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MEMORANDUM

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TO: Roberto Duke, AICP, Montgomery County Planning Department - MNCPPC

SUBJECT: **MARC Germantown Rail Plan – Road Diet Feasibility Analysis**

Introduction

This memo summarizes the feasibility evaluation of road diets and/ or non-expansion on select roadways in Germantown's Town Center district. The reduced roadway footprint for vehicle traffic could be used for providing new bicycle infrastructure. Per MNCPPC's request, *Middlebrook Road* between MD 118 and MD 119 was assessed for the feasibility of reducing the number of travel lanes. In addition, *Wisteria Drive* between MD 118 and MD 119 and *MD 119 (Great Seneca Highway)* from Middlebrook Road to Wisteria Drive was evaluated for maintaining the current 3-lane and 4-lane section, respectively, rather than expanding to the ultimate 4-lane and 6-lane Master Plan recommended section. The map below shows the study area, study intersections, and road segments. While MD 118 (Germantown Road) was not assessed for a road diet, it is discussed in this memo for the purposes of accommodating cyclists by off-road means. Under existing and future conditions, which accounts for a twenty percent growth in traffic volumes, the study intersections along Middlebrook Road meet the County's Critical Lane Volume (CLV) congestion standards based on Critical Lane Analysis for a road diet, while intersections along Wisteria Drive and MD 119 meet the congestion standards without further widening.



Traffic Forecast Development

The growth rates for input into the road diet analysis were developed using a subarea forecasting process based upon the Metropolitan Washington Council of Government's (MWCOG) 2.3.57a Travel Forecasting Model and Round 8.4 Cooperative Forecasts. The MWCOG travel demand model is developed at the level of detail needed to support the regional Constrained Long Range Plan and air quality analysis. Consequently, more detailed networks and Traffic Analysis Zones (TAZs) are often needed to capture the local traffic patterns and access locations for subarea/corridor studies and their operational analyses. This was found to be the case for the Germantown MARC Rail Plan study area. The post mode choice assignment approach used was developed to add the desired level of detail and mimic the previous MNCPPC Travel/3 model subarea process used for similar studies (such as the White Flint Sector Plan Update). It included the following steps:

- The 2015 and 2040 MWCOG 2.3.57a Travel forecasting Model networks and zone land use files were used as a foundation.
- 2015 and 2040 network detail, TAZ boundary splits within the Germantown Study "impact area" (which include the Marc rail Study Area and surrounding TAZs) were transferred from the recently developed MNCPPC Travel/4 travel forecasting model (this model is still being refined for future year forecasts).
- Added additional network and TAZ detail for the study area (MWCOG TAZs 418, 420, 426 & 427)
- Prepared and validated a 2015 subarea forecast for Average Daily Traffic.
- Prepared the 2040 subarea forecast for Average Daily Traffic for the "Illustrative Plan" Land Use Data.
- Prepared the link and turning movement growth factors used for the peak hour operational analyses.

This process ensures that the results are consistent with the adopted regional model but also allows for additional network and zone detail within the Study Area.

Forecasted Growth

The model-derived Average Daily Traffic is shown in the table to the right for each of the study roadways for years 2015 and 2040. Over the

	2015	2040	Percent Change
MD 118 Germantown Road	21,880	26,558	21%
Middlebrook Road	19,235	22,118	15%
MD 119 Great Seneca Highway	11,334	13,288	17%
Wisteria Drive	1,771	2,858	61%

twenty-five years, the traffic volumes on MD 118, Middlebrook Road, and MD 119 grows less than twenty percent on average. Since year 2040 intersection-level traffic forecasts have yet to be developed in order to assess the feasibility of a road diet under future conditions, the existing intersection volumes were increased by twenty percent for all movements along MD 118, Middlebrook Road, MD 119 and Wisteria Drive. The Critical Lane Analysis described in the following section will show that acceptable CLVs can be maintained along Wisteria Drive even with higher growth volumes.

Critical Lane Analysis

The intersections along the study roadways were assessed for the feasibility of a road diet (Middlebrook Road) and maintaining the current cross-section (Wisteria Drive and MD 119) using the Critical Lane Analysis in the future conditions, accounting for the predicted growth in future traffic volumes.

The study intersections fall into two *policy areas* according to the County’s LATR/TPAR Guidelines¹, which

Germantown Town Center		Germantown East	
1600	Middlebrook Road at MD 118	1425	Middlebrook Road at MD 119
	Middlebrook Road at Crystal Rock Drive		Wisteria Drive at MD 119
	Wisteria Drive at MD 118		
	Wisteria Drive at Crystal Rock Drive		

affects the critical lane volume standard that acceptable intersection congestion is measured against. The intersections along MD 119 are required to have a CLV of less than 1425 while the remaining intersections are required to have a CLV of less than 1600 to meet congestion standards.

The table below shows the CLV and level of service for each study intersection under three scenarios: existing conditions, existing volumes under a road diet/ non-expansion, and future volumes under a road diet/ non-expansion. Under existing volumes, and existing volumes under a road diet/ non-expansion, all study intersections meet the critical lane volume standard of 1425. Under future conditions, accounting for the road diet/ non-expansion and expected growth in traffic volumes, all except one intersection meets its respective critical lane volume standard; Middlebrook Road at MD 119 in the AM peak hour exceeds the critical lane volume standard by 1.5% (at a CLV of 1446). A lane reconfiguration along the northbound approach of MD 119, such as converting the center lane to a shared left-right lane, could reduce the CLV to acceptable standards.

Intersection	Existing Conditions AM (PM)		Existing With Road Diet/ Non- Expansion AM (PM)		20% Growth With Road Diet/ Non- Expansion AM (PM)	
	CLV	LOS	CLV	LOS	CLV	LOS
	MD 118 at Middlebrook Road	865 (944)	A (A)	1156 (1253)	C (C)	1387 (1503)
Middlebrook Road at Crystal Rock Drive	786 (760)	A (A)	931 (972)	A (A)	1117 (1166)	B (C)
MD 119 at Middlebrook Road	1052 (867)	B (A)	1205 (962)	C (A)	1446 (1155)	D (C)
MD 119 at Wisteria Drive	723 (719)	A (A)	858 (836)	A (A)	1026 (1085)	B (B)
MD 118 at Wisteria Drive	713 (985)	A (A)	886 (1234)	A (C)	1063 (1480)	B (E)
Wisteria Drive at Crystal Rock Drive*	602 (716)	A (A)	479 (578)	A (A)	575 (693)	A (A)

*Unsignalized Intersection

Although the forecasted growth along Wisteria Drive is greater than twenty percent, the level of service for the intersections at Crystal Rock Drive and at MD 119 remains at a B or better in the future condition showing that there is sufficient capacity and the roadway does not need to be expanded beyond its current cross section. To maintain the CLV standard in the future conditions at Wisteria Drive and MD

¹ Montgomery County Planning Department. (2013). *Local Area Transportation Review and Transportation Policy Area Review Guidelines*. Silver Spring, MD: The Maryland-National Capital Park and Planning Commission. Page 5. <http://www.montgomeryplanning.org/transportation/latr_guidelines/documents/LATR-TPARGuidelinesFINAL.pdf>.

118 under the ultimate 61% growth, additional turn lanes may be necessary along Wisteria Drive approaching MD 118.

Existing & Proposed Cross-Sections

Existing and proposed cross-sections for a road diet for each study roadway are described below. Illustrative renderings can be found in the Appendix.

Middlebrook Road

Two road diet concepts were developed for Middlebrook Road between MD 118 and MD119. A typical cross-section of Middlebrook Road under existing conditions provides a divided six-lane section with a raised, concrete median and sidewalks aligning the roadway. The two road diet concepts consider a reduction to a four-lane cross-section to provide additional space to install protected bicycle lanes.

The first option includes providing a six-foot bike lane with a four-foot striped buffer in one direction and moves the outside curb in the other direction to create an 8' protected bike path. The second options maintains both outside curbs and restripes the outside vehicle travel lane to provide a six-foot bike lane and four-foot striped buffer in each direction.

Wisteria Drive

A typical cross-section of Wisteria Drive under existing conditions provides for two travel lanes with a center two-way-left-turn lane and sidewalks/ a share use path align the roadway. Reductions in travel lane width, to provide a six-foot bike lane and three foot striped buffer in each direction were recommended along Wisteria Drive between MD 118 and MD 119.

Germantown Road

Although Germantown Road was not considered for a road diet, two concepts were developed to accommodate bicycle infrastructure via a shared use path. The shared use path options consider providing additional width to the existing six foot sidewalk along the western side of MD 118 to accommodate bicycles.

The first of the two shared-use path scenarios consider taking three feet from the existing four foot grass buffer between the sidewalk and western edge of pavement to create a nine foot shared-use path. The second scenario considers maintain the existing four foot grass buffer and widening the existing sidewalk to the west by four feet to create a ten foot shared-use path. (This concept may require additional right-of-way.) The proposed shared-use path in each scenario accommodates both pedestrians and cyclists.

Next Steps

The planning-level analysis shows that the road diet is feasible along Middlebrook Road, and no expansion of Wisteria Drive or MD 119 is necessary under existing and future conditions. To further analyze the road diet, a Highway Capacity Manual traffic operations analysis and a micro simulation analysis of the network should be performed once the future year ADT volumes are post-processed and year 2040 intersection level traffic volumes are finalized.