: Dan Hardy, Transportation Supervisor
County-wide Planning Division

SUBJECT: Comparative Traffic Impact of Public Hearing Draft Plan and Worksession #7
Scenarios

This memorandum compares the forecasted transportation system performance of the land use scenarios tested for the Public Hearing Draft Plan and Worksession #7. **Staff finds that the land uses assumed in Worksession #7 result in higher levels of congestion than those envisioned in the Public Hearing Draft Plan, but that the increased levels would not warrant changes to explicit transportation plan recommendations.** The forecasted transportation conditions in the Shady Grove Plan area remain affected predominantly by through traffic and trips generated by existing development.

Review of Public Hearing Draft Plan transportation system performance

The effects of the Public Hearing Draft Plan were described in a draft Transportation Appendix included as Attachment A of the staff packet for Worksession #3 and have been summarized as follows:

- A forecasted Average Congestion Index (ACI) of 0.70, higher than the Derwood Policy Area ACI standard of 0.57 (no longer applicable under the FY 05 Annual Growth Policy) but lower than the 0.72 ACI forecasted for current Master Plan uses and comparable to the 0.73 ACI standard for Bethesda/Chevy Chase
- Four intersections forecasted to fail to meet current CLV standards given currently programmed capital improvements. At one of the four locations (MD 355 at Gude Drive), the Public Hearing Draft Plan recommends a grade-separated interchange to address forecasted congestion. At a second location (Shady Grove Road at Midcounty Highway), further study is recommended in conjunction with the ICC study process. At all locations, compliance with standards would be achieved through the subdivision process.

Worksession #7 Scenario Transportation System Performance

The Worksession #7 land use scenario reflects the following changes to the land uses envisioned in the Public Hearing Draft Plan:

- An increase in approximately 2,600 residential dwelling units (in part due to an explicit assumption in the Worksession #7 scenario regarding Moderately Priced Dwelling Units).
- An increase in approximately 1,300 jobs
- An increase in 1,200 park-and-ride spaces at the Shady Grove Metrorail station

These changes result in evening peak hour vehicle trip generation totals for local land uses in the Worksession #7 scenario land uses that are 16% higher than the Public Hearing Draft Plan totals. The relative effect on traffic congestion, however, is less because about two-thirds of the travel on area roadways is through traffic, with neither an origin nor a destination within the Shady Grove Sector Plan area. From an areawide perspective, therefore, the change from Public Hearing Draft Plan to Worksession #7 land uses would result in a total traffic increase of about 4%.

The remaining portions of this memorandum provides additional comparisons of the Public Hearing Draft Plan scenario and the Worksession #7 scenario by updating the presentation materials included in Attachment A to the Worksession #3 staff packet. The analysis of alternative development scenarios considered three levels of transportation impacts:

- The **cordons line** analysis demonstrated the relative effects of vehicles generated by alternative local land use scenarios as compared to through travel
- The areawide **average congestion index** analysis indicates the degree to which the alternative local land use and transportation scenarios provide an appropriate balance between land use and transportation per current County policies, and
- The **intersection congestion** analysis indicates the degree to which alternative land use or transportation changes affect congestion hot-spots within the Sector Plan area.

Cordon Line Analysis

Exhibit 1 provides a comparison of the total number of vehicles crossing the Shady Grove Sector Plan cordons line for three alternative scenarios: development per the current Master Plan area zoning, development envisioned in the Public Hearing Draft Plan and development tested in the Worksession #7 scenario.

The trips crossing the cordons line are divided into four categories:

- “Metro Station Area” represents traffic generated by commercial or residential land uses within the Metro communities within Transportation Analysis Zones (TAZ) 197 and 198
- “Metro Access” represents traffic generated by the Shady Grove Metrorail station, including park-n-ride, kiss-n-ride (including taxis), and bus traffic
- “Remainder Plan Area: represents traffic generated by land uses in the Sector Plan area other than TAZ 197 and 198, and

- “Through” represents traffic that travels through the Sector Plan area.

Currently, approximately 38,000 vehicles cross the Sector Plan cordon line during the PM peak hour. In the three future year scenarios shown in Exhibit 1, between 73,000 and 76,000 vehicles are forecast to cross the Sector Plan cordon line during the PM peak hour. The increase in travel demand is due both to increased development in the I-270 corridor as well as assumed increases in roadway capacity within the Sector Plan area. Approximately 11,000 vehicles (or about 15% of the cordon line total) cross the cordon line at the Upper Rock Creek Master Plan Area boundary on either the ICC or Midcounty Highway Extended.

Exhibit 2 uses the same materials from Exhibit 1 to provide additional context on the degree to which travel demand in the Shady Grove Sector Plan area is a function of future development within the Sector Plan area. The pie chart in Exhibit 2 shows the composition of the 72,000 vehicles crossing the cordon line in the Worksession #7 scenario. Existing traffic accounts for 48% of the future total (with 19% generated by local land uses and 29% through traffic). The growth in through traffic accounts for 42% of the total. Additional development in the Sector Plan area accounts for only 10% of the total future traffic, and most of that additional traffic is generated by development outside of the Metro communities.

Average Congestion Index

The Average Congestion Index (ACI) is a tool that has been applied as part of the County’s Policy Area Transportation Review to determine development staging ceilings as part of the Annual Growth Policy. The ACI provides a measure of average roadway congestion on roadway links within each of the County’s 27 policy areas.

This review of policy areas has been part of the Annual Growth Policy since 1982. During that time, the ACI has also been used in the development of Master Plans to determine whether or not the end-state land use and transportation recommendations of the Master Plan are “in balance”. Sector Plan areas typically address roadway capacity needs by intersection improvements rather than roadway widening. Therefore, the AGP process has evaluated Sector Plans in conjunction with the master plan and policy area surrounding the Sector Plan.

The Shady Grove Sector Plan Area is located within the Derwood Policy Area. The current congestion standard for the Derwood Policy Area is an ACI of 0.57. As previously described, the Public Hearing Draft Plan scenario resulted in a forecast year 2025 ACI of 0.70. The additional traffic generated by the Worksession #7 scenario results in a forecast ACI of 0.73.

As discussed at previous worksessions, while forecast ACI has typically been used in the past to assess the master plan balance between land use and transportation, staff finds the current ACI standard is not an appropriate tool for the Shady Grove Sector Plan, considering three technical factors:

- the fact that the ACI standards used for Policy Area Transportation Review consider short-term regional transit accessibility rather than master planned facilities, so that the ACI standard

would increase if improved Metrorail service frequencies and the Corridor Cities Transitway were incorporated;

- the fact that the Derwood Policy Area is bounded by Rockville and Gaithersburg, two independent municipalities that would be in moratorium as part of Policy Area review, but are not subject to the Annual Growth Policy; and
- the degree to which congestion in the Derwood Policy Area is influenced by through traffic.

Perhaps more important than these technical factors, the County Council has eliminated Policy Area Transportation Review from the Annual Growth Policy.

Intersection Congestion

The Shady Grove Sector Plan supports redevelopment toward a transit-oriented community with an emphasis on pedestrian accessibility, connectivity, and safety. The degree by which additional development can be accommodated within the Sector Plan area by providing additional intersection capacity requires a value judgment regarding the tradeoffs between the level of service afforded to vehicles compared to that provided to pedestrians.

The congested intersection analysis applies the Critical Lane Volume (CLV) methodology from the Department's Local Area Transportation Review (LATR) guidelines. The CLV values are converted to a volume-to-capacity, or V/C ratio, by dividing the current or forecasted CLV values by the applicable congestion standard. Congested intersections are identified as those for which the V/C ratio exceeds 1.0.

Exhibit 3 provides a tabular summary of the seven congested intersections under the Public Hearing Draft and Worksession #7 scenarios, listed in decreasing order of forecast congestion for the Worksession #7 scenario. For each intersection the CLV congestion standard is identified. Within the Shady Grove Policy Area, the CLV congestion standard is an 1800 CLV. Outside the Shady Grove Policy Area, the CLV congestion is a 1475 CLV under the FY 2005 AGP.

Exhibit 4 includes two columns of data for both scenarios. The column described as "Base with TDM" indicates forecast 2025 volumes reflects the following:

- achievement of the TDM goals of both the Shady Grove Sector Plan as well as other master plans in the I-270 corridor,
- implementation of the programmed Redland Road widening project that will widen three of the four intersection approaches by one lane each.
- incorporation of a westbound left turn lane on Redland Road at MD 355 into the Sector Plan's proposed reconstruction of Redland Road as a divided business district street. This turn lane also addresses the Sector Plan's recommendation to reinstate the westbound left turn movement, currently prohibited except for transit vehicles.
- construction of Midcounty Highway Extended as a six-lane roadway but with only two through lanes in each direction at Shady Grove Road to minimize the intersection footprint

The column described as "plus turn lanes", reflects the following additional improvements considered in an effort to achieve CLV standards:

- At MD 355 and Gude Drive, implementation of the Sector Plan proposal to grade-separated interchange to address the forecast congestion,
- At Midcounty Highway and Shady Grove Road, addition of exclusive right turn lanes on eastbound and westbound Shady Grove Road at Midcounty Highway and three through lanes rather than two through lanes on Midcounty Highway,
- At MD 355 and Shady Grove Road, addition of a second right turn lane on both the eastbound and westbound approaches of Shady Grove Road,
- At Shady Grove Road and Crabbs Branch Way, addition of exclusive right turn lanes on eastbound and westbound Shady Grove Road at Crabbs Branch Way and addition of a second left turn lane on both northbound and southbound Crabbs Branch Way. This intersection is the one that is most effected by the additional traffic in Worksession #7.

As indicated in Exhibit 3, the forecast intersection performance is similar under both Public Hearing Draft Plan and Worksession #7 scenarios. In general, the V/C ratio comparisons reflect the areawide 4% difference in total traffic volumes between the two scenarios. There are two locations where the localized effect of the Worksession #7 land uses is greater than the average areawide difference. At MD 355 and Shady Grove Road, the increased commercial development in the Metro West neighborhood attracts additional traffic from the north via MD 355 and I-370, resulting in a V/C ratio of 1.17 in Worksession #7 compared to the 1.08 in the Public Hearing Draft Plan. The addition of turn lanes as described above does not reduce the V/C ratio below 1.0 in the Worksession #7 scenario. At Shady Grove Road and Crabbs Branch Way, nearly all traffic generated by the additional development to the north in Worksession #7 travels through the intersection to turn onto Shady Grove Road, disproportionately increasing V/C ratios.

As noted in the draft Transportation Appendix materials included as an attachment to the Worksession #3 packet, this Sector Plan, like most others, does not explicitly recommend roadway capacity improvements to achieve current Local Area Transportation Review standards for four reasons:

- The balance between vehicular congestion and pedestrian accessibility should be made on a case-by-case basis through subdivision cases or facility planning studies as needs arise.
- The level of travel demand forecasting performed for the sector plan analysis is useful for assessing long-term trends, but not for programming 20-year needs on an intersection-specific basis
- Current Annual Growth Policy (AGP) processes allow CLV congestion standards to be exceeded in Metro Station policy areas as long as operational analyses demonstrate that vehicle queues do not block upstream intersections
- AGP standards and practices are re-evaluated every two years and are subject to change during the 20-year Sector Plan timeframe.

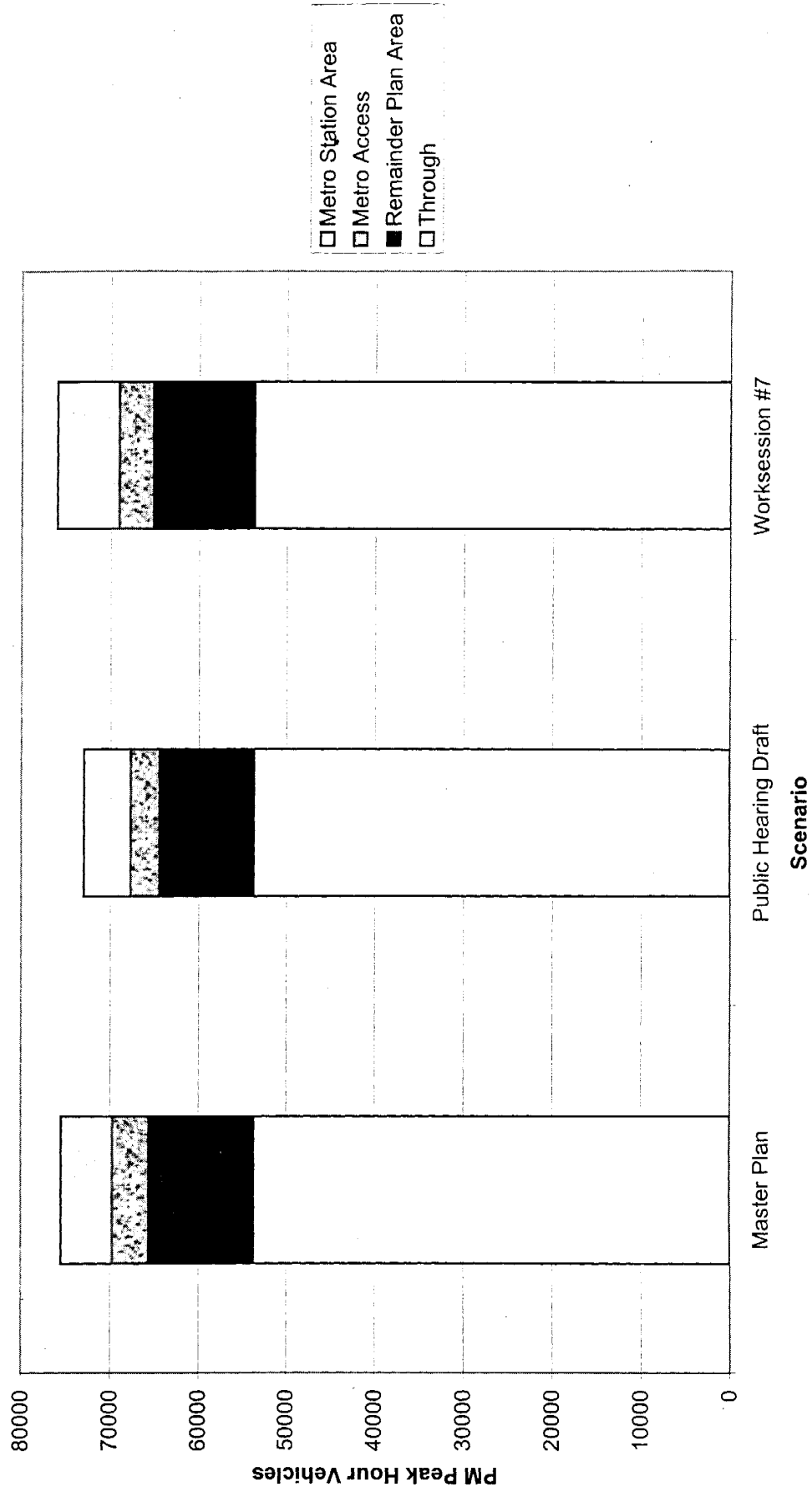
Staff proposes that as development occurs within the Sector Plan area, the Planning Board seek to address traffic congestion using the following priorities:

- Consider aggressive travel demand management (TDM), including but not necessarily limited to the current AGP Alternative Review Procedure for Metro Station Policy Areas of

allowing a developer to meet LATR requirements by mitigating 50% of their peak hour trips through TDM techniques.

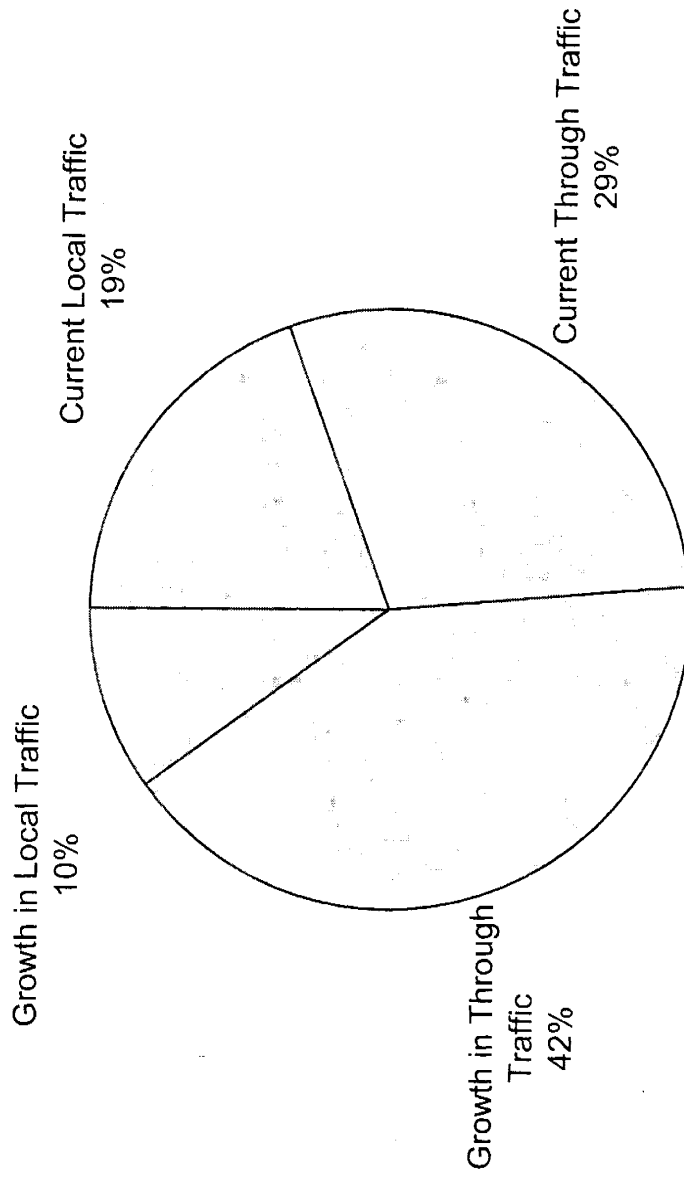
- Consider alternative operational methods to address traffic congestion, including but not necessarily limited to the current AGP procedure for conducting queueing analyses in Metro Station Policy Areas.
- Consider intersection widening solutions only after the TDM and operational solutions have been examined and adequate conditions still cannot be achieved.

Exhibit 1. Source of Cordon Line Traffic in PM Peak Hour



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Exhibit 2: Composition of Worksession #7 Traffic Volumes



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Exhibit 3. Shady Grove Sector Plan Intersection Comparison

Intersection	CLV Congestion Standard (as of 7/1/04)	Forecast 2025 Volume-to-Capacity Ratios					
		Current	Public Hearing Draft Plan		Worksession #7		
		Base with TDM	Plus Turn Lanes	Base with TDM	Plus Turn Lanes	Base with TDM	Plus Turn Lanes
<u>Interchange Locations</u>							
MD 355 / Gude Drive	1475	1.27	1.53	N/A	1.55	N/A	N/A
<u>Non-interchange locations</u>							
Shady Grove Road / Midcounty Highway	1475	1.24	1.40	1.11	1.45	1.16	1.16
MD 355 / Shady Grove Road	1800	0.90	1.08	0.93	1.17	1.02	1.02
MD 355 / Redland Road	1800	0.73	1.07	0.96	1.10	0.97	0.97
Shady Grove Road / Crabbs Branch Way	1800	0.66	0.92		1.07	0.91	0.91
Crabbs Branch Way / Redland Road	1800	0.84	0.93		0.96		
Shady Grove Road / Oakmont Avenue	1800	0.68	0.89		0.91		

Notes:

V/C Ratio calculated as intersection CLV divided by congestion standard
Peak hour (AM or PM) shown reflects worst V/C ratio

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