



WELLS + ASSOCIATES

WATERS VILLAGE

LOCAL AREA TRANSPORTATION REVIEW

Submission: July 21, 2022

Revised: November 30, 2022



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Montgomery County, Maryland

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WATERS VILLAGE

Section 1 INTRODUCTION

OVERVIEW

This report details a Local Area Transportation Review (LATR) for the Waters Village, located at 19621 Waters Road, Germantown, Maryland. The subject site is located along the east side of Waters Road and south of Wisteria Drive, as shown in Figure 1-1. The site and the study intersections are located within the Germantown Town Center (Orange) Policy Area of Montgomery County. This study was prepared in support of the Preliminary Plan application and to satisfy the LATR requirements in accordance with the Maryland-National Capital Park and Planning Commission (M-NCPPC) 2022 LATR Guidelines.

The Applicant, KHR Waters Investments, LLC, is proposing to develop 26,680 SF of retail space and 3,200 SF of fast-food restaurant with a drive thru. The existing property is occupied with a single-family home and approximately 5,054 SF of light industrial use. The parking lot is currently used for automobile storage. Access to the site is currently provided via two driveways on Waters Road and one driveway on Wisteria Drive. The Applicant is proposing to allow site access to be provided via full-access driveways on Waters Road and the planned Waters House Avenue. With the Waters Village development, a portion of the planned Waters House Avenue, per the Germantown Master Plan, will be constructed. The site plan is shown on Figure 1-2.

This application is subject to LATR since the proposed development is expected to generate 50 or more new peak hour person trips during the AM and PM peak periods. The scope of this LATR traffic study was established in consultation with M-NCPPC, Montgomery County Department of Transportation (MCDOT), and Maryland State Highway Administration (SHA) staff. The Scope of Work Agreement and correspondence are included in Appendix A. This study incorporates comments from M-NCPPC, MCDOT and SHA.

EXECUTIVE SUMMARY

The proposed Waters Village redevelopment including 26,680 SF of retail uses and a 3,200 SF fast food restaurant with drive thru is subject to the Local Area Transportation Review system adequacy tests and a Vision Zero statement, based on the number of peak hour person trips the site will generate, as outlined in Montgomery County's Growth and Infrastructure Policy and the LATR 2022 Guidelines. Following are the findings and conclusions of the adequacy test and Vision Zero evaluations.

1. Waters Village is expected to generate 278 AM peak hour and 382 PM peak hour new person trips, and 179 AM peak hour and 246 PM peak hour new auto-driver (vehicle) trips.
2. The AM and PM peak hour average vehicle delays at the study intersections are currently within the Germantown Town Center policy area congestion standard of 63 seconds per vehicle.
3. Under future conditions, without and with the proposed Waters Village redevelopment, the study intersections would continue to operate within the Germantown Town Center policy area congestion standard during both the AM and PM peak hours. Mitigation is not required for the Motor Vehicle Adequacy Test.
4. For the Pedestrian System Adequacy Test, mitigation is required to bring the existing undesirable pedestrian level of comfort ratings for segments along Wisteria Drive, Waters Road and MD 118 (Germantown Road) and to address ADA noncompliance for crosswalk ramps within the study area. Per County policy and LATR Guidelines the Applicant is responsible for their fair share contribution to improve the PLOC in the study area.
5. Mitigation is required to pass the Bicycle System Adequacy Test because there is high level of traffic stress under existing conditions along Wisteria Drive and MD 118 (Germantown Road). The Applicant will coordinate with Planning staff to determine the fair share contribution toward the mitigation.
6. Several bus stops within the study area do not have bus shelters. Mitigation is required to pass the Bus Transit System Adequacy Test.
7. Per the LATR Proportionality Guide Calculator, the Applicant's off-site mitigation cap to address deficiencies in the Pedestrian, Bicycle and Bus Transit Systems is \$122,882.
8. The Applicant proposes to place two bus shelters with real time signs to meet the mitigation requirement. Based on a cost estimate including contingencies, two shelters with real-time displays cost \$150,000.

9. A review of crash history within the 1,000 feet study area radius found that 114 crashes occurred between 2017 and June 2022. None of the crashes were identified as severe injury or fatal.
10. Speed studies conducted along Wisteria Drive, Waters Road, and MD 118 (Germantown Road) revealed that speeding occurs on the area roadways. Montgomery County should consider speed mitigation measures such as education, enforcement, and speed cameras.
11. With the development of Waters Village, a section of the planned Waters House Avenue will be construction from Wisteria Road, south along the property frontage. Ultimately, per the Germantown Master Plan, Waters House Avenue will intersect with Waters Road opposite Waterford Hills Boulevard. Waters House Avenue will provide access to the subject site and the retail use to the east and other properties as they redevelop.
12. The location of the proposed site driveways minimized turning movement conflicts on Waters Road and Waters House Avenue and lead in sidewalk and crosswalks provide safe pedestrian access to and onto the site. The sidepath along the Wisteria Drive frontage provides a low level of traffic stress for bicyclists to travel across the site frontage.

DESCRIPTION OF MULTI-MODAL ADEQUACY TESTS

The following section describes the various multi-modal tests for determining transportation adequacy per the 2022 LATR Guidelines and the Montgomery County Growth and Infrastructure Policy:

Motor Vehicle Adequacy. This test is required for any development generating 50 or more peak hour person trips. Intersections within Orange policy areas are evaluated for adequacy using the Highway Capacity Manual (HCM) analyses methodology. The congestion standard (HCM delay based) for intersections within the Germantown Town Center policy area is an overall average vehicle delay of 63 seconds per vehicle.

The scope of the study intersections is based on the motor vehicle trip generation. For sites generating fewer than 250 peak hour vehicle trips, the study area is required to include a minimum of one (1) significant intersection in each direction. The proposed development will generate 179 AM and 246 PM peak hour vehicle trips and is required to study at least one (1) significant intersection in each direction from the site. However, through the scoping processes additional intersections were added to the study area. The following study area was identified in consultation with Staff during the scoping process:

1. Germantown Road (MD 118) / Waters Road / Bowman Mill Drive
2. Germantown Road (MD 118) / Wisteria Drive
3. Waters Road / Wisteria Drive
4. Waters Road / Waterford Hills Boulevard

5. Wisteria Drive / Driveway (Future Century Boulevard)
6. Waters Road / Site Driveway
7. Father Hurley Boulevard / Wisteria Drive
8. Father Hurley Boulevard / Middlebrook Road / Sweetgum Circle

Pedestrian System Adequacy is defined by the criteria described in section V.A of the Guidelines. The Pedestrian System Adequacy test consists of three components:

Pedestrian Level of Comfort (PLOC). Per the Guidelines, pedestrian system adequacy is defined as providing a “Somewhat Comfortable” (PLOC-2) or “Very Comfortable” (PLOC-1) score on streets and intersections for roads classified as Primary Residential or higher (excluding Controlled Major Highways and Freeways, and their ramps), within a certain walkshed from the site frontage, specified in the LATR Guidelines. Specific improvements to be constructed are to be identified in consultation with MNCPPC and MCDOT.

Street Lighting. As stated in the Guidelines, the applicant must evaluate existing street lighting based on MCDOT standards along roadways or paths from the development to destinations within a certain walkshed from the site frontage as specified in the LATR Guidelines. The Guidelines also identifies the maximum span of street lighting that the applicant must provide beyond the frontage. Where standards are not met, the applicant must upgrade the street lighting to meet the applicable standards.

ADA Compliance. The Guidelines state that the applicant must fix Americans with Disabilities Act (ADA) noncompliance issues within a certain walkshed from the site frontage equivalent to half the walkshed specified in the LATR Guidelines. The maximum span of ADA improvements that the applicant must provide beyond the frontage is also identified in the Guidelines.

Based on the expected peak hour person trips to be generated by this site, the required distances for the three components of the pedestrian study area are as follows:

- Pedestrian Level of Comfort and Street Lighting Study Area
1,000 feet in in all directions from the property
- ADA Compliance Study Area
500 feet in all directions from the site

Bicycle System Adequacy. This analysis considers the following:

Bicycle system adequacy is defined by the criteria described in Section VI.A of the LATR Guidelines. Per the Guidelines, the determination of adequacy is the achievement of a low Level of Traffic Stress (LTS-2) for bicyclists. As stated in the Guidelines, bicycle system analysis is based on the following standards and scoping:

For any site generating at least 50 net new weekday peak-hour person trips, the applicant is to conduct an analysis of existing and programmed conditions to ensure low Level of Traffic Stress (LTS-2) conditions on all transportation rights-of-way within a certain distance of the site frontage, specified in the LATR Guidelines. If current and programmed connections will not create adequate conditions, the applicant must construct side paths, separated bike lanes, or trails, consistent with the Bicycle Master Plan, that create or extend LTS-2 conditions up to the specified distance from the site frontage.

Based on the expected person trips to be generated by this site, the required distance for the bicycle study area is within 1,000 feet of the site.

Bus Transit System Adequacy. This analysis considers the following:

Bus transit system adequacy is defined by the criteria described in Section VII.A of the LATR Guidelines. As stated in the Guidelines, for any site generating at least 50 net new weekday peak-hour person trips in Red, Orange, and Yellow policy areas, the applicant is to conduct an analysis of existing and programmed conditions to ensure that there are bus shelters outfitted with real-time travel information displays and other standard amenities, along with a safe, efficient, and accessible path between the site and a bus stop, at a certain number of bus stops within a certain distance of the site frontage, specified in the LATR Guidelines. Where shelters and associated amenities are not provided, an applicant must construct up to the number of shelters and amenities specified in the Guidelines.

Based on the expected person trips to be generated by this site, the required distance for the transit study area is within 1,500 feet of the site.

According to the LATR Guidelines, all LATR studies for a site that will generate 50 or more net new weekday peak-hour person trips must develop a Vision Zero Statement. This statement must assess and propose solutions to high injury network and safety issues, review traffic speeds, and describe in detail how safe site access will be provided. With concurrence of the responsible agency, projects must implement or contribute to the implementation of safety countermeasures. The Planning Board must find a nexus to the project's impact and that any countermeasure is proportional to that impact. The County Council may adopt predictive safety analysis as part of this statement, when available. The components of the Vision Zero Statement are described below, as stated in the LATR Guidelines.

1. **Review High Injury Network segments:** Document any segments on the High Injury Network (HIN) that are within a certain distance of the site frontage, as specified in the LATR Guidelines.
 - a. *HIN Attributes:* Document attributes of the roadway segment(s), including number of lanes, posted speed limit, presence of pedestrian or bicycle infrastructure and crossings, and annual average daily traffic (if available).

- b. *HIN Crashes*: Summarize the crashes on the relevant segment(s) within the past five years, noting the severity and mode of crashes. Review the crash attributes and summarize any trends (e.g., collision type, time of day of crashes, contributing factors).
 - c. *HIN Improvements*: Identify any recent improvements to the segment(s) or if safety improvements for the segment are included in the approved Capital Improvement Program.
2. **Assess proximate safety issues**: Review the crash history for all segments and crossings within a certain distance of the site frontage, as specified in the LATR Guidelines.
 - a. *Crash Summary*: Summarize the crashes within the past five years, noting the overall severity and mode of crashes. For any severe or fatal crashes, document the collision type, mode, and whether the crash occurred at an intersection or along a segment.
3. **Review traffic speeds**: Conduct speed studies within a certain distance from the site frontage, specified in the LATR Guidelines. Speed studies should be conducted mid-week (Tuesday, Wednesday, or Thursday) on days when school is in session. Locations will be determined by Planning staff in collaboration with MCDOT staff and will prioritize filling in gaps in the inventory of speed studies. Relevant speed studies that have been completed within the past three years may be used to fulfill this requirement if gaps do not remain in the inventory of speed studies.
 - a. *Observed Speeds*: For each speed study, document the 50th and 85th percentile speed for each direction.
 - b. *10-mile per hour (mph) Pace*: For each speed study, document the range of speed at which the majority of cars are traveling.
4. **Describe site access**: Summarize the safety issues identified in components 1 through 3 and describe how site circulation promotes safety, outlining how safe access will be provided to the site. Planning staff will note if the applicant is contributing a fee in lieu of constructing a countermeasure. Reference the Vision Zero Community Toolkit (forthcoming) or national best practices and research in outlining the appropriate treatments to address identified safety issues.
 - a. *High Injury Network*: If applicable, summarize how the project's right-of-way improvements along the HIN will address identified safety issues.
 - b. *Proximate Safety Issues*: Record how the project's right-of-way improvements within the vicinity of the site will address identified safety issues for motorists, transit riders, bicyclists, and pedestrians.
 - c. *Traffic Speeds*: If observed 85th percentile speed for any day or direction exceeds the posted speed by 20 mph, summarize speed management improvements that could reduce speeds along the roadway. For example, traffic calming would be warranted

- on a roadway with a 25-mph posted speed limit if the observed 85th percentile speed is greater than 30 mph.
- d. *Site Circulation*: Document how site design promotes bicycle, pedestrian, and motor vehicle occupant safety. For example, limiting vehicle access points and locating and designing parking to reduce conflicts with pedestrians and bicyclists both passing by and visiting the site.

Tasks undertaken in this study included the following:

- Review of the proposed plans, background materials provided, and the Local Area Transportation Review Guidelines requirements for the Germantown Town Center Policy Area.
- Calculation of the number of peak hour person trips generated by the proposed redevelopment based on the LATR Guidelines methodology.
- Coordination with M-NCPPC Staff to identify the necessary scope and analyses to be included in the LATR study.
- Preparation of Motor Vehicle Adequacy Test
 - Collection of new vehicular turning movement, bicycle, and pedestrian counts at the study intersections.
 - Calculation of existing conditions average vehicle delay.
 - Identify pipeline developments located within proximity of the site development.
 - Forecast of background future traffic volumes by combining the adjusted existing peak hour traffic volumes and the traffic expected to be generated by pipeline projects that are currently approved or planned for development.
 - Calculation of future background peak hour conditions average vehicle delay for each study intersection based on the future background traffic forecasts and existing or planned intersection geometrics.
 - Calculation of the number of AM and PM peak hour vehicle trips that will be generated by the proposed redevelopment based on the LATR Guidelines and Trip Generation, 11th Edition, published by the Institute of Transportation Engineers (ITE).
 - Assignment of the site trips based on previously approved distributions for the subject site.
 - Forecast of total future traffic volumes by combining the site trips with the background traffic forecasts.
 - Calculation of total future peak hour conditions average vehicle delay for each study intersection based on the total future traffic forecasts and existing or planned intersection geometrics.
- Preparation of Bicycle System Adequacy Test
- Preparation of Pedestrian System Adequacy Test
- Preparation of Bus Transit System Adequacy Test
- Preparation of Vision Zero Statement

Sources of data for this study include: the M-NCPPC, the MCDOT, the Maryland State Highway Administration (SHA), Institute of Transportation Engineers (ITE), Macris, Hendricks and Glascock, P.A., KHR Waters Investments, LLC, Lerch, Early & Brewer, Chtd., and Wells + Associates Inc.

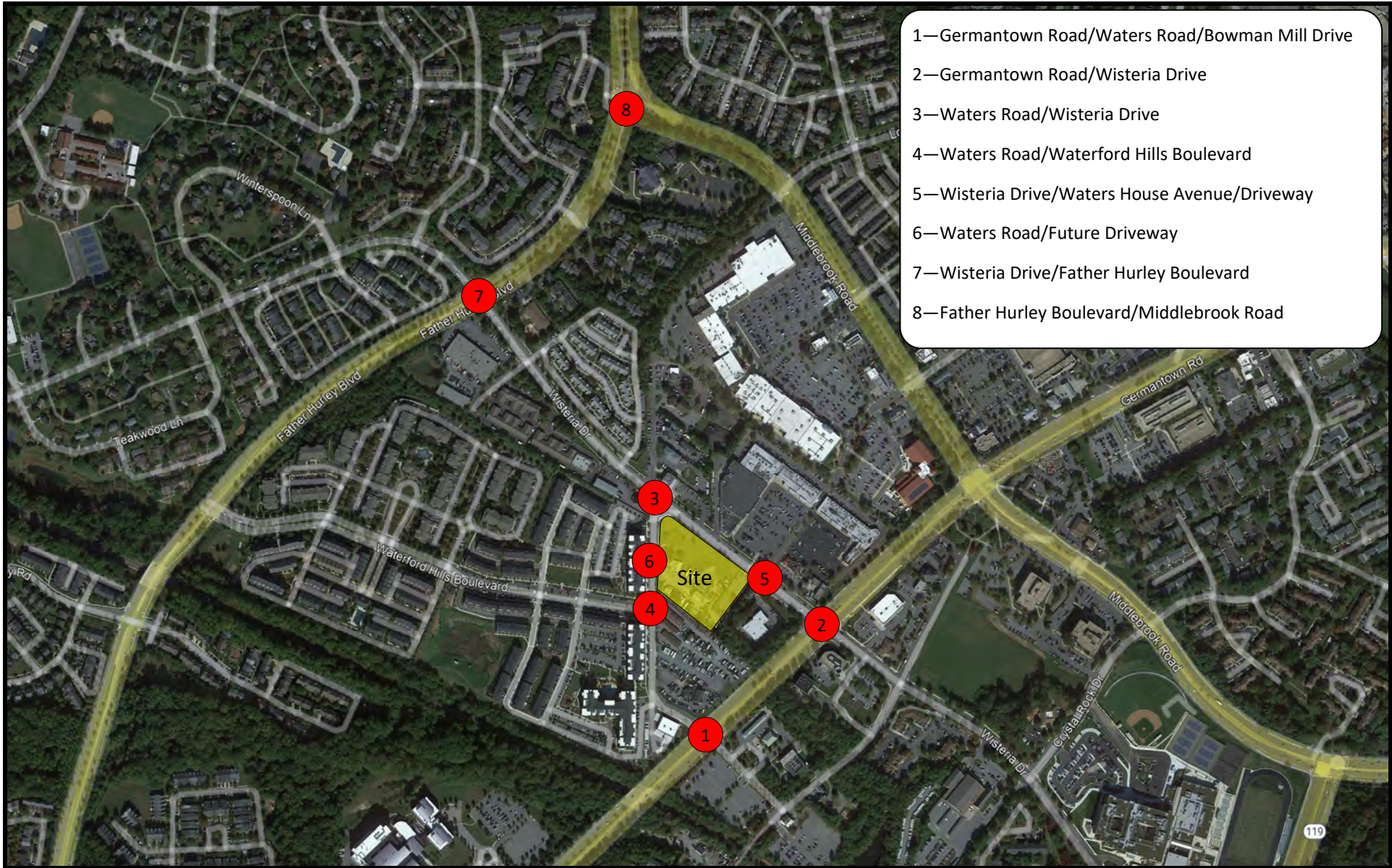


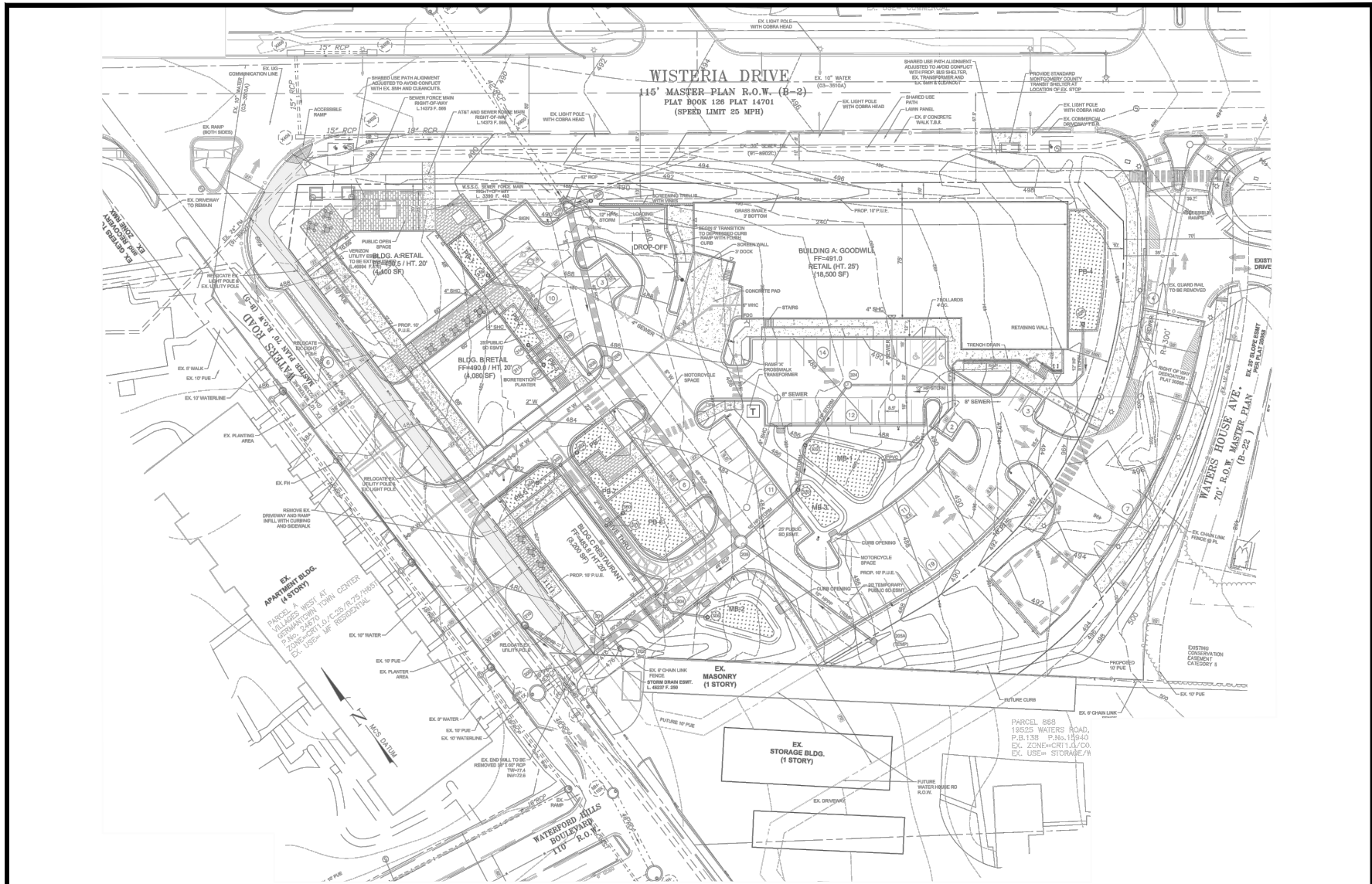
Figure 1-1
 Site Location And Study Intersections



NORTH

Waters Village
 Montgomery County, MD





PLAN PROVIDED BY: MHG

Figure 1-2
Site Plan



SECTION 2 BACKGROUND DATA

OVERVIEW

This section presents the following background information for the LATR:

- Description of the proposed site user
- Description of the existing vehicular ingress/egress
- Description of the study area public road network and transportation facilities
- Programmed and Planned Improvements
- Definition of the study area
- Vehicular, pedestrian and bicycle traffic counts

PLANNED SITE USER

This study considers commercial use development, which includes 26,680 SF of retail space and 3,200 SF of fast-food restaurant with a drive thru.

VEHICULAR ACCESS

Currently, site access is provided via two driveways on Waters Road and one driveway on Wisteria Drive.

As shown on Figure 1-2, vehicular access would be provided via a single driveway on Waters Road and a single driveway from Waters House Avenue which would extend from Wisteria Drive along the eastern property boundary. Based on discussions with MC DOT staff, the Waters House Avenue approach at the Wisteria Drive intersection will be restricted to right in and right out turn movements.

PUBLIC ROAD NETWORK

Existing Network/Site Access

Regional access is provided by Germantown Road (MD 118). Local access to the site is provided via Wisteria Drive, Waters Road and Father Hurley Boulevard.

Germantown Road (MD 118) is a state-maintained, six-lane divided major highway. Traffic signals and additional turn lanes are typically provided at major intersections. Germantown Road (MD 118) has a posted speed limit of 40 mph.

Waters Road is a two-lane undivided business road per the Master Plan of Highways and Transitways Functional Classification. Waters Road provides local access and has a posted speed limit of 25 mph.

Wisteria Drive is a four-lane undivided business road and provides direct access to the proposed development. Traffic signals and additional turn lanes are typically provided at major intersections. Wisteria Drive has a posted speed limit of 30 mph.

Bowman Mill Drive is a two-lane undivided business road per the Master Plan of Highways and Transitways Functional Classification. Bowman Mill Drive has a posted speed limit of 25 mph.

Waterford Hills Boulevard is a two-lane divided business road per the Master Plan of Highways and Transitways Functional Classification. Waterford Hills Boulevard has a posted speed limit of 30 mph.

Father Hurley Boulevard is a four-lane divided major highway west of the site and provides regional access to the proposed development. Traffic signals and additional turn lanes are typically provided at major intersections. Father Hurley Boulevard has a posted speed limit of 35 mph.

Middlebrook Road is a six-lane undivided major highway. Traffic signals and additional turn lanes are typically provided at major intersections. Middlebrook Road has a posted speed limit of 35 mph.

NON-AUTO TRANSPORTATION FACILITIES

The following bicycle, pedestrian, and transit infrastructure are either currently provided near the subject site or are planned.

Bicycle Facilities

Per the Montgomery County Bicycle Master Plan, there is a sidepath along the north side of Wisteria Drive east of MD 118 (Germantown Road). Bicycle facilities are not currently provided along other roadways in the study area. However, there are proposed sidepaths along Wisteria Drive and the west side of Germantown Road. Separate bike lanes are also planned for the extension of Waters Road north of Wisteria Drive.

Sidewalks

Sidewalks are provided along public roads within the study area except for a section of the east side of Waters Road south of Waterford Hills Boulevard.

Transit Service

The site is served by the following Ride On bus services:

- Ride On 61 provides service between the Shady Grove Station and Germantown Transit Center.
- Ride On 75 provides service between the Montgomery County Correctional Facility and Germantown MARC Station.
- Ride On 83 provides service between Holy Cross - Germantown and Germantown MARC Station.
- Ride On 97 provides service between Germantown Transit Center and Wisteria Drive / Father Hurley Boulevard in the morning and Germantown Transit Center and Middlebrook Road / Waring Station Road in the afternoon.
- Ride On 98 provides service between Kingsview Park and Ride and Germantown Transit Center.

All bus routes and schedules are included in Appendix B.

The proposed site development is served by the MARC Brunswick line via the Germantown station, located at 19311 Mateny Hill Road, with connecting services to Ride On Routes 75, 83, and 97. The Brunswick line operates on weekdays between Brunswick, Maryland and Washington Union Station.

PROGRAMMED and PLANNED IMPROVEMENTS

With the Waters Village development, a section of the planned Waters House Avenue will be constructed from Wisteria Drive south along the properties frontage and will ultimately connect to Waters Road. Per the Germantown Master Plan, as properties to the north redevelop, Century Boulevard is planned to continue from Middlebrook Road south to Wisteria Drive and continue as Waters House Avenue to Waters Road at the Waterford Hills Boulevard intersection. Century Boulevard and Waters House Avenue are classified as Business District Streets and would have a Main Street character. This transportation study assumes the Waters House Avenue approach at Wisteria Drive will accommodate right-in and right-out movements only, per discussions with MC DOT staff.

There are no other programmed or planned off-site improvements within the site vicinity at the time of this study.

STUDY AREA DEFINITION

The study area for this LATR study was established in accordance with M-NCPPC's LATR Guidelines and through consultation with M-NCPPC staff. The scoping agreement is provided in Appendix A. The following intersections and driveways are included in the study:

1. Germantown Road (MD 118) / Waters Road / Bowman Mill Drive
2. Germantown Road (MD 118) / Wisteria Drive
3. Waters Road / Wisteria Drive
4. Waters Road / Waterford Hills Boulevard
5. Wisteria Drive / Driveway (Future Waters House Avenue)
6. Waters Road / Site Driveway
7. Father Hurley Boulevard / Wisteria Drive
8. Father Hurley Boulevard / Middlebrook Road / Sweetgum Circle

Figure 2-1 shows the existing lane use and traffic control for the study area.

EXISTING TRAFFIC COUNTS

Existing AM and PM peak hour vehicular, pedestrian, and bicycle traffic counts were conducted at the study intersections on either Tuesday, December 9, 2021, or Tuesday, April 5, 2022 from 6:30 AM to 9:30 AM and from 4:00 PM to 7:00 PM. Figure 2-2 shows the existing AM and PM peak hour vehicular traffic volumes. Pedestrian and bicycle volumes at the study intersections are summarized in Figures 2-3 and 2-4, respectively, and the detailed count data is provided in Appendix C.

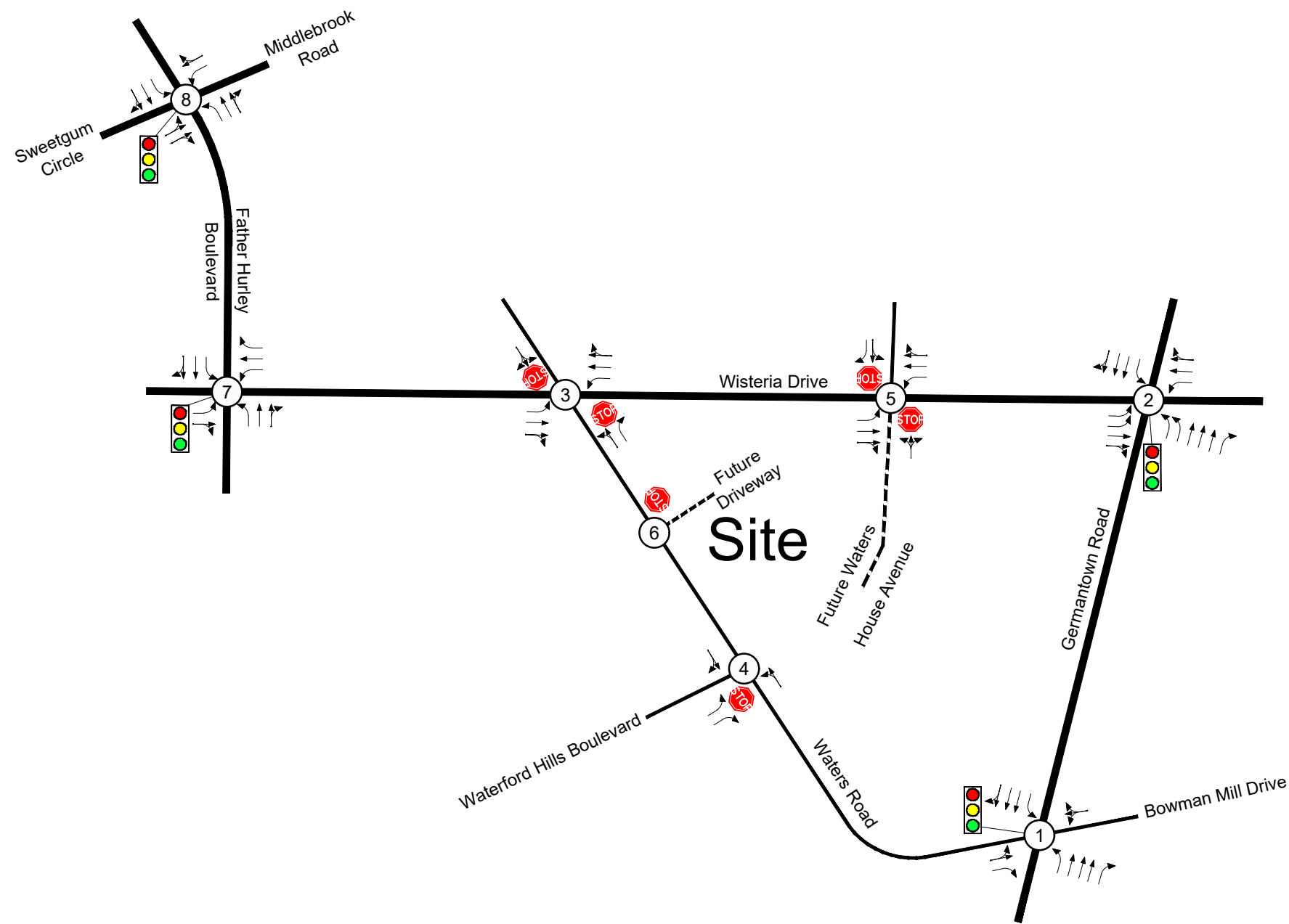
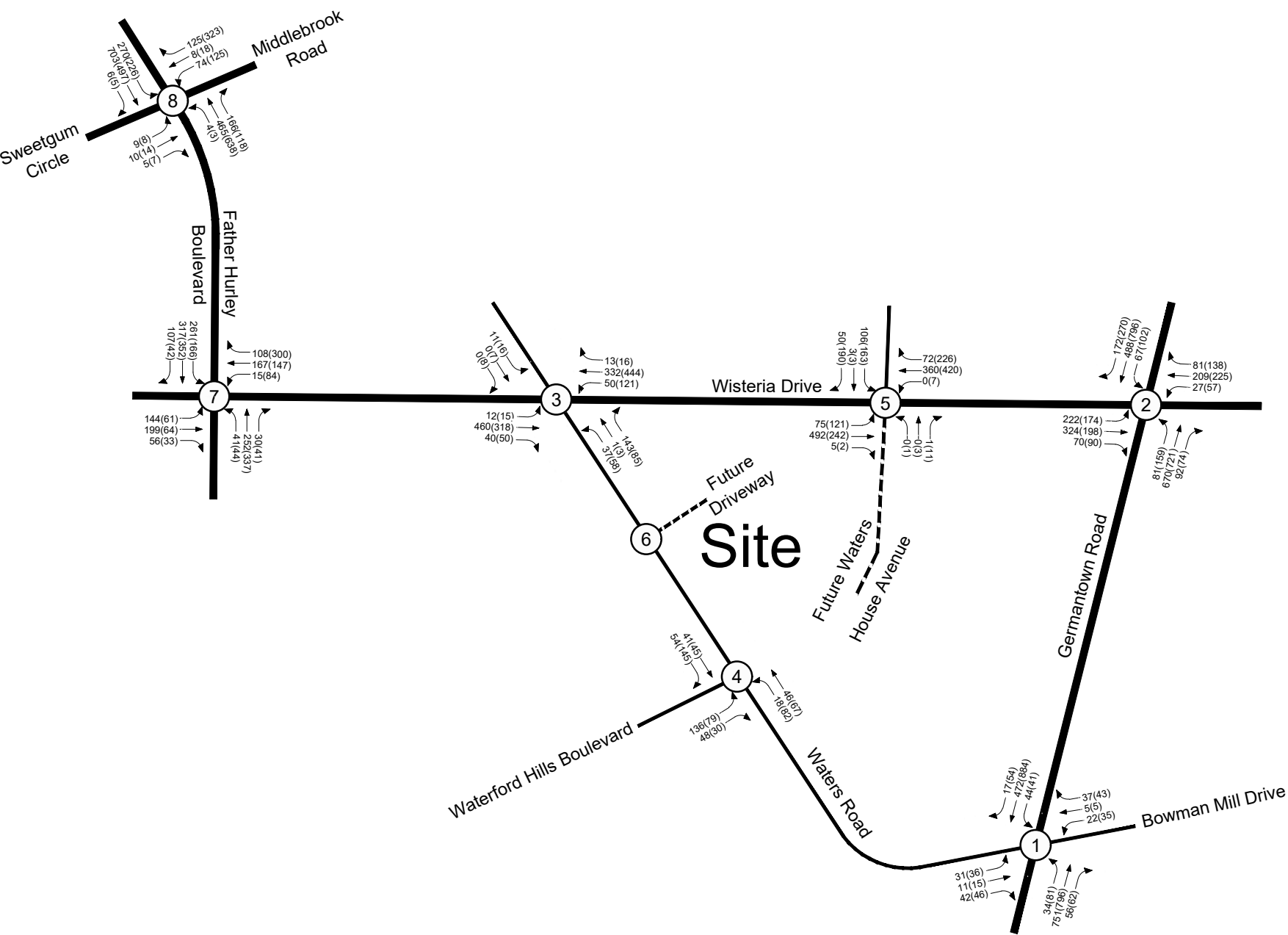


Figure 2-1
Existing Lane Use and Traffic Control

- ← Represents One Travel Lane
- 🚦 Signalized Intersection
- 🛑 Stop Sign





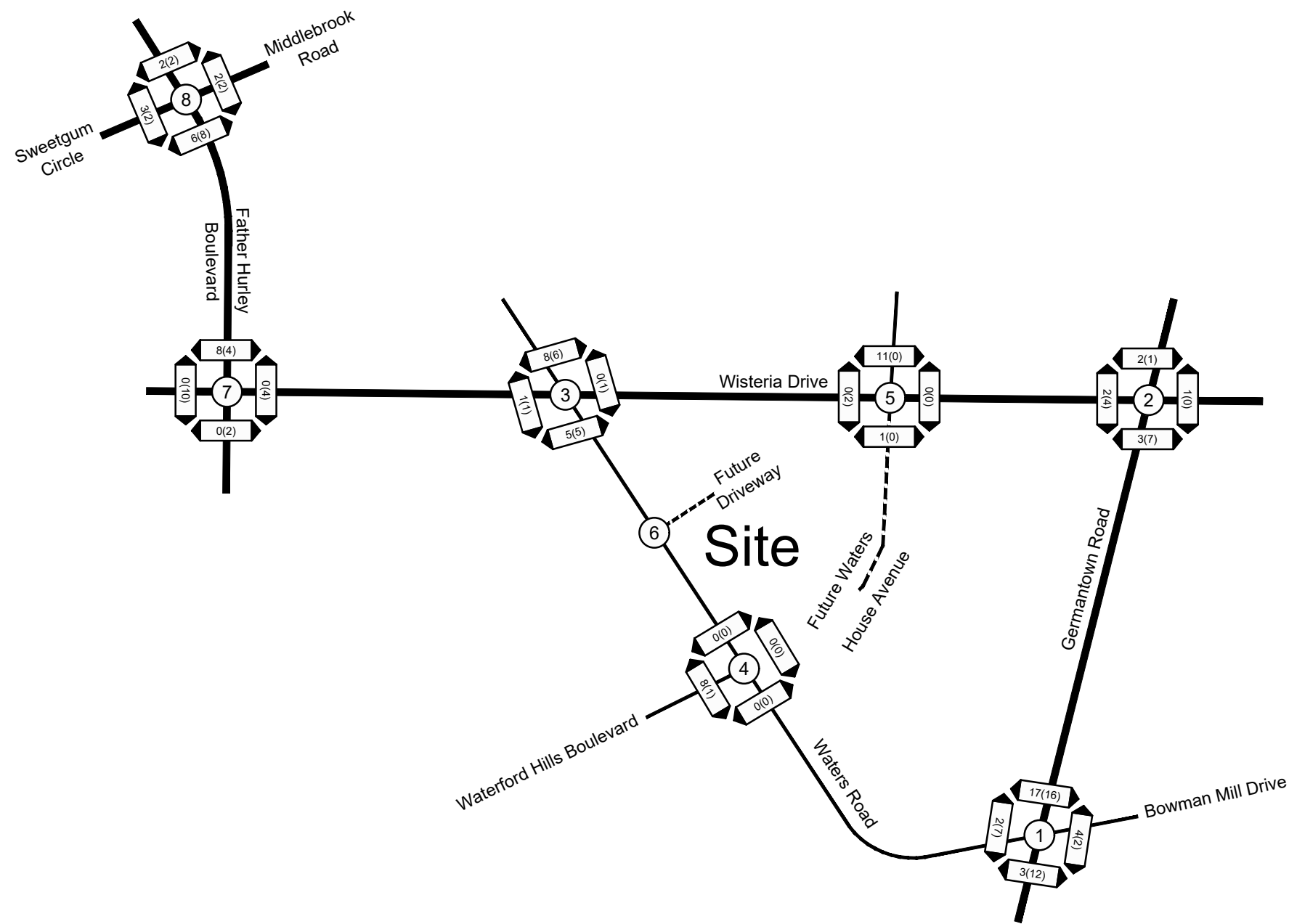
AM PEAK HOUR
PM PEAK HOUR
000(000)

Figure 2-2
Existing Peak Hour Vehicular Traffic Volumes



Waters Village
Montgomery County, MD





AM PEAK HOUR
PM PEAK HOUR
000(000)

Figure 2-3
Existing Pedestrian Volumes



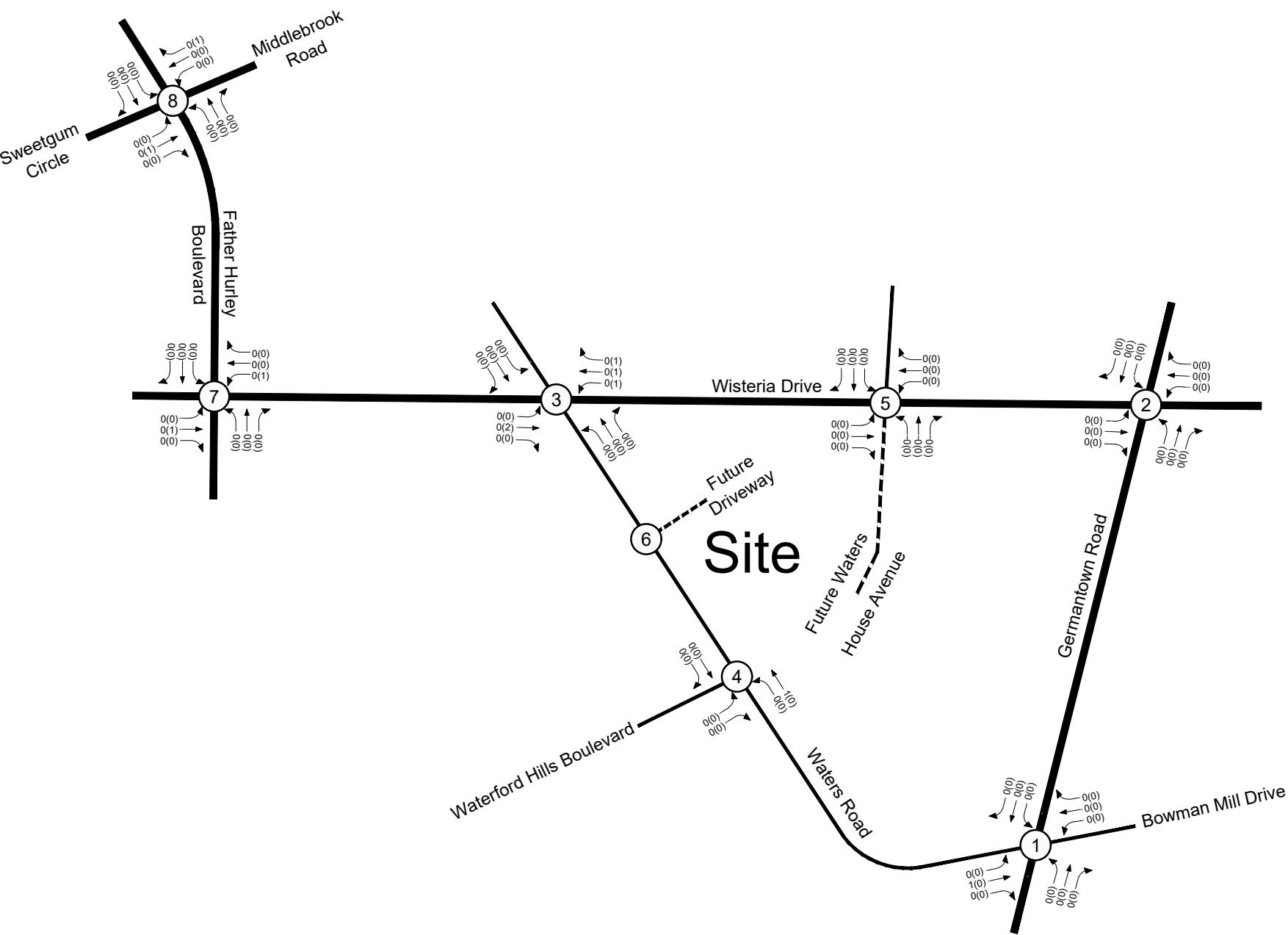


Figure 2-4
Existing Bicycle Volumes

AM PEAK HOUR
PM PEAK HOUR
000(000)



NORTH
Waters Village
Montgomery County, MD



SECTION 3 MOTOR VEHICLE ADEQUACY TEST

OVERVIEW

This section presents the details of the Motor Vehicle Adequacy Test for the LATR. It includes: the applicable congestion standard for the policy area; analysis of existing average vehicle delay at the study intersections; a summary of site and pipeline trip generation projections; and analysis of future average vehicle delay without and with the site development. To address potential queueing at key intersections adjacent to the subject site, SimTraffic analysis was conducted for existing and future conditions. The queue analysis results are used to help determine the appropriate design of respective intersections but are not considered in determining the Motor Vehicle Adequacy.

CONGESTION STANDARD

All the study intersections, including the site driveways, are located within the Germantown Town Center policy area of Montgomery County. In Orange policy areas, the level of congestion is determined using the Highway Capacity Manual delay-based level of service methodology.

The congestion standard (HCM delay based) for intersections within the Germantown Town Center policy area is an overall average vehicle delay of 63 seconds per vehicle at the studied intersections during the AM and PM peak hours.

EXISTING CONDITIONS

Vehicular Analysis

Existing peak hour average vehicle delays were analyzed for each of the study intersections per the LATR Guidelines methodology.

The existing peak hour delays were calculated based on the existing lane use and traffic control shown on Figure 2-1, existing traffic signal phasing/timing obtained from Montgomery County Department of Transportation (MCDOT) shown in Appendix C, the existing vehicular traffic volumes shown on Figure 2-2, and the HCM 2000 methodology for signalized and unsignalized intersections. HCM worksheets for each study intersection are presented in Appendix D. The results of the existing analyses are summarized in Table 3-1.

Under the existing conditions, all the study intersections operate below the delay congestion standard of 63.0 seconds per vehicle. Therefore, all the study intersections operate adequately.

SimTraffic Analysis

The SimTraffic analysis software was used to simulate the existing road network operations at key intersections within the road network, focusing on the adjacent intersections along Wisteria Drive and the proposed site driveway (under total future conditions). All study intersections were included in the model and traffic conditions were observed for the model's calibration. The results represent an average of ten (10) SimTraffic model runs with 15-minute seeds and 60-minutes of run time. A summary of the 95th percentile queues from the simulation analysis are shown in Table 3-2 and analysis reports are provided in Appendix D.

As shown in Table 3-2, the 95th percentile queues for the turning movement lane groups at the key study intersections that are the focus of this evaluation, i.e. the eastbound left on Wisteria Drive at MD 118, the northbound right on Waters Road at Wisteria Drive, and the westbound left on Wisteria Drive at the Future Waters House Avenue/Shopping Center driveway are accommodated within the available storage lengths during the AM and PM peak hours.

Some of the other queues extend beyond the available storage, including the westbound left on Wisteria Drive at MD 118 during the PM peak hour and the southbound left on MD 118 at Wisteria Drive during the PM peak hour.

Table 3-1
Waters Village
HCM Signalized and Unsignalized Levels of Service Summary for ALL Conditions ^{1,2}

Intersection	Existing Conditions				Future Background Conditions				Total Future Conditions (Stop Control with 25' Storage Length)				Future Background Conditions (Signalized Intersection)			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)
1: MD 118 & Waters Road / Bowman Mill Drive (Signalized)																
Overall	A	9.7	A	9.6	A	9.3	A	9.3	B	10.0	B	10.2	B	10.8	B	10.1
2: MD 118 & Wisteria Drive (Signalized)																
Overall	D	38.8	D	39.4	D	39.7	D	41.0	C	40.7	D	42.5	D	40.3	D	42.8
3: Waters Road & Wisteria Drive (Unsignalized)																
Overall	A	2.6	A	3.1	A	2.6	A	3.0	A	3.1	A	3.7	-	-	-	-
3: Waters Road & Wisteria Drive (Signalized)																
Overall	-	-	-	-	-	-	-	-	-	-	-	-	B	16.7	B	15.5
4: Waters Road & Waterford Hills Boulevard (Unsignalized)																
Overall	A	5.8	A	4.3	A	5.8	A	4.3	A	4.9	A	3.7	A	4.9	A	3.7
5: Wisteria Drive & Future Waters House Avenue / Future Century Boulevard (Unsignalized)																
Overall	A	2.4	A	5.8	A	1.1	A	5.8	A	2.9	A	6.5	A	2.9	A	6.5
6: Waters Road & Site Driveway (Unsignalized)																
Overall	NA								A	1.6	A	2.2	A	1.6	A	2.2
7: Father Hurley Boulevard & Wisteria Drive (Signalized)																
Overall	C	27.7	C	24.8	C	27.8	C	25.3	C	27.8	C	25.3	C	27.8	C	25.3
8: Father Hurley Boulevard & Sweetgum Circle / Middlebrook Road (Signalized)																
Overall	C	23.0	C	28.7	C	22.9	C	28.7	C	22.8	C	28.6	C	22.8	C	28.6

Notes:

1. Capacity analysis based on Highway Capacity Manual 2000 methodology, using Synchro 11 unless otherwise noted.
2. The congestion standard for intersections within the Germantown Town Center policy area is an overall average vehicle delay of 63 seconds per vehicle.

Table 3-2
Waters Village
SimTraffic 95th Percentile Queue Analyses Summary

Lane Group	Available Storage (ft)	Existing Conditions		Future Background Conditions		Total Future Conditions (Stop Control with 25' Storage Length)		Total Future Conditions (Signalized Intersection)	
		95th Percentile Queue (ft)		95th Percentile Queue (ft)		95th Percentile Queue (ft)		95th Percentile Queue (ft)	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
2: MD 118 & Wisteria Drive (Signalized)									
EBL	260	170	138	182	141	201	187	193	204
EBT	-	213	159	221	169	220	161	222	156
EBTR	-	205	162	220	170	214	166	212	163
WBL	90	90	111	90	116	92	125	99	124
WBT	-	187	237	196	257	202	254	208	254
WBTR	-	199	307	210	354	204	335	214	331
NBL	230	85	146	87	159	96	146	88	149
NBT	-	189	201	190	221	194	215	192	211
NBR	-	50	43	51	56	50	54	51	52
SBL	185	119	193	141	235	125	237	128	223
SBT	-	217	305	223	326	219	332	226	307
SBTR	-	95	259	125	271	160	320	156	315
3: Waters Road & Wisteria Drive (Unsignalized)									
EBL	-	4	3	1	4	1	3	-	-
EBT	-	0	0	0	0	1	0	-	-
EBTR	-	0	0	0	0	0	0	-	-
WBL	-	35	44	34	45	37	43	-	-
WBT	-	4	1	0	1	0	1	-	-
WBTR	-	0	2	0	0	0	5	-	-
NBLT	-	51	79	56	80	67	115	-	-
NBR	300	58	35	64	40	26	45	-	-
SBLTR	-	23	45	26	41	26	45	-	-
3: Waters Road & Wisteria Drive (Signalized)									
EBL	-	-	-	-	-	-	-	18	6
EBT	-	-	-	-	-	-	-	100	73
EBTR	-	-	-	-	-	-	-	87	62
WBL	-	-	-	-	-	-	-	45	63
WBT	-	-	-	-	-	-	-	48	72
WBTR	-	-	-	-	-	-	-	47	81
NBLTR	-	-	-	-	-	-	-	127	121
SBLTR	-	-	-	-	-	-	-	31	52
5: Wisteria Drive & Future Waters House Avenue / Future Century Boulevard (Unsignalized)									
EBL	-	49	68	46	71	52	73	55	89
EBT	-	15	0	2	0	0	3	13	28
EBTR	-	4	0	5	0	7	2	25	0
WBL	75	0	12	0	12	0	0	0	0
WBT	-	5	6	0	8	0	12	23	59
WBTR	-	9	27	9	24	6	33	26	78
NBLTR	-	9	36	10	41	58	65	58	67
SBLT	-	89	140	91	165	86	197	93	235
SBR	-	52	84	54	97	52	128	51	176
6: Waters Road & Site Driveway (Unsignalized)									
WBLR	-	-	-	-	-	39	35	37	34
NBTR	-	-	-	-	-	3	2	0	6
SBLT	-	-	-	-	-	38	51	35	54

FUTURE BACKGROUND CONDITIONS

Five (5) pipeline developments (approved, planned, or under construction and within the site vicinity) were identified during the scoping process and are included in this study. The pipeline development locations are shown in Figure 3-1.

- [Wisteria Business Park](#) The development program for Wisteria Business Park includes office space and a supermarket. Wisteria Business Park is located east of Germantown Road between Wisteria Drive and Bowman Mill Drive.
- [Qaigen Research Park](#) The site is located to the south of the subject site on the west side of Germantown Road and north of Dawson Farm Road. Portions of Qaigen Research Park is already built and operational. Additional research and development space, warehouse, manufacturing space and office space are planned for the site.
- [Germantown Estate](#) This development includes up to 15,600 SF of office space. Germantown Estate is located south of the subject site in the northeast corner of MD 117 and MD 118.
- [Fairchild Apartments](#) The site is located west of Germantown Road, east of Century Boulevard and north of Aircraft Drive. It is planned to be developed with 215 residential apartments dwelling units.
- [Liberty Mill](#) This development is located at the intersection of Liberty Mill Road and Dawson Farm Road and is planned for an assisted living facility with 130 beds.

Pipeline Trip Generation

The trip generation for the pipeline development were either obtained from the respective LATR traffic study for the development or estimated based on the LATR Guidelines methodology. The pipeline developments are forecast to add 311 AM peak hour trips (186 inbound and 124 outbound) and 505 PM peak hour trips (239 inbound and 267 outbound) to the area road network at full capacity. The trip generation for the pipeline development is shown on Table 3-3.

Pipeline Trip Assignments

The peak hour trip distribution for the pipeline developments were developed on information from the respective traffic study or the LATR methodology. The trips anticipated to be generated by the pipeline developments were then assigned to the roadway network based on these distributions. It is noted that not all pipeline development trips will travel through the studied intersections due to the development location. The total pipeline development peak hour traffic volumes traveling through the study intersections are shown on Figure 3-2.

Future Background Traffic Forecasts

The future background traffic forecasts represent future conditions without Waters Village. AM and PM peak hour background traffic forecasts were estimated by adding the pipeline traffic

assignments (Figure 3-2) to the existing peak hour traffic counts (Figure 2-2). The resulting background future traffic forecasts are summarized in Figure 3-3. Traffic forecasting worksheets are provided in Appendix E.

Vehicular Analysis

The future background peak hour average vehicle delays were calculated based on the existing lane use and traffic control shown on Figure 2-1, existing traffic signal phasing/timing obtained from Montgomery County Department of Transportation (MCDOT) shown in Appendix C, the future background traffic forecasts shown on Figure 3-3, and the HCM 2000 methodology for signalized and unsignalized intersections. HCM worksheets for each study intersection are presented in Appendix F. The results of the future background analyses are summarized in Table 3-1.

Under the future background conditions, all the study intersections are expected to operate below the delay congestion standard of 63.0 seconds per vehicle.

SimTraffic Analysis

The 95th percentile queues were calculated at key study intersections for future conditions without the proposed development. The results represent an average of ten (10) SimTraffic model runs with 15-minute seeds and 60-minutes of run time. A summary of the 95th percentile queues from the simulation results are shown in Table 3-2 and analysis results are provided in Appendix F.

As shown in Table 3-2, the 95th percentile queues for the turning movement lane groups at the key study intersections that are the focus of this evaluation, would be accommodated within the available storage lengths during the AM and PM peak hours.

Some of the other queues would extend beyond the available storage, including the westbound left on Wisteria Drive at MD 118 during the PM peak hour and the southbound left on MD 118 at Wisteria Drive during the PM peak hour.

Table 3-3
Waters Village
Pipeline Trip Generation ¹

Pipeline Development Name / Land Use	Land Use Code	Size	Units	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Wisteria Business Park									
<u>Existing Office</u> Vehicle Trips	710	15,000	S.F.	14	1	15	3	12	15
Existing People Trips				20	2	22	4	18	22
Existing Transit Trips				1	0	1	0	1	1
Existing Bicycle Trips				1	1	2	0	2	2
Existing Walking Trips				2	1	3	0	3	3
<u>Proposed Supermarket</u> Vehicle Trips		30,000	S.F.	61	41	102	144	139	283
Proposed Bass-by Trips				0	0	0	52	50	102
Total Proposed Vehicle Trips w/ Pass-by Reduction				61	41	102	92	89	181
Proposed People Trips				95	63	158	223	216	439
Proposed Transit Trips				2	2	4	6	5	11
Proposed Bicycle Trips				7	3	10	14	15	29
Proposed Walking Trips				9	5	14	20	20	40
<u>Trip Generation</u> Net Vehicle Trips				47	40	87	141	127	268
Net People Trips				75	61	136	219	198	417
Net Transit Trips				1	2	3	6	4	10
Net Bicycle Trips				6	2	8	14	13	27
Net Walking Trips				7	4	11	20	17	37
Qaigen Research Park									
Warehouse		36,548	S.F.	22	6	28	9	22	31
Manufacturing		108,352	S.F.	56	18	74	25	55	80
Qaigen Total Trips (Maximum)				78	24	102	34	77	111
Germantown Estate									
<u>Office</u> Auto Driver	710	15,600	S.F.	32	5	37	3	14	17
Auto Passenger				11	1	12	1	5	6
Transit				2	0	2	0	1	1
Bicycle (Non-Motorized)				2	1	3	0	1	1
Walk (Transit and other walk trips)				4	1	5	0	2	2
Fairchild Apartments									
Adjusted Trips (89%)	220	215	DU	19	53	72	56	36	92
				17	47	64	50	32	82
Liberty Mill									
Assisted Living	254	130	Beds	14	9	23	12	19	31
Adjusted Trips (89%)				12	8	20	11	17	28
Total Pipeline Trips				186	124	311	239	267	505

Notes:

1. Trip generation based on previously approved traffic impact studies, statements, or staff reports, unless otherwise stated.

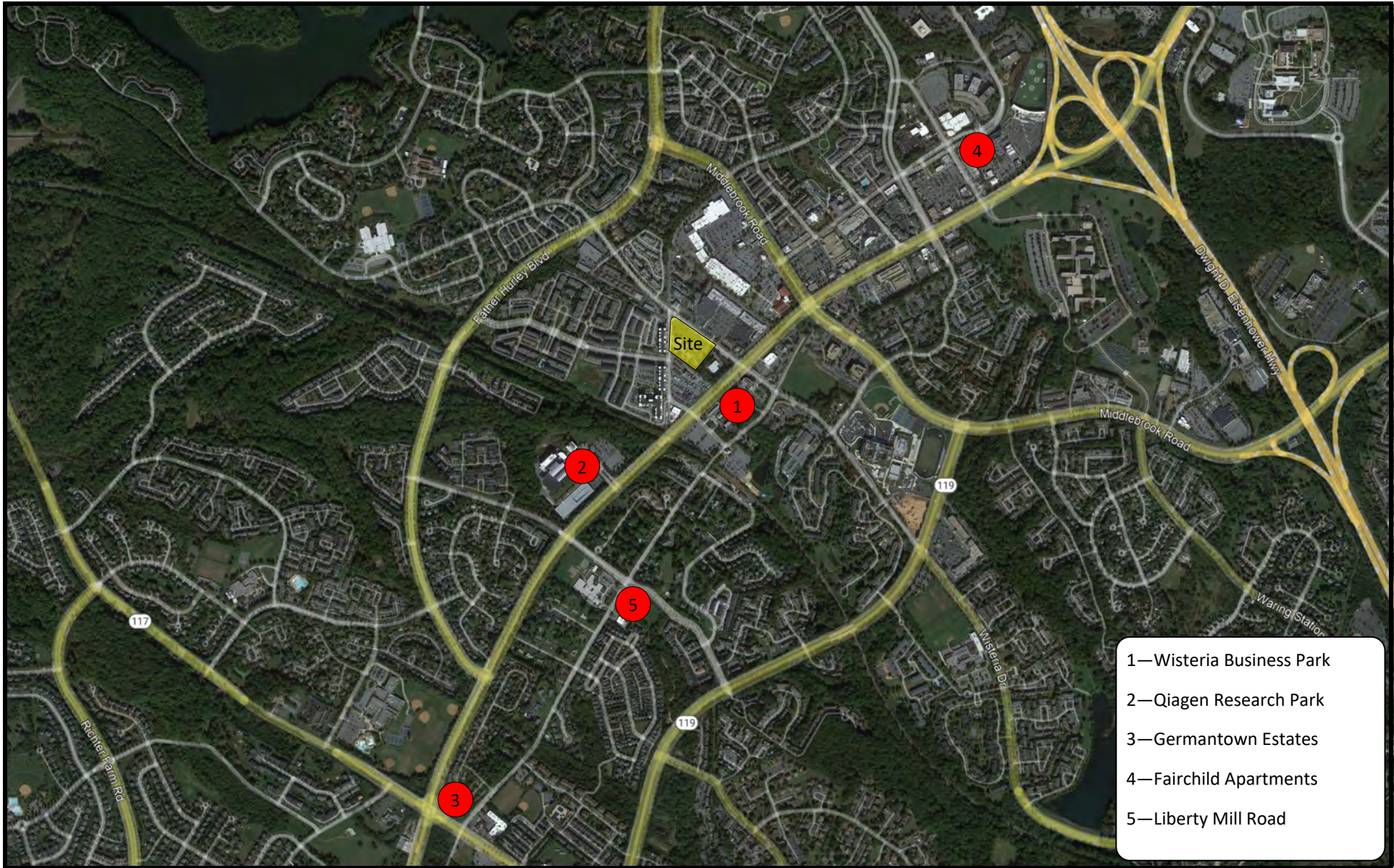


Figure 3-1
Pipeline Development Locations



NORTH

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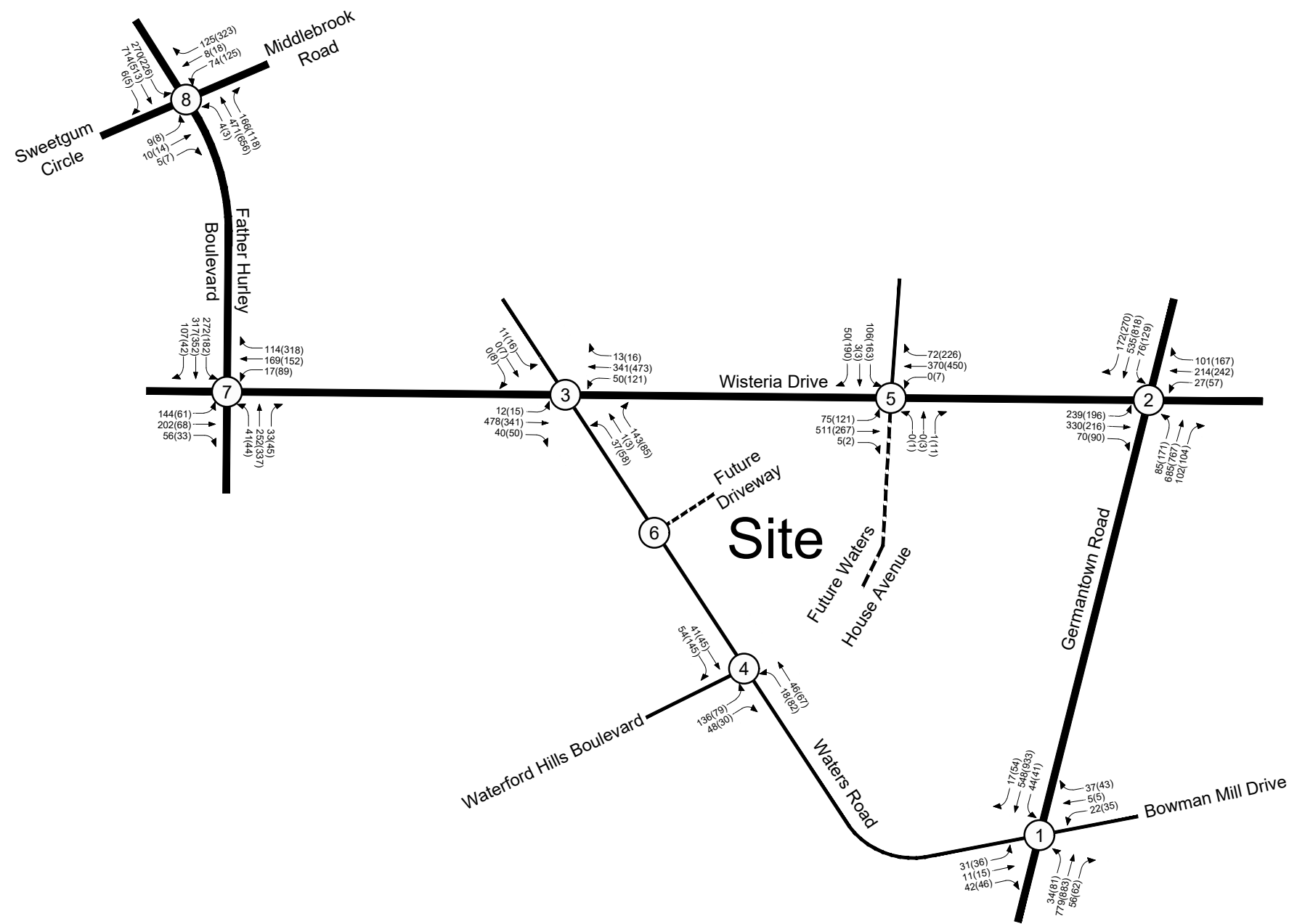


Figure 3-3
Background Future Traffic Forecasts

AM PEAK HOUR
PM PEAK HOUR
000(000)



NORTH
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TOTAL FUTURE CONDITIONS

The total future condition analyzes the impact of the Waters Village proposed development, which includes 26,680 SF of strip retail space and a 3,200 SF fast food restaurant with drive-thru. The proposed use would replace the existing 5,054 SF of general light industrial uses and a single family home.

It is noted that under total future conditions, the Wisteria Drive and Waters Road intersection (Intersection #3) was analyzed under two (2) different scenarios. As exists, the aforementioned intersection includes a exclusive northbound right turn lane with a storage length of approximately 300 feet. However, with the Waters Village redevelopment, the Waters Road frontage will be modified to include six (6) on-street parking spaces, landscaping and a wider sidewalk, and eliminating the separate northbound right turn lane at the Wisteria Drive intersection. A storage length of 25 feet was assumed for the northbound right turn channelization on Waters Road at Wisteria Drive. For the second scenario, the Waters Road and Wisteria Drive intersection was analyzed as a signalized intersection. A new traffic signal has been approved at that intersection but it has not been installed as of the time of this report.

To address a comment raised by MC DOT, the Wisteria Drive / Shopping Center Driveway (Lotte Center) / Waters House Avenue intersection was analyzed with right-in / right-out movements only for the south approach, i.e. Waters House Avenue. This analysis conditions affects the existing left turn movements to the NTB site and future Waters House Avenue, and therefore the trip distributions at the adjacent intersections.

Trip Generation

Trip generation calculations for Waters Village were based on ITE trip generation rates and the Germantown Town Center Policy Area adjustment factors and non-auto mode split percentages provided in the LATR Guidelines. The trip generation summary is shown in Table 3-4.

Waters Village, as shown in the Multimodal Trip Generation section of Table 3-1, is expected to generate 288 AM peak hour and 392 PM peak hour total person trips, and 185 AM peak hour and 252 PM peak hour total auto-driver (vehicle) trips, based on the LATR Guidelines methodology for calculating person and vehicle trips. The existing uses generate 10 AM peak hour and 10 PM peak hour person trips, and 6 AM peak hour and 6 PM peak hour vehicle trips. Therefore, the proposed redevelopment will generate 278 AM peak hour and 382 PM peak hour new person trips and 179 AM peak hour and 246 PM peak hour new vehicle trips.

As noted in Table 3-4, the peak hour vehicle trips generated by the existing uses were not removed from the road network, resulting in a conservative capacity analysis.

Some of the retail vehicle trips that will access the proposed retail and drive-thru restaurant are already on the road network. Per ITE, 49 percent of the drive-thru restaurant AM peak hour trips will divert from Germantown Road. During the PM peak hour, 34 percent of the retail trips

and 50 percent of the drive-thru restaurant trips will divert from Germantown Road. As shown in Table 3-4, 63 AM peak hour and 101 PM peak hour vehicle trips are diverted link trips, already on the road network.

Considering the diverted link trips, Waters Village is expected to add 122 AM peak hour vehicle trips (67 inbound and 55 outbound) and 151 PM peak hour vehicles trips (76 inbound and 75 outbound).

Site Trip Distributions

The peak hour site trip distributions were developed based on the trip assignment assumptions documented in the LATR Guidelines, as confirmed through the scoping process. (See Appendix A). The new trips are anticipated to approach the site with the following distributions:

	<u>Percent</u>
North on Germantown Road	58
North on Father Hurley Boulevard	9
Crystal Rock	5
East on Wisteria Drive	3
South on Germantown Road	<u>25</u>
Total	100

Site Trip Assignments

The new site-generated traffic volumes were assigned to the public road network according to the directional distribution described above. The resulting site traffic assignments are shown on Figure 3-4.

The diverted link trips from Germantown Road to the site driveway on Waters House Avenue are shown on Figure 3-5.

Total Future Forecasts

The total future traffic forecasts represent future conditions with Waters Village. It is noted that Intersection #5 will only permit right-in / right-out movements under total future conditions; therefore, volume adjustments were made to reroute the existing volumes using restricted movements entering and exiting Waters House Avenue. The adjusted existing volumes and adjusted background forecasts are shown on Figures 3-4 and 3-5, respectively.

The AM and PM peak hour total future traffic forecasts were developed by adding the proposed new site traffic assignments, shown on Figure 3-6, and the diverted link trips shown on Figure 3-7 to the future background traffic forecasts, shown on Figure 3-5. The AM and PM total future traffic forecasts are shown on Figure 3-8. The detailed traffic forecasting worksheets are provided in Appendix E.

Vehicular Analysis

The total future peak hour delays were calculated based on the future lane use and traffic control for the off site intersections shown on Figures and 3-9, existing and approved traffic signal phasing/timing plans obtained from Montgomery County Department of Transportation (MCDOT) shown in Appendix C, the total future traffic forecasts shown on Figure 3-6, and the HCM 2000 methodology for signalized and unsignalized intersections. HCM worksheets for each study intersection are presented in Appendix G. The results of the total future analyses are summarized in Table 3-1.

Under both total future conditions, all the study intersections are expected to operate below the delay congestion standard. Therefore, all study intersections will operate adequately with the traffic generated by the identified pipeline developments and the proposed commercial site. The motor vehicle adequacy test is passed, and mitigation is not required.

SimTraffic Analysis

The SimTraffic analysis software was used to simulate the future road network operations with the proposed development. The results represent an average of ten (10) SimTraffic model runs with 15-minute seeds and 60-minutes of run time. A summary of the 95th percentile queues from the simulation results are shown in Table 3-2 and complete results are provided in Appendix G.

It is noted that the installation of a traffic signal at the Wisteria Drive and Waters Road intersection and the elimination of the northbound right turn lane on Waters Road will not have a significant impact to the expected queues along the roadway network.

As shown in Table 3-2, the 95th percentile queues for the turning movement lane groups at the key study intersections that are the focus of this evaluation, would continue to be accommodated within the available storage lengths during the AM and PM peak hours.

Some of the other queues would extend beyond the available storage, including the westbound left on Wisteria Drive at MD 118 during the PM peak hour and the southbound left on MD 118 at Wisteria Drive during the PM peak hour. The Waters Village impact on those queue lengths are insignificant.

Table 3-4
Waters Village
Site Trip Generation ^{1, 2}

Land Use	LUC	Amount	Unit	AM Peak Hour			PM Peak Hour			Multimodal Trip Generation			
				In	Out	Total	In	Out	Total	AM Peak Hour		PM Peak Hour	
										Auto Driver	Total Person Trips	Auto Driver	Total Person Trips
				ITE Trip Generation						Multimodal Trip Generation			
Proposed Site Plan													
Strip Retail Plaza (<40k)	822	26,680	SF	38	25	63	88	88	176	57	89	157	244
Fast Food with D/T	934	<u>3,200</u>	SF	<u>73</u>	<u>70</u>	<u>143</u>	<u>55</u>	<u>51</u>	<u>106</u>	<u>128</u>	<u>199</u>	<u>95</u>	<u>148</u>
		29,880	Total Trips	111	95	206	143	139	282	185	288	252	392
Existing Uses													
General Light Industrial	110	5,054	SF	-4	-1	-5	-1	-4	-5	-5	-8	-5	-8
Single Family Residential	210	1	DU	<u>0</u>	<u>-1</u>	<u>-1</u>	<u>-1</u>	<u>0</u>	<u>-1</u>	<u>-1</u>	<u>-2</u>	<u>-1</u>	<u>-2</u>
			Existing Trips	-4	-2	-6	-2	-4	-6	-6	-10	-6	-10
			Net New Trips (Proposed minus Existing)	107	93	200	141	135	276	179	278	246	382
			Trips for Scoping Form							179	278	246	382
Auto Driver Trips Used for Forecast and Capacity Analysis ³													
Retail Auto Driver Trips				34	23	57	79	78	157				
Diverted Link Trips (0% AM & 34% PM)				<u>0</u>	<u>0</u>	<u>0</u>	<u>-27</u>	<u>-27</u>	<u>-53</u>				
Net Primary Retail Trips				34	23	57	52	51	104				
Fast Food Auto Driver Trips				65	63	128	49	46	95				
Diverted Link Trips (49% AM & 50% PM)				<u>-32</u>	<u>-31</u>	<u>-63</u>	<u>-25</u>	<u>-23</u>	<u>-48</u>				
Net Primary Fast Food Trips				33	32	65	24	23	47				
Existing Uses													
Light Industrial				-4	-1	-5	-1	-4	-5				
Single Family Residential				<u>0</u>	<u>-1</u>	<u>-1</u>	<u>-1</u>	<u>0</u>	<u>-1</u>				
Existing Site Trips ³				-4	-2	-6	-1	-4	-6				
Vehicle Trips Assigned to Road Network													
Diverted Link Trips				32	31	63	52	50	101				
New Site Trips				67	55	122	76	75	151				

Note:

1. Trip generation based on ITE Trip Generation Manual 11th Edition.
2. Germantown Town Center Policy Area.
3. For the capacity analysis, trips generated by the existing uses were not removed from the road network. Existing trips were calculated for scoping purposes only.

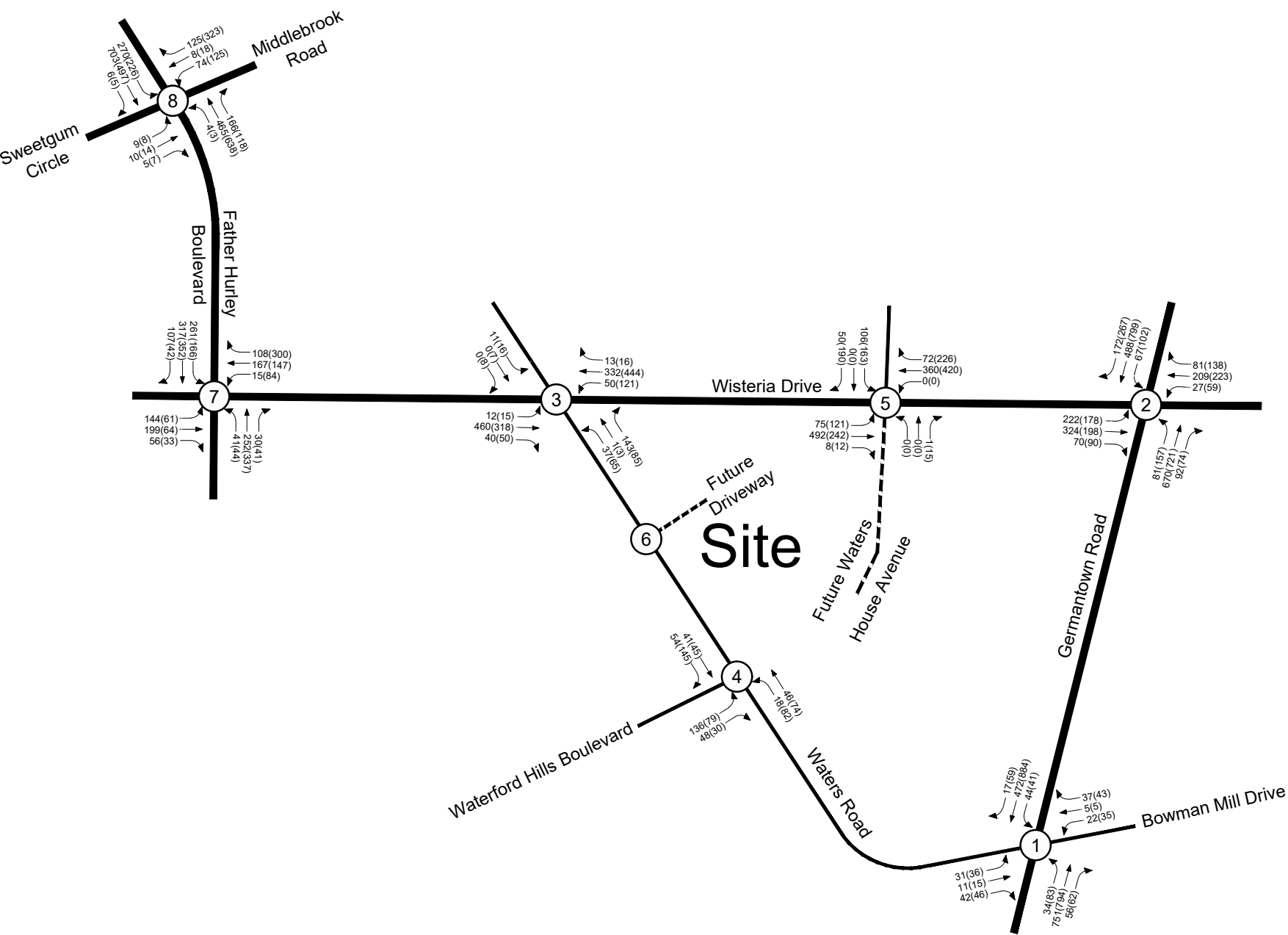


Figure 3-4
Adjusted Existing Peak Hour Vehicular Traffic Volumes

AM PEAK HOUR
PM PEAK HOUR
000(000)



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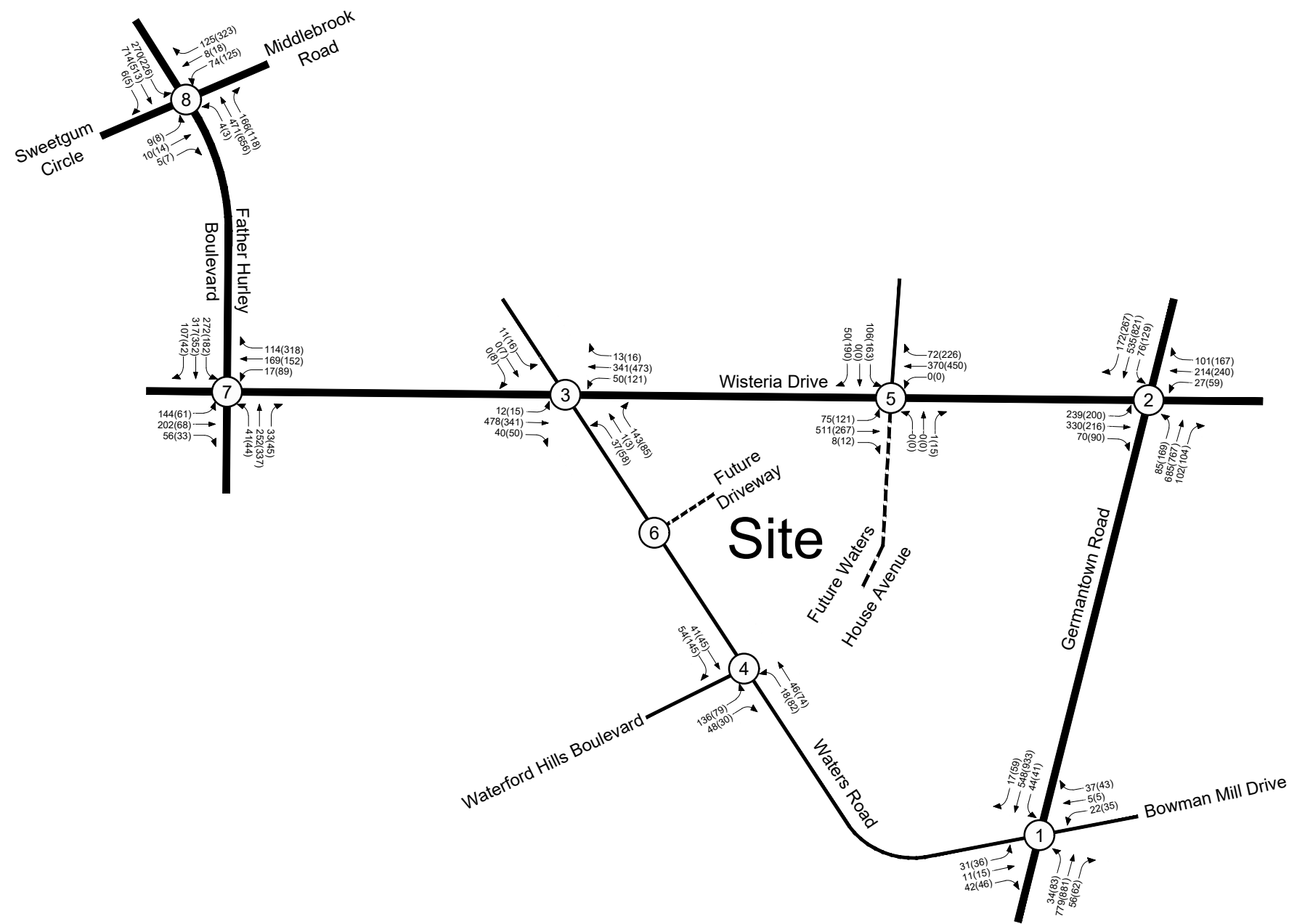


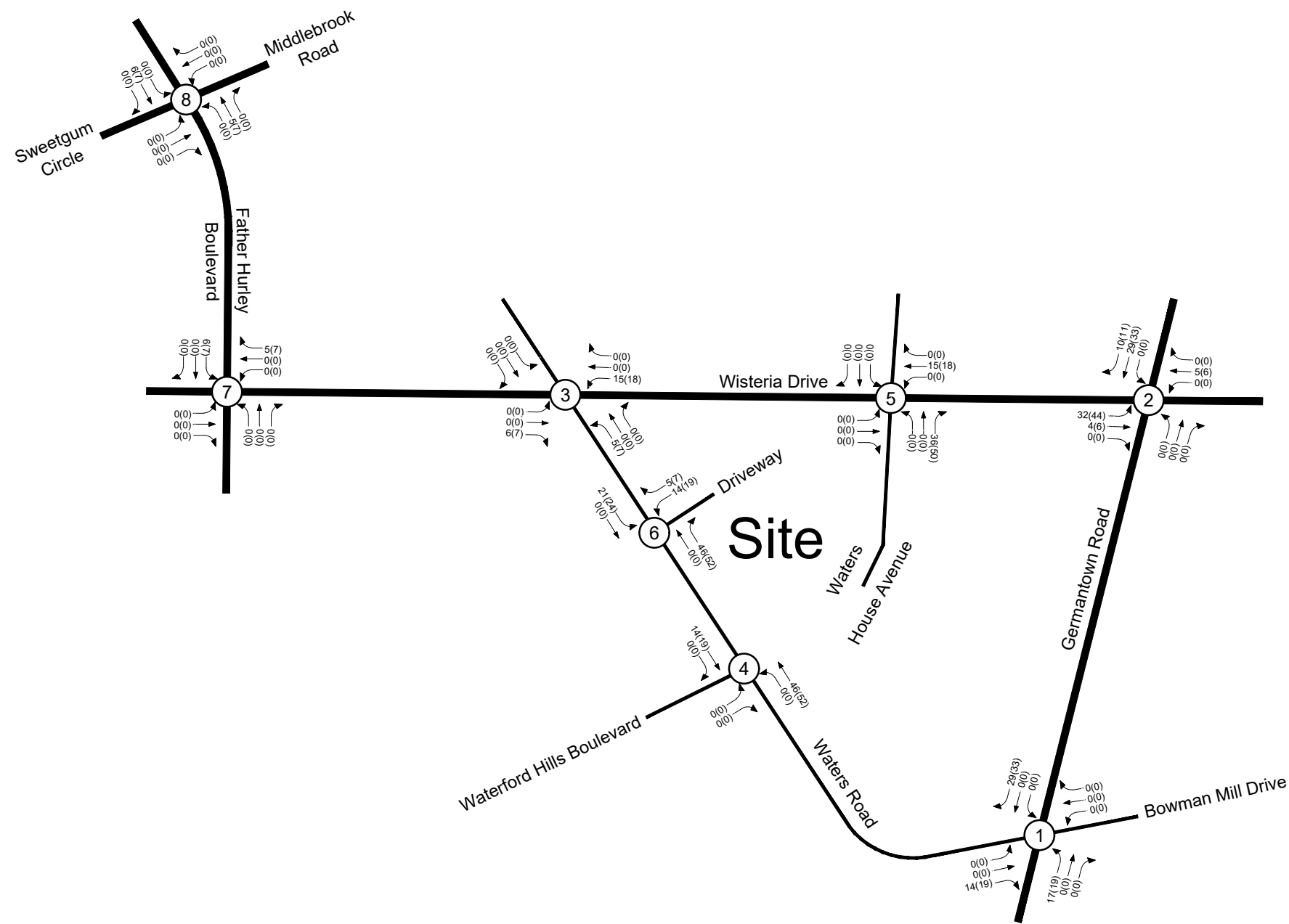
Figure 3-5
Adjusted Background Future Traffic Forecasts

AM PEAK HOUR
PM PEAK HOUR
000(000)



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Montgomery County, MD





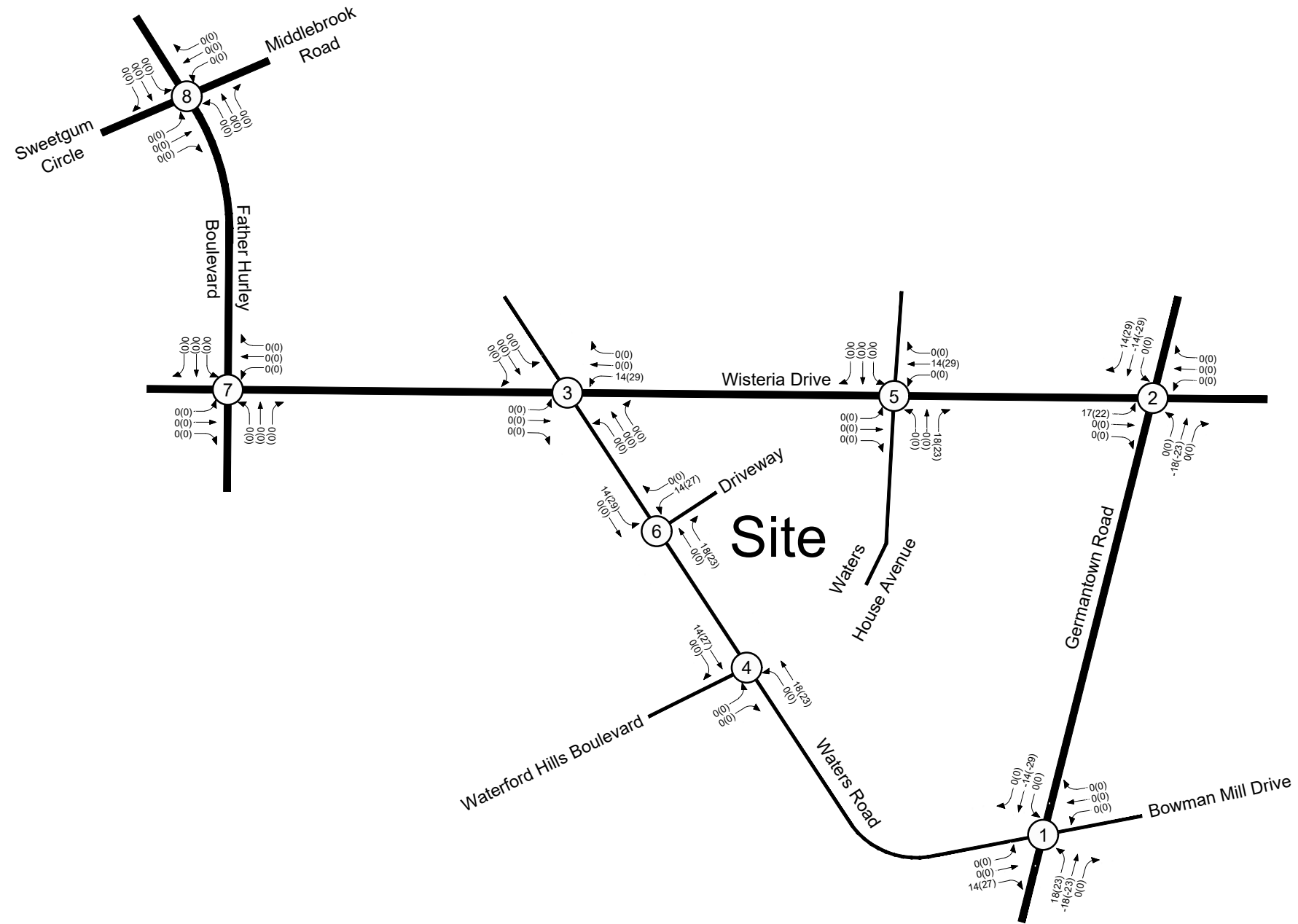
AM PEAK HOUR
PM PEAK HOUR
000(000)

Figure 3-6
New Site Trips (Proposed minus Existing)



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AM PEAK HOUR
 PM PEAK HOUR
 000(000)

Figure 3-7
 Diverted Link Trips



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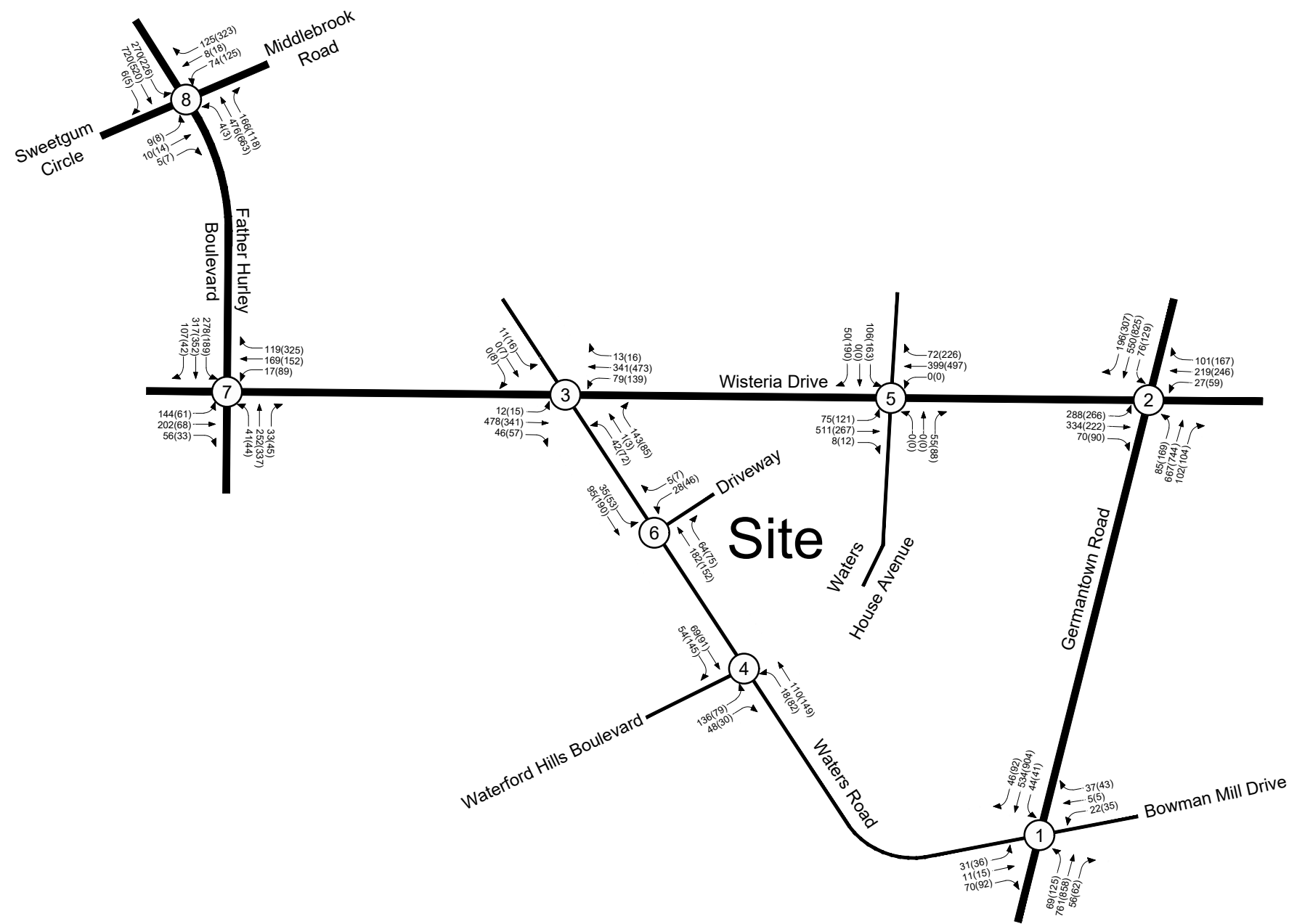


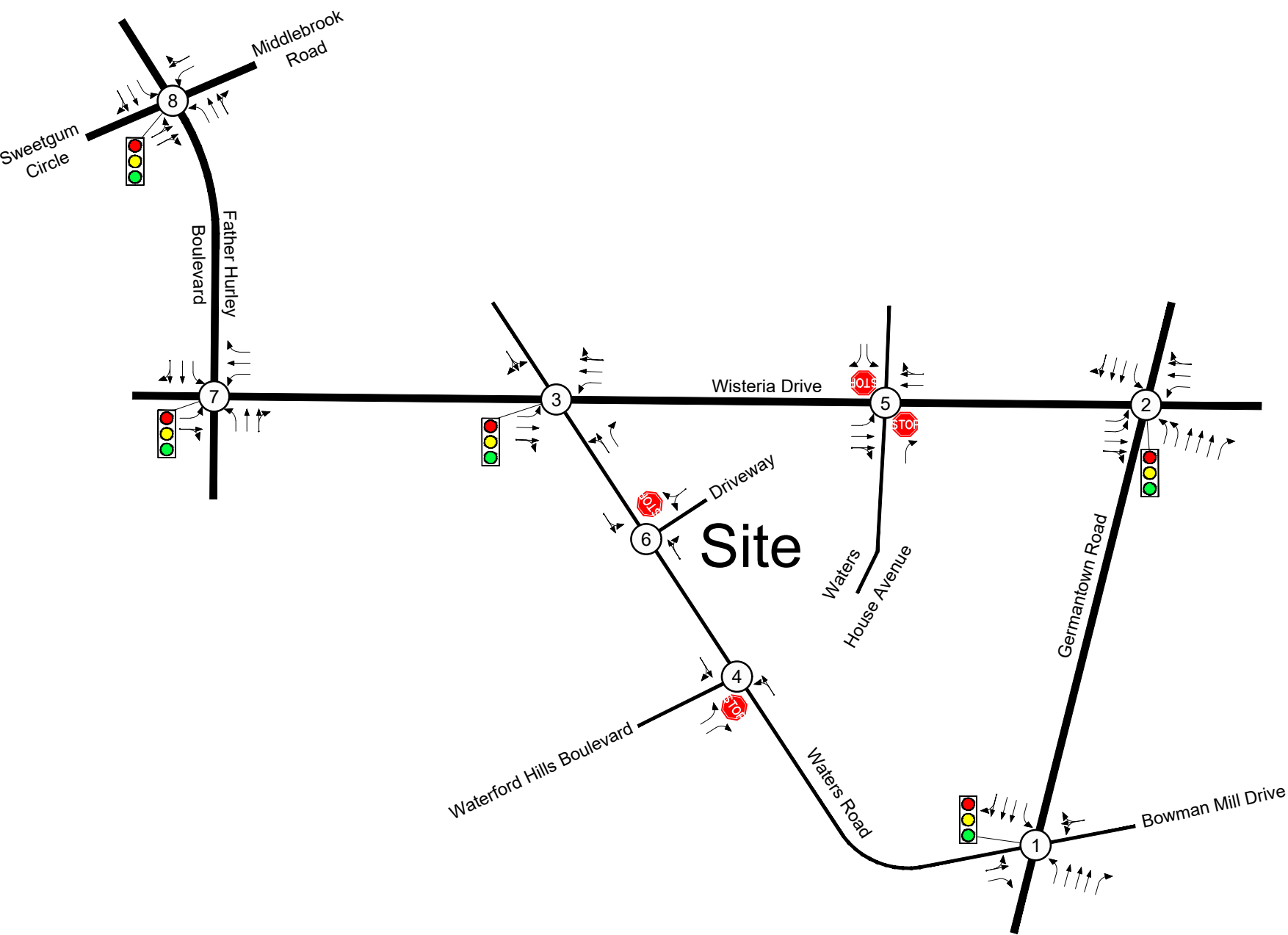
Figure 3-8
 Total Future Traffic Forecasts

AM PEAK HOUR
 PM PEAK HOUR
 000(000)



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- ← Represents One Travel Lane
- Signalized Intersection
- Stop Sign

Figure 3-9
 Total Future Lane Use and Traffic Control
 Signalization at Intersection #3



SECTION 4 PEDESTRIAN, BICYCLE, and BUS TRANSIT SYSTEM ADEQUACY TESTS

OVERVIEW

This section discusses the scope and results of the Pedestrian, Bicycle, and Bus Transit System Adequacy tests, following the LATR Guidelines.

Pedestrian System Adequacy

As previously discussed, the Pedestrian System Adequacy Test consists of the following three components:

- Pedestrian Level of Comfort (PLOC)
- Street Lighting
- ADA Compliance

Following is a discussion of the results of each evaluation.

Pedestrian Level of Comfort (PLOC)

The requirements for the PLOC portion of the Pedestrian Adequacy Test are described in the LATR Guidelines. Per the Guidelines, the applicable value for the proposed redevelopment is 1,000 feet in all directions based on a peak-hour person trip generation of 350 or more and a location within an Orange Policy Area.

The Pedestrian Level of Comfort Map found at <https://mcatlas.org/pedplan/> was reviewed to identify the PLOC for the pedestrian facilities with the 1,000 foot radius of the subject property. Field work was performed in November, 2021 and a field verification on June 22, 2022 to verify the PLOC within the 1,000 foot radius for the Pedestrian System Adequacy Test.

Figure 4-1 shows the existing pedestrian facilities in the study area and Figure 4-2 shows the current PLOC within the applicable 1,000 feet from the site boundary. Table 4-1 lists the PLOC Value and comfort level along with conditions and characteristics that effect the PLOC.

Of the 42 segments reviewed, 13 segments have a uncomfortable or undesirable rating. Each of these segments are off-site. Widening the buffer between the vehicle travel lane and the sidewalk would improve the rating. One segment on Waters Road south of Waterford Hills Boulevard does not have sidewalk. Building a sidewalk would improve the PLOC. The applicant will work with Planning staff and MCDOT to identify which improvements are feasible and within the Proportionality Guide Calculation for off-site improvements detailed later in this report.

Street Lighting

According to the LATR Guidelines, streetlights are to be inventoried and inspected to determine if they are operational. The applicant must upgrade the street lighting if standards are not met or they are not operational.

Based on the person trip generation, the applicable radius for the proposed development is 1,000 feet from the property boundaries. A field verified inventory of streetlights within the 1,000 foot study area boundary, is provided on Figure 4-3. An inspection of the street lights in March 2022 verified that each of the streets along Wisteria Drive, Waters Road and Waterford Hills Boulevard are operating. As shown on Figure 4-3, there are streetlights along MD 118, Germantown Road, and the field verification confirmed they are in operation.

Mitigation is not required for the applicable study area.

ADA Compliance

The requirements for the ADA Compliance portion of the Pedestrian Adequacy Test are described in the LATR Guidelines. The applicable value for the proposed development is one-half of 1,000 ft (500 ft) based on peak hour person trip generation of 350 or more and located within an Orange Policy Area. Table 4-2 lists the ramp and the location. The table lists if detectable warning strips are provided, the ramp width, cross slope, running slope and landing area for each ramp.

Of the 45 ADA ramps in the study area, 11 meet the ADA standards. 34 ramps either have running slopes greater than 2% or a landing area less than 5 feet by 5 feet. These 34 ramps can be eligible for off-site improvement. Determining whether the ramps or some of the ramps should be fixed to meet mitigation requirements and the Proportionality Guide Calculation cap will be vetted with staff during the review process.



Figure 4-1
Pedestrian Facilities



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Figure 4-2
Existing Pedestrian Level of Comfort



NORTH

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Montgomery County, MD



Table 4-1
Waters Village
Sidewalk and Pathway Pedestrian Level of Comfort

ID	Location	Speed Limit (MPH)	Linear Length (ft)	Sidewalk Width	Buffer Width	DPL/SBL	PLOC Issue	PLOC Value	PLOC Comfort Level	Potential Improvement	Feasibility
1	Waters Road SB North of Waterford	25	110	5-8ft	0-2ft	No DPL/SBL	NA	3	Uncomfortable	Widening the buffer	NA
2	Waters Road SB North of Waterford	25	332	5-8ft	5-8ft	DPL/SBL	NA	1	Very Comfortable	NA	NA
3	Waters Road SB North of Waterford	25	60	5-8 ft	>8ft	No DPL/SBL	NA	1	Very Comfortable	NA	NA
4	Waters Road NB North of Waterford	25	60	5-8ft	0-2ft	No DPL/SBL	Narrow Buffer	2/3*	somewhat Uncomfortable	Widening the buffer	Unlikely
5	Waters Road NB North of Waterford	25	238	5-8ft	2-5ft	No DPL/SBL	Narrow Buffer	2/3*	somewhat Uncomfortable	Widening the buffer	Unlikely
6	Waterford Hills Blvd WB	30	312	5-8ft	>8ft	No DPL/SBL	NA	1	Very Comfortable	NA	NA
7	Waterford Hills Blvd WB	30	180	5-8ft	>8ft	No DPL/SBL	NA	1	Very Comfortable	NA	NA
8	Waterford Hills Blvd WB	30	450	5-8ft	>8ft	No DPL/SBL	NA	1	Very Comfortable	NA	NA
9	Waterford Hills Blvd EB	25	330	5-8ft	>8ft	No DPL/SBL	NA	1	Very Comfortable	NA	NA
10	Waterford Hills Blvd EB	25	180	5-8ft	>8ft	No DPL/SBL	NA	1	Very Comfortable	NA	NA
11	Waterford Hills Blvd EB	25	360	5-8ft	>8ft	No DPL/SBL	NA	1	Very Comfortable	NA	NA
12	Wisteria Dr WB	30	120	5-8ft	>8ft	No DPL/SBL	NA	1	Very Comfortable	NA	NA
13	Wisteria Dr WB	30	650	5-8ft	>8ft	No DPL/SBL	NA	1	Very Comfortable	NA	NA
14	Wisteria Dr WB	30	320	5-8ft	>8ft	No DPL/SBL	NA	1	Very Comfortable	NA	NA
15	Wisteria Dr EB	30	920	5-8ft	>8ft	No DPL/SBL	NA	1	Very Comfortable	NA	NA
16	Wisteria Dr EB	30	340	5-8ft	>8ft	No DPL/SBL	NA	1	Very Comfortable	NA	NA
17	Waters Rd SB South of Waterford	25	60	5-8ft	>8ft	No DPL/SBL	NA	1	Very Comfortable	NA	NA
18	Waters Rd SB South of Waterford	25	230	5-8ft	5-8ft	DPL/SBL	NA	1	Very Comfortable	NA	NA
19	Waters Rd SB South of Waterford	25	75	5-8ft	>8ft	No DPL/SBL	NA	1	Very Comfortable	NA	NA
20	Waters Rd SB South of Waterford	25	75	5-8ft	5-8ft	No DPL/SBL	NA	2	somewhat Comfortable	NA	NA
21	Waters Rd SB South of Waterford	25	205	5-8ft	5-8ft	No DPL/SBL	NA	2	somewhat Comfortable	NA	NA

Table 4-1
Waters Village
Sidewalk and Pathway Pedestrian Level of Comfort

ID	Location	Speed Limit (MPH)	Linear Length (ft)	Sidewalk Width	Buffer Width	DPL/SBL	PLOC Issue	PLOC Value	PLOC Comfort Level	Potential Improvement	Feasibility
22	Waters Rd SB South of Waterford	25	10	5-8ft	5-8ft	No DPL/SBL	NA	2	Somewhat Comfortable	NA	NA
23	Waters Rd NB South of Waterford	No Sidewalk	850	No Sidewalk	No Sidewalk	No DPL/SBL	No Sidewalk	NA	Undesirable	Constructing Sidewalk	NA
24	Wisteria Dr WB East of Waters Rd	30	273	5-8ft	>8ft	No DPL/SBL	NA	1	Very Comfortable	NA	NA
25	Wisteria Dr WB East of Waters Rd	30	460	5-8ft	5-8ft	No DPL/SBL	NA	2	Somewhat Comfortable	NA	NA
26	Wisteria Dr WB East of Waters Rd	30	150	>10ft	2-5ft	No DPL/SBL	Narrow Buffer	3	Uncomfortable	Widening the buffer	Likely
27	Wisteria Dr EB East of Waters Rd	30	860	<5	0-2ft	No DPL/SBL	Low Sidewalk and Buffer	4	Undesirable	Widening the buffer	Unlikely
28	Wisteria Dr WB East of MD 118	30	55	5-8ft	5-8ft	No DPL/SBL	Narrow Buffer	2	Somewhat Comfortable	NA	NA
29	Wisteria Dr WB East of MD 118	30	255	>10ft	2-5ft	No DPL/SBL	Narrow Buffer	3	Uncomfortable	Widening the buffer	NA
30	Wisteria Dr EB East of MD 118	30	45	5-8ft	2-5ft	No DPL/SBL	Narrow Buffer	3	Uncomfortable	Widening the buffer	Likely
31	Wisteria Dr EB East of MD 118	30	40	5-8ft	5-8ft	No DPL/SBL	NA	2	Somewhat Comfortable	NA	NA
32	Wisteria Dr EB East of MD 118	30	80	5-8ft	>8ft	No DPL/SBL	NA	1	Very Comfortable	NA	NA
33	Walter Johnson Rd SB South of Wisteria	25	50	5-8ft	>8ft	No DPL/SBL	NA	1	Very Comfortable	NA	NA
34	Walter Johnson Rd SB South of Wisteria	25	130	5-8ft	5-8ft	No DPL/SBL	NA	2	Somewhat Comfortable	NA	NA
35	Walter Johnson Rd NB South of Wisteria	25	220	5-8ft	>8ft	No DPL/SBL	NA	1	Very Comfortable	NA	NA
36	MD 118 SB North of Wisteria	40	650	5-8ft	2-5ft	No DPL/SBL	Narrow Buffer	4	Undesirable	Widening the buffer	Unlikely
37	MD 118 NB North of Wisteria	40	80	8-10ft	2-5ft	No DPL/SBL	Narrow Buffer	4	Undesirable	Widening the buffer	Unlikely
38	MD 118 NB North of Wisteria	40	370	5-8ft	2-5ft	No DPL/SBL	Narrow Buffer	4	Undesirable	Widening the buffer	Unlikely
39	MD 118 NB North of Wisteria	40	22	5-8ft	0-2ft	No DPL/SBL	Narrow Buffer	4	Undesirable	Widening the buffer	Unlikely
40	MD 118 SB South of Wisteria	40	240	5-8ft	>8ft	No DPL/SBL	NA	2	Somewhat Comfortable	NA	NA
41	MD 118 SB South of Wisteria	40	700	5-8ft	2-5ft	No DPL/SBL	Narrow Buffer	4	Undesirable	Widening the buffer	Unlikely
42	MD 118 NB South of Wisteria	40	450	5-8ft	>8ft	No DPL/SBL	NA	2	Somewhat Comfortable	NA	NA

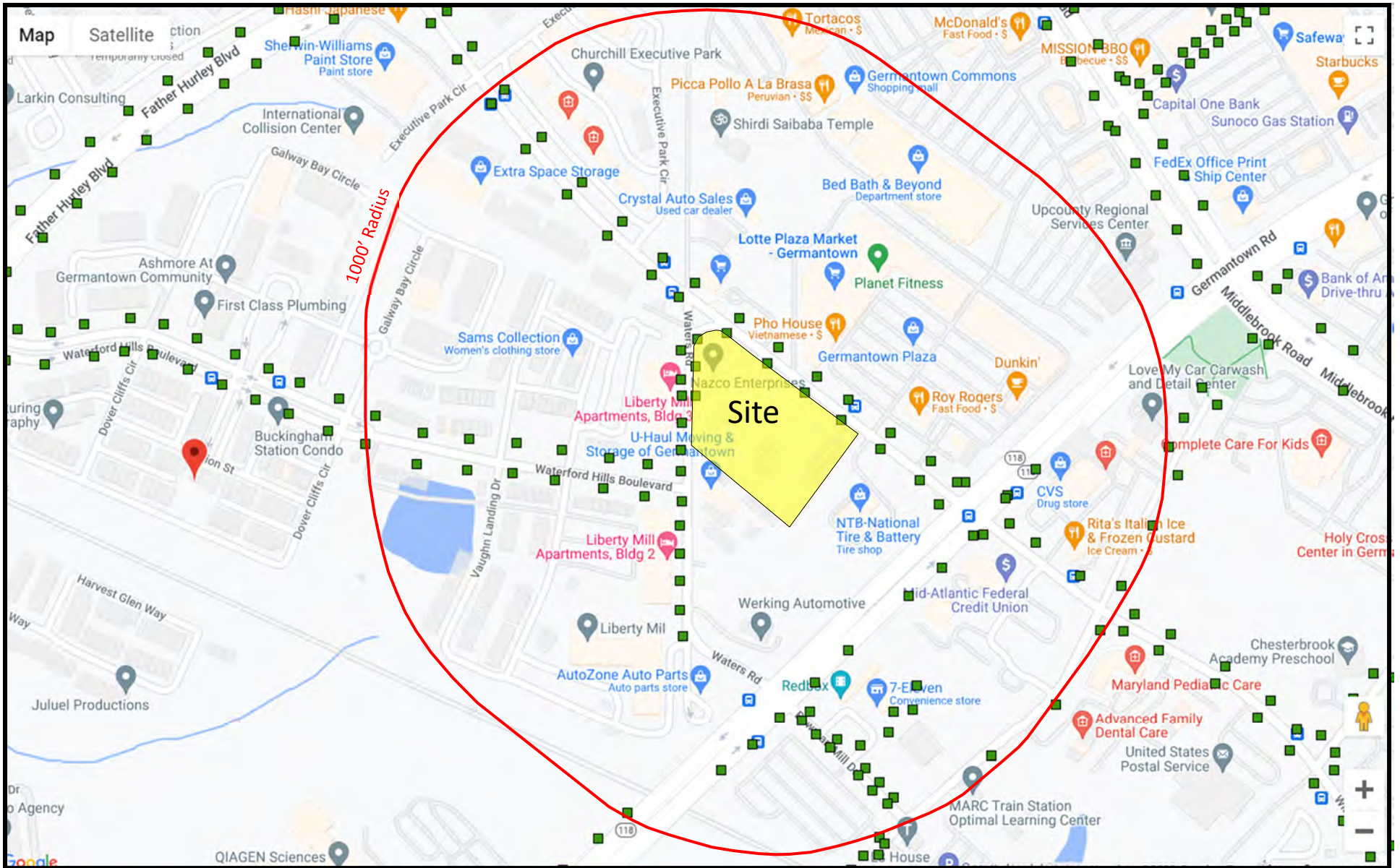


Figure 4-3
Streetlight Inventory

■ Streetlights

Base Map Taken From: <https://www2.montgomerycountymd.gov/dot-streetlight/Index.aspx>
On June 22, 2022



NORTH
Waters Village
Montgomery



Table 4-2
Waters Village
ADA Ramp Evaluation

Ramps										
ID	In between		DWS (Y/N)	DWS Type	DWS Color	DWS Size	Ramp Width	Crossing Slope (8.3% or less)	Running Slope (2% or less)	Ramp Landing Area (5' x 5')
	Road Segment	Road Segment								
1	Crossing MD 118 at Wisteria Dr	WB	Y	NI	Yellow	2x7	7	1.2	2.3	5x7
2	Crossing Wisteria Dr at MD 118	SB	Y	NI	Yellow	2x6	6	0.8	1.1	5x6
3	Crossing Wisteria Dr at MD 118	SB	Y	NI	Yellow	2x8	8	2	1.8	8x6
4	Crossing MD 118 at Wisteria Dr	EB	Y	NI	Yellow	2x6	6	1.2	1	6x6.5
5	Crossing MD 118 at Wisteria Dr	EB	Y	NI	Yellow	2x6	6	1.9	1.5	6x7.5
6	Crossing Wisteria Dr at MD 118	NB	Y	NI	Yellow	2x6.5	6.5	3.5	3.3	6.5x8
7	Crossing Wisteria Dr at MD 119	NB	Y	NI	Yellow	2x6	6	1.9	1.3	6x5
8	Crossing MD 118 at Wisteria Dr	WB	Y	NI	Yellow	2x6	6	2.3	1.2	6x5
9	Crossing Shopping Mall Driveway at Wisteria Dr	WB	Y	NI	Yellow	2x4	4	6.3	4.9	4x5
10	Crossing Shopping Mall Driveway at Wisteria Dr	WB	Y	NI	Yellow	2x4	4	4.1	10.3	4x4.5
11	Crossing Shopping Mall Driveway at Wisteria Dr	WB	Y	NI	Yellow	2x4.5	4.5	4.1	4.1	4.5x4.5
12	Crossing Shopping Mall Driveway at Wisteria Dr	WB	Y	NI	Yellow	2x4	4	0.9	9.2	4x5
13	Crossing Driveway at Wisteria Dr	EB	Y	NI	Yellow	2x6	6	1.8	7.6	6x9
14	Crossing Driveway at Wisteria Dr	EB	Y	NI	Yellow	2x4	4	0.2	11.5	4x3.5
15	Crossing Waters Rd at Wisteria Dr	EB	Y	NI	Yellow	2x4.5	4.5	2.8	8.3	4.5x3.5
16	Crossing Waters Rd at Wisteria Dr	EB	Y	NI	Yellow	2x4	4	0.8	9.7	4x3.5
17	Crossing Waters Rd at Wisteria Dr	EB	Y	NI	Yellow	2x4	4	1.6	7.7	4x7
18	Crossing Waters Rd at Wisteria Dr	EB	Y	NI	Yellow	2x5	5	6.6	8.6	5x3
19	Crossing Driveway at Wisteria Dr	WB	Y	NI	Yellow	2x4	4	3.8	3.2	4x4
20	Crossing Driveway at Wisteria Dr	WB	Y	NI	Yellow	2x4.5	4.5	2.4	9.5	4.5x5
21	Crossing Waters Rd at Wisteria Dr	WB	Y	NI	Yellow	2x4	4	3.4	6.6	4x3.5
22	Crossing Waters Rd at Wisteria Dr	WB	Y	NI	Yellow	2x5	5	0.2	4.1	5x6
23	Crossing Waters Rd at Wisteria Dr	WB	Y	NI	Yellow	2x5	5	5.7	6.2	5x3

Table 4-2
Waters Village
ADA Ramp Evaluation

Ramps										
ID	In between		DWS (Y/N)	DWS Type	DWS Color	DWS Size	Ramp Width	Crossing Slope (8.3% or less)	Running Slope (2% or less)	Ramp Landing Area (5' x 5')
	Road Segment	Road Segment								
24	Crossing Waters Rd at Wisteria Dr	WB	Y	NI	Yellow	2x5	5	6	11.6	5x3
25	Crossing Waters Rd at Wisteria Dr	WB	Y	NI	Yellow	2x4	4	5.6	1.5	3.5x4
26	Crossing Waters Rd at Wisteria Dr	WB	Y	NI	Yellow	2x4.5	4.5	0.9	4.5	4.5x3.5
27	Crossing Waterford at Waters Rd	SB	Y	NI	Yellow	2x5	5	1	6.3	5x4.5
28	Crossing Waterford at Waters Rd	SB	Y	NI	Yellow	2x5	5	0.7	1.3	5x5
29	Crossing Waterford at Waters Rd	SB	Y	NI	Yellow	2x5	5	0.7	2	5x5
30	Crossing Waterford at Waters Rd	SB	Y	NI	Yellow	2x5	5	3.3	1.5	5x4
31	Crossing Driveway at Waters Rd	NB	Y	NI	Yellow	2x5	5	2.6	6.8	5x4
32	Crossing Driveway at Waters Rd	NB	Y	NI	Yellow	2x5	5	1.3	0.8	5x4
33	Crossing Driveway at Waters Rd	NB	Y	NI	Yellow	2x5	5	1.7	7	5x4
34	Crossing Waterford	NB	Y	NI	Yellow	2x5	5	2.9	4.7	5x3
35	Crossing Private Drive	EB	Y	NI	Yellow	2x5	5	1.2	5.3	5x5
36	Crossing Private Drive	EB	Y	NI	Yellow	2x5	5	2.4	0.6	3.5x5
37	Crossing Waterford	SB	Y	NI	Yellow	2x5	5	0.8	5.7	5x3.5
38	Crossing Waterford	SB	Y	NI	Yellow	2x5	5	1.2	1.8	5x5
39	Crossing Waterford	SB	Y	NI	Yellow	2x5	5	1.2	1.8	5x5
40	Crossing Waterford	SB	Y	NI	Yellow	2x5	5	0.3	6.2	5x3.5
41	Crossing Private Drive	WB	Y	NI	Yellow	2x5	5	2.8	0.6	5x3.5
42	Crossing Private Drive	WB	Y	NI	Yellow	2x5	5	2.3	5.2	5x5
43	Crossing Waterford	NB	Y	NI	Yellow	2x5	5	0.8	8.4	5x3
44	Crossing Waterford	NB	Y	NI	Yellow	2x5	5	2	1	5x5
45	Crossing Waterford	NB	Y	NI	Yellow	2x5	5	2	1	5x5

Bicycle System Adequacy

As previously discussed, per the LATR Guidelines, bicycle system adequacy is defined as providing a low Level of Traffic Stress (LTS-2) for bicyclists. The requirements for the Bicycle System Adequacy test are described in the LATR Guidelines. The applicable value for the proposed development is 1,000 feet based on peak hour person trip generation of 350 or more and located within an Orange Policy Area.

Figure 4-4 shows existing and proposed bicycle facilities, per the Bicycle Master Plan. As shown, sidepaths are proposed along Wisteria Drive. East of Germantown Road, a sidepath exists on the north side. A sidepath is also proposed along MD 118 (Germantown Road).

Separated bike lanes are proposed along an extension of Waters Road north of Wisteria Drive. The extension of Century Boulevard north of Wisteria Drive is proposed shared road.

Bicycle system adequacy is measured by the LTS (Level of Traffic Stress). The stress is determined on the comfort or skill level of a cyclist in reference to a roadway. Per the Guidelines, appropriate adequacy for a bicycle system provides an LTS-2. Potential mitigation involves the Applicant providing necessary adjustments to promote low level of traffic stress facilities LTS-2 conditions within 1,000 ft of the development's site boundary.

Per the County's Bicycle Stress Map, MD 118 (Germantown Road) and Wisteria Drive currently are rated with high & moderate stress levels. The sidepaths proposed per the Bicycle Master Plan would improve the level of traffic stress to low or very low.

Along the property frontage, a sidepath will be provided on Wisteria Drive. The applicant will work with staff to determine if the sidepath improvements along other sections of Wisteria or Germantown Road should be constructed to meet the Proportionality Guide Calculation cap for offsite improvements.

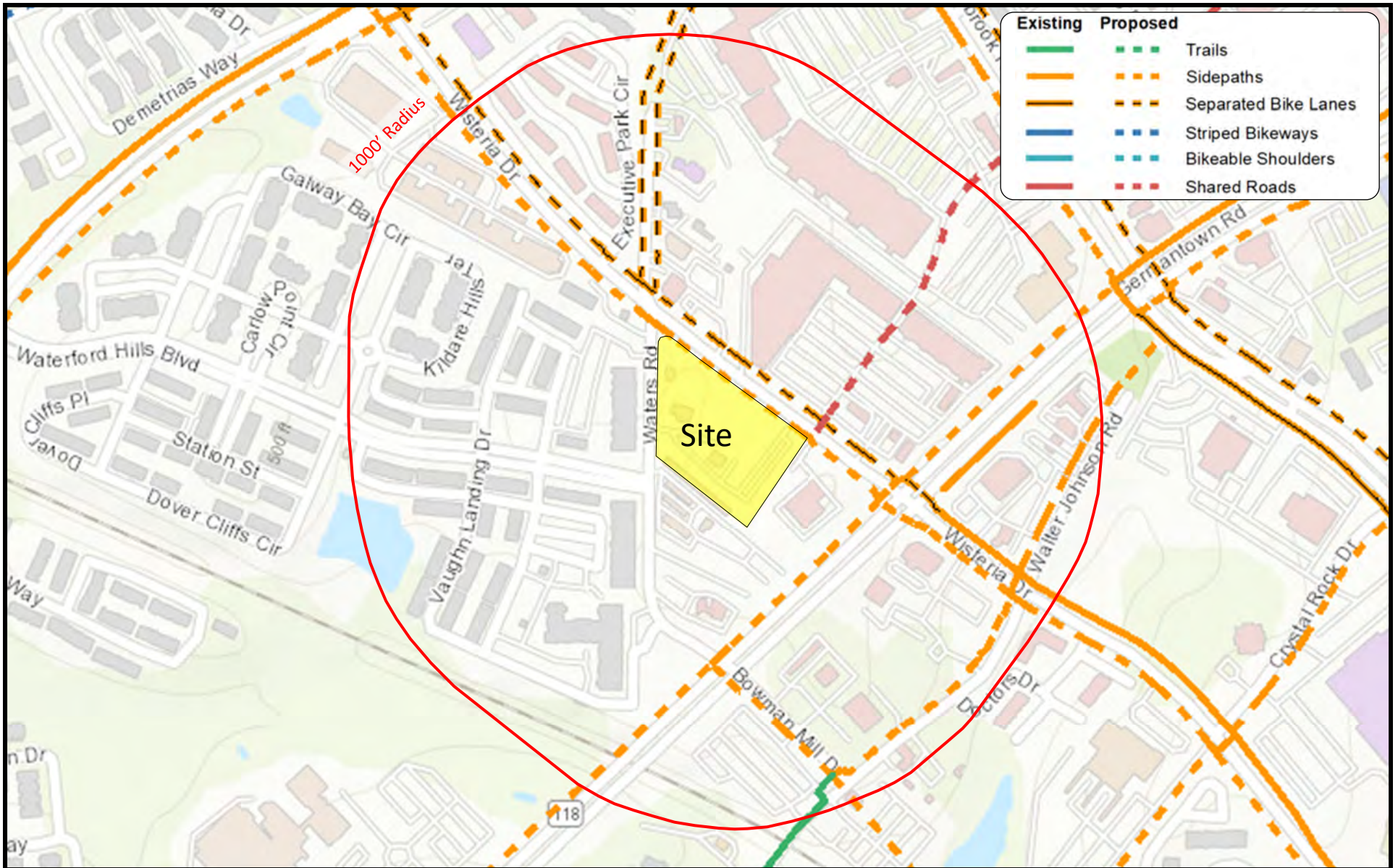


Figure 4-4
Bicycle Master Plan



NORTH

Waters Village
Montgomery County, MD



Bus Transit System Adequacy

The requirements for the Bus Transit Adequacy test are described in the LATR Guidelines. The applicable requirement for the proposed development is four (4) shelters within 1,500 feet of the site based on a peak hour person trip generation of 350 or more and located within an Orange Policy Area.

There are 23 bus stops within the study area, as shown on Figure 4-5 and listed on Table 4-3. Of the 23 bus stops, seven (7) have shelters and 16 do not have shelters. To meet the mitigation requirement, the applicant will coordinate with MC DOT staff to identify four (4) stops that may be appropriate for bus shelters and coordinate the appropriate off-site improvement to meet the Proportionality Guide Calculation cap for off-site improvements.

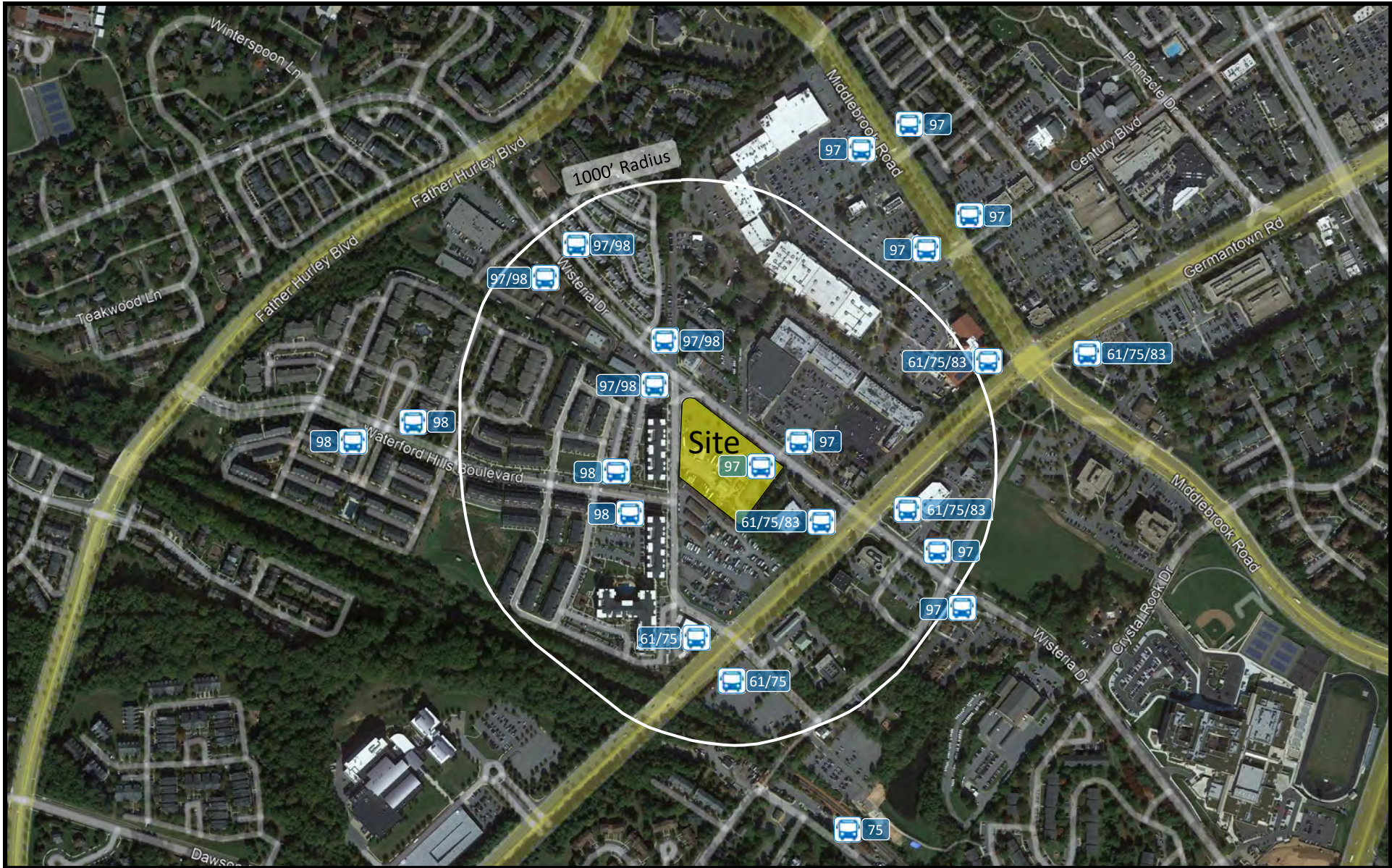




Figure 4-5
Bus Transit Stops

-  Bus Stop
-  Ride On Bus Route



Waters Village
Montgomery County, MD

Table 4-3
Waters Village
Bus Stops

Bus Pads						
Bus Number	Bus Route (RideOn)	Location	Size	Connected to Pathway	Midblock	Bus Shelter
24136	R97	Middlebrook/Celebration (WB)	13*6	Yes	Yes	No
24098	R97	Middlebrook/Celebration (EB)	2*5	Yes	Yes	No
15046	R97	Middlebrook/Century (EB)	12*10	Yes	Yes	No
15044	R97	Middlebrook/Century (WB)	12*10 + 13* 6 (L Shape)	Yes	Yes	No
22886	R61 R83 R75	Middlebrook/MD118 (SB)	7*13	Yes	No	Yes
22904	R61 R83 R75	Middlebrook/MD118 (NB)	7*20	Yes	No	Yes
22884	R61 R83 R75	MD 118/Wisteria (SB)	14*9	Yes	No	Yes
22906	R61 R83 R75	MD 118/Wisteria (NB)	18*6	Yes	No	Yes
27462	R97	Wisteria/Walter Johnson (WB)	5*5	Yes	No	No
27424	R97	Wisteria/Walter Johnson (EB)	12*5	Yes	No	No
22880	R61 R75	MD118/Waters (NB)	14*7	Yes	No	Yes
22908	R61 R75	MD118/Waters (SB)	6*3	Yes	No	No
27463	R97	Wisteria/Shopping Center In front of Driveway (WB)	9*5	Yes	Yes	No
27423	R97	Wisteria/Shopping Center In front of Driveway (EB)	6*5	Yes	Yes	No
14559	R98 R97	Wisteria/Waters (EB)	9.5*7	Yes	No	No
27421	R98 R97	Wisteria/Executive Park (EB)	9*6	Yes	No	No
27770	R98 R97	Wisteria/Executive Park (WB)	9*5	Yes	No	No
14560	R98 R97	Wisteria/Waters (WB)	10*7	Yes	No	No
17664	R98	Waters/Waterford (EB)	14*5	Yes	No	No
17099	R98	Waterford/Vaughn (WB)	5*14	Yes	No	No
17099	R98	Waterford/Carlow Point (WB)	14*5	Yes	No	Yes
17099	R98	Waterford/Carlow Point (EB)	14*5	Yes	No	Yes
28898	R75	Germantown TrainStation	6*5	Yes	Yes	No

LATR PROPORTIONALITY FOR OFF-SITE IMPROVEMENTS

Per the LATR Guidelines, the Planning Board established a maximum cost for off-site improvements that applicant is required to construct or fund to mitigate deficiencies identified in Pedestrian, Bicycle and Bus Transit Systems Adequacy tests.

With the proposed 29,880 SF of retail and restaurant uses, the Applicant has a maximum \$122,882 improvement cap for off-site improvements. The Applicant proposes to install two bus shelters with real time signs for bus stops along Wisteria Drive proximate to the subject site. Based on a cost estimate including contingencies, two shelters with real-time displays costs \$150,000

The Applicant will work with MC DOT and Planning staff to identify which improvement options should be pursued to meet Waters Village requirement to mitigate deficiencies in the Pedestrian, Bicycle, and Bus Transit Systems.

SECTION 5 VISION ZERO STATEMENT

This section provides a Vision Zero Statement following the LATR Guidelines. The LATR Vision Zero Statement requirement consists of the following:

1. **Review High Injury Network segments:** Document any segments on the High Injury Network (HIN) that are within a certain distance of the site frontage, as specified in Table 6 of the LATR Guidelines.

The subject study area does not include any segments identified as High Injury Network segments by Montgomery County.

2. **Assess proximate safety issues:** Review the crash history for all segments and crossings within a certain distance of the site frontage, as specified in the LATR Guidelines. A summary of crashes within the past five years, noting the overall severity and mode of crashes, is to be provided. For any severe or fatal crashes, documentation of the collision type, mode, and whether the crash occurred at an intersection or along a segment is to be provided.

Per the LATR Guidelines, the applicable Vision Zero study area and requirement for the proposed development is collecting crash data within 1,000 feet in all directions within the past five (5) years. All crash data was collected from Montgomery County's Interactive Crash Map. Table 5-1 provides a summary of the number of crashes within the study area.

Within 1,000 feet of the site boundaries, a total of 114 crashes were reported from 2017 through June 17, 2022. None of the crashes were reported as severe or fatal, however, three (3) were classified as suspected severe injury.

3. **Review traffic speeds:** Speed studies are to be conducted within a certain distance from the site frontage as specified in the LATR Guidelines. The speed studies were conducted along Wisteria Drive, Germantown Road and Waters Road within a 1,000 feet radius. The study began on February 8, 2022, at 12:00 AM and concluded on February 10, 2022, at 12:00 AM, lasting a total of 48 hours. The posted speed limit and results from the data collection are summarized in Table 5-2.

As shown, the 85th percentile speeds for vehicles traveling in both directions along each of the segment's studies were in excess of 120% of the posted speed limit, except for one lane on westbound Wisteria Drive. Therefore, it is recommended that speed reduction measures and enforcement, such as installation of speed cameras, be considered by the County.

4. **Describe site access:**

As shown on the site plan shown on Figure 1-2, vehicular access would be provided via a driveway on Waters Road and a driveway on Waters House Avenue. Vehicles exiting the property would operate under stop control, yielding to bicyclists, pedestrians and other

vehicles on Waters Road and Waters House Avenue. Marked crosswalks are planned across both driveways.

Sidewalks would be constructed along each of the property frontages on public streets, i.e., Waters Road, Wisteria Drive, and Waters House Avenue. Lead in sidewalks would be provided at both of the driveways and to the amenity space at corner of the Waters Road / Wisteria Drive intersection.

Table 5-1
Waters Village
Crash Analysis Summary ^(1,2)

Category	Subcategory	Applicable Radius: 250' within Proposed Site Development
		# of Crashes
Year	2017-2018	27
	2018-2019	22
	2019-2020	27
	2020-2021	12
	2021-2022	19
	<u>Jan 2022 - June 2022</u>	<u>7</u>
	Total	114
Severity	Minor/No Injury	95
	Possible Injury	16
	Suspected Severe Injury	3
	Severe Injury/Fatal	0
Mode	Vehicles Only	106
	Bicyclist Related	1
	Pedestrian Related	7

Note:

(1) Dataset taken from Montgomery County Interactive Crash Map.

<https://mcplanning.maps.arcgis.com/apps/webappviewer/index.html?id=3bec8ba90fca4cc182cc042ed38af0e7>

(2) No crashes were identified as fatal or severe.

Table 5-2
Waters Village
Speed Study Analysis

Lane/Direction	Wisteria Drive WB				Wisteria Drive EB			
	Lane 1		Lane 2		Lane 2		Lane 1	
Date Collected	2/8/2022	2/9/2022	2/8/2022	2/9/2022	2/8/2022	2/9/2022	2/8/2022	2/9/2022
Posted Speed Limit (mph)	30	30	30	30	30	30	30	30
120% of Posted Speed Limit (mph)	36	36	36	36	36	36	36	36
Average Speed (mph)	32	32	29	29	29	29	32	32
50th Percentile (mph)	23	23	18	18	23	23	24	24
85th Percentile (mph)	39	39	35	35	41	41	42	42
85th Percentile Exceed 120% of Posted Speed Limit? (Y/N)	Y	Y	N	N	Y	Y	Y	Y
10-mph pace (mph)	30-40	30-40	25-35	25-35	30-40	30-40	30-40	30-40

Lane/Direction	Germantown Road SB				Germantown Road NB							
	Lane 1		Lane 2		Lane 3		Lane 3		Lane 2		Lane 1	
Date Collected	2/8/2022	2/9/2022	2/8/2022	2/9/2022	2/8/2022	2/9/2022	2/8/2022	2/9/2022	2/8/2022	2/9/2022	2/8/2022	2/9/2022
Posted Speed Limit (mph)	40	40	40	40	40	40	40	40	40	40	40	40
120% of Posted Speed Limit (mph)	48	48	48	48	48	48	48	48	48	48	48	48
Average Speed (mph)	46	47	49	50	46	46	44	45	44	46	48	49
50th Percentile (mph)	36	36	39	39	36	36	35	35	36	36	38	38
85th Percentile (mph)	54	54	58	58	54	54	51	51	61	61	57	57
85th Percentile Exceed 120% of Posted Speed Limit? (Y/N)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
10-mph pace (mph)	40-50	40-50	45-55	45-55	40-50	40-50	40-50	40-50	40-50	40-50	45-55	45-55

Lane/Direction	Waters Road			
	SB		NB	
Date Collected	2/8/2022	2/9/2022	2/8/2022	2/9/2022
Posted Speed Limit (mph)	25	25	25	25
120% of Posted Speed Limit (mph)	30	30	30	30
Average Speed (mph)	25	25	27	27
50th Percentile (mph)	25	25	27	27
85th Percentile (mph)	30	30	34	34
85th Percentile Exceed 120% of Posted Speed Limit? (Y/N)	Y	Y	Y	Y
10-mph pace (mph)	20-30	20-30	20-30	20-30

Section 6 CONCLUSIONS

The proposed Waters Village redevelopment including 26,680 SF of retail uses and a 3,200 SF fast food restaurant with drive thru is subject to the Local Area Transportation Review system adequacy tests and a Vision Zero statement, based on the number of peak hour person trips the site will generate, as outlined in Montgomery County's Growth and Infrastructure Policy and the LATR 2022 Guidelines. Following are the findings and conclusions of the adequacy test and Vision Zero evaluations.

1. Waters Village is expected to generate 278 AM peak hour and 383 PM peak hour new person trips, and 179 AM peak hour and 246 PM peak hour new auto-driver (vehicle) trips.
2. The AM and PM peak hour average vehicle delays at the study intersections are currently within the Germantown Town Center policy area congestion standard of 63 seconds per vehicle.
3. Under future conditions, without and with the proposed Waters Village redevelopment, the study intersections would continue to operate within the Germantown Town Center policy area congestion standard during both the AM and PM peak hours. Mitigation is not required for the Motor Vehicle Adequacy Test.
4. For the Pedestrian System Adequacy Test, mitigation is required to bring the existing undesirable pedestrian level of comfort ratings for segments along Wisteria Drive, Waters Road and MD 118 (Germantown Road) and to address ADA noncompliance for crosswalk ramps within the study area. Per County policy and LATR Guidelines the Applicant is responsible for their fair share contribution to improve the PLOC in the study area.
5. Mitigation is required to pass the Bicycle System Adequacy Test because there is high level of traffic stress under existing conditions along Wisteria Drive and MD 118 (Germantown Road). The Applicant will coordinate with Planning staff to determine the fair share contribution toward the mitigation.
6. Several bus stops within the study area do not have bus shelters. Mitigation is required to pass the Bus Transit System Adequacy Test.
7. Per the LATR Proportionality Guide Calculator, the Applicant's off-site mitigation cap to address deficiencies in the Pedestrian, Bicycle and Bus Transit Systems is \$122,882.
8. The Applicant proposes to place two bus shelters with real time signs to meet the mitigation requirement. Based on a cost estimate including contingencies, two shelters with real-time displays cost \$150,000.

9. A review of crash history within the 1,000 feet study area radius found that 114 crashes occurred between 2017 and June 2022. None of the crashes were identified as severe injury or fatal.
10. Speed studies conducted along Wisteria Drive, Waters Road, and MD 118 (Germantown Road) revealed that speeding occurs on the area roadways. Montgomery County should consider speed mitigation measures such as education, enforcement, and speed cameras.
11. With the development of Waters Village, a section of the planned Waters House Avenue will be construction from Wisteria Road, south along the property frontage. Ultimately, per the Germantown Master Plan, Waters House Avenue will intersect with Waters Road opposite Waterford Hills Boulevard. Waters House Avenue will provide access to the subject site and the retail use to the east and other properties as they redevelop.
12. The location of the proposed site driveways minimized turning movement conflicts on Waters Road and Waters House Avenue and lead in sidewalk and crosswalks provide safe pedestrian access to and onto the site. The sidepath along the Wisteria Drive frontage provides a low level of traffic stress for bicyclists to travel across the site frontage.

APPENDIX A SCOPING MATERIALS

From: [Barr, Stuart R.](#)
To: [Whelan, William](#)
Cc: [Van Alstyne, Chris](#); [Chris L. Kabatt](#); [Barr, Stuart R.](#)
Subject: RE: Waters Village Scope
Date: Wednesday, April 20, 2022 6:23:29 PM

Billy --- based on the LATR Guidelines and the location and amount of our proposed development/traffic generation, we do not understand why we are being asked to study Father Hurley/Middlebrook. If it is for informational purposes only, then we will agree to include that intersection in our study, provided that our project is not responsible for any potential mitigation associated with that intersection. Thank you – Stuart Barr

Stuart R. Barr, Attorney

Lerch, Early & Brewer, Chtd. rise to every challenge
7600 Wisconsin Ave | Suite 700 | Bethesda, MD 20814
T 301-961-6095 | F 301-347-1771 | Cell 571-213-2354
srbarr@lerchearly.com | [Bio](#)

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From: Whelan, William <William.Whelan@montgomerycountymd.gov>
Sent: Wednesday, April 20, 2022 9:47 AM
To: Chris L. Kabatt <clkabatt@wellsandassociates.com>
Cc: Van Alstyne, Chris <chris.vanalstyne@montgomeryplanning.org>; Barr, Stuart R. <srbarr@lerchearly.com>
Subject: RE: Waters Village Scope

Hi Chris,

Our traffic section reviewed this and wants the intersection of Father Hurley Blvd and Middlebrook as well as Father Hurley Blvd and Wisteria to be included in the study.

Thanks

From: Chris L. Kabatt <clkabatt@wellsandassociates.com>
Sent: Wednesday, April 13, 2022 1:12 PM
To: Whelan, William <William.Whelan@montgomerycountymd.gov>
Cc: Van Alstyne, Chris <chris.vanalstyne@montgomeryplanning.org>; Stuart Barr Esq. <srbarr@lerchearly.com>
Subject: Re: Waters Village Scope

[EXTERNAL EMAIL]

Billy,

Have you heard back from Traffic regarding the Father Hurley / Middlebrook intersection and the Wisteria/Waters traffic signal? The Middlebrook intersection is in the 3rd ring of intersections and we only require 1 ring. The signal warrant studies were already completed for Buchanan and a design is approved. I can forward those when I return on Monday if you or Traffic don't have copies of each.

Thank you,

Chris

Chris L. Kabatt, P.E. | Principal

WELLS + ASSOCIATES

1110 Bonifant Street, Suite 210 | Silver Spring, MD 20910

D: [301.971.3416](tel:301.971.3416) | M: [703.898.5066](tel:703.898.5066) | O: [301.448.1333](tel:301.448.1333)

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Celebrating 30 years of serving great clients

On Apr 7, 2022, at 10:36 AM, Whelan, William <william.whelan@montgomerycountymd.gov> wrote:

Hi Chris,

I passed the request on to our Traffic section. I'll let you know ASAP.

From: Chris L. Kabatt <clkabatt@wellsandassociates.com>

Sent: Thursday, April 7, 2022 9:27 AM

To: Van Alstyne, Chris <chris.vanalstyne@montgomeryplanning.org>

Cc: Whelan, William <William.Whelan@montgomerycountymd.gov>

Subject: RE: Waters Village Scope

[EXTERNAL EMAIL]

Chris,

Did you and Billy have a chance to revisit the study intersections? I'd like to remove Father Hurley Boulevard and Middlebrook from the study as it is 3 intersections from the driveways. Also, since the warrant study was already done and a signal design has been approved for Waters and Wisteria, please confirm we do not have to do a signal warrant study. If you can give me an update on your discussions with DOT, I'd appreciate it.

Sincerely,

Chris

Chris L. Kabatt, P.E. | Principal

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From: Van Alstyne, Chris <chris.vanalstyne@montgomeryplanning.org>

Sent: Thursday, March 31, 2022 10:14 AM

To: Chris L. Kabatt <clkabatt@wellsandassociates.com>

Cc: Whelan, William <william.whelan@montgomerycountymd.gov>

Subject: RE: Waters Village Scope

Great. Billy and I will discuss the signal change and let you know.

Chris

From: Chris L. Kabatt <clkabatt@wellsandassociates.com>
Sent: Thursday, March 31, 2022 7:50 AM
To: Van Alstyne, Chris <chris.vanalstyne@montgomeryplanning.org>
Cc: Whelan, William <william.whelan@montgomerycountymd.gov>
Subject: Waters Village Scope

[EXTERNAL EMAIL] Exercise caution when opening attachments, clicking links, or responding.

Chris,

After the DRC, the Waters Village design team is working on options eliminating or restricting the driveway on Wisteria Drive. Once we have a plan, I'll recirculate the scoping form for another review and comment, and signature if we are in agreement. However, we request to drop Father Hurley Boulevard / Middlebrook Road. That intersection is 3 intersections from the site access, where we are technically in the 1 ring of intersections area. We are adding the Father Hurley Boulevard/Wisteria Drive intersection to the study area.

Can you discuss the inclusion of the Father Hurley / Middlebrook intersection with DOT and get back to me on the study intersections?

Thank you,

Chris

Chris L. Kabatt, P.E. | Principal

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For more helpful Cybersecurity Resources, visit: <https://www.cisa.gov/be-cyber-smart>

From: [Van Alstyne, Chris](#)
To: [Chris L. Kabatt](#)
Cc: [Jim W. Watson](#); bdonnelly@mhgpa.com
Subject: RE: Waters Village LATR TIS Scope of Work Agreement
Date: Tuesday, January 11, 2022 6:45:18 PM
Attachments: [image001.png](#)
[image002.png](#)
[image003.png](#)
[image004.png](#)
[image005.png](#)
[image006.png](#)

Hi Chris, apologies for the delay in getting these comments to you. I haven't heard anything from SHA/DOT yet but will ping them again as well. My comments are below:

- Intersections 1, 2, and 3 are in the 1st 'ring' of intersections. The following intersections should be included as 2nd 'ring' as the application generates > 250 trips:
 - Germantown and Middlebrook Rd.
 - Wisteria Rd. and Walter Johnson Rd.
 - Germantown Rd. and Dawson Farm Rd.
 - Wisteria Rd. and Father Hurley Rd.
- Traffic analysis should be conducted in both HCM and CLV as application is in Germantown Town Center orange policy area. Germantown Rd./ Dawson Farm Rd. is outside policy and may just use CLV.
- Background projects – it looks like all others are built except for: Qiagen Germantown Town Center East, Fairchild apartments, Germantown Estates (15,600 sf retail). Add Liberty Mill Road (520200160 130 bed assisted living facility) and Wisteria Business Park - Lidl Germantown (120220030 – 32,000 sf shopping center)
- Signal warrant study for Wisteria Dr. / Waters Rd. should be included in study
- Speed studies needed: Wisteria, between Waters Rd. and Germantown Rd.; Germantown Rd between Wisteria and Dawson Farm rd.; Waters Rd at property frontage
- For the trip generation table, add some description of methodology, specifically explaining the difference between the top and bottom split; eg, why is the driver trips in PM at the top 184 but in the bottom listed 164?
- As a general note, pass-by trips should not be deducted from topline stated results; these are only deducted as part of calculations used for intersection level analysis. These calculations accounting for pass-by deductions should be in a separate table.
- For the study itself, please upload all intersection count data into our data loader when finalized: <https://mcatlas.org/LATRDataloader/?project=12002079B>

Please let me know if you have any questions.

Thank you,
Chris



Chris Van Alstyne
Transportation Planner Coordinator
Up-County Division
301.495.4629





WE'VE MOVED!

THE NEW PARK AND PLANNING HEADQUARTERS IS NOW LOCATED AT
2425 REEDIE DRIVE, WHEATON, MD 20902

From: Chris L. Kabatt <clkabatt@wellsandassociates.com>
Sent: Monday, January 3, 2022 11:58 AM
To: Van Alstyne, Chris <chris.vanalstyne@montgomeryplanning.org>
Cc: Jim W. Watson <jwwatson@wellsandassociates.com>; bdonnelly@mhgpa.com
Subject: RE: Waters Village LATR TIS Scope of Work Agreement

[EXTERNAL EMAIL] Exercise caution when opening attachments, clicking links, or responding.

Chris,

Thank you for the update. We'll look for your comments later this week.

Happy New Year!

Chris

Chris L. Kabatt, P.E. | Principal

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1110 Bonifant Street, Suite 210 | Silver Spring, MD 20910

D: 301.971.3416 | M: 703.898.5066 | O: 301.448.1333

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From: Van Alstyne, Chris <chris.vanalstyne@montgomeryplanning.org>
Sent: Thursday, December 23, 2021 4:46 PM
To: Chris L. Kabatt <clkabatt@wellsandassociates.com>
Cc: Jim W. Watson <jwwatson@wellsandassociates.com>; bdonnelly@mhgpa.com
Subject: RE: Waters Village LATR TIS Scope of Work Agreement

Hi Chris, we're pretty far behind unfortunately. We have quite a few cases moving through at the end of year which has delayed everything. I'll have my comments to you by Jan. 7th after I return and will reach out to DOT and SHA to see their status.

Chris

Chris Van Alstyne



Transportation Planner Coordinator

Up-County Division

301.495.4629



WE'VE MOVED!

THE NEW PARK AND PLANNING HEADQUARTERS IS NOW LOCATED AT
2425 REEDIE DRIVE, WHEATON, MD 20902

From: Chris L. Kabatt <clkabatt@wellsandassociates.com>
Sent: Monday, December 20, 2021 12:41 PM
To: Van Alstyne, Chris <chris.vanalstyne@montgomeryplanning.org>; Campbell, Lauren <lauren.campbell@montgomeryplanning.org>
Cc: Jim W. Watson <jwwatson@wellsandassociates.com>; bdonnelly@mhgpa.com
Subject: RE: Waters Village LATR TIS Scope of Work Agreement

[EXTERNAL EMAIL] Exercise caution when opening attachments, clicking links, or responding.

Chris and Lauren,

I am checking in to see if are reviewing the scope of work for Waters Village. When can we expect comments from you, DOT and SHA?

Thank you,

Chris

Chris L. Kabatt, P.E. | Principal

WELLS + ASSOCIATES

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[Web](#) | [Blog](#) | [LinkedIn](#) | [Twitter](#) | [Facebook](#)

Celebrating 30 years of serving great clients

From: Chris L. Kabatt
Sent: Wednesday, December 8, 2021 9:42 AM
To: chris.vanalstyne@montgomeryplanning.org; Campbell, Lauren <lauren.campbell@montgomeryplanning.org>
Cc: Jim W. Watson <jwwatson@wellsandassociates.com>; bdonnelly@mhgpa.com
Subject: Waters Village LATR TIS Scope of Work Agreement

Chris and Lauren,

Attached is a scope of work agreement for a proposed retail site in the Germantown Town Center, at the corner of Wisteria Drive and Waters Road. Please review and comment, and distribute the form to MC DOT and SHA for their review and input. During your review, please contact me with any questions you have about the proposed scope of work.

Thank you,

Chris



Local Area Transportation Review

TRANSPORTATION IMPACT STUDY SCOPE OF WORK AGREEMENT

Updated July 2020

Scoping Approval - Prior to initiating a Local Area Transportation Review study or supplemental traffic study, scoping *must be approved* by relevant agencies, including the Planning Department, the Montgomery County Department of Transportation, and the State Highway Administration (where relevant). It is the responsibility of the Applicant to obtain approval, which is demonstrated below via signature or electronic signature of the relevant agency representatives. Generally, the Applicant should anticipate a turnaround time of ten (10) business days for form review. Substantially large projects may require additional time and/or may warrant a scoping meeting.

Montgomery County Planning Department

Name (print): _____ Signature: _____ Date: _____

Montgomery County Department of Transportation

Name (print): _____ Signature: _____ Date: _____

State Highway Administration (where relevant)

Name (print): _____ Signature: _____ Date: _____

Applicant Contact Information

Transportation Consultant
 (company, contact name, email,
 and phone number)

Name of Applicant /
 Developer

Project Information

Include Tables/Graphics, As Needed

Project Name
 (include plan no. if known)

Project Location
 (include address if known)

Policy Area(s)
 (subdivision staging policy map)

Master Plan(s) /
 Sector Plan Area(s)

Application Type(s)

Preliminary Plan

Site Plan

Sketch/Concept/Pre-
 Preliminary (Optional)

Amendment

Conditional Use
 (formerly special exception)

Local Map
 Amendment

APF at Building
 Permit

Other:

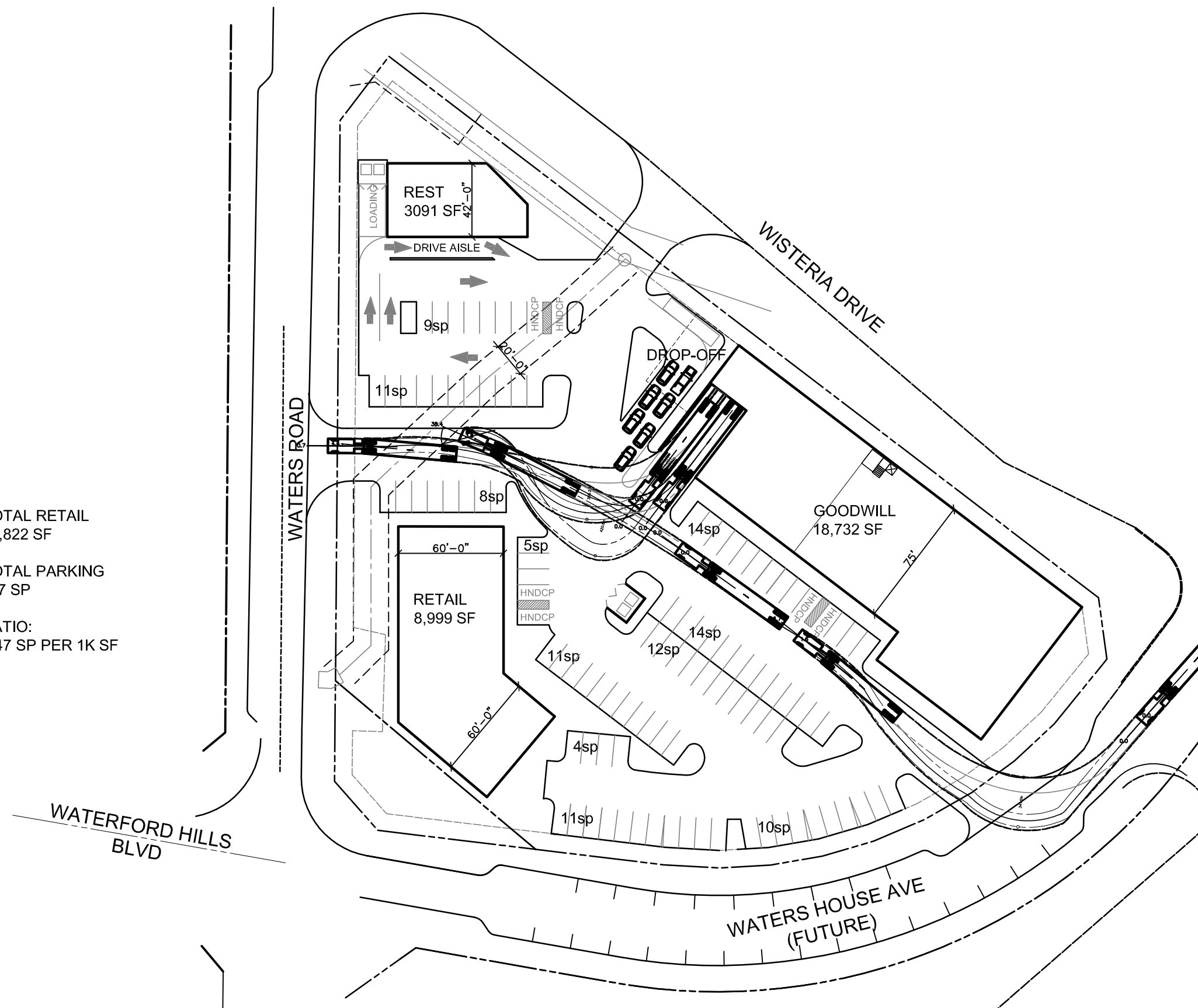
7.Study Intersections (For projects generating 50 or more person trips, list all signalized & significant unsignalized intersections, and site driveways traffic counts must be collected within 12-months of completed and accepted application)	# of tiers of intersections to study (refer current LATR Guidelines): _____ <i>For the purpose of determining the number of tiers of study intersections, trip calculation for the subject site should also include nearby unbuilt properties in common ownership. No trip reductions should be taken in this calculation other than a credit for existing developments over 12 years old.</i>				
	1)		7)		
	2)		8)		
	3)		9)		
	4)		10)		
	5)		11)		
	6)		attach more rows if necessary		
8.Trip Generation (clearly cite sources and methodology including use of average rates vs. equation; include trip generation for existing site, current approvals, proposed uses, and net changes)	Total Person Trips	Vehicle Trips* (Auto Driver)	Transit Trips*	Walking Trips* (non-motorized + transit)	Bicycling Trips* (non-motorized)
	<i>* Only required if total peak hour person trips are 50 or more in either the AM or PM peak hour. Sum of all vehicle, transit, and non-motorized trips shall be the equivalent of total person trips. Use table at the end of the form to show all calculations and assumptions for mode breakout.</i>				
9.Trip Reductions (include justification and supporting documentation for internal capture, pass-by, diverted, Transportation Demand Management)					
10.Trip Distribution % (include a map of the proposed project in addition to a list or table)					
11.Pipeline Developments to be considered as background traffic (include name, plan #, land uses, and sizes for approved but unbuilt developments or concurrently pending applications; info can be obtained from the M-NCPPC Pipeline website: - website is updated quarterly)					
12.Pipeline Transportation Projects to be considered as background condition (fully funded for construction in County Capital Improvement Program, State Consolidated Transportation Program, developer projects, etc. within the next 6 years)					

Preliminary Mitigation Analysis		<i>*Refer to the LATR Guidelines for details on how to mitigate</i>		
14.Vehicular Analysis	<input type="checkbox"/> Vehicular Analysis Anticipated (Vehicular mitigation to be determined after study)	<ul style="list-style-type: none"> TEST: HCM Analysis is required to be provided for all intersections analyzed in studies for: 1) "Red & Orange" policy areas, and 2) intersections with a CLV of more than 1,350 in "Yellow & Green" policy areas. 3) CLV analysis required for all intersections regardless of policy area. CLV assessment and signal timing worksheets are to be included in the study appendix. MITIGATION: Required if HCM delay analyses exceed policy area standard 		
15.Pedestrian Analysis	<input type="checkbox"/> Pedestrian Mitigation Anticipated	<ul style="list-style-type: none"> TEST: If the plan generates 50 or more pedestrian peak hour trips, mitigation of surrounding pedestrian conditions is required MITIGATION: Required if ADA non-compliance issues within 500 foot radius of site boundary and if pedestrian crosswalk delay at LATR intersections within 500 feet of site boundary is lower than Level of Service (LOS) D 		
16.Bicycle Analysis	<input type="checkbox"/> Bicycle Mitigation Anticipated	<ul style="list-style-type: none"> TEST: If the plan generates 50 or more bicycle peak hour trips and is within 0.25 miles of an existing educational institution or existing/planned bikeshare station, mitigation of surrounding bicycle conditions is required MITIGATION: Required to make improvements to provide a low Level of Traffic Stress to any existing similar facility within 750 feet of the site boundary; Alternatively, project may provide a master planned improvement that provides an equivalent improvement in the level of traffic stress for cyclists 		
17.Transit Analysis	<input type="checkbox"/> Transit Mitigation Anticipated	<ul style="list-style-type: none"> TEST: If the plan generates 50 or more transit peak hour trips and the peak load of bus routes at bus stops within 1,000 feet of site boundary exceeds (or is worse than) peak load of LOS D (1.25 transit riders per seat during the peak period in the peak direction), mitigation of transit conditions is required MITIGATION: Required to provide or fund improvements that would mitigate the trips exceeding the standard that are attributable to the development 		
Additional Analysis or Software Required	<input type="checkbox"/> Queuing Analysis <input type="checkbox"/> Signal Warrant Analysis <input type="checkbox"/> Weaving/Merge Analysis	<input type="checkbox"/> Accident Analysis <input type="checkbox"/> Synchro <input type="checkbox"/> SIDRA	<input type="checkbox"/> VISSIM <input type="checkbox"/> CORSIM <input type="checkbox"/> Other _____	
M-NCPPC Clarifications		Additional Assumptions & Special Circumstances for Discussion		
<ul style="list-style-type: none"> Transportation impact study will comply with all other requirements of the LATR Guidelines not listed on this form. If physical improvements are proposed as mitigation, the transportation impact study will demonstrate feasibility with regards to right-of-way and utility relocation (at a minimum). If the development proposal significantly changes after this transportation impact study scope has been agreed to, the Applicant will work with M-NCPPC staff to amend the scope to accurately reflect the new proposal. A receipt from MCDOT showing that the transportation impact study review fee has been paid will be provided to M-NCPPC DARC at the time the development application is submitted. Minimum of seven paper copies (more if near the County line or an incorporated City) and two PDF copies of the transportation impact study and appendices will be provided. 				

TOTAL RETAIL
30,822 SF

TOTAL PARKING
107 SP

RATIO:
3.47 SP PER 1K SF



OPTION 07B

WATERS VILLAGE MASTER PLAN

Conceptual Site Plan



ROUNDS VANDUZER
ARCHITECTS
467A N. WASHINGTON ST
FALLS CHURCH, VA 22046

Waters Village - Study Intersections & Distributions



Waters Village - Pedestrian Study Area (1,000 ft Radius)

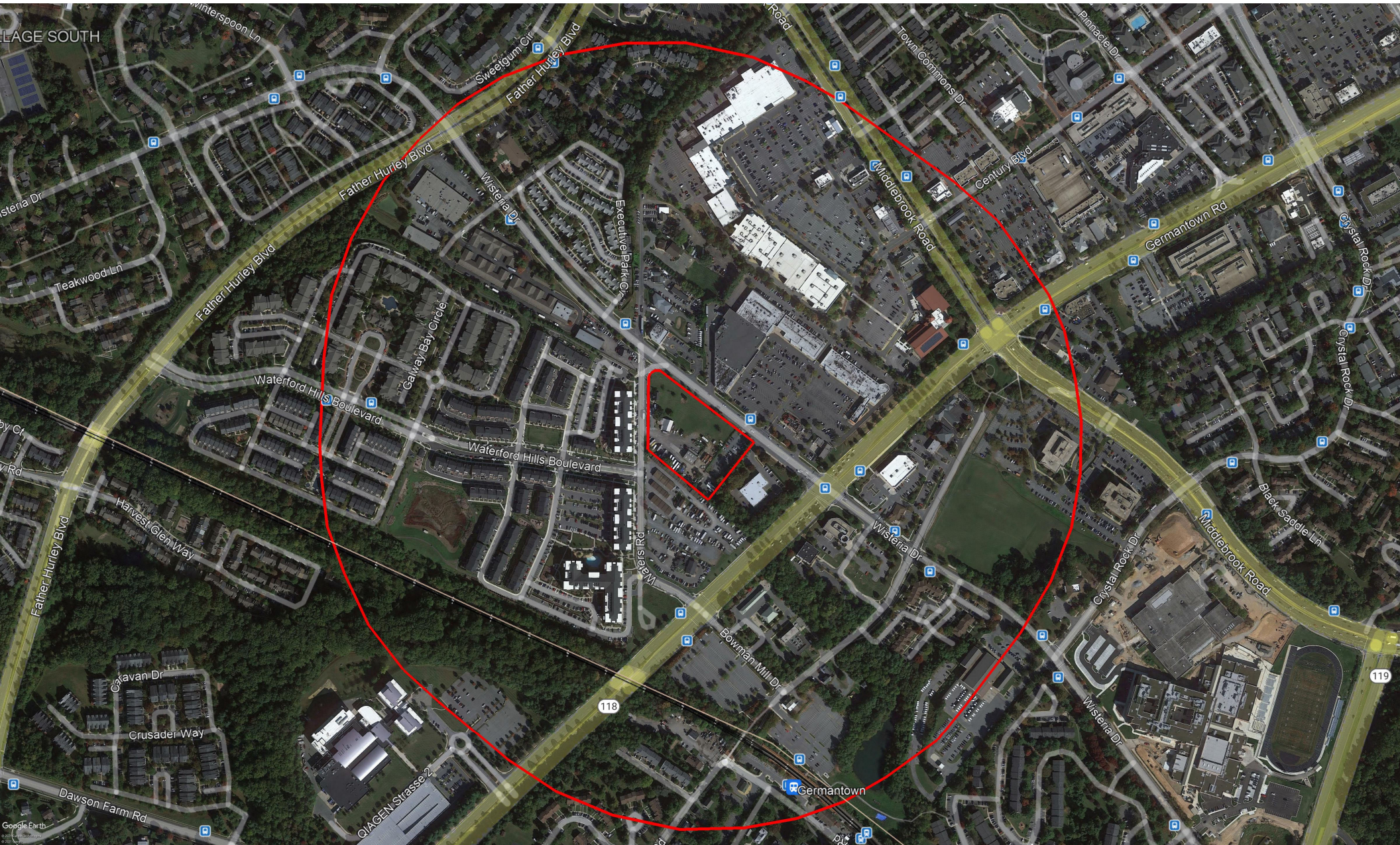


Waters Village - Bicycle Study Area (1,000 ft Radius)

Existing	Proposed	
		Trails
		Sidepaths
		Separated Bike Lanes
		Striped Bikeways
		Bikeable Shoulders
		Shared Roads



Waters Village - Transit Study Area (1,500 ft Radius)



APPENDIX B BUS ROUTES

61 To Shady Grove

MONDAY THROUGH FRIDAY

SEE TIMEPOINT LOCATION ON ROUTE MAP

1	2	3	4	5	6	7	8	9
4:20	4:22	4:28	4:30	4:36	4:44	4:47	4:52	4:58
4:40	4:42	4:48	4:50	4:56	5:04	5:07	5:12	5:18
5:00	5:02	5:08	5:10	5:16	5:24	5:27	5:32	5:38
5:20	5:22	5:28	5:30	5:36	5:44	5:47	5:52	5:58
5:40	5:42	5:48	5:50	5:56	6:04	6:07	6:12	6:18
6:00	6:02	6:09	6:11	6:19	6:29	6:33	6:39	6:45
6:20	6:22	6:29	6:31	6:39	6:49	6:53	6:59	7:05
6:35	6:37	6:44	6:47	6:56	7:07	7:11	7:17	7:23
6:50	6:52	6:59	7:02	7:11	7:22	7:26	7:32	7:38
7:05	7:07	7:14	7:17	7:26	7:37	7:41	7:47	7:53
7:20	7:22	7:29	7:32	7:41	7:52	7:56	8:02	8:08
7:35	7:37	7:44	7:47	7:56	8:07	8:11	8:17	8:23
7:50	7:52	7:59	8:02	8:11	8:22	8:26	8:32	8:38
8:05	8:07	8:14	8:17	8:26	8:37	8:41	8:47	8:53
8:25	8:27	8:34	8:37	8:46	8:57	9:01	9:07	9:13
8:45	8:47	8:54	8:57	9:07	9:18	9:21	9:26	9:32
9:05	9:07	9:14	9:17	9:27	9:38	9:41	9:46	9:52
9:35	9:37	9:44	9:47	9:57	10:08	10:11	10:16	10:22
10:05	10:07	10:14	10:17	10:27	10:38	10:41	10:46	10:52
10:35	10:37	10:44	10:47	10:57	11:08	11:11	11:16	11:22
11:05	11:07	11:14	11:17	11:27	11:38	11:41	11:46	11:52
11:35	11:37	11:44	11:47	11:57	12:08	12:11	12:16	12:22
12:05	12:07	12:14	12:17	12:27	12:38	12:41	12:46	12:52
12:35	12:37	12:45	12:48	12:57	1:08	1:12	1:18	1:24
1:05	1:07	1:15	1:18	1:27	1:38	1:42	1:48	1:54
1:35	1:37	1:45	1:48	1:57	2:08	2:12	2:18	2:24
2:05	2:07	2:15	2:18	2:27	2:38	2:42	2:48	2:54
2:30	2:32	2:40	2:43	2:52	3:03	3:07	3:13	3:19
2:55	2:57	3:05	3:08	3:17	3:28	3:32	3:38	3:44
3:20	3:22	3:30	3:33	3:42	3:53	3:57	4:03	4:09
3:45	3:47	3:55	3:58	4:07	4:18	4:22	4:28	4:34
4:10	4:12	4:20	4:23	4:32	4:43	4:47	4:53	4:59
4:35	4:37	4:45	4:48	4:57	5:08	5:12	5:18	5:24
5:05	5:07	5:15	5:18	5:27	5:38	5:42	5:48	5:54
5:35	5:37	5:45	5:48	5:57	6:08	6:12	6:18	6:24
6:05	6:07	6:15	6:18	6:27	6:38	6:42	6:48	6:54
6:35	6:37	6:44	6:47	6:55	7:05	7:09	7:14	7:19
7:05	7:07	7:14	7:17	7:25	7:35	7:39	7:44	7:49
7:45	7:47	7:54	7:57	8:04	8:13	8:16	8:21	8:26
8:30	8:32	8:39	8:42	8:49	8:58	9:01	9:06	9:11
9:15	9:17	9:23	9:25	9:31	9:38	9:41	9:45	9:50
10:00	10:02	10:08	10:10	10:16	10:23	10:26	10:30	10:35
10:45	10:47	10:53	10:55	11:01	11:08	11:11	11:15	11:20
11:30	11:32	11:38	11:40	11:46	11:53	11:56	12:00	12:05

NOTES:

AM	PM
----	----

Please arrive at your stop several minutes ahead of your bus' scheduled arrival. Since safe service is a priority at Ride On, buses may be delayed due to traffic or weather.

61 To Shady Grove

SATURDAY

SEE TIMEPOINT LOCATION ON ROUTE MAP

1	2	3	4	5	6	7	8	9
6:00	6:02	6:08	6:09	6:16	6:26	6:29	6:33	6:38
6:40	6:42	6:48	6:49	6:56	7:06	7:09	7:13	7:18
7:20	7:22	7:28	7:29	7:36	7:46	7:49	7:53	7:58
7:55	7:57	8:03	8:04	8:11	8:21	8:24	8:28	8:33
8:30	8:32	8:39	8:40	8:48	8:59	9:02	9:07	9:12
9:05	9:07	9:14	9:15	9:23	9:34	9:37	9:42	9:47
9:35	9:37	9:44	9:45	9:53	10:04	10:07	10:12	10:17
10:05	10:07	10:14	10:15	10:23	10:34	10:37	10:42	10:47
10:35	10:37	10:44	10:45	10:53	11:04	11:07	11:12	11:17
11:05	11:07	11:14	11:16	11:24	11:36	11:39	11:44	11:50
11:35	11:37	11:44	11:46	11:54	12:06	12:09	12:14	12:20
12:05	12:07	12:14	12:16	12:24	12:36	12:39	12:44	12:50
12:35	12:37	12:44	12:46	12:54	1:06	1:09	1:14	1:20
1:05	1:07	1:14	1:16	1:24	1:36	1:39	1:44	1:50
1:35	1:37	1:44	1:46	1:54	2:06	2:09	2:14	2:20
2:05	2:07	2:14	2:16	2:24	2:36	2:39	2:44	2:50
2:35	2:37	2:44	2:46	2:54	3:06	3:09	3:14	3:20
3:05	3:07	3:14	3:16	3:24	3:36	3:39	3:44	3:50
3:35	3:37	3:44	3:46	3:54	4:06	4:09	4:14	4:20
4:05	4:07	4:14	4:16	4:24	4:36	4:39	4:44	4:50
4:35	4:37	4:44	4:45	4:53	5:04	5:07	5:12	5:18
5:05	5:07	5:14	5:15	5:23	5:34	5:37	5:42	5:48
5:40	5:42	5:49	5:50	5:58	6:09	6:12	6:17	6:23
6:15	6:17	6:24	6:25	6:33	6:44	6:47	6:52	6:58
6:50	6:52	6:58	6:59	7:06	7:15	7:18	7:22	7:27
7:30	7:32	7:38	7:39	7:46	7:55	7:58	8:02	8:07
8:10	8:12	8:18	8:19	8:26	8:35	8:38	8:42	8:47
8:50	8:52	8:58	8:59	9:06	9:15	9:18	9:22	9:27
9:30	9:32	9:38	9:39	9:46	9:55	9:58	10:02	10:07
10:10	10:12	10:18	10:19	10:26	10:35	10:38	10:42	10:47

NOTES:

AM	PM
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SEE REVERSE FOR SUNDAY SERVICE

HOW TO RIDE A BUS

Check schedule for timepoint nearest your location. Wait at the blue and white **RIDE ON** bus stop sign. Arrive several minutes before scheduled time. Have exact fare ready (drivers do not make change).

- Not all stops are listed on a public timetable.
- If you are unfamiliar with your stop, sit or stand behind the line near the front of the bus and ask the bus driver to notify you when your stop is approaching.
- Ask the bus driver if you are not sure if the bus goes to your stop.
- If you have internet access (at home or somewhere else, such as a public library), it may be easier for you to use an online trip planner rather than a paper timetable.
- Be mindful of changes in the schedule, for holidays or bad weather.
- Please observe the following rules for all patrons: No eating, drinking, or smoking.
- Electronic devices may be played with earphones set at low level.

GUARANTEED RIDE HOME

When you take Metrobus, Metrorail and Ride On to work, you are eligible to participate in the free Commuter Connections Guaranteed Ride Home Program. To register and to receive program details call: Commuter Services at **301-770-POOL(7665)**.

METROACCESS

Alternative paratransit service to this Ride On route for people with disabilities is available. Call MetroAccess at **301-562-5360**.

61 To Germantown Transit Center (GTC)

MONDAY THROUGH FRIDAY

SEE TIMEPOINT LOCATION ON ROUTE MAP

9	8	7	6	5	4	3	2	1
5:05	5:11	5:16	5:21	5:28	5:33	5:37	5:40	5:43
5:30	5:36	5:41	5:46	5:53	5:58	6:02	6:05	6:08
5:55	6:01	6:06	6:11	6:18	6:23	6:27	6:30	6:33
6:20	6:27	6:32	6:39	6:48	6:54	6:59	7:03	7:06
6:45	6:52	6:57	7:04	7:13	7:19	7:24	7:28	7:31
7:05	7:12	7:17	7:24	7:33	7:39	7:44	7:48	7:51
7:25	7:32	7:37	7:44	7:53	7:59	8:04	8:08	8:11
7:45	7:52	7:57	8:04	8:13	8:19	8:24	8:28	8:31
8:05	8:12	8:17	8:24	8:33	8:39	8:44	8:48	8:51
8:25	8:32	8:37	8:44	8:53	8:59	9:04	9:08	9:11
8:45	8:52	8:57	9:04	9:13	9:19	9:24	9:28	9:31
9:10	9:17	9:22	9:29	9:38	9:44	9:49	9:53	9:56
9:35	9:42	9:47	9:54	10:03	10:09	10:14	10:18	10:21
10:05	10:12	10:17	10:24	10:33	10:39	10:44	10:48	10:51
10:35	10:42	10:47	10:54	11:03	11:09	11:14	11:18	11:21
11:05	11:12	11:17	11:24	11:33	11:39	11:44	11:48	11:51
11:35	11:42	11:47	11:54	12:03	12:09	12:14	12:18	12:21
12:05	12:12	12:18	12:25	12:34	12:42	12:47	12:51	12:54
12:35	12:42	12:48	12:55	1:04	1:12	1:17	1:21	1:24
1:05	1:12	1:18	1:25	1:34	1:42	1:47	1:51	1:54
1:35	1:42	1:48	1:55	2:04	2:12	2:17	2:21	2:24
2:05	2:12	2:18	2:25	2:34	2:42	2:47	2:51	2:54
2:30	2:37	2:43	2:50	2:59	3:07	3:12	3:16	3:19
2:55	3:02	3:08	3:15	3:24	3:32	3:37	3:41	3:44
3:20	3:27	3:33	3:40	3:49	3:57	4:02	4:06	4:09
3:45	3:52	3:58	4:05	4:14	4:22	4:27	4:31	4:34
4:10	4:17	4:23	4:30	4:39	4:47	4:52	4:56	4:59
4:30	4:37	4:43	4:50	5:00	5:08	5:13	5:17	5:20
4:50	4:57	5:03	5:10	5:20	5:28	5:33	5:37	5:40
5:10	5:17	5:23	5:30	5:40	5:48	5:53	5:57	6:00
5:30	5:37	5:43	5:50	6:00	6:08	6:13	6:17	6:20
5:50	5:57	6:03	6:10	6:20	6:28	6:33	6:37	6:40
6:15	6:22	6:28	6:35	6:45	6:53	6:58	7:02	7:05
6:40	6:46	6:52	6:59	7:07	7:14	7:19	7:23	7:26
7:05	7:11	7:17	7:24	7:32	7:39	7:44	7:48	7:51
7:35	7:41	7:47	7:54	8:02	8:09	8:14	8:18	8:21
8:10	8:16	8:22	8:29	8:37	8:44	8:49	8:53	8:56
8:55	9:01	9:07	9:14	9:22	9:29	9:34	9:38	9:41
9:40	9:46	9:52	9:59	10:07	10:14	10:19	10:23	10:26
10:25	10:31	10:36	10:42	10:49	10:55	11:00	11:03	11:06
11:10	11:16	11:21	11:27	11:34	11:40	11:45	11:48	11:51
11:55	12:01	12:06	12:12	12:19	12:25	12:30	12:33	12:36

NOTES:

AM	PM
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61 To Germantown Transit Center (GTC)

SATURDAY

SEE TIMEPOINT LOCATION ON ROUTE MAP

9	8	7	6	5	4	3	2	1
6:20	6:26	6:31	6:37	6:45	6:50	6:54	6:58	7:00
7:00	7:06	7:11	7:17	7:25	7:30	7:34	7:38	7:40
7:40	7:46	7:51	7:57	8:05	8:10	8		

**75 To Germantown Transit Center (GTC)
Germantown MARC Station**

MONDAY THROUGH FRIDAY

SEE TIMEPOINT LOCATION ON ROUTE MAP

Montgomery County
Correctional Facility
Snowden Farm Pkwy
& Stringtown Rd
Clarksburg
High School
Frederick Rd &
Little Seneca Pkwy
Milestone Center
Park & Ride
Germantown
Transit Center (GTC)
Germantown
MARC Station

1	2	3	4	5	6	7
5:15	5:25		5:35	5:39	5:46	5:52
5:55	6:05		6:15	6:19	6:26	6:32
6:30	6:40		6:51	6:57	7:05	7:14
7:05	7:16	7:28	7:31	7:37	7:45	7:53
7:40	7:51		8:02	8:08	8:18	8:27
8:15	8:25		8:36	8:41	8:47	
8:50	9:00		9:11	9:16	9:22	
9:25	9:35		9:46	9:51	9:57	
10:00	10:10		10:21	10:26	10:32	
10:35	10:45		10:56	11:01	11:07	
11:10	11:20		11:31	11:36	11:42	
11:45	11:55		12:06	12:11	12:17	
12:20	12:30		12:41	12:46	12:52	
12:50	1:00		1:11	1:16	1:22	
1:20	1:30		1:41	1:46	1:53	
1:50	2:00		2:11	2:16	2:23	
2:20	2:30	2:42	2:45	2:50	2:57	
2:50	3:00		3:11	3:16	3:23	
3:25	3:35		3:46	3:51	3:58	
4:00	4:10		4:21	4:26	4:34	4:43
4:35	4:45		4:56	5:01	5:09	5:18
5:10	5:20		5:31	5:36	5:44	5:53
5:45	5:55		6:06	6:11	6:19	6:28
6:20	6:29		6:39	6:44	6:52	6:59
6:55	7:04		7:14	7:19	7:27	7:34
7:30	7:39		7:49	7:54	8:00	8:07
8:05	8:14		8:24	8:29	8:35	
8:40	8:49		8:59	9:04	9:10	
9:15	9:24		9:34	9:39	9:45	
9:50	9:59		10:09	10:14	10:20	
10:35	10:44		10:53	10:58	11:03	
11:20	11:29		11:38	11:43	11:48	

NOTES: AM PM

**75 To Montgomery County
Correctional Facility**

MONDAY THROUGH FRIDAY

SEE TIMEPOINT LOCATION ON ROUTE MAP

Germantown
MARC Station
Germantown
Transit Center (GTC)
Milestone Center
Park & Ride
Frederick Rd &
Little Seneca Pkwy
Clarksburg
High School
Snowden Farm Pkwy
& Stringtown Rd
Montgomery County
Correctional Facility

7	6	5	4	3	2	1
	5:40	5:46	5:51		6:00	6:09
6:10	6:17	6:23	6:28		6:37	6:46
6:46	6:53	7:00	7:06		7:15	7:24
7:18	7:25	7:32	7:38	7:39	7:51	8:00
7:56	8:03	8:10	8:16		8:25	8:34
8:33	8:40	8:46	8:52		9:01	9:10
	9:15	9:21	9:27		9:36	9:45
	9:50	9:56	10:02		10:11	10:20
	10:25	10:31	10:37		10:46	10:55
	11:00	11:06	11:12		11:21	11:30
	11:35	11:41	11:47		11:56	12:05
	12:10	12:16	12:22		12:31	12:40
	12:45	12:51	12:57		1:06	1:15
	1:15	1:21	1:27		1:37	1:47
	1:45	1:51	1:57		2:07	2:17
	2:15	2:21	2:27		2:37	2:47
	2:45	2:51	2:57	2:58	3:11	3:21
	3:15	3:21	3:27		3:37	3:47
	3:45	3:52	4:00		4:10	4:19
	4:20	4:27	4:35		4:45	4:54
4:48	4:55	5:02	5:10		5:20	5:29
5:23	5:30	5:37	5:45		5:55	6:04
5:58	6:05	6:12	6:20		6:30	6:39
6:32	6:40	6:47	6:54		7:04	7:13
7:07	7:15	7:22	7:29		7:39	7:48
7:42	7:50	7:57	8:04		8:14	8:23
8:22	8:30	8:37	8:44		8:54	9:03
	9:15	9:20	9:26		9:35	9:43
	10:00	10:05	10:11		10:20	10:28
	10:45	10:50	10:56		11:05	11:13

NOTES: AM PM

75 To Germantown Transit Center (GTC)

SATURDAY

SEE TIMEPOINT LOCATION ON ROUTE MAP

Montgomery County
Correctional Facility
Snowden Farm Pkwy
& Stringtown Rd
Frederick Rd &
Little Seneca Pkwy
Milestone Center
Park & Ride
Germantown
Transit Center (GTC)

1	2	4	5	6
7:25	7:34	7:44	7:48	7:53
8:10	8:19	8:29	8:33	8:38
8:45	8:54	9:04	9:08	9:13
9:20	9:29	9:39	9:43	9:48
9:55	10:05	10:15	10:20	10:26
10:30	10:40	10:50	10:55	11:01
11:05	11:15	11:25	11:30	11:36
11:40	11:50	12:00	12:05	12:11
12:15	12:25	12:35	12:40	12:46
12:50	1:00	1:10	1:15	1:21
1:25	1:35	1:45	1:50	1:56
2:00	2:10	2:20	2:25	2:31
2:35	2:45	2:55	3:00	3:06
3:10	3:20	3:30	3:35	3:41
3:45	3:54	4:04	4:09	4:15
4:20	4:29	4:39	4:44	4:50
4:55	5:04	5:14	5:19	5:25
5:30	5:39	5:49	5:54	6:00
6:05	6:14	6:24	6:29	6:35
6:40	6:49	6:59	7:04	7:10
7:15	7:24	7:34	7:39	7:45
7:55	8:04	8:14	8:19	8:25
8:40	8:49	8:59	9:03	9:09
9:25	9:34	9:44	9:48	9:54
10:10	10:19	10:29	10:33	10:39

NOTES: AM PM

SEE REVERSE FOR SUNDAY SERVICE

Please arrive at your stop several minutes ahead of your bus' scheduled arrival. Since safe service is a priority at Ride On, buses may be delayed due to traffic or weather.

**75 To Montgomery County
Correctional Facility**

SATURDAY

SEE TIMEPOINT LOCATION ON ROUTE MAP

Germantown
Transit Center (GTC)
Milestone Center
Park & Ride
Frederick Rd &
Little Seneca Pkwy
Snowden Farm Pkwy
& Stringtown Rd
Montgomery County
Correctional Facility

6	5	4	2	1
6:45	6:50	6:55	7:04	7:12
7:30	7:35	7:40	7:49	7:57
8:05	8:10	8:15	8:24	8:32
8:40	8:45	8:50	8:59	9:07
9:15	9:20	9:25	9:34	9:42
9:50	9:55	10:00	10:09	10:17
10:25	10:30	10:35	10:44	10:52
11:00	11:06	11:11	11:20	11:29
11:35	11:41	11:46	11:55	12:04
12:10	12:16	12:21	12:30	12:39
12:45	12:51	12:56	1:05	1:14
1:20	1:26	1:31	1:40	1:49
1:55	2:01	2:06	2:15	2:24
2:30	2:36	2:41	2:50	2:59
3:05	3:11	3:16	3:25	3:34
3:40	3:46	3:51	4:00	4:09
4:15	4:21	4:26	4:35	4:44
4:50	4:56	5:01	5:10	5:19
5:25	5:31	5:36	5:45	5:54
6:00	6:05	6:10	6:19	6:28
6:35	6:40	6:45	6:54	7:03
7:15	7:20	7:25	7:34	7:43
8:00	8:05	8:10	8:19	8:28
8:45	8:50	8:55	9:04	9:13
9:30	9:35	9:40	9:49	9:57

NOTES: AM PM

SEE REVERSE FOR SUNDAY SERVICE

HOW TO RIDE A BUS

Check schedule for timepoint nearest your location. Wait at the blue and white **RIDE ON** bus stop sign. Arrive several minutes before scheduled time. Have exact fare ready (drivers do not make change).

- Not all stops are listed on a public timetable.
- If you are unfamiliar with your stop, sit or stand behind the line near the front of the bus and ask the bus driver to notify you when your stop is approaching.
- Ask the bus driver if you are not sure if the bus goes to your stop.
- If you have internet access (at home or somewhere else, such as a public library), it may be easier for you to use an online trip planner rather than a paper timetable.
- Be mindful of changes in the schedule, for holidays or bad weather.
- Please observe the following rules for all patrons: No eating, drinking, or smoking.
- Electronic devices may be played with earphones set at *low level*.

HOW TO READ A TIMETABLE

- Find the schedule for the day of the week and the direction you wish to ride.
- Find the timepoints closest to your origin and destination. The timepoints are shown on the route map and indicate the time the bus is scheduled to be at the particular location. Your nearest bus stop may be between timepoints.
- Read down the column to see the times when a trip will be at the given timepoint. Read the times across to the right to see when the trip reaches other timepoints. If no time is shown, that trip does not serve that timepoint.

Montgomery County assures that no person shall, on the grounds of race, color, or national origin, as provided by Title VI of the Civil Rights Act of 1964 and the Civil Rights Act of 1987, be excluded from the participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity. For more information or to file a complaint, please contact the Montgomery County Office of Human Rights.

FARES Effective July 1, 2021

Regular Fare, Token, or SmarTrip®	\$2.00
SmarTrip® Fare Transfer from MetroRail	\$1.50
Seniors age 65 years or older with a Senior SmarTrip® card or valid Medicare Card and Photo ID	FREE
Person with disability with Metro Disabled ID Card	
Person with disability with Metro Disability ID Card – Attendant Eligible Attendant also rides free.	FREE
MetroAccess - Certified Customer with ID MetroAccess - Companion	
Children under age 5	FREE
Local Bus Transfer with SmarTrip®	
Children 5 to 18 with a Youth Cruiser SmarTrip® Card or student ID Anytime	

GUARANTEED RIDE HOME

When you take Metrobus, Metrorail and Ride On to work, you are eligible to participate in the free Commuter Connections Guaranteed Ride Home Program. To register and to receive program details call: Commuter Services at **301-770-POOL(7665)**.

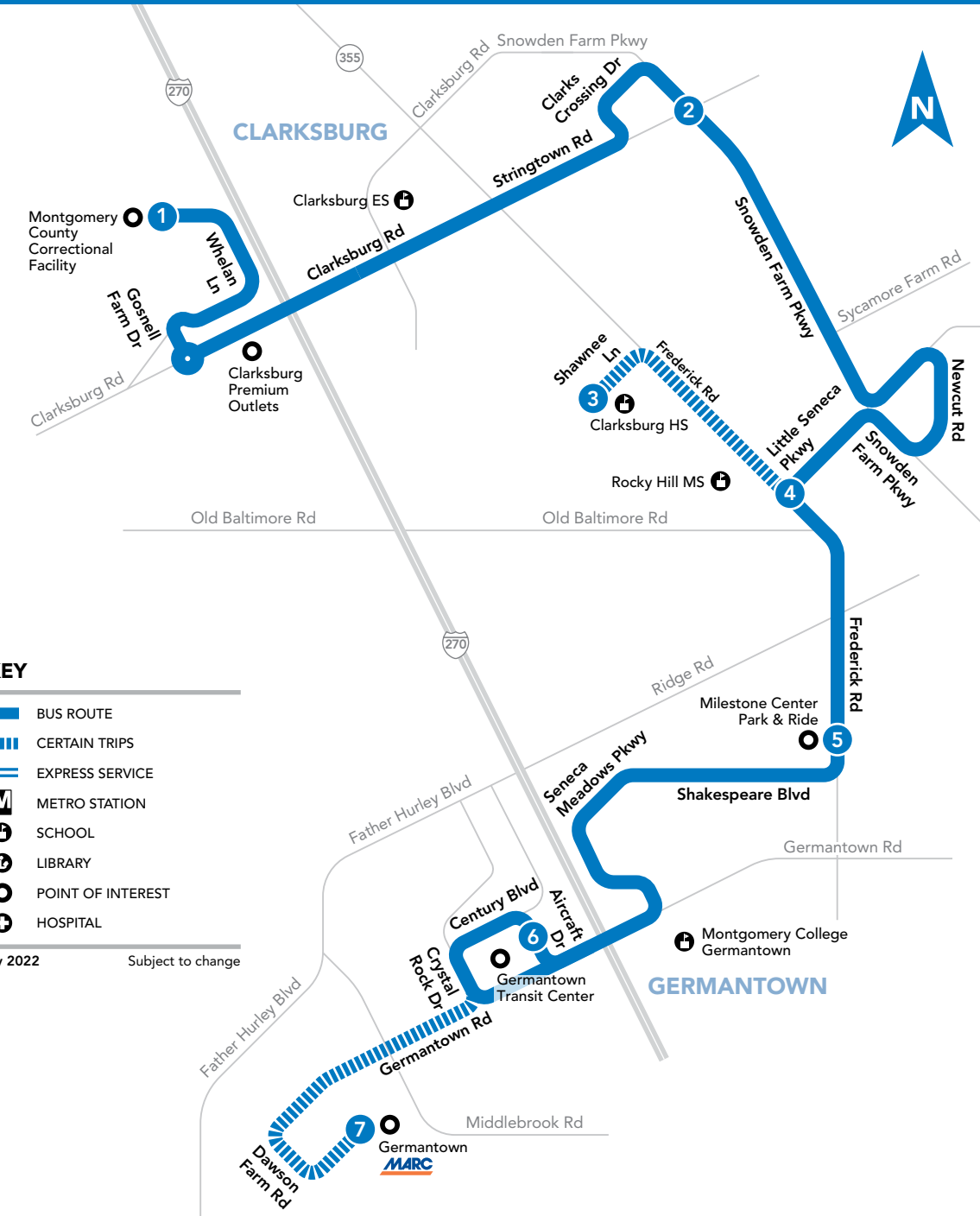
METROACCESS

Alternative paratransit service to this Ride On route for people with certified disabilities is available. Call MetroAccess at **301-562-5360**.



75

Montgomery County Correctional Facility – Clarksburg – Milestone Center – Germantown Transit Center (GTC) – Germantown MARC Station (Certain Trips)



- KEY**
- BUS ROUTE
 - CERTAIN TRIPS
 - EXPRESS SERVICE
 - METRO STATION
 - SCHOOL
 - LIBRARY
 - POINT OF INTEREST
 - HOSPITAL
- May 2022 Subject to change

75 To Germantown Transit Center (GTC)

SUNDAY

SEE TIMEPOINT LOCATION ON ROUTE MAP

1	2	4	5	6
7:25	7:34	7:44	7:48	7:53
8:10	8:19	8:29	8:33	8:38
8:45	8:54	9:04	9:08	9:13
9:20	9:29	9:39	9:43	9:48
9:55	10:05	10:15	10:20	10:26
10:30	10:40	10:50	10:55	11:01
11:05	11:15	11:25	11:30	11:36
11:40	11:50	12:00	12:05	12:11
12:15	12:25	12:35	12:40	12:46
12:50	1:00	1:10	1:15	1:21
1:25	1:35	1:45	1:50	1:56
2:00	2:10	2:20	2:25	2:31
2:35	2:45	2:55	3:00	3:06
3:10	3:20	3:30	3:35	3:41
3:45	3:54	4:04	4:09	4:15
4:20	4:29	4:39	4:44	4:50
4:55	5:04	5:14	5:19	5:25
5:30	5:39	5:49	5:54	6:00
6:05	6:14	6:24	6:29	6:35
6:40	6:49	6:59	7:04	7:10
7:15	7:24	7:34	7:39	7:45
7:55	8:04	8:14	8:19	8:25
8:40	8:49	8:59	9:03	9:09
9:25	9:34	9:44	9:48	9:54
10:10	10:19	10:29	10:33	10:39

NOTES: AM PM

75 To Montgomery County Correctional Facility

SUNDAY

SEE TIMEPOINT LOCATION ON ROUTE MAP

6	5	4	2	1
6:45	6:50	6:55	7:04	7:12
7:30	7:35	7:40	7:49	7:57
8:05	8:10	8:15	8:24	8:32
8:40	8:45	8:50	8:59	9:07
9:15	9:20	9:25	9:34	9:42
9:50	9:55	10:00	10:09	10:17
10:25	10:30	10:35	10:44	10:52
11:00	11:06	11:11	11:20	11:29
11:35	11:41	11:46	11:55	12:04
12:10	12:16	12:21	12:30	12:39
12:45	12:51	12:56	1:05	1:14
1:20	1:26	1:31	1:40	1:49
1:55	2:01	2:06	2:15	2:24
2:30	2:36	2:41	2:50	2:59
3:05	3:11	3:16	3:25	3:34
3:40	3:46	3:51	4:00	4:09
4:15	4:21	4:26	4:35	4:44
4:50	4:56	5:01	5:10	5:19
5:25	5:31	5:36	5:45	5:54
6:00	6:05	6:10	6:19	6:28
6:35	6:40	6:45	6:54	7:03
7:15	7:20	7:25	7:34	7:43
8:00	8:05	8:10	8:19	8:28
8:45	8:50	8:55	9:04	9:13
9:30	9:35	9:40	9:49	9:57

NOTES: AM PM

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WELCOME TO RIDE ON

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Visit our web site at: www.rideonbus.com
 Regular Mailing Address: Montgomery County DOT Division of Transit Services 101 Monroe Street, 5th Floor Rockville, MD 20850

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자세한 정보를 원하시거나 본 문서를 다른 형식 또는 다른 언어로의 번역본으로 원하실 경우, 전화번호 311, 또는 몽고메리 카운티 이외의 지역에서는 240-777-0311로 연락하시기 바랍니다.

ለተጨማሪ መረጃ፣ ወይም ይህንን ደብዳቤ በተለያዩ መልኩ ለመጠየቅ ወይም ወደሌላ ቋንቋ ለማስተርጎም፣ እባክዎን በ 311 ወይም ከሞንትጎመሪ ካውንቲ ውጪ 240-777-0311 ይደውሉ።

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Để tìm hiểu thêm, hoặc để yêu cầu cung cấp tài liệu này theo định dạng khác hay chuyển ngữ sang ngôn ngữ khác, vui lòng gọi 311 hoặc số 240-777-0311 nếu gọi từ bên ngoài Quận Montgomery.

HOLIDAY SCHEDULE

Weekday Schedule operates on Indigenous Peoples' Day
 Saturday Schedule operates on Independence Day
 Sunday Schedule operates on New Year's Day, Memorial Day, Labor Day, Thanksgiving Day, Christmas Day
 Special Schedule operates on MLK, Jr. Day, Presidents' Day, Juneteenth, Veterans Day

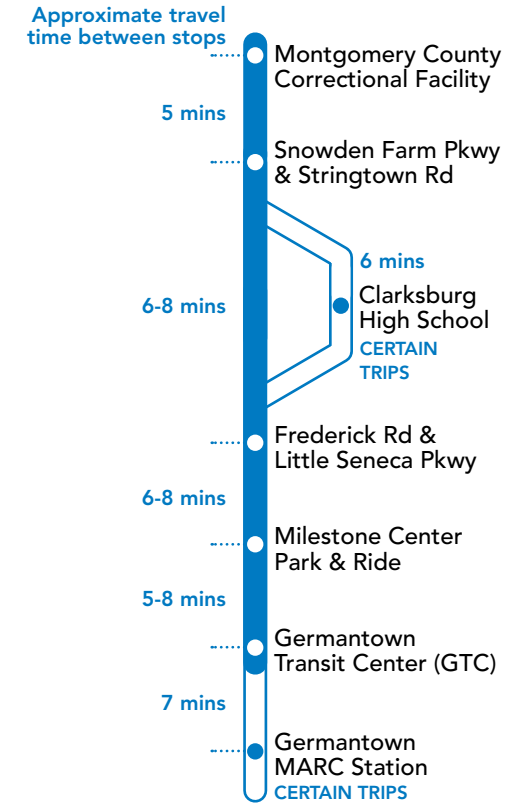
- Like us on Facebook facebook.com/RideOnMCT
- Follow us on Twitter twitter.com/RideOnMCT
- Subscribe to email alerts at www.montgomerycountymd.gov/govdelivery
- Subscribe to text alerts by texting MONTGOMERY RIDEON to 468311
- YouTube youtube.com/RideOnMCT
- Instagram instagram.com/RideOnMCT

Thank You for Riding with Us!
 Printed on recycled paper with soy-based ink

EFFECTIVE: MAY 8, 2022



75



SERVICE DAYS
 DAILY

Telephone 311
 Online at www.rideonbus.com
 Real Time Info at www.rideonrealtime.com

83 To GTC/MARC Station

MONDAY THROUGH FRIDAY

SEE TIMEPOINT LOCATION ON ROUTE MAP

Holy Cross Germantown	Milestone Park & Ride	Dorsey Mill & Waters Hollow Rds	Crystal Rock Rd & Father Hurley Blvd	Waters Landing Dr & Father Hurley Blvd	Germantown Transit Center (GTC)	Germantown MARC Station
1	2	3	4	5	6	7
4:30	4:38	4:44	4:48	4:54	4:58	
5:15	5:23	5:29	5:33	5:39	5:43	5:50
6:00	6:08	6:14	6:19	6:26	6:31	6:38
6:45	6:53	6:59	7:04	7:11	7:16	7:23
7:30	7:38	7:44	7:49	7:56	8:01	8:08
8:15	8:23	8:29	8:34	8:41	8:46	
9:00	9:08	9:14	9:19	9:26	9:31	
9:45	9:53	9:59	10:04	10:11	10:16	
10:30	10:38	10:44	10:49	10:56	11:01	
11:15	11:23	11:29	11:34	11:41	11:46	
12:00	12:08	12:14	12:19	12:26	12:31	
12:45	12:53	12:59	1:04	1:11	1:16	
1:30	1:38	1:44	1:49	1:56	2:01	
2:15	2:23	2:29	2:34	2:41	2:46	
3:00	3:08	3:14	3:19	3:26	3:31	
3:45	3:53	3:59	4:04	4:11	4:16	4:23
4:30	4:38	4:44	4:49	4:56	5:01	5:08
5:15	5:23	5:29	5:34	5:41	5:46	5:53
6:00	6:08	6:14	6:19	6:26	6:31	6:38
6:45	6:53	6:59	7:04	7:11	7:16	7:23
7:30	7:38	7:44	7:49	7:56	8:01	
8:15	8:23	8:29	8:34	8:40	8:44	
9:00	9:08	9:14	9:19	9:25	9:29	
9:45	9:53	9:59	10:04	10:10	10:14	
10:30	10:38	10:44	10:48	10:54	10:58	
11:15	11:23	11:29	11:33	11:39	11:43	
12:00	12:08	12:14	12:18	12:24	12:28	

NOTES: AM PM

83 To Holy Cross Germantown

MONDAY THROUGH FRIDAY

SEE TIMEPOINT LOCATION ON ROUTE MAP

Germantown MARC Station	Germantown Transit Center (GTC)	Waters Landing Dr & Father Hurley Blvd	Crystal Rock Rd & Father Hurley Blvd	Dorsey Mill & Waters Hollow Rds	Milestone Park & Ride	Holy Cross Germantown
7	6	5	4	3	2	1
	4:40	4:43	4:47	4:52	4:58	5:05
	5:25	5:28	5:33	5:38	5:44	5:51
6:03	6:10	6:13	6:18	6:23	6:29	6:36
6:47	6:55	6:59	7:05	7:11	7:18	7:25
7:32	7:40	7:44	7:50	7:56	8:03	8:10
8:17	8:25	8:29	8:35	8:41	8:48	8:55
9:10	9:14	9:20	9:26	9:33	9:40	
9:55	9:58	10:03	10:09	10:16	10:23	
10:40	10:43	10:48	10:54	11:01	11:08	
11:25	11:28	11:33	11:39	11:46	11:53	
12:10	12:13	12:18	12:24	12:31	12:38	
12:55	12:58	1:03	1:09	1:16	1:23	
1:40	1:43	1:48	1:54	2:01	2:08	
2:25	2:28	2:33	2:39	2:46	2:53	
3:10	3:13	3:18	3:24	3:31	3:38	
3:55	3:59	4:05	4:12	4:19	4:26	
4:33	4:40	4:44	4:50	4:57	5:04	5:11
5:18	5:25	5:29	5:35	5:42	5:49	5:56
6:03	6:10	6:14	6:20	6:27	6:34	6:41
6:48	6:55	6:59	7:05	7:12	7:19	7:26
7:33	7:40	7:44	7:50	7:57	8:04	8:11
8:25	8:28	8:33	8:39	8:45	8:52	
9:10	9:13	9:18	9:24	9:30	9:37	
9:55	9:58	10:03	10:09	10:15	10:22	
10:40	10:43	10:48	10:54	11:00	11:07	
11:25	11:28	11:33	11:39	11:45	11:52	

NOTES: AM PM

83 To Germantown Transit Center (GTC)

SATURDAY

SEE TIMEPOINT LOCATION ON ROUTE MAP

Holy Cross Germantown	Milestone Park & Ride	Dorsey Mill & Waters Hollow Rds	Crystal Rock Rd & Father Hurley Blvd	Waters Landing Dr & Father Hurley Blvd	Germantown Transit Center (GTC)
1	2	3	4	5	6
7:30	7:38	7:44	7:48	7:54	7:58
8:15	8:23	8:29	8:34	8:41	8:46
9:00	9:08	9:14	9:19	9:26	9:31
9:45	9:53	9:59	10:04	10:11	10:16
10:30	10:38	10:44	10:49	10:56	11:01
11:15	11:23	11:29	11:34	11:41	11:46
12:00	12:08	12:14	12:19	12:26	12:31
12:45	12:53	12:59	1:04	1:11	1:16
1:30	1:38	1:44	1:49	1:56	2:01
2:15	2:23	2:29	2:34	2:41	2:46
3:00	3:08	3:14	3:19	3:26	3:31
3:45	3:53	3:59	4:04	4:11	4:16
4:30	4:38	4:44	4:49	4:56	5:01
5:15	5:23	5:29	5:34	5:40	5:44
6:00	6:08	6:14	6:19	6:25	6:29
6:45	6:53	6:59	7:04	7:10	7:14
7:30	7:38	7:44	7:49	7:55	7:59
8:15	8:23	8:29	8:34	8:40	8:44
9:00	9:08	9:14	9:19	9:25	9:29
9:45	9:53	9:59	10:04	10:10	10:14

NOTES: AM PM

83 To Holy Cross Germantown

SATURDAY

SEE TIMEPOINT LOCATION ON ROUTE MAP

Germantown Transit Center (GTC)	Waters Landing Dr & Father Hurley Blvd	Crystal Rock Rd & Father Hurley Blvd	Dorsey Mill & Waters Hollow Rds	Milestone Park & Ride	Holy Cross Germantown
6	5	4	3	2	1
6:55	6:59	7:05	7:11	7:18	7:25
7:40	7:44	7:50	7:56	8:03	8:10
8:25	8:29	8:35	8:41	8:48	8:55
9:10	9:14	9:20	9:26	9:33	9:40
9:55	9:59	10:05	10:12	10:19	10:26
10:40	10:44	10:50	10:57	11:04	11:11
11:25	11:29	11:35	11:42	11:49	11:56
12:10	12:14	12:20	12:27	12:34	12:41
12:55	12:59	1:05	1:12	1:19	1:26
1:40	1:44	1:50	1:57	2:04	2:11
2:25	2:29	2:35	2:42	2:49	2:56
3:10	3:14	3:20	3:27	3:34	3:41
3:55	3:59	4:05	4:12	4:19	4:26
4:40	4:44	4:50	4:57	5:04	5:11
5:25	5:29	5:35	5:42	5:49	5:56
6:10	6:13	6:18	6:24	6:30	6:37
6:55	6:58	7:03	7:09	7:15	7:22
7:40	7:43	7:48	7:54	8:00	8:07
8:25	8:28	8:33	8:39	8:45	8:52
9:10	9:13	9:18	9:24	9:30	9:37

NOTES: AM PM

HOW TO RIDE A BUS

Check schedule for timepoint nearest your location. Wait at the blue and white **RIDE ON** bus stop sign. Arrive several minutes before scheduled time. Have exact fare ready (drivers do not make change).

- Not all stops are listed on a public timetable.
- If you are unfamiliar with your stop, sit or stand behind the line near the front of the bus and ask the bus driver to notify you when your stop is approaching.
- Ask the bus driver if you are not sure if the bus goes to your stop.
- If you have internet access (at home or somewhere else, such as a public library), it may be easier for you to use an online trip planner rather than a paper timetable.
- Be mindful of changes in the schedule, for holidays or bad weather.
- Please observe the following rules for all patrons: No eating, drinking, or smoking.
- Electronic devices may be played with earphones set *at low level*.

GUARANTEED RIDE HOME

When you take Metrobus, Metrorail and Ride On to work, you are eligible to participate in the free Commuter Connections Guaranteed Ride Home Program. To register and to receive program details call: Commuter Services at **301-770-POOL(7665)**.

METROACCESS

Alternative paratransit service to this Ride On route for people with certified disabilities is available. Call MetroAccess at **301-562-5360**.

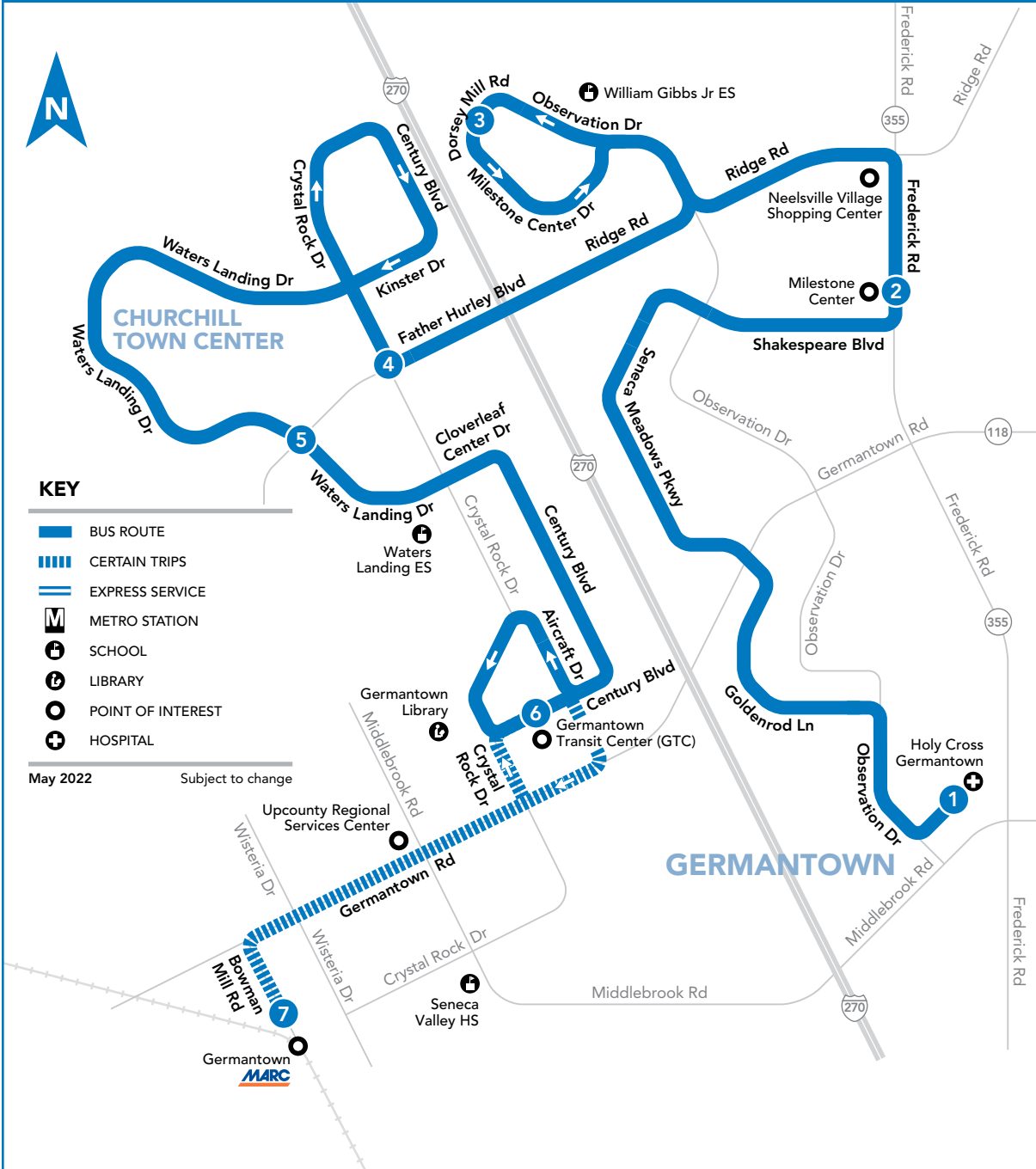
There is **NO** Sunday service on this route

Please arrive at your stop several minutes ahead of your bus' scheduled arrival. Since safe service is a priority at Ride On, buses may be delayed due to traffic or weather.



83

Holy Cross Germantown – Milestone P&R
Dorsey Mill Rd – Germantown Transit Center (GTC)
MARC Station (Mon-Fri only)



FARES

Effective July 1, 2021

Regular Fare, Token, or SmarTrip®	\$2.00
SmarTrip® Fare Transfer from MetroRail	\$1.50
Seniors age 65 years or older with a Senior SmarTrip® card or valid Medicare Card and Photo ID	FREE
Person with disability with Metro Disabled ID Card	
Person with disability with Metro Disability ID Card – Attendant Eligible Attendant also rides free.	
MetroAccess - Certified Customer with ID MetroAccess - Companion	FREE
Children under age 5	
Local Bus Transfer with SmarTrip®	
Children 5 to 18 with a Youth Cruiser SmarTrip® Card or student ID Anytime	

HOW TO READ A TIMETABLE

- Find the schedule for the day of the week and the direction you wish to ride.
- Find the timepoints closest to your origin and destination. The timepoints are shown on the route map and indicate the time the bus is scheduled to be at the particular location. Your nearest bus stop may be between timepoints.
- Read down the column to see the times when a trip will be at the given timepoint. Read the times across to the right to see when the trip reaches other timepoints. If no time is shown, that trip does not serve that timepoint.

Montgomery County assures that no person shall, on the grounds of race, color, or national origin, as provided by Title VI of the Civil Rights Act of 1964 and the Civil Rights Act of 1987, be excluded from the participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity. For more information or to file a complaint, please contact the Montgomery County Office of Human Rights.

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Special Schedule operates on MLK, Jr. Day, Presidents' Day, Juneteenth, Veterans Day

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Subscribe to text alerts by texting
MONTGOMERY RIDEON to 468311

YouTube
[youtube.com/RideOnMCT](https://www.youtube.com/RideOnMCT)

Instagram
[instagram.com/RideOnMCT](https://www.instagram.com/RideOnMCT)

Thank You for Riding with Us!

Printed on recycled paper with soy-based ink

EFFECTIVE: MAY 8, 2022



83

Approximate travel time between stops



SERVICE DAYS

MONDAY – SATURDAY



Telephone **311**

Online at www.rideonbus.com
Real Time Info at www.rideonrealtime.com

97 Clockwise Loop

MONDAY THROUGH FRIDAY

SEE TIMEPOINT LOCATION ON ROUTE MAP

Germantown Transit Center (GTC) Middlebrook & Waring Station Rds Wisteria Dr & Great Seneca Hwy Germantown MARC Station Wisteria Dr & Father Hurley Blvd Germantown Transit Center (GTC)

1	2	3	5	4	1
4:30	4:34	4:40		4:44	4:48
5:00	5:04	5:10	5:12	5:16	5:20
5:30	5:34	5:40	5:42	5:46	5:50
6:00	6:04	6:10	6:12	6:16	6:20
6:30	6:34	6:40	6:42	6:46	6:50
7:00	7:05	7:13	7:16	7:20	7:23
7:15	7:20	7:28	7:31	7:35	7:38
7:30	7:35	7:43	7:46	7:50	7:53
7:45	7:50	7:58	8:01	8:05	8:08
8:00	8:05	8:13	8:16	8:20	8:23
8:15	8:20	8:28		8:32	8:35
8:30	8:35	8:43		8:47	8:50
8:45	8:50	8:58		9:02	9:05
9:00	9:05	9:13		9:17	9:20
9:30	9:35	9:43		9:47	9:50
10:00	10:05	10:13		10:17	10:20
10:30	10:35	10:43		10:47	10:50
11:00	11:05	11:13		11:17	11:20
11:30	11:35	11:43		11:47	11:50

NOTES: AM Service Only Operates Clockwise AM

97 Counter-Clockwise Loop

MONDAY THROUGH FRIDAY

SEE TIMEPOINT LOCATION ON ROUTE MAP

Germantown Transit Center (GTC) Wisteria Dr & Father Hurley Blvd Germantown MARC Station Wisteria Dr & Great Seneca Hwy Middlebrook & Waring Station Rds Germantown Transit Center (GTC)

1	4	5	3	2	1
12:00	12:06		12:10	12:17	12:21
12:30	12:36		12:40	12:47	12:51
1:00	1:06		1:10	1:17	1:21
1:30	1:36		1:40	1:47	1:51
2:00	2:06		2:10	2:17	2:21
2:30	2:36		2:41	2:50	2:54
2:45	2:51		2:56	3:05	3:09
3:00	3:06		3:11	3:20	3:24
3:15	3:21		3:26	3:35	3:39
3:30	3:36		3:41	3:50	3:54
3:45	3:51		3:56	4:05	4:09
4:00	4:06	4:10	4:13	4:22	4:26
4:15	4:21	4:25	4:28	4:37	4:41
4:30	4:36	4:40	4:43	4:51	4:54
5:00	5:06	5:10	5:13	5:21	5:24
5:30	5:36	5:40	5:43	5:51	5:54
6:00	6:06	6:10	6:13	6:21	6:24
6:30	6:36	6:40	6:43	6:51	6:54
7:00	7:06	7:10	7:13	7:21	7:24
7:30	7:36	7:40	7:43	7:51	7:54
8:00	8:06	8:10	8:13	8:21	8:24
8:30	8:36		8:41	8:49	8:52
9:00	9:06		9:11	9:19	9:22
9:30	9:36		9:41	9:49	9:52
10:00	10:05		10:09	10:15	10:18
10:30	10:35		10:39	10:45	10:48
11:00	11:05		11:09	11:15	11:18
11:30	11:35		11:39	11:45	11:48

NOTES: PM Service Only Operates Counter-Clockwise PM

97 Clockwise Loop

SATURDAY

SEE TIMEPOINT LOCATION ON ROUTE MAP

Germantown Transit Center (GTC) Middlebrook & Waring Station Rds Wisteria Dr & Great Seneca Hwy Wisteria Dr & Father Hurley Blvd Germantown Transit Center (GTC)

1	2	3	4	1
6:30	6:33	6:39	6:43	6:47
7:00	7:03	7:09	7:13	7:17
7:30	7:33	7:39	7:43	7:47
8:00	8:03	8:09	8:13	8:17
8:30	8:33	8:39	8:43	8:47
9:00	9:03	9:09	9:13	9:17
9:30	9:33	9:39	9:43	9:47
10:00	10:04	10:11	10:16	10:20
10:30	10:34	10:41	10:46	10:50
11:00	11:04	11:11	11:16	11:20
11:30	11:34	11:41	11:46	11:50

NOTES: AM Service Only Operates Clockwise AM

97 Counter-Clockwise Loop

SATURDAY

SEE TIMEPOINT LOCATION ON ROUTE MAP

Germantown Transit Center (GTC) Wisteria Dr & Father Hurley Blvd Wisteria Dr & Great Seneca Hwy Middlebrook & Waring Station Rds Germantown Transit Center (GTC)

1	4	3	2	1
12:00	12:06	12:10	12:18	12:21
12:30	12:36	12:40	12:48	12:51
1:00	1:06	1:10	1:18	1:21
1:30	1:36	1:40	1:48	1:51
2:00	2:06	2:10	2:18	2:21
2:30	2:36	2:40	2:48	2:51
3:00	3:06	3:10	3:18	3:21
3:30	3:36	3:40	3:48	3:51
4:00	4:06	4:10	4:18	4:21
4:30	4:36	4:40	4:48	4:51
5:00	5:06	5:10	5:18	5:21
5:30	5:36	5:40	5:48	5:51
6:00	6:05	6:09	6:15	6:18
6:30	6:35	6:39	6:45	6:48
7:00	7:05	7:09	7:15	7:18
7:30	7:35	7:39	7:45	7:48
8:00	8:05	8:09	8:15	8:18
8:30	8:35	8:39	8:45	8:48
9:00	9:05	9:09	9:15	9:18
9:30	9:35	9:39	9:45	9:48

NOTES: PM Service Only Operates Counter-Clockwise PM

HOW TO RIDE A BUS

Check schedule for timepoint nearest your location. Wait at the blue and white **RIDE ON** bus stop sign. Arrive several minutes before scheduled time. Have exact fare ready (drivers do not make change).

- Not all stops are listed on a public timetable.
- If you are unfamiliar with your stop, sit or stand behind the line near the front of the bus and ask the bus driver to notify you when your stop is approaching.
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- If you have internet access (at home or somewhere else, such as a public library), it may be easier for you to use an online trip planner rather than a paper timetable.
- Be mindful of changes in the schedule, for holidays or bad weather.
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- Electronic devices may be played with earphones set at *low level*.

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- Read down the column to see the times when a trip will be at the given timepoint. Read the times across to the right to see when the trip reaches other timepoints. If no time is shown, that trip does not serve that timepoint.

FARES

Effective July 1, 2021

Regular Fare, Token, or SmarTrip®	\$2.00
SmarTrip® Fare Transfer from MetroRail	\$1.50
Seniors age 65 years or older with a Senior SmarTrip® card or valid Medicare Card and Photo ID	FREE
Person with disability with Metro Disabled ID Card	
Person with disability with Metro Disability ID Card – Attendant Eligible Attendant also rides free.	
MetroAccess - Certified Customer with ID MetroAccess - Companion	
Children under age 5	FREE
Local Bus Transfer with SmarTrip®	
Children 5 to 18 with a Youth Cruiser SmarTrip® Card or student ID Anytime	

GUARANTEED RIDE HOME

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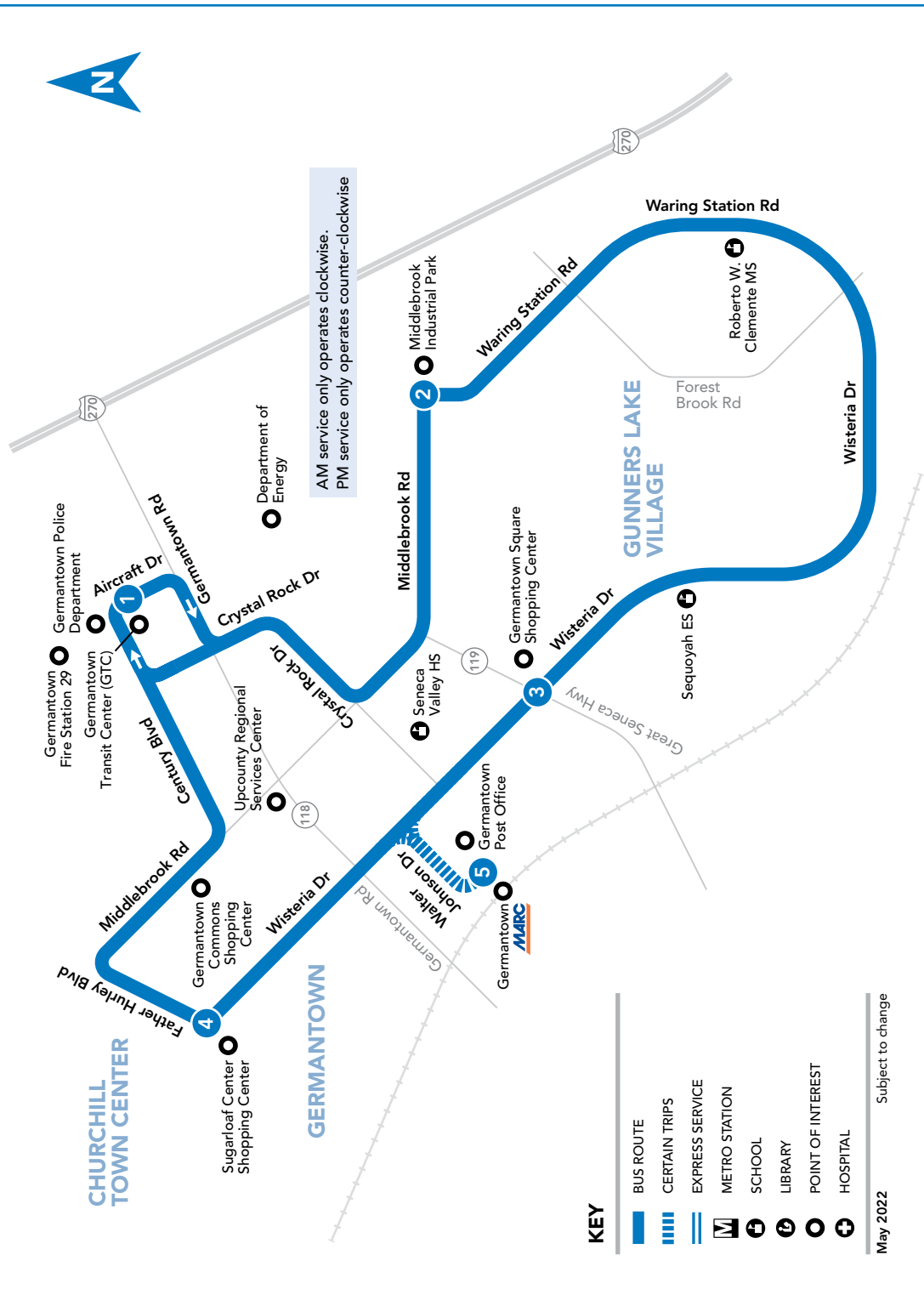
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97 Clockwise Loop

SUNDAY

SEE TIMEPOINT LOCATION ON ROUTE MAP

1	2	3	4	1
6:30	6:33	6:39	6:43	6:47
7:00	7:03	7:09	7:13	7:17
7:30	7:33	7:39	7:43	7:47
8:00	8:03	8:09	8:13	8:17
8:30	8:33	8:39	8:43	8:47
9:00	9:03	9:09	9:13	9:17
9:30	9:33	9:39	9:43	9:47
10:00	10:04	10:11	10:16	10:20
10:30	10:34	10:41	10:46	10:50
11:00	11:04	11:11	11:16	11:20
11:30	11:34	11:41	11:46	11:50

NOTES: AM Service Only Operates Clockwise

97 Counter-Clockwise Loop

SUNDAY

SEE TIMEPOINT LOCATION ON ROUTE MAP

1	4	3	2	1
12:00	12:06	12:10	12:18	12:21
12:30	12:36	12:40	12:48	12:51
1:00	1:06	1:10	1:18	1:21
1:30	1:36	1:40	1:48	1:51
2:00	2:06	2:10	2:18	2:21
2:30	2:36	2:40	2:48	2:51
3:00	3:06	3:10	3:18	3:21
3:30	3:36	3:40	3:48	3:51
4:00	4:06	4:10	4:18	4:21
4:30	4:36	4:40	4:48	4:51
5:00	5:06	5:10	5:18	5:21
5:30	5:36	5:40	5:48	5:51
6:00	6:05	6:09	6:15	6:18
6:30	6:35	6:39	6:45	6:48
7:00	7:05	7:09	7:15	7:18
7:30	7:35	7:39	7:45	7:48
8:00	8:05	8:09	8:15	8:18
8:30	8:35	8:39	8:45	8:48
9:00	9:05	9:09	9:15	9:18
9:30	9:35	9:39	9:45	9:48

NOTES: PM Service Only Operates Counter-Clockwise

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Visit our web site at: www.rideonbus.com
Real Time information is available at: www.rideonrealtime.com

Regular Mailing Address:
Montgomery County DOT
Division of Transit Services
101 Monroe Street, 5th
Floor Rockville, MD 20850

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자세한 정보를 원하시거나 본 문서를 다른 형식 또는 다른 언어로의 번역본으로 원하실 경우, 전화번호 311, 또는 몽고메리 카운티 이외의 지역에서는 240-777-0311로 연락하시기 바랍니다.

ለተጨማሪ መረጃ፣ ወይም ይህንን ደብዳቤ በተለያዩ መልኩ ለመጠየቅ ወይም ወደሌላ ቋንቋ ለማስተርጎም፣ ለበከዎትን በ 311 ወይም ከዎንትጎመሪ ካውንቲ ውጪ 240-777-0311 ይደውሉ።

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Để tìm hiểu thêm, hoặc để yêu cầu cung cấp tài liệu này theo định dạng khác hay chuyển ngữ sang ngôn ngữ khác, vui lòng gọi 311 hoặc số 240-777-0311 nếu gọi từ bên ngoài Quận Montgomery.

HOLIDAY SCHEDULE

Weekday Schedule operates on Indigenous Peoples' Day
Saturday Schedule operates on Independence Day
Sunday Schedule operates on New Year's Day, Memorial Day, Labor Day, Thanksgiving Day, Christmas Day
Special Schedule operates on MLK, Jr. Day, Presidents' Day, Juneteenth, Veterans Day

f Like us on Facebook facebook.com/RideOnMCT
t Follow us on Twitter twitter.com/RideOnMCT

e Subscribe to email alerts at www.montgomerycountymd.gov/govdelivery

s Subscribe to text alerts by texting MONTGOMERY RIDEON to 468311

y YouTube youtube.com/RideOnMCT
i Instagram instagram.com/RideOnMCT

Thank You for Riding with Us!

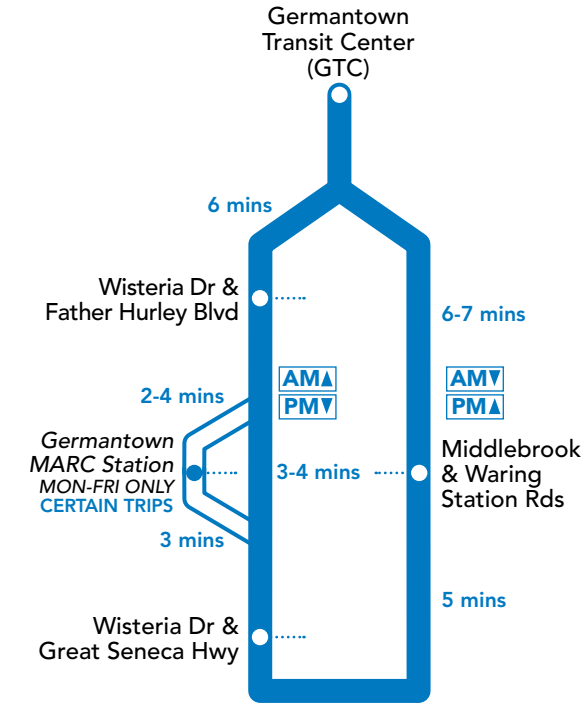
Printed on recycled paper with soy-based ink

EFFECTIVE: MAY 8, 2022



97

Approximate travel time between stops



SERVICE DAYS

DAILY



Telephone 311

Online at www.rideonbus.com

Real Time Info at www.rideonrealtime.com

98 To Germantown Transit Center

MONDAY THROUGH FRIDAY

SEE TIMEPOINT LOCATION ON ROUTE MAP

Kingsview Park & Ride
Cinnamon Dr & Mustard Seed Ct
Germantown Community Center
Richter Farm Rd & Clopper Rd
Father Hurley Blvd & Wisteria Dr
Wanegarden Dr & Wynnfield Dr
Father Hurley Blvd & Waters Landing Dr
Germantown Transit Center (GTC)

1	2	3	5	6	7	8	9
4:45	4:48		4:57	5:05	5:08	5:12	5:14
5:30	5:34		5:45	5:54	5:58	6:02	6:04
6:15	6:19		6:30	6:39	6:43	6:47	6:49
7:00	7:04		7:15	7:24	7:28	7:32	7:34
7:45	7:49		8:00	8:09	8:13	8:17	8:19
8:30	8:34		8:45	8:54	8:58	9:02	9:04
9:15	9:18	9:24	9:33	9:37	9:41	9:43	
10:00	10:03	10:09	10:18	10:22	10:26	10:28	
10:45	10:48	10:54	11:03	11:07	11:11	11:13	
11:30	11:33	11:39	11:48	11:52	11:56	11:58	
12:15	12:18	12:24	12:33	12:37	12:41	12:43	
1:00	1:03	1:09	1:18	1:22	1:26	1:28	
1:45	1:48	1:54	2:03	2:07	2:11	2:13	
2:30	2:33	2:40	2:50	2:54	2:58	3:01	
3:15	3:18	3:25	3:35	3:39	3:43	3:46	
4:00		4:08	4:18	4:22	4:26	4:29	
4:45		4:53	5:03	5:07	5:11	5:14	
5:30		5:37	5:46	5:49	5:52	5:54	
6:15		6:22	6:31	6:34	6:37	6:39	
7:00		7:07	7:16	7:19	7:22	7:24	
7:45		7:52	8:01	8:04	8:07	8:09	

NOTES: AM PM

98 To Kingsview Park & Ride

MONDAY THROUGH FRIDAY

SEE TIMEPOINT LOCATION ON ROUTE MAP

Germantown Transit Center (GTC)
Father Hurley Blvd & Waters Landing Dr
Wanegarden Dr & Wynnfield Dr
Father Hurley Blvd & Wisteria Dr
Richter Farm Rd & Clopper Rd
Germantown Community Center
Cinnamon Dr & Mustard Seed Ct
Kingsview Park & Ride

9	8	7	6	5	3	2	1
4:50	4:53	4:56	4:59	5:06			5:13
5:35	5:38	5:41	5:44	5:51			5:58
6:20	6:23	6:26	6:29	6:36			6:43
7:05	7:08	7:11	7:14	7:21			7:28
7:50	7:54	7:57	8:01	8:09			8:16
8:35	8:39	8:42	8:46	8:54			9:01
9:20	9:24	9:27	9:31	9:39			9:46
10:05	10:09	10:12	10:16	10:24	10:30		10:32
10:50	10:54	10:57	11:01	11:09	11:15		11:17
11:35	11:39	11:42	11:46	11:54	12:00		12:02
12:20	12:24	12:27	12:31	12:39	12:45		12:47
1:05	1:09	1:12	1:16	1:24	1:30		1:32
1:50	1:54	1:57	2:01	2:09	2:15		2:17
2:35	2:39	2:42	2:46	2:54	3:00		3:02
3:20	3:25	3:28	3:32	3:41	3:47		3:50
4:05	4:10	4:13	4:17	4:26		4:37	4:42
4:50	4:55	4:58	5:02	5:11		5:22	5:27
5:35	5:40	5:43	5:47	5:56		6:07	6:12
6:20	6:25	6:28	6:32	6:41		6:52	6:57
7:05	7:10	7:13	7:17	7:25		7:36	7:41
7:50	7:55	7:58	8:02	8:10		8:21	8:26

NOTES: AM PM

98 To Germantown Transit Center

SATURDAY

SEE TIMEPOINT LOCATION ON ROUTE MAP

Kingsview Park & Ride
SoccerPlex Stadium
Richter Farm Rd & Clopper Rd
Father Hurley Blvd & Wisteria Dr
Wanegarden Dr & Wynnfield Dr
Father Hurley Blvd & Waters Landing Dr
Germantown Transit Center (GTC)

1	4	5	6	7	8	9
7:00	7:06	7:13	7:22	7:26	7:30	7:32
7:45	7:51	7:58	8:07	8:11	8:15	8:17
8:30	8:36	8:43	8:52	8:56	9:00	9:02
9:15	9:21	9:28	9:37	9:41	9:45	9:47
10:00	10:06	10:13	10:22	10:26	10:30	10:32
10:45	10:51	10:58	11:07	11:11	11:15	11:17
11:30	11:36	11:43	11:52	11:56	12:00	12:02
12:15	12:21	12:28	12:37	12:41	12:45	12:47
1:00	1:06	1:13	1:22	1:26	1:30	1:32
1:45	1:51	1:58	2:07	2:11	2:15	2:17
2:30	2:37	2:45	2:55	2:59	3:03	3:06
3:15	3:22	3:30	3:40	3:44	3:48	3:51
4:00	4:07	4:15	4:25	4:29	4:33	4:36
4:45	4:52	5:00	5:10	5:14	5:18	5:21
5:30	5:36	5:43	5:52	5:55	5:58	6:00
6:15	6:21	6:28	6:37	6:40	6:43	6:45
7:00	7:06	7:13	7:22	7:25	7:28	7:30
7:45	7:51	7:58	8:07	8:10	8:13	8:15

NOTES: AM PM

98 To Kingsview Park & Ride

SATURDAY

SEE TIMEPOINT LOCATION ON ROUTE MAP

Germantown Transit Center (GTC)
Father Hurley Blvd & Waters Landing Dr
Wanegarden Dr & Wynnfield Dr
Father Hurley Blvd & Wisteria Dr
Richter Farm Rd & Clopper Rd
SoccerPlex Stadium
Kingsview Park & Ride

9	8	7	6	5	4	1
7:05	7:08	7:11	7:14	7:21	7:26	7:33
7:50	7:54	7:57	8:01	8:06	8:11	8:18
8:35	8:39	8:42	8:46	8:51	8:56	9:03
9:20	9:24	9:27	9:31	9:36	9:41	9:48
10:05	10:09	10:12	10:16	10:21	10:26	10:33
10:50	10:54	10:57	11:01	11:06	11:11	11:18
11:35	11:39	11:42	11:46	11:51	11:56	12:03
12:20	12:24	12:27	12:31	12:36	12:41	12:48
1:05	1:09	1:12	1:16	1:24	1:29	1:37
1:50	1:54	1:57	2:01	2:09	2:14	2:22
2:35	2:39	2:42	2:46	2:54	2:59	3:07
3:20	3:25	3:28	3:32	3:41	3:46	3:54
4:05	4:10	4:13	4:17	4:26	4:31	4:39
4:50	4:55	4:58	5:02	5:11	5:16	5:24
5:35	5:40	5:43	5:47	5:56	6:01	6:09
6:20	6:25	6:28	6:32	6:41	6:46	6:54
7:05	7:10	7:13	7:17	7:25	7:30	7:37
7:50	7:55	7:58	8:02	8:10	8:15	8:22

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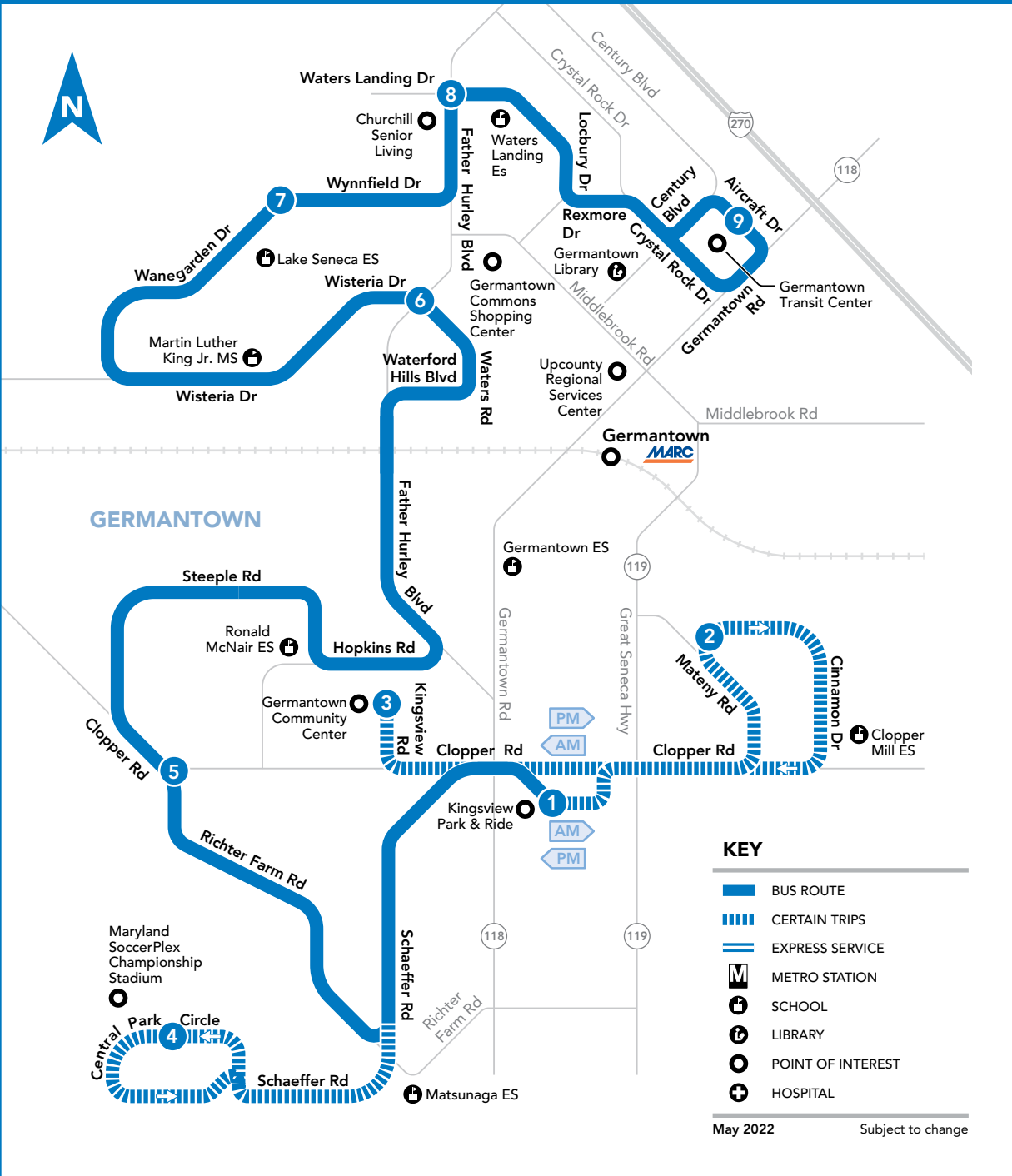
There is NO Sunday service on this route

Please arrive at your stop several minutes ahead of your bus' scheduled arrival. Since safe service is a priority at Ride On, buses may be delayed due to traffic or weather.



98

Kingsview Park & Ride – SoccerPlex (Saturday) – Germantown Transit Center (GTC)



FARES Effective July 1, 2021

Regular Fare, Token, or SmarTrip®	\$2.00
SmarTrip® Fare Transfer from MetroRail	\$1.50
Seniors age 65 years or older with a Senior SmarTrip® card or valid Medicare Card and Photo ID	FREE
Person with disability with Metro Disabled ID Card	
Person with disability with Metro Disability ID Card – Attendant Eligible Attendant also rides free.	
MetroAccess - Certified Customer with ID MetroAccess - Companion	FREE
Children under age 5	
Local Bus Transfer with SmarTrip®	
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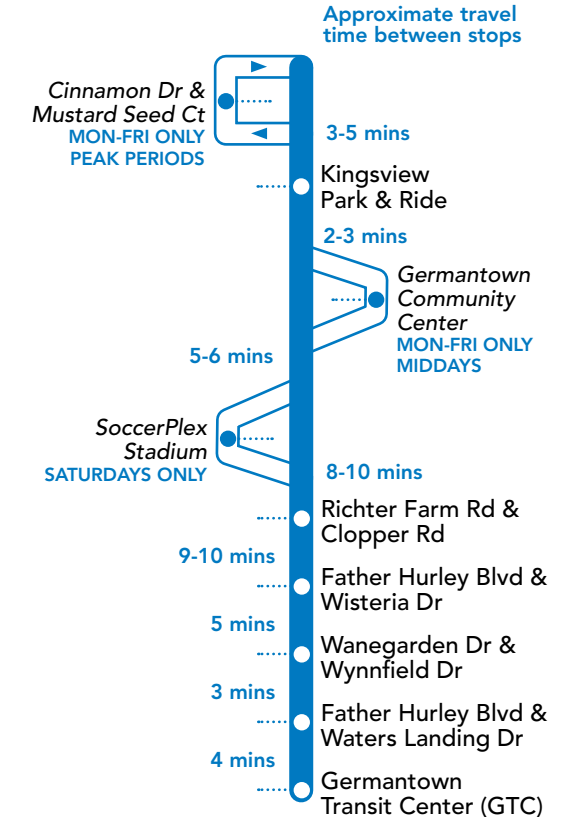
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EFFECTIVE: MAY 8, 2022



98



SERVICE DAYS
MONDAY – SATURDAY

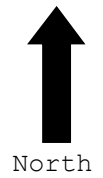


Telephone **311**
Online at www.rideonbus.com
Real Time Info at www.rideonrealtime.com

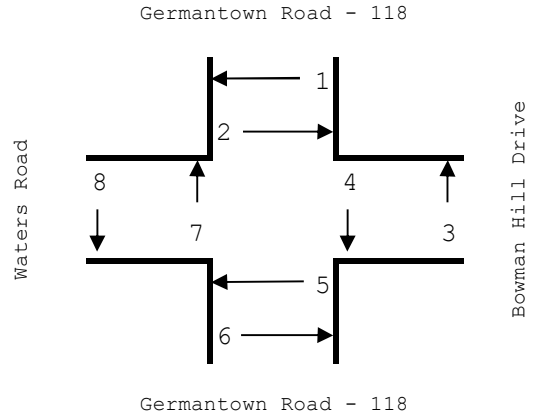
APPENDIX C
TRAFFIC COUNT DATA AND SIGNAL TIMING SHEETS

Wells & Associates, Inc
 McLean, Virginia

Pedestrian Volume Survey



Project Name: Waters Village MP
 Project Number: 8615
 Location: Montgomery Co., MD
 Intersection: Germantown Rd. & Waters Rd.
 Weather: clear
 Date: 12/9/2021
 Surveyor: James & Inita



TIME	Movement							
	1	2	3	4	5	6	7	8
AM								
6:30-6:45						1		1
6:45-7:00								
7:00-7:15							3	
7:15-7:30							1	1
7:30-7:45								
7:45-8:00				1		3		
8:00-8:15		2						
8:15-8:30								
8:30-8:45								
8:45-9:00					1			
9:00-9:15								
9:15-9:30					2	1		
PM								
4:00-4:15					1		1	1
4:15-4:30		1						
4:30-4:45								
4:45-5:00		1			2		1	
5:00-5:15					1			2
5:15-5:30					3	1	1	
5:30-5:45				2			1	1
5:45-6:00					2			
6:00-6:15								2
6:15-6:30								
6:30-6:45								
6:45-7:00								

Wells & Associates, Inc

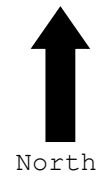
McLean, Virginia

Existing Traffic Count

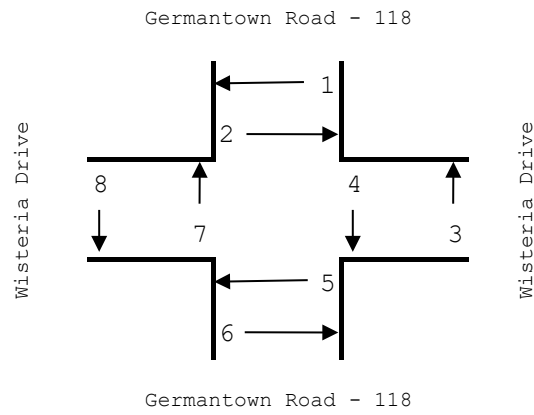
Time Period	Turning Movements																Total	PHF	Time Period				
	Southbound Germantown Road - 118				Westbound Bowman Hill Drive				Northbound Germantown Road - 118				Eastbound Waters Road							North & South	East & West		
	1 Right	2 Thru	3 Left	Total	4 Right	5 Thru	6 Left	Total	7 Right	8 Thru	9 Left	Total	10 Right	11 Thru	12 Left	Total							
AM																							
6:30-6:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	6:30-6:45
6:45-7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	6:45-7:00
7:00-7:15	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1		1	7:00-7:15
7:15-7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	7:15-7:30
7:30-7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	7:30-7:45
7:45-8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	7:45-8:00
8:00-8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	8:00-8:15
8:15-8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	8:15-8:30
8:30-8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	8:30-8:45
8:45-9:00	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	1	0	1	0	1		1	8:45-9:00
9:00-9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	9:00-9:15
9:15-9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	9:15-9:30
3 Hour Totals	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0	2		2	
1 Hour Totals																							
6:30-7:30	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0.25	1	6:30-7:30
6:45-7:45	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0.25	1	6:45-7:45
7:00-8:00	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0.25	1	7:00-8:00
7:15-8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0	7:15-8:15
7:30-8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0	7:30-8:30
7:45-8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0	7:45-8:45
8:00-9:00	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	1	0	1	0	1	0.25	1	8:00-9:00
8:15-9:15	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	1	0	1	0	1	0.25	1	8:15-9:15
8:30-9:30	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	1	0	1	0	1	0.25	1	8:30-9:30
AM Peak 6:30-7:30	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0.25	1	AM Peak 6:30-7:30
PM																							
4:00-4:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	4:00-4:15
4:15-4:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	4:15-4:30
4:30-4:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	4:30-4:45
4:45-5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	4:45-5:00
5:00-5:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	5:00-5:15
5:15-5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	5:15-5:30
5:30-5:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	5:30-5:45
5:45-6:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	5:45-6:00
6:00-6:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	6:00-6:15
6:15-6:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	6:15-6:30
6:30-6:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	6:30-6:45
6:45-7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	6:45-7:00
3 Hour Totals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	
1 Hour Totals																							
4:00-5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0	4:00-5:00
4:15-5:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0	4:15-5:15
4:30-5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0	4:30-5:30
4:45-5:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0	4:45-5:45
5:00-6:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0	5:00-6:00
5:15-6:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0	5:15-6:15
5:30-6:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0	5:30-6:30
5:45-6:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0	5:45-6:45
6:00-7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0	6:00-7:00
PM Peak 4:00-5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0	PM Peak 4:00-5:00

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 McLean, Virginia

Pedestrian Volume Survey



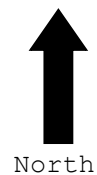
Project Name: Waters Village MP
 Project Number: 8615
 Location: Montgomery Co., MD
 Intersection: Germantown Rd. & WISTERIA Dr.
 Weather: clear
 Date: 12/9/2021
 Surveyor: James & Inita



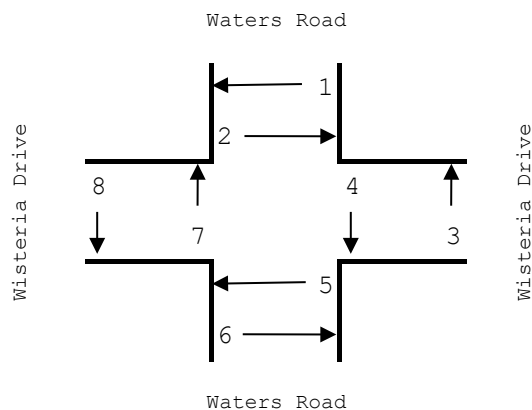
TIME	Movement							
	1	2	3	4	5	6	7	8
AM								
6:30-6:45		2						
6:45-7:00	3						1	
7:00-7:15		5			2	1		1
7:15-7:30		2						
7:30-7:45	2	7	2					
7:45-8:00		6		2	3		2	
8:00-8:15								
8:15-8:30	3	4					1	
8:30-8:45			1				2	
8:45-9:00	2	2		1	1		1	3
9:00-9:15		1			2			
9:15-9:30	1						1	
PM								
4:00-4:15	1	1		1	5		1	
4:15-4:30	2	3			6	1		
4:30-4:45	4				3		3	2
4:45-5:00	3	3		2	4			
5:00-5:15	4					2		
5:15-5:30		2				3		2
5:30-5:45	1			5	4			7
5:45-6:00		3			3			
6:00-6:15		7		3	1		4	
6:15-6:30	3	1					3	
6:30-6:45	2			1				
6:45-7:00	1	6						2

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Pedestrian Volume Survey



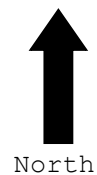
Project Name: Waters Village MP
 Project Number: 8615
 Location: Montgomery Co., MD
 Intersection: Wisteria Dr. & Waters Rd.
 Weather: clear
 Date: 12/9/2021
 Surveyor: Majda & Ramiz



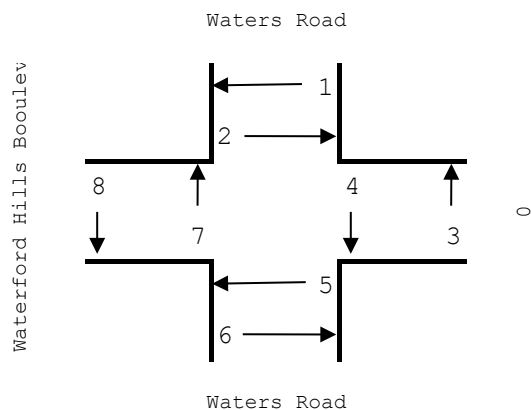
TIME	Movement							
	1	2	3	4	5	6	7	8
AM								
6:30-6:45	1	1					1	
6:45-7:00		1						
7:00-7:15	1							1
7:15-7:30		1						
7:30-7:45		5						
7:45-8:00						3		1
8:00-8:15	1	1				2		
8:15-8:30		1						
8:30-8:45						1		
8:45-9:00		2			1		1	
9:00-9:15		3		1				
9:15-9:30						2		
PM								
4:00-4:15					3			
4:15-4:30	2	4		1	1	2		
4:30-4:45					2			1
4:45-5:00	1	2			2	1		
5:00-5:15	1			1				
5:15-5:30	2							
5:30-5:45						2		
5:45-6:00	1							
6:00-6:15	2	1						
6:15-6:30		1			1			
6:30-6:45								
6:45-7:00	1	1						

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 McLean, Virginia

Pedestrian Volume Survey



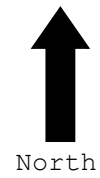
Project Name: Waters Village MP
 Project Number: 8615
 Location: Montgomery Co., MD
 Intersection: Waterford Hills Blvd. & Waters
 Weather: clear
 Date: 12/9/2021
 Surveyor: Agan



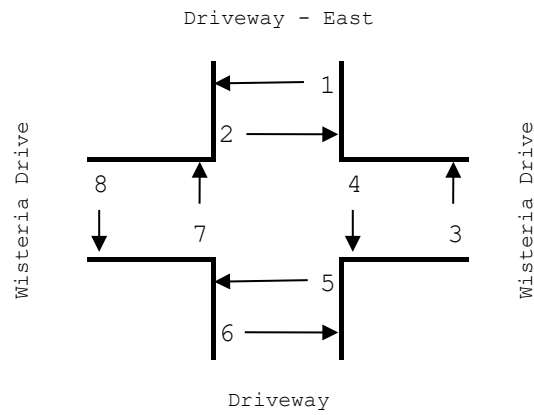
TIME	Movement							
	1	2	3	4	5	6	7	8
AM								
6:30-6:45							1	1
6:45-7:00							1	
7:00-7:15								
7:15-7:30								
7:30-7:45							4	1
7:45-8:00							3	
8:00-8:15								
8:15-8:30								2
8:30-8:45								1
8:45-9:00							8	3
9:00-9:15							4	6
9:15-9:30							3	3
PM								
4:00-4:15							3	1
4:15-4:30							4	11
4:30-4:45								3
4:45-5:00								
5:00-5:15							1	3
5:15-5:30							2	1
5:30-5:45								
5:45-6:00							1	
6:00-6:15								
6:15-6:30								
6:30-6:45								1
6:45-7:00							1	

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Pedestrian Volume Survey



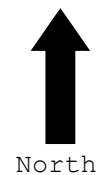
Project Name: Waters Village MP
 Project Number: 8615
 Location: Montgomery Co., MD
 Intersection: Wisteria Dr. & Driveway - East
 Weather: clear
 Date: 12/9/2021
 Surveyor: Agan



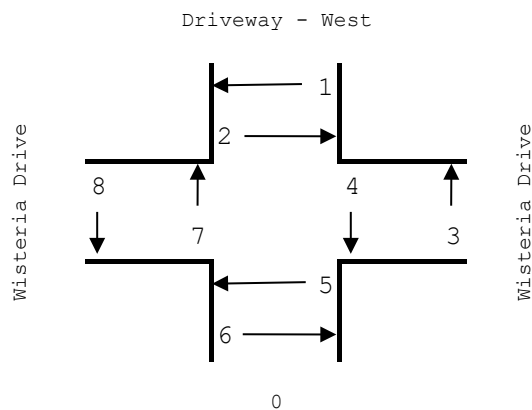
TIME	Movement							
	1	2	3	4	5	6	7	8
AM								
6:30-6:45		1						
6:45-7:00		1						
7:00-7:15								
7:15-7:30		2						
7:30-7:45	1	1						
7:45-8:00		4				1		
8:00-8:15	1	2						
8:15-8:30		2						
8:30-8:45						1		
8:45-9:00		1			1			
9:00-9:15	2	3						
9:15-9:30	2	1	1	1		3		
PM								
4:00-4:15					1	1		
4:15-4:30								
4:30-4:45								
4:45-5:00					2			
5:00-5:15						2		
5:15-5:30								
5:30-5:45								
5:45-6:00							2	
6:00-6:15								
6:15-6:30								
6:30-6:45							1	
6:45-7:00							1	1

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 McLean, Virginia

Pedestrian Volume Survey



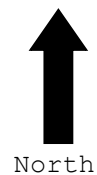
Project Name: Waters Village MP
 Project Number: 8615
 Location: Montgomery Co., MD
 Intersection: Wisteria Dr. & Driveway - West
 Weather: clear
 Date: 12/9/2021
 Surveyor: Agan



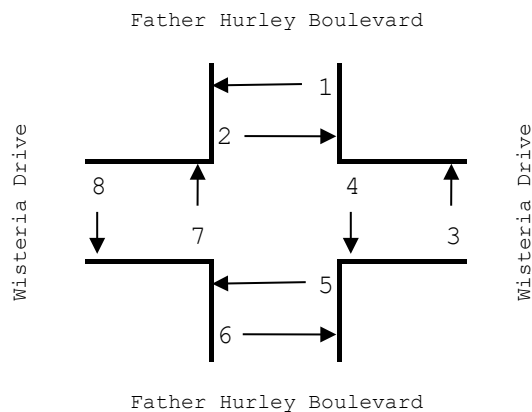
TIME	Movement							
	1	2	3	4	5	6	7	8
AM								
6:30-6:45		1						
6:45-7:00		1						
7:00-7:15						3		
7:15-7:30		2	1					
7:30-7:45		1						
7:45-8:00								
8:00-8:15	1	1	1					
8:15-8:30		2						
8:30-8:45						1		
8:45-9:00				1	2			
9:00-9:15								
9:15-9:30						2		
PM								
4:00-4:15	1			1	3	1		
4:15-4:30		3	1					
4:30-4:45						1		
4:45-5:00	2	1			2			
5:00-5:15	1	2			1			
5:15-5:30								
5:30-5:45						1		1
5:45-6:00	1		1	1		1		
6:00-6:15	1			1				
6:15-6:30		1			1			
6:30-6:45								
6:45-7:00	1	1						

Wells & Associates, Inc
 McLean, Virginia

Pedestrian Volume Survey



Project Name: Waters Village
 Project Number: 8615
 Location: Montgomery Co., MD
 Intersection: Father Hurley Blvd. & Wisteria
 Weather: clear
 Date: 4/5/2022
 Surveyor: James & Inita



TIME	Movement							
	1	2	3	4	5	6	7	8
AM								
6:30-6:45		2						
6:45-7:00	1	2						
7:00-7:15		1						
7:15-7:30		1						
7:30-7:45		1						
7:45-8:00		4						
8:00-8:15	2	1						
8:15-8:30								
8:30-8:45								
8:45-9:00								
9:00-9:15	1	1						
9:15-9:30								
PM								
4:00-4:15	1				1			
4:15-4:30					2		2	
4:30-4:45						1		1
4:45-5:00		1			1		1	
5:00-5:15			1					8
5:15-5:30	1	1						
5:30-5:45		1	2	1	1			2
5:45-6:00		1			1			
6:00-6:15	1	1		3		1	1	
6:15-6:30								
6:30-6:45		3						
6:45-7:00		1		1			1	

Wells & Associates, Inc

McLean, Virginia

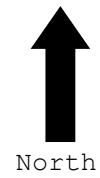
Existing Traffic Count

PROJECT: Waters Village	DATE: 4/5/2022	SOUTHBOUND ROAD: Father Hurley Boulevard
W & A JOB NO.: 8615	DAY: Tuesday	NORTHBOUND ROAD: Father Hurley Boulevard
INTERSECTION: Father Hurley Blvd. & Wisteria Dr.	WEATHER: clear	WESTBOUND ROAD: Wisteria Drive
LOCATION: Montgomery Co., MD	COUNTED BY: James & Inita	EASTBOUND ROAD: Wisteria Drive
	INPUTED BY: agan	BIKES

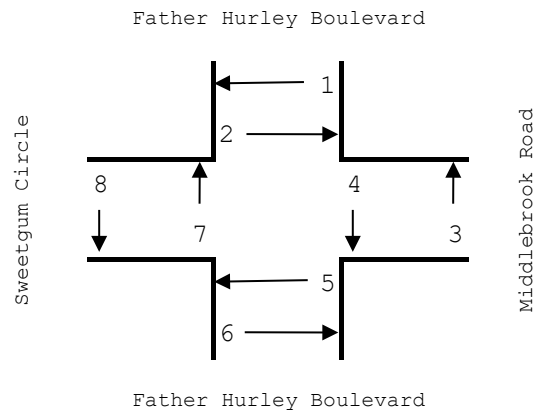
Time Period	Turning Movements																		Total	PHF	Time Period	
	Southbound Father Hurley Boulevard				Westbound Wisteria Drive				Northbound Father Hurley Boulevard				Eastbound Wisteria Drive				North & South	East & West				
	1 Right	2 Thru	3 Left	Total	4 Right	5 Thru	6 Left	Total	7 Right	8 Thru	9 Left	Total	10 Right	11 Thru	12 Left	Total						
AM																						
6:30-6:45	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1		6:30-6:45
6:45-7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		6:45-7:00
7:00-7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		7:00-7:15
7:15-7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		7:15-7:30
7:30-7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		7:30-7:45
7:45-8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		7:45-8:00
8:00-8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		8:00-8:15
8:15-8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		8:15-8:30
8:30-8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		8:30-8:45
8:45-9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		8:45-9:00
9:00-9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		9:00-9:15
9:15-9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		9:15-9:30
3 Hour Totals	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1		
1 Hour Totals																						
6:30-7:30	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0.25	6:30-7:30
6:45-7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	6:45-7:45
7:00-8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	7:00-8:00
7:15-8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	7:15-8:15
7:30-8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	7:30-8:30
7:45-8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	7:45-8:45
8:00-9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	8:00-9:00
8:15-9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	8:15-9:15
8:30-9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	8:30-9:30
AM Peak 6:30-7:30	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0.25	AM Peak 6:30-7:30
PM																						
4:00-4:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		4:00-4:15
4:15-4:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		4:15-4:30
4:30-4:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		4:30-4:45
4:45-5:00	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1		4:45-5:00
5:00-5:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	1		5:00-5:15
5:15-5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		5:15-5:30
5:30-5:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		5:30-5:45
5:45-6:00	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1		5:45-6:00
6:00-6:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		6:00-6:15
6:15-6:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		6:15-6:30
6:30-6:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	1		6:30-6:45
6:45-7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		6:45-7:00
3 Hour Totals	0	0	0	0	0	0	2	2	0	0	0	0	0	2	0	2	0	4	4	4		
1 Hour Totals																						
4:00-5:00	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	1	1	0.25	4:00-5:00
4:15-5:15	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0	1	0	2	2	0.50	4:15-5:15
4:30-5:30	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0	1	0	2	2	0.50	4:30-5:30
4:45-5:45	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0	1	0	2	2	0.50	4:45-5:45
5:00-6:00	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0	1	0	2	2	0.50	5:00-6:00
5:15-6:15	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	1	1	0.25	5:15-6:15
5:30-6:30	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	1	1	0.25	5:30-6:30
5:45-6:45	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0	1	0	2	2	0.50	5:45-6:45
6:00-7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	1	0.25	6:00-7:00
PM Peak 4:15-5:15	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	1	0	2	2	2	0.50	PM Peak 4:15-5:15

Wells & Associates, Inc
 McLean, Virginia

Pedestrian Volume Survey



Project Name: Waters Village
 Project Number: 8615
 Location: Montgomery Co., MD
 Intersection: Father Hurley Blvd. & Middlebrook
 Weather: clear
 Date: 4/5/2022
 Surveyor: Tyler & Austin



TIME	Movement							
	1	2	3	4	5	6	7	8
AM								
6:30-6:45						2		1
6:45-7:00			1			2		1
7:00-7:15						1	2	
7:15-7:30				2	2	1	2	
7:30-7:45						1		1
7:45-8:00	1			2	1	1		1
8:00-8:15								
8:15-8:30	1					3		1
8:30-8:45						1		1
8:45-9:00			1		1		1	
9:00-9:15			1			1		
9:15-9:30				1			1	
PM								
4:00-4:15								
4:15-4:30			1					
4:30-4:45	1			1				
4:45-5:00					2	2		
5:00-5:15	1					4	2	
5:15-5:30					4		3	2
5:30-5:45							2	
5:45-6:00							2	
6:00-6:15	1	1			4			
6:15-6:30	2				1			1
6:30-6:45	2					2	2	1
6:45-7:00					3		1	

Wells & Associates, Inc

McLean, Virginia

Existing Traffic Count

PROJECT: Waters Village	DATE: 4/5/2022	SOUTHBOUND ROAD: Father Hurley Boulevard
W & A JOB NO.: 8615	DAY: Tuesday	NORTHBOUND ROAD: Father Hurley Boulevard
INTERSECTION: Father Hurley Blvd. & Middlebrook Rd.	WEATHER: clear	WESTBOUND ROAD: Middlebrook Road
LOCATION: Montgomery Co., MD	COUNTED BY: Tyler & Austin	EASTBOUND ROAD: Sweetgum Circle
	INPUTED BY: agan	BIKES

Time Period	Turning Movements																		Total	PHF	Time Period		
	Southbound Father Hurley Boulevard				Westbound Middlebrook Road				Northbound Father Hurley Boulevard				Eastbound Sweetgum Circle				North & South	East & West					
	1 Right	2 Thru	3 Left	Total	4 Right	5 Thru	6 Left	Total	7 Right	8 Thru	9 Left	Total	10 Right	11 Thru	12 Left	Total							
AM																							
6:30-6:45	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1		6:30-6:45
6:45-7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		6:45-7:00
7:00-7:15	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	1		7:00-7:15
7:15-7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		7:15-7:30
7:30-7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		7:30-7:45
7:45-8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		7:45-8:00
8:00-8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		8:00-8:15
8:15-8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		8:15-8:30
8:30-8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		8:30-8:45
8:45-9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		8:45-9:00
9:00-9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		9:00-9:15
9:15-9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		9:15-9:30
3 Hour Totals	0	1	0	1	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	2		
1 Hour Totals																							
6:30-7:30	0	1	0	1	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	2	0.50	6:30-7:30
6:45-7:45	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	1	0.25	6:45-7:45
7:00-8:00	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	1	0.25	7:00-8:00
7:15-8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	7:15-8:15
7:30-8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	7:30-8:30
7:45-8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	7:45-8:45
8:00-9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	8:00-9:00
8:15-9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	8:15-9:15
8:30-9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	8:30-9:30
AM Peak 6:30-7:30	0	1	0	1	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	2	0.50	AM Peak 6:30-7:30
PM																							
4:00-4:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		4:00-4:15
4:15-4:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		4:15-4:30
4:30-4:45	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	1		4:30-4:45
4:45-5:00	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1		4:45-5:00
5:00-5:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		5:00-5:15
5:15-5:30	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1		5:15-5:30
5:30-5:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		5:30-5:45
5:45-6:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		5:45-6:00
6:00-6:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		6:00-6:15
6:15-6:30	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1		6:15-6:30
6:30-6:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		6:30-6:45
6:45-7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		6:45-7:00
3 Hour Totals	0	0	1	1	2	0	0	2	0	0	0	0	0	1	0	1	1	3	4				
1 Hour Totals																							
4:00-5:00	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	1	0	2	2	2	2	0.50	4:00-5:00
4:15-5:15	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	1	0	2	2	2	0.50	4:15-5:15	
4:30-5:30	0	0	1	1	1	0	0	1	0	0	0	0	0	1	0	1	1	2	3	2	0.75	4:30-5:30	
4:45-5:45	0	0	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	1	1	2	0.50	4:45-5:45	
5:00-6:00	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0.25	5:00-6:00	
5:15-6:15	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0.25	5:15-6:15	
5:30-6:30	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	0.25	5:30-6:30	
5:45-6:45	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	0.25	5:45-6:45	
6:00-7:00	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	0.25	6:00-7:00	
PM Peak 4:30-5:30	0	0	1	1	1	0	0	1	0	0	0	0	0	1	0	1	1	2	3	0.75	PM Peak 4:30-5:30		

SIG#0902 Hub-LB

PHASE IN USE/PED

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
IN USE	X	X		X	X	X		X								
EXCLUSIVE PED																

PLAN 1

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
MIN GRN	5	7	0	5	5	7	0	5	0	0	0	0	0	0	0	0
BK MGRN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CS MGRN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DLY GRN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WALK	0	7	0	7	0	7	0	7	0	0	0	0	0	0	0	0
WALK2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WLK MAX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PED CLR	0	12	0	23	0	12	0	23	0	0	0	0	0	0	0	0
PD CLR2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PC MAX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PED CO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VEH EXT	3.0	0.0	0.0	5.0	3.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VH EXT2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAX1	20	50	0	30	20	50	0	30	0	0	0	0	0	0	0	0
MAX2	40	60	0	50	40	60	0	50	0	0	0	0	0	0	0	0
MAX3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DYM MAX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DYM STP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
YELLOW	3.5	4.5	0.0	3.5	3.5	4.5	0.0	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RED CLR	1.0	1.0	0.0	3.0	1.0	1.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RED MAX	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RED RVT	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
ACT B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SEC/ACT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAX INT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TIME B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CARS WT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STPTDUC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TTREDUC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MIN GAP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

PLAN 1

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
LOCK DET																
VE RCALL																
PD RCALL	X				X											
MX RCALL	X				X											
SF RCALL																
NO REST																
AI CALC																

NextEdit

COORDINATOR OPTIONS

MANUAL PATTERN	AUTO	ECPI COORD	X
SYSTEM SOURCE	SYS	SYSTEM FORMAT	STD
SPLITS IN	SECONDS	OFFSET IN	SECONDS
TRANSITION	SMOOTH	MAX SELECT	MAX2
DWELL/ADD TIME	255	FORCE OFF	FIXED
DLY COORD WK-LZ		CAL USE PED TM	X
OFFSET REF	LAG	PED RESERVE	
PED RECALL	X	FO ADD INI GRN	
LOCAL ZERO OVRD		MULTISYNC	
RE-SYNC COUNT	1		

COORDINATOR PATTERN 1

USE SPLIT PATTERN	1	TIMING PLAN	1
CYCLE	150	SEQUENCE	1
OFFSET VAL	6	ACTION PLAN	0
ACTUATED COORD		FORCE OFF	NONE
ACT WALK REST		VEH PERM 1	0
PHASE RESERVICE		VEH PERM 2	0
MAX SELECT	NONE	VEH PERM 2 - DISP	0
STD (COS)	111	XART PTRN.	0
DWELL/ADD TIME	0		

RING CONFIG

RING	1	2	3	4	RING	1	2	3	4	RING	1	2	3	4
SPLT EXT	0	0	0	0	SPLIT DEMAND PTRN.	0	0			RING DISP	0	0	0	0

SPLIT PREF PHASES

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PREF 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PREF 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PHASE MODES

Phase	1	2	3	4	5	6	7	8
COORD		X				X		
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

PHASE MODES

Phase	9	10	11	12	13	14	15	16
COORD								
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

SF OUT

PHASE	1	2	3	4	5	6	7	8
SF OUT								

COORDINATOR PATTERN 2

USE SPLIT PATTERN	2	ACTUATED COORD	
CYCLE	150	ACT WALK REST	
OFFSET VAL	0	PHASE RESERVICE	

NextEdit

COORDINATOR PATTERN 2

MAX SELECT	NONE	FORCE OFF	NONE
STD (COS)	121	VEH PERM 1	0
DWELL/ADD TIME	0	VEH PERM 2	0
TIMING PLAN	1	VEH PERM 2 - DISP	0
SEQUENCE	1	XART PTRN.	0
ACTION PLAN	0		

RING CONFIG

RING	1	2	3	4	RING	1	2	3	4	RING	1	2	3	4
SPLT EXT	0	0	0	0	SPLIT DEMAND PTRN.	0	0			RING DISP		0	0	0

SPLIT PREF PHASES

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PREF 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PREF 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PHASE MODES

Phase	1	2	3	4	5	6	7	8
COORD		X				X		
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

PHASE MODES

Phase	9	10	11	12	13	14	15	16
COORD								
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

SF OUT

PHASE	1	2	3	4	5	6	7	8
SF OUT								

COORDINATOR PATTERN 3

USE SPLIT PATTERN	3	TIMING PLAN	1
CYCLE	150	SEQUENCE	1
OFFSET VAL	16	ACTION PLAN	0
ACTUATED COORD		FORCE OFF	NONE
ACT WALK REST		VEH PERM 1	0
PHASE RESERVICE		VEH PERM 2	0
MAX SELECT	NONE	VEH PERM 2 - DISP	0
STD (COS)	131	XART PTRN.	0
DWELL/ADD TIME	0		

RING CONFIG

RING	1	2	3	4	RING	1	2	3	4	RING	1	2	3	4
SPLT EXT	0	0	0	0	SPLIT DEMAND PTRN.	0	0			RING DISP		0	0	0

SPLIT PREF PHASES

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PREF 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PREF 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NextEdit

PHASE MODES

Phase	1	2	3	4	5	6	7	8
COORD		X				X		
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

PHASE MODES

Phase	9	10	11	12	13	14	15	16
COORD								
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

SF OUT

PHASE	1	2	3	4	5	6	7	8
SF OUT								

COORDINATOR PATTERN 4

USE SPLIT PATTERN	4	TIMING PLAN	1
CYCLE	120	SEQUENCE	1
OFFSET VAL	0	ACTION PLAN	0
ACTUATED COORD		FORCE OFF	NONE
ACT WALK REST		VEH PERM 1	0
PHASE RESERVICE		VEH PERM 2	0
MAX SELECT	NONE	VEH PERM 2 - DISP	0
STD (COS)	141	XART PTRN.	0
DWELL/ADD TIME	0		

RING CONFIG

RING	1	2	3	4	RING	1	2	3	4	RING	1	2	3	4
SPLT EXT	0	0	0	0	SPLIT DEMAND PTRN.	0	0			RING DISP		0	0	0

SPLIT PREF PHASES

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PREF 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PREF 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PHASE MODES

Phase	1	2	3	4	5	6	7	8
COORD		X				X		
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

PHASE MODES

Phase	9	10	11	12	13	14	15	16
COORD								
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

SF OUT

PHASE	1	2	3	4	5	6	7	8
SF OUT								

Split 1

PHASE	1	2	3	4	5	6	7	8
SPLIT	32	81	0	37	32	81	0	37
COORD		X				X		
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

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Split 1

PHASE	9	10	11	12	13	14	15	16
SPLIT	0	0	0	0	0	0	0	0
COORD								
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

Split 2

PHASE	1	2	3	4	5	6	7	8
SPLIT	35	73	0	42	35	73	0	42
COORD		X				X		
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

Split 2

PHASE	9	10	11	12	13	14	15	16
SPLIT	0	0	0	0	0	0	0	0
COORD								
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

Split 3

PHASE	1	2	3	4	5	6	7	8
SPLIT	20	80	0	50	20	80	0	50
COORD		X				X		
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

Split 3

PHASE	9	10	11	12	13	14	15	16
SPLIT	0	0	0	0	0	0	0	0
COORD								
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

Split 4

PHASE	1	2	3	4	5	6	7	8
SPLIT	35	73	0	42	35	73	0	42
COORD		X				X		
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

Split 4

PHASE	9	10	11	12	13	14	15	16
SPLIT	0	0	0	0	0	0	0	0
COORD								
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

ACTION PLAN 1

PATTERN	1	FLASH		SYS OVERRIDE		RED REST	
TIMING PLAN	1	VEH DET DIAG PLN	0	SEQUENCE	1	PED DET DIAG PLN	0
VEH DET PLAN	0	DIMMING ENABLE		DET LOG	0	PRIORITY RETURN	

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ACTION PLAN 1

PED PR RETURN		QUEUE DELAY		PMT COND DELAY	
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PHASE TABLE

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PED RCL																
WALK 2																
VEX 2																
VEH RCL																
MAX RCL																
MAX 2																
MAX 3																
CS INH																
OMIT																
SPC FCT																
AUX FCT																

LP TABLE

LP Statement	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15
LP 16-30
LP 31-45
LP 46-60
LP 61-75
LP 76-90
LP 91-100

ACTION PLAN 2

PATTERN	2	SYS OVERRIDE		PED PR RETURN	
TIMING PLAN	1	SEQUENCE	1	QUEUE DELAY	
VEH DET PLAN	0	DET LOG	0	PMT COND DELAY	
FLASH		RED REST			
VEH DET DIAG PLN	0	PED DET DIAG PLN	0		
DIMMING ENABLE		PRIORITY RETURN			

PHASE TABLE

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PED RCL																
WALK 2																
VEX 2																
VEH RCL																
MAX RCL																
MAX 2																
MAX 3																
CS INH																
OMIT																
SPC FCT																

NextEdit

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PHASE TABLE

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
AUX FCT																

LP TABLE

LP Statement	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15
LP 16-30
LP 31-45
LP 46-60
LP 61-75
LP 76-90
LP 91-100

ACTION PLAN 3

PATTERN	3	SYS OVERRIDE		PED PR RETURN	
TIMING PLAN	1	SEQUENCE	1	QUEUE DELAY	
VEH DET PLAN	0	DET LOG	0	PMT COND DELAY	
FLASH		RED REST			
VEH DET DIAG PLN	0	PED DET DIAG PLN	0		
DIMMING ENABLE		PRIORITY RETURN			

PHASE TABLE

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PED RCL																
WALK 2																
VEX 2																
VEH RCL																
MAX RCL																
MAX 2																
MAX 3																
CS INH																
OMIT																
SPC FCT																
AUX FCT																

LP TABLE

LP Statement	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15
LP 16-30
LP 31-45
LP 46-60
LP 61-75
LP 76-90
LP 91-100

ACTION PLAN 4

PATTERN	4	SYS OVERRIDE		PED PR RETURN	
TIMING PLAN	1	SEQUENCE	1	QUEUE DELAY	
VEH DET PLAN	0	DET LOG	0	PMT COND DELAY	
FLASH		RED REST			
VEH DET DIAG PLN	0	PED DET DIAG PLN	0		
DIMMING ENABLE		PRIORITY RETURN			

PHASE TABLE

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PED RCL																
WALK 2																
VEX 2																
VEH RCL																
MAX RCL																
MAX 2																
MAX 3																
CS INH																
OMIT																
SPC FCT																
AUX FCT																

LP TABLE

LP Statement	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15
LP 16-30
LP 31-45
LP 46-60
LP 61-75
LP 76-90
LP 91-100

ACTION PLAN 100

PATTERN	FLSH	DIMMING ENABLE		PED DET DIAG PLN	0
TIMING PLAN	1	SYS OVERRIDE		PRIORITY RETURN	
VEH DET PLAN	0	SEQUENCE	1	PED PR RETURN	
FLASH	X	DET LOG	0	QUEUE DELAY	
VEH DET DIAG PLN	0	RED REST		PMT COND DELAY	

PHASE TABLE

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PED RCL																
WALK 2																
VEX 2																
VEH RCL																
MAX RCL																
MAX 2																

NextEdit

PHASE TABLE

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
MAX 3																
CS INH																
OMIT																
SPC FCT																
AUX FCT																

LP TABLE

LP Statement	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15
LP 16-30
LP 31-45
LP 46-60
LP 61-75
LP 76-90
LP 91-100

Day Plan 1

EVENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
ACTION PLAN	4	100	4	1	2	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	5	6	9	15	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	30	30	0	30	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 1

EVENT	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
ACTION PLAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 2

EVENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
ACTION PLAN	4	100	4	1	2	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	5	6	9	15	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	30	30	0	30	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 2

EVENT	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
ACTION PLAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 3

EVENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
ACTION PLAN	4	100	4	1	2	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	5	6	9	15	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NextEdit

Day Plan 3

EVENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
START TIME - MM	0	30	30	0	30	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 3

EVENT	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
ACTION PLAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 4

EVENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
ACTION PLAN	4	100	4	1	2	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	5	6	9	15	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	30	30	0	30	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 4

EVENT	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
ACTION PLAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 5

EVENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
ACTION PLAN	4	100	4	1	2	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	5	6	9	15	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	30	30	0	30	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 5

EVENT	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
ACTION PLAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 6

EVENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
ACTION PLAN	4	100	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	30	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 6

EVENT	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
ACTION PLAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 7

EVENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
ACTION PLAN	4	100	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	30	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 7

EVENT	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
ACTION PLAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SIG#0376 Hub-GC

PHASE IN USE/PED

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
IN USE	X	X	X	X	X	X	X	X								
EXCLUSIVE PED																

PLAN 1

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
MIN GRN	5	7	5	5	5	7	5	5	0	0	0	0	0	0	0	0
BK MGRN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CS MGRN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DLY GRN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WALK	0	7	0	7	0	7	0	7	0	0	0	0	0	0	0	0
WALK2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WLK MAX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PED CLR	0	18	0	24	0	18	0	24	0	0	0	0	0	0	0	0
PD CLR2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PC MAX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PED CO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VEH EXT	5.0	0.0	5.0	5.0	5.0	0.0	5.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VH EXT2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAX1	15	60	20	40	15	60	20	40	0	0	0	0	0	0	0	0
MAX2	25	60	30	40	50	60	30	40	0	0	0	0	0	0	0	0
MAX3	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DYM MAX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DYM STP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
YELLOW	3.5	4.5	3.5	4.0	3.5	4.5	3.5	4.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
RED CLR	1.0	1.5	1.5	2.5	1.0	1.5	1.5	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RED MAX	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RED RVT	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
ACT B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SEC/ACT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAX INT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TIME B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CARS WT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STPTDUC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TTREDUC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MIN GAP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

PLAN 1

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
LOCK DET			X					X								
VE RCALL																
PD RCALL		X				X										
MX RCALL		X				X										
SF RCALL																
NO REST																
AI CALC																

NextEdit

COORDINATOR OPTIONS

MANUAL PATTERN	AUTO	ECPI COORD	X
SYSTEM SOURCE	SYS	SYSTEM FORMAT	STD
SPLITS IN	SECONDS	OFFSET IN	SECONDS
TRANSITION	SMOOTH	MAX SELECT	MAX2
DWELL/ADD TIME	255	FORCE OFF	FIXED
DLY COORD WK-LZ		CAL USE PED TM	X
OFFSET REF	LAG	PED RESERVE	
PED RECALL	X	FO ADD INI GRN	
LOCAL ZERO OVRD		MULTISYNC	
RE-SYNC COUNT	1		

COORDINATOR PATTERN 1

USE SPLIT PATTERN	1	TIMING PLAN	1
CYCLE	150	SEQUENCE	1
OFFSET VAL	9	ACTION PLAN	0
ACTUATED COORD		FORCE OFF	NONE
ACT WALK REST		VEH PERM 1	0
PHASE RESERVICE		VEH PERM 2	0
MAX SELECT	NONE	VEH PERM 2 - DISP	0
STD (COS)	111	XART PTRN.	0
DWELL/ADD TIME	0		

RING CONFIG

RING	1	2	3	4	RING	1	2	3	4	RING	1	2	3	4
SPLT EXT	0	0	0	0	SPLIT DEMAND PTRN.	0	0			RING DISP	0	0	0	0

SPLIT PREF PHASES

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PREF 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PREF 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PHASE MODES

Phase	1	2	3	4	5	6	7	8
COORD		X				X		
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

PHASE MODES

Phase	9	10	11	12	13	14	15	16
COORD								
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

SF OUT

PHASE	1	2	3	4	5	6	7	8
SF OUT								

COORDINATOR PATTERN 2

USE SPLIT PATTERN	2	ACTUATED COORD	
CYCLE	150	ACT WALK REST	
OFFSET VAL	0	PHASE RESERVICE	

NextEdit

COORDINATOR PATTERN 2

MAX SELECT	NONE	FORCE OFF	NONE
STD (COS)	121	VEH PERM 1	0
DWELL/ADD TIME	0	VEH PERM 2	0
TIMING PLAN	1	VEH PERM 2 - DISP	0
SEQUENCE	1	XART PTRN.	0
ACTION PLAN	0		

RING CONFIG

RING	1	2	3	4	RING	1	2	3	4	RING	1	2	3	4
SPLT EXT	0	0	0	0	SPLIT DEMAND PTRN.	0	0			RING DISP		0	0	0

SPLIT PREF PHASES

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PREF 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PREF 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PHASE MODES

Phase	1	2	3	4	5	6	7	8
COORD		X				X		
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

PHASE MODES

Phase	9	10	11	12	13	14	15	16
COORD								
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

SF OUT

PHASE	1	2	3	4	5	6	7	8
SF OUT								

COORDINATOR PATTERN 3

USE SPLIT PATTERN	3	TIMING PLAN	1
CYCLE	150	SEQUENCE	1
OFFSET VAL	147	ACTION PLAN	0
ACTUATED COORD		FORCE OFF	NONE
ACT WALK REST		VEH PERM 1	0
PHASE RESERVICE		VEH PERM 2	0
MAX SELECT	NONE	VEH PERM 2 - DISP	0
STD (COS)	131	XART PTRN.	0
DWELL/ADD TIME	0		

RING CONFIG

RING	1	2	3	4	RING	1	2	3	4	RING	1	2	3	4
SPLT EXT	0	0	0	0	SPLIT DEMAND PTRN.	0	0			RING DISP		0	0	0

SPLIT PREF PHASES

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PREF 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PREF 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NextEdit

PHASE MODES								
Phase	1	2	3	4	5	6	7	8
COORD		X				X		
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

PHASE MODES								
Phase	9	10	11	12	13	14	15	16
COORD								
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

SF OUT								
PHASE	1	2	3	4	5	6	7	8
SF OUT								

COORDINATOR PATTERN 4	
USE SPLIT PATTERN	4
CYCLE	150
OFFSET VAL	0
ACTUATED COORD	
ACT WALK REST	
PHASE RESERVICE	
MAX SELECT	NONE
STD (COS)	141
DWELL/ADD TIME	0
TIMING PLAN	1
SEQUENCE	1
ACTION PLAN	0
FORCE OFF	NONE
VEH PERM 1	0
VEH PERM 2	0
VEH PERM 2 - DISP	0
XART PTRN.	0

RING CONFIG														
RING	1	2	3	4	RING	1	2	3	4	RING	1	2	3	4
SPLT EXT	0	0	0	0	SPLIT DEMAND PTRN.	0	0			RING DISP		0	0	0

SPLIT PREF PHASES																
PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PREF 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PREF 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PHASE MODES								
Phase	1	2	3	4	5	6	7	8
COORD		X				X		
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

PHASE MODES								
Phase	9	10	11	12	13	14	15	16
COORD								
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

SF OUT								
PHASE	1	2	3	4	5	6	7	8
SF OUT								

Split 1								
PHASE	1	2	3	4	5	6	7	8
SPLIT	22	63	27	38	22	63	27	38
COORD		X				X		
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

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Split 1

PHASE	9	10	11	12	13	14	15	16
SPLIT	0	0	0	0	0	0	0	0
COORD								
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

Split 2

PHASE	1	2	3	4	5	6	7	8
SPLIT	30	54	27	39	30	54	27	39
COORD		X				X		
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

Split 2

PHASE	9	10	11	12	13	14	15	16
SPLIT	0	0	0	0	0	0	0	0
COORD								
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

Split 3

PHASE	1	2	3	4	5	6	7	8
SPLIT	33	54	24	39	33	54	24	39
COORD		X				X		
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

Split 3

PHASE	9	10	11	12	13	14	15	16
SPLIT	0	0	0	0	0	0	0	0
COORD								
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

Split 4

PHASE	1	2	3	4	5	6	7	8
SPLIT	30	54	27	39	30	54	27	39
COORD		X				X		
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

Split 4

PHASE	9	10	11	12	13	14	15	16
SPLIT	0	0	0	0	0	0	0	0
COORD								
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

ACTION PLAN 1

PATTERN	1	FLASH		SYS OVERRIDE		RED REST	
TIMING PLAN	1	VEH DET DIAG PLN	0	SEQUENCE	1	PED DET DIAG PLN	0
VEH DET PLAN	0	DIMMING ENABLE		DET LOG	0	PRIORITY RETURN	

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ACTION PLAN 1

PED PR RETURN		QUEUE DELAY		PMT COND DELAY	
---------------	--	-------------	--	----------------	--

PHASE TABLE

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PED RCL																
WALK 2																
VEX 2																
VEH RCL																
MAX RCL																
MAX 2																
MAX 3																
CS INH																
OMIT																
SPC FCT																
AUX FCT																

LP TABLE

LP Statement	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15
LP 16-30
LP 31-45
LP 46-60
LP 61-75
LP 76-90
LP 91-100

ACTION PLAN 2

PATTERN	2	SYS OVERRIDE		PED PR RETURN	
TIMING PLAN	1	SEQUENCE	1	QUEUE DELAY	
VEH DET PLAN	0	DET LOG	0	PMT COND DELAY	
FLASH		RED REST			
VEH DET DIAG PLN	0	PED DET DIAG PLN	0		
DIMMING ENABLE		PRIORITY RETURN			

PHASE TABLE

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PED RCL																
WALK 2																
VEX 2																
VEH RCL																
MAX RCL																
MAX 2																
MAX 3																
CS INH																
OMIT																
SPC FCT																

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PHASE TABLE

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
AUX FCT																

LP TABLE

LP Statement	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15
LP 16-30
LP 31-45
LP 46-60
LP 61-75
LP 76-90
LP 91-100

ACTION PLAN 3

PATTERN	3	SYS OVERRIDE		PED PR RETURN	
TIMING PLAN	1	SEQUENCE	1	QUEUE DELAY	
VEH DET PLAN	0	DET LOG	0	PMT COND DELAY	
FLASH		RED REST			
VEH DET DIAG PLN	0	PED DET DIAG PLN	0		
DIMMING ENABLE		PRIORITY RETURN			

PHASE TABLE

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PED RCL																
WALK 2																
VEX 2																
VEH RCL																
MAX RCL																
MAX 2																
MAX 3	X															
CS INH																
OMIT																
SPC FCT																
AUX FCT																

LP TABLE

LP Statement	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15
LP 16-30
LP 31-45
LP 46-60
LP 61-75
LP 76-90
LP 91-100

ACTION PLAN 4

PATTERN	4	SYS OVERRIDE		PED PR RETURN	
TIMING PLAN	1	SEQUENCE	1	QUEUE DELAY	
VEH DET PLAN	0	DET LOG	0	PMT COND DELAY	
FLASH		RED REST			
VEH DET DIAG PLN	0	PED DET DIAG PLN	0		
DIMMING ENABLE		PRIORITY RETURN			

PHASE TABLE

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PED RCL																
WALK 2																
VEX 2																
VEH RCL																
MAX RCL																
MAX 2																
MAX 3																
CS INH																
OMIT																
SPC FCT																
AUX FCT																

LP TABLE

LP Statement	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15
LP 16-30
LP 31-45
LP 46-60
LP 61-75
LP 76-90
LP 91-100

ACTION PLAN 31

PATTERN	3	SYS OVERRIDE		PED PR RETURN	
TIMING PLAN	1	SEQUENCE	1	QUEUE DELAY	
VEH DET PLAN	0	DET LOG	0	PMT COND DELAY	
FLASH		RED REST			
VEH DET DIAG PLN	0	PED DET DIAG PLN	0		
DIMMING ENABLE		PRIORITY RETURN			

PHASE TABLE

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PED RCL																
WALK 2																
VEX 2																
VEH RCL																
MAX RCL				X			X									

NextEdit

PHASE TABLE

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
MAX 2																
MAX 3																
CS INH																
OMIT																
SPC FCT																
AUX FCT																

LP TABLE

LP Statement	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15
LP 16-30
LP 31-45
LP 46-60
LP 61-75
LP 76-90
LP 91-100

ACTION PLAN 32

PATTERN	2	SYS OVERRIDE		PED PR RETURN	
TIMING PLAN	1	SEQUENCE	1	QUEUE DELAY	
VEH DET PLAN	0	DET LOG	0	PMT COND DELAY	
FLASH		RED REST			
VEH DET DIAG PLN	0	PED DET DIAG PLN	0		
DIMMING ENABLE		PRIORITY RETURN			

PHASE TABLE

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PED RCL																
WALK 2																
VEX 2																
VEH RCL																
MAX RCL				X			X									
MAX 2																
MAX 3																
CS INH																
OMIT																
SPC FCT																
AUX FCT																

LP TABLE

LP Statement	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15
LP 16-30
LP 31-45
LP 46-60

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LP TABLE

LP Statement	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 61-75
LP 76-90
LP 91-100

ACTION PLAN 100

PATTERN	FLSH	DIMMING ENABLE		PED DET DIAG PLN	0
TIMING PLAN	1	SYS OVERRIDE		PRIORITY RETURN	
VEH DET PLAN	0	SEQUENCE	1	PED PR RETURN	
FLASH	X	DET LOG	0	QUEUE DELAY	
VEH DET DIAG PLN	0	RED REST		PMT COND DELAY	

PHASE TABLE

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PED RCL																
WALK 2																
VEX 2																
VEH RCL																
MAX RCL																
MAX 2																
MAX 3																
CS INH																
OMIT																
SPC FCT																
AUX FCT																

LP TABLE

LP Statement	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15
LP 16-30
LP 31-45
LP 46-60
LP 61-75
LP 76-90
LP 91-100

Day Plan 1

EVENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
ACTION PLAN	4	100	4	1	2	3	4	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	5	6	9	15	19	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	30	30	0	30	0	30	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 1

EVENT	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
ACTION PLAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NextEdit

Day Plan 1

EVENT	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
START TIME - MM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 2

EVENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
ACTION PLAN	4	100	4	1	2	3	4	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	5	6	9	15	19	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	30	30	0	30	0	30	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 2

EVENT	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
ACTION PLAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 3

EVENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
ACTION PLAN	4	100	4	1	2	3	4	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	5	6	9	15	19	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	30	30	0	30	0	30	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 3

EVENT	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
ACTION PLAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 4

EVENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
ACTION PLAN	4	100	4	1	2	3	4	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	5	6	9	15	19	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	30	30	0	30	0	30	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 4

EVENT	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
ACTION PLAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 5

EVENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
ACTION PLAN	4	100	4	1	2	3	4	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	5	6	9	15	19	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	30	30	0	30	0	30	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 5

EVENT	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	
ACTION PLAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 6

EVENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
ACTION PLAN	4	100	4	2	4	32	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	5	10	22	18	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	30	30	0	0	30	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 6

EVENT	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
ACTION PLAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 7

EVENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
ACTION PLAN	4	100	4	2	4	32	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	5	11	22	18	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	30	30	0	0	30	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 7

EVENT	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
ACTION PLAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SIG#0790 Hub-GC

PHASE IN USE/PED

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
IN USE	X	X		X	X	X		X								
EXCLUSIVE PED																

PLAN 1

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
MIN GRN	5	5	0	5	5	5	0	5	0	0	0	0	0	0	0	0
BK MGRN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CS MGRN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DLY GRN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WALK	0	7	0	7	0	7	0	7	0	0	0	0	0	0	0	0
WALK2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WLK MAX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PED CLR	0	15	0	26	0	15	0	26	0	0	0	0	0	0	0	0
PD CLR2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PC MAX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PED CO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VEH EXT	3.0	0.0	0.0	8.0	3.0	0.0	0.0	8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VH EXT2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAX1	15	25	0	45	25	25	0	45	0	0	0	0	0	0	0	0
MAX2	20	60	0	50	40	60	0	50	0	0	0	0	0	0	0	0
MAX3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DYM MAX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DYM STP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
YELLOW	3.5	4.0	0.0	4.0	3.5	4.0	0.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
RED CLR	1.0	1.0	0.0	2.5	1.0	1.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RED MAX	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RED RVT	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
ACT B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SEC/ACT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAX INT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TIME B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CARS WT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STPTDUC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TTREDUC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MIN GAP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

PLAN 1

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
LOCK DET																
VE RCALL																
PD RCALL		X				X										
MX RCALL		X				X										
SF RCALL																
NO REST																
AI CALC																

NextEdit

COORDINATOR OPTIONS

MANUAL PATTERN	AUTO	ECPI COORD	X
SYSTEM SOURCE	SYS	SYSTEM FORMAT	STD
SPLITS IN	SECONDS	OFFSET IN	SECONDS
TRANSITION	SMOOTH	MAX SELECT	MAX2
DWELL/ADD TIME	255	FORCE OFF	FIXED
DLY COORD WK-LZ		CAL USE PED TM	X
OFFSET REF	LAG	PED RESERVE	
PED RECALL	X	FO ADD INI GRN	
LOCAL ZERO OVRD		MULTISYNC	
RE-SYNC COUNT	1		

ACTION PLAN 99

PATTERN	FREE	SYS OVERRIDE		PED PR RETURN	
TIMING PLAN	1	SEQUENCE	1	QUEUE DELAY	
VEH DET PLAN	0	DET LOG	0	PMT COND DELAY	
FLASH		RED REST			
VEH DET DIAG PLN	0	PED DET DIAG PLN	0		
DIMMING ENABLE		PRIORITY RETURN			

PHASE TABLE

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PED RCL																
WALK 2																
VEX 2																
VEH RCL																
MAX RCL																
MAX 2																
MAX 3																
CS INH																
OMIT																
SPC FCT																
AUX FCT																

LP TABLE

LP Statement	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15
LP 16-30
LP 31-45
LP 46-60
LP 61-75
LP 76-90
LP 91-100

ACTION PLAN 100

PATTERN	FLSH	VEH DET PLAN	0	VEH DET DIAG PLN	0
TIMING PLAN	1	FLASH	X	DIMMING ENABLE	

NextEdit

SIG#0790 Hub-GC

ACTION PLAN 100

SYS OVERRIDE		RED REST		PED PR RETURN	
SEQUENCE	1	PED DET DIAG PLN	0	QUEUE DELAY	
DET LOG	0	PRIORITY RETURN		PMT COND DELAY	

PHASE TABLE

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PED RCL																
WALK 2																
VEX 2																
VEH RCL																
MAX RCL																
MAX 2																
MAX 3																
CS INH																
OMIT																
SPC FCT																
AUX FCT																

LP TABLE

LP Statement	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15
LP 16-30
LP 31-45
LP 46-60
LP 61-75
LP 76-90
LP 91-100

Day Plan 1

EVENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
ACTION PLAN	99	100	99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	30	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 1

EVENT	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
ACTION PLAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 2

EVENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
ACTION PLAN	99	100	99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	30	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NextEdit

Day Plan 2

EVENT	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
ACTION PLAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 3

EVENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
ACTION PLAN	99	100	99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	30	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 3

EVENT	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
ACTION PLAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 4

EVENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
ACTION PLAN	99	100	99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	30	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 4

EVENT	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
ACTION PLAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 5

EVENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
ACTION PLAN	99	100	99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	30	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 5

EVENT	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
ACTION PLAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 6

EVENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
ACTION PLAN	99	100	99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NextEdit

Day Plan 6

EVENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
START TIME - MM	0	30	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 6

EVENT	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
ACTION PLAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 7

EVENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
ACTION PLAN	99	100	99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	30	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 7

EVENT	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
ACTION PLAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SIG#0617 Hub-GC

PHASE IN USE/PED

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
IN USE		X		X	X	X		X								
EXCLUSIVE PED																

PLAN 1

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
MIN GRN	0	5	0	5	5	5	0	5	0	0	0	0	0	0	0	0
BK MGRN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CS MGRN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DLY GRN	0	0	0	5	0	0	0	5	0	0	0	0	0	0	0	0
WALK	0	7	0	7	0	7	0	7	0	0	0	0	0	0	0	0
WALK2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WLK MAX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PED CLR	0	27	0	22	0	27	0	22	0	0	0	0	0	0	0	0
PD CLR2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PC MAX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PED CO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VEH EXT	0.0	0.0	0.0	0.0	3.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VH EXT2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAX1	0	50	0	20	15	50	0	20	0	0	0	0	0	0	0	0
MAX2	0	60	0	40	15	60	0	40	0	0	0	0	0	0	0	0
MAX3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DYM MAX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DYM STP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
YELLOW	3.0	4.0	3.0	4.5	3.5	4.0	3.0	4.5	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
RED CLR	0.0	2.0	0.0	5.5	2.5	2.0	0.0	5.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RED MAX	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RED RVT	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
ACT B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SEC/ACT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAX INT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TIME B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CARS WT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STPTDUC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TTREDUC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MIN GAP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

PLAN 1

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
LOCK DET								X								
VE RCALL																
PD RCALL		X				X										
MX RCALL		X				X										
SF RCALL																
NO REST																
AI CALC																

NextEdit

COORDINATOR OPTIONS

MANUAL PATTERN	AUTO	ECPI COORD	X
SYSTEM SOURCE	SYS	SYSTEM FORMAT	STD
SPLITS IN	SECONDS	OFFSET IN	SECONDS
TRANSITION	SMOOTH	MAX SELECT	MAX2
DWELL/ADD TIME	255	FORCE OFF	FIXED
DLY COORD WK-LZ		CAL USE PED TM	X
OFFSET REF	LAG	PED RESERVE	
PED RECALL	X	FO ADD INI GRN	
LOCAL ZERO OVRD		MULTISYNC	
RE-SYNC COUNT	1		

COORDINATOR PATTERN 1

USE SPLIT PATTERN	1	TIMING PLAN	1
CYCLE	120	SEQUENCE	1
OFFSET VAL	54	ACTION PLAN	0
ACTUATED COORD		FORCE OFF	NONE
ACT WALK REST		VEH PERM 1	0
PHASE RESERVICE		VEH PERM 2	0
MAX SELECT	NONE	VEH PERM 2 - DISP	0
STD (COS)	0	XART PTRN.	0
DWELL/ADD TIME	0		

RING CONFIG

RING	1	2	3	4	RING	1	2	3	4	RING	1	2	3	4
SPLT EXT	0	0	0	0	SPLIT DEMAND PTRN.	0	0			RING DISP	0	0	0	0

SPLIT PREF PHASES

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PREF 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PREF 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PHASE MODES

Phase	1	2	3	4	5	6	7	8
COORD		X				X		
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

PHASE MODES

Phase	9	10	11	12	13	14	15	16
COORD								
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

SF OUT

PHASE	1	2	3	4	5	6	7	8
SF OUT								

COORDINATOR PATTERN 2

USE SPLIT PATTERN	2	ACTUATED COORD	
CYCLE	110	ACT WALK REST	
OFFSET VAL	0	PHASE RESERVICE	

NextEdit

COORDINATOR PATTERN 2

MAX SELECT	NONE	FORCE OFF	NONE
STD (COS)	0	VEH PERM 1	0
DWELL/ADD TIME	0	VEH PERM 2	0
TIMING PLAN	1	VEH PERM 2 - DISP	0
SEQUENCE	1	XART PTRN.	0
ACTION PLAN	0		

RING CONFIG

RING	1	2	3	4	RING	1	2	3	4	RING	1	2	3	4
SPLT EXT	0	0	0	0	SPLIT DEMAND PTRN.	0	0			RING DISP		0	0	0

SPLIT PREF PHASES

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PREF 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PREF 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PHASE MODES

Phase	1	2	3	4	5	6	7	8
COORD		X				X		
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

PHASE MODES

Phase	9	10	11	12	13	14	15	16
COORD								
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

SF OUT

PHASE	1	2	3	4	5	6	7	8
SF OUT								

COORDINATOR PATTERN 3

USE SPLIT PATTERN	3	TIMING PLAN	1
CYCLE	120	SEQUENCE	1
OFFSET VAL	57	ACTION PLAN	0
ACTUATED COORD		FORCE OFF	NONE
ACT WALK REST		VEH PERM 1	0
PHASE RESERVICE		VEH PERM 2	0
MAX SELECT	NONE	VEH PERM 2 - DISP	0
STD (COS)	0	XART PTRN.	0
DWELL/ADD TIME	0		

RING CONFIG

RING	1	2	3	4	RING	1	2	3	4	RING	1	2	3	4
SPLT EXT	0	0	0	0	SPLIT DEMAND PTRN.	0	0			RING DISP		0	0	0

SPLIT PREF PHASES

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PREF 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PREF 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NextEdit

PHASE MODES

Phase	1	2	3	4	5	6	7	8
COORD		X				X		
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

PHASE MODES

Phase	9	10	11	12	13	14	15	16
COORD								
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

SF OUT

PHASE	1	2	3	4	5	6	7	8
SF OUT								

COORDINATOR PATTERN 4

USE SPLIT PATTERN	4	TIMING PLAN	1
CYCLE	110	SEQUENCE	1
OFFSET VAL	0	ACTION PLAN	0
ACTUATED COORD		FORCE OFF	NONE
ACT WALK REST		VEH PERM 1	0
PHASE RESERVICE		VEH PERM 2	0
MAX SELECT	NONE	VEH PERM 2 - DISP	0
STD (COS)	0	XART PTRN.	0
DWELL/ADD TIME	0		

RING CONFIG

RING	1	2	3	4	RING	1	2	3	4	RING	1	2	3	4
SPLT EXT	0	0	0	0	SPLIT DEMAND PTRN.	0	0			RING DISP		0	0	0

SPLIT PREF PHASES

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PREF 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PREF 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PHASE MODES

Phase	1	2	3	4	5	6	7	8
COORD		X				X		
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

PHASE MODES

Phase	9	10	11	12	13	14	15	16
COORD								
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

SF OUT

PHASE	1	2	3	4	5	6	7	8
SF OUT								

Split 1

PHASE	1	2	3	4	5	6	7	8
SPLIT	0	75	0	45	30	45	0	45
COORD		X				X		
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

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Split 1

PHASE	9	10	11	12	13	14	15	16
SPLIT	0	0	0	0	0	0	0	0
COORD								
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

Split 2

PHASE	1	2	3	4	5	6	7	8
SPLIT	0	65	0	45	20	45	0	45
COORD		X				X		
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

Split 2

PHASE	9	10	11	12	13	14	15	16
SPLIT	0	0	0	0	0	0	0	0
COORD								
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

Split 3

PHASE	1	2	3	4	5	6	7	8
SPLIT	0	75	0	45	21	54	0	45
COORD		X				X		
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

Split 3

PHASE	9	10	11	12	13	14	15	16
SPLIT	0	0	0	0	0	0	0	0
COORD								
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

Split 4

PHASE	1	2	3	4	5	6	7	8
SPLIT	0	65	0	45	20	45	0	45
COORD		X				X		
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

Split 4

PHASE	9	10	11	12	13	14	15	16
SPLIT	0	0	0	0	0	0	0	0
COORD								
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

ACTION PLAN 1

PATTERN	1	FLASH		SYS OVERRIDE		RED REST	
TIMING PLAN	1	VEH DET DIAG PLN	0	SEQUENCE	1	PED DET DIAG PLN	0
VEH DET PLAN	0	DIMMING ENABLE		DET LOG	0	PRIORITY RETURN	

NextEdit

SIG#0617 Hub-GC

ACTION PLAN 1

PED PR RETURN		QUEUE DELAY		PMT COND DELAY	
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PHASE TABLE

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PED RCL																
WALK 2																
VEX 2																
VEH RCL																
MAX RCL																
MAX 2																
MAX 3																
CS INH																
OMIT																
SPC FCT																
AUX FCT																

LP TABLE

LP Statement	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15
LP 16-30
LP 31-45
LP 46-60
LP 61-75
LP 76-90
LP 91-100

ACTION PLAN 2

PATTERN	2	SYS OVERRIDE		PED PR RETURN	
TIMING PLAN	1	SEQUENCE	1	QUEUE DELAY	
VEH DET PLAN	0	DET LOG	0	PMT COND DELAY	
FLASH		RED REST			
VEH DET DIAG PLN	0	PED DET DIAG PLN	0		
DIMMING ENABLE		PRIORITY RETURN			

PHASE TABLE

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PED RCL																
WALK 2																
VEX 2																
VEH RCL																
MAX RCL																
MAX 2																
MAX 3																
CS INH																
OMIT																
SPC FCT																

NextEdit

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PHASE TABLE

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
AUX FCT																

LP TABLE

LP Statement	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15
LP 16-30
LP 31-45
LP 46-60
LP 61-75
LP 76-90
LP 91-100

ACTION PLAN 3

PATTERN	3	SYS OVERRIDE		PED PR RETURN	
TIMING PLAN	1	SEQUENCE	1	QUEUE DELAY	
VEH DET PLAN	0	DET LOG	0	PMT COND DELAY	
FLASH		RED REST			
VEH DET DIAG PLN	0	PED DET DIAG PLN	0		
DIMMING ENABLE		PRIORITY RETURN			

PHASE TABLE

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PED RCL																
WALK 2																
VEX 2																
VEH RCL																
MAX RCL																
MAX 2																
MAX 3																
CS INH																
OMIT																
SPC FCT																
AUX FCT																

LP TABLE

LP Statement	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15
LP 16-30
LP 31-45
LP 46-60
LP 61-75
LP 76-90
LP 91-100

ACTION PLAN 4

PATTERN	4	SYS OVERRIDE		PED PR RETURN	
TIMING PLAN	1	SEQUENCE	1	QUEUE DELAY	
VEH DET PLAN	0	DET LOG	0	PMT COND DELAY	
FLASH		RED REST			
VEH DET DIAG PLN	0	PED DET DIAG PLN	0		
DIMMING ENABLE		PRIORITY RETURN			

PHASE TABLE

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PED RCL																
WALK 2																
VEX 2																
VEH RCL																
MAX RCL																
MAX 2																
MAX 3																
CS INH																
OMIT																
SPC FCT																
AUX FCT																

LP TABLE

LP Statement	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15
LP 16-30
LP 31-45
LP 46-60
LP 61-75
LP 76-90
LP 91-100

ACTION PLAN 100

PATTERN	FLSH	DIMMING ENABLE		PED DET DIAG PLN	0
TIMING PLAN	1	SYS OVERRIDE		PRIORITY RETURN	
VEH DET PLAN	0	SEQUENCE	1	PED PR RETURN	
FLASH	X	DET LOG	0	QUEUE DELAY	
VEH DET DIAG PLN	0	RED REST		PMT COND DELAY	

PHASE TABLE

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PED RCL																
WALK 2																
VEX 2																
VEH RCL																
MAX RCL																
MAX 2																

NextEdit

PHASE TABLE

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
MAX 3																
CS INH																
OMIT																
SPC FCT																
AUX FCT																

LP TABLE

LP Statement	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15
LP 16-30
LP 31-45
LP 46-60
LP 61-75
LP 76-90
LP 91-100

Day Plan 1

EVENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
ACTION PLAN	4	100	4	1	2	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	5	6	9	15	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	30	30	0	30	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 1

EVENT	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
ACTION PLAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 2

EVENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
ACTION PLAN	4	100	4	1	2	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	5	6	9	15	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	30	30	0	30	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 2

EVENT	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
ACTION PLAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 3

EVENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
ACTION PLAN	4	100	4	1	2	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	5	6	9	15	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NextEdit

Day Plan 3

EVENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
START TIME - MM	0	30	30	0	30	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 3

EVENT	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
ACTION PLAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 4

EVENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
ACTION PLAN	4	100	4	1	2	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	5	6	9	15	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	30	30	0	30	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 4

EVENT	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
ACTION PLAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 5

EVENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
ACTION PLAN	4	100	4	1	2	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	5	6	9	15	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	30	30	0	30	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 5

EVENT	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
ACTION PLAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 6

EVENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
ACTION PLAN	4	100	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	30	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 6

EVENT	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
ACTION PLAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 7

EVENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
ACTION PLAN	4	100	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	30	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 7

EVENT	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
ACTION PLAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

INT.#	Cabinet Type	System	INTERSECTION NAME:													TS.#			
902	Cobalt TS2	TSS	BOWMAN MILL DR, GERMANTOWN RD (MD 118) & WATERS RD													B.0			
			Hubbette: LB																
			NBLT GERMANTOWN RD (MD 118)	SB GERMANTOWN RD (MD 118)	EB WATERS RD	SBLT GERMANTOWN RD (MD 118)	NB GERMANTOWN RD (MD 118)	WB BOWMAN MILL DR											
2-1 CONTROLLER TIMING DATA																			
TIMING PLAN 1																			
PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16			
MINIMUM GREEN	5	7		5	5	7		5											
BICYCLE MINIMUM GREEN																			
CONDITIONAL SERVICE MINIMUM GREEN																			
DELAYED GREEN																			
WALK		7		7		7		7											
WALK 2																			
WALK MAX																			
PEDESTRIAN CLEARANCE		12		23		12		23											
PEDESTRIAN CLEARANCE 2																			
PEDESTRIAN CLEARANCE MAX																			
PEDESTRIAN CARRY OVER																			
VEHICLE EXTENSION	3.0			3.0	3.0			3.0											
VEHICLE EXTENSION 2																			
MAX1	20	50		30	20	50		30											
MAX2	30	60		40	30	60		40											
MAX3																			
DYNAMIC MAX																			
DYNAMIC MAX STEP																			
YELLOW CHANGE	3.5	4.5		3.5	3.5	4.5		3.5											
RED CLEARANCE	1.0	1.0		3.0	1.0	1.0		3.0											
RED MAX																			
RED REVERT	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
ACTUATIONS BEFORE GAP REDUCTION																			
SECONDS PER ACTIONS ADDED TO INITIAL																			
MAXIMUM ADDED INITIAL GREEN																			
TIME BEFORE GAP REDUCTION																			
CARS WAITING BEFORE GAP REDUCTION																			
STEP TO REDUCE																			
TIME TO REDUCE TO MINIMUM																			
MINIMUM GAP																			

*TIMING PURPOSES ONLY

TOD (Late) Flash 00:30 - 05:30 7 Days
 Spec. Action Plan _____
 Spec. Action Plan _____

Submitted by / Date: GBURLEY 01-21-2020 Checked by / Date: KHamud 6/10/20 approved by / Date: KHamud 6/11/20
 In Service by / Date/Time: 766 6/10/20 11:30

INT.#	Cabinet Type	System	INTERSECTION NAME:													TS.#				
376	TS1	TSS	GERMANTOWN RD (MD 118) & WISTERIA DR													E.1				
			Hubbette:																	
			NBLT MD 118	SB MD 118	WBLT WISTERIA DR	EB WISTERIA DR	SBLT MD 118	NB MD 118	EBLT WISTERIA DR	WB WISTERIA DR										
2-1 CONTROLLER TIMING DATA																				
TIMING PLAN			1																	
PHASE			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
MINIMUM GREEN			5	7	5	5	5	7	5	5										
BICYCLE MINIMUM GREEN																				
CONDITIONAL SERVICE MINIMUM GREEN																				
DELAYED GREEN																				
WALK				7		7		7		7										
WALK 2																				
WALK MAX																				
PEDESTRIAN CLEARANCE				18		24		18		24										
PEDESTRIAN CLEARANCE 2																				
PEDESTRIAN CLEARANCE MAX																				
PEDESTRIAN CARRY OVER																				
VEHICLE EXTENSION			5.0		5.0	5.0	5.0		5.0	5.0										
VEHICLE EXTENSION 2																				
MAX1			15	60	20	40	15	60	20	40										
MAX2			50	60	30	40	50	60	30	40										
MAX3			70																	
DYNAMIC MAX																				
DYNAMIC MAX STEP																				
YELLOW CHANGE			3.5	4.5	3.5	4.0	3.5	4.5	3.5	4.0										
RED CLEARANCE			1.0	1.5	1.5	2.5	1.0	1.5	1.5	2.5										
RED MAX																				
RED REVERT			5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
ACTUATIONS BEFORE GAP REDUCTION																				
SECONDS PER ACTIONS ADDED TO INITIAL																				
MAXIMUM ADDED INITIAL GREEN																				
TIME BEFORE GAP REDUCTION																				
CARS WAITING BEFORE GAP REDUCTION																				
STEP TO REDUCE																				
TIME TO REDUCE TO MINIMUM																				
MINIMUM GAP																				

* TIMING PURPOSES ONLY

TOD (Late) Flash 00:30 - 05:30 7 Days

Spec. Action Plan

Spec. Action Plan

Submitted by / Date: VP 04/28/2016

Checked by / Date KHamud 3/14/17 Approved by / Date KHamud 3/10/17

In Service by / Date/Time 767/755 3/17/17 10.00

SEQUENCE OF OPERATION SHEET

MD 118
RUNS IN A
NORTH-SOUTH
DIRECTION

TRAFFIC OPERATIONS SECTION
DIVISION OF TRAFFIC ENGINEERING
MONTGOMERY COUNTY, MARYLAND

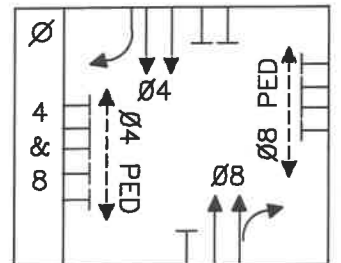
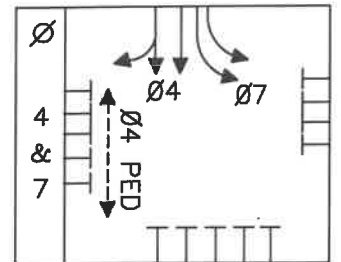
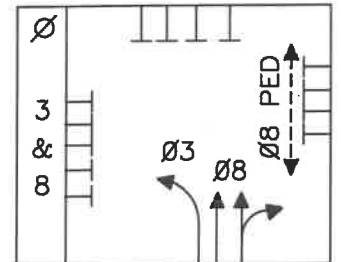
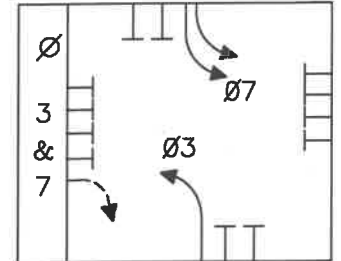
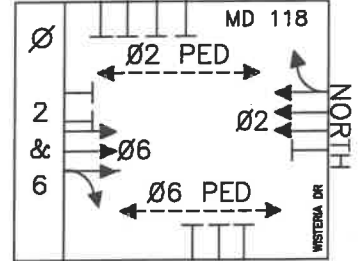
NO. 376-E.0

sheet 1 of 2

INTERSECTION: GERMANTOWN ROAD (MD 118) AT WISTERIA ROAD

PHASING

SIGNAL NO.	SIGNAL HEAD INDICATIONS				
	1,2,3,6,7,10,11 14,15,16	4,5,8,9 12,13,17,18			19-26
TOTAL:	11	8			8
LEGEND					
	OPTICALLY LIMITED				
R	RED				
Y	YELLOW				
G	GREEN				
←	ARROW				
F	FLASHING				
	12"	12"			12" 16"



SIGNAL NO.	SEQUENCE OF OPERATION																		FLASH			
	INTERVAL																					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18				
1	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R		
2	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	
3	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	
4	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Y
5	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Y
6	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	
7	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	
8	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Y
9	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Y
10	←R	←R	←R	←R	←G	←Y	←R	←G	←Y	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	
11	←R	←R	←R	←R	←G	←Y	←R	←G	←Y	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	
12	R	R	R	R	R	R	R	G	G	G	R	R	R	G	G	G	Y	R	R	R	R	
13	R	R	R	R	R	R	R	G	G	G	R	R	R	G	G	G	Y	R	R	R	R	
14	←R	←R	←R	←R	←G	←Y	←R	←R	←R	←R	←G	←Y	←R	←R	←R	←R	←R	←R	←R	←R	←R	
15	←R	←R	←R	←R	←G	←Y	←R	←R	←R	←R	←G	←Y	←R	←R	←R	←R	←R	←R	←R	←R	←R	
16	←R	←R	←R	←R	←G	←Y	←R	←R	←R	←R	←G	←Y	←R	←R	←R	←R	←R	←R	←R	←R	←R	
17	R	R	R	R	R	R	R	R	R	R	G	G	G	G	G	Y	R	R	R	R	R	
18	R	R	R	R	R	R	R	R	R	R	G	G	G	G	G	Y	R	R	R	R	R	
19	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DARK
20	DW	DW	DW	DW	DW	DW	DW	W	W	W	DW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DW	DARK
21	DW	DW	DW	DW	DW	DW	DW	W	W	W	DW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DW	DARK
22	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DARK
23	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DARK
24	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	W	W	W	FDW	DW	DW	DW	DW	DW	DW	DARK
25	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	W	W	W	FDW	DW	DW	DW	DW	DW	DW	DARK
26	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DARK
PHASE	2 & 6	ALL RED	3 & 7	ALL RED	3 & 8	ALL RED	4 & 7	ALL RED	4 & 8	ALL RED												

NOTES: E.0= NORTHBOUND INSTALL SECOND LEFT TURN LANE

SUBMITTED: RSC 12/12/011	CHECKED: _____	APPROVED: _____
IN SERVICE BY: _____	DATE: _____	TIME: _____

SEQUENCE OF OPERATION SHEET

MD 118
RUNS IN A
NORTH-SOUTH
DIRECTION

TRAFFIC OPERATIONS SECTION
DIVISION OF TRAFFIC ENGINEERING
MONTGOMERY COUNTY, MARYLAND

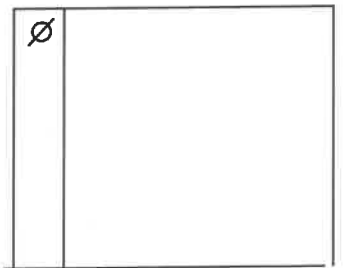
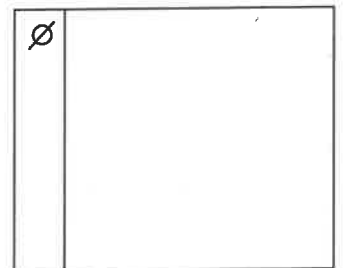
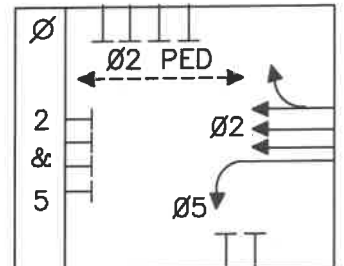
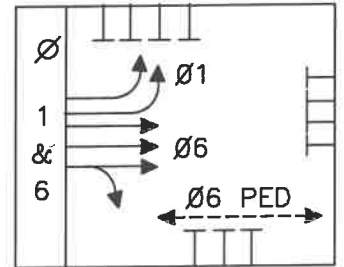
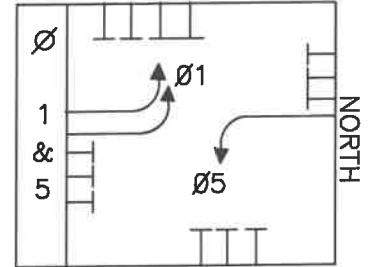
NO. 376-E.0

sheet 2 of 2

PHASING

INTERSECTION: GERMANTOWN ROAD (MD 118) AT WISTERIA ROAD

SIGNAL NO.	SIGNAL HEAD INDICATIONS				
	1,2,5,6,7,10,11 12,15,16,17	3,4,8,9,13 14,18,19			20-27
TOTAL:	11	8			8
LEGEND	 12"	 12"			 12" 16"



SIGNAL NO.	SEQUENCE OF OPERATION									FLASH
	19	20	21	22	23	24	25	26	27	
1	←G	←Y	←R	←G	←Y	←R	←R	←R	←R	←R
2	←G	←Y	←R	←G	←Y	←R	←R	←R	←R	←R
3	←G	←Y	←R	←G	←Y	←R	←R	←R	←R	←R
4	R	R	R	G	G	G	R	R	R	Y
5	R	R	R	G	G	G	R	R	R	Y
6	←G	←Y	←R	←R	←R	←R	←G	←Y	←R	←R
7	←G	←Y	←R	←R	←R	←R	←G	←Y	←R	←R
8	R	R	R	R	R	R	G	G	G	Y
9	R	R	R	R	R	R	G	G	G	Y
10	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R
11	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R
12	R	R	R	R	R	R	R	R	R	R
13	R	R	R	R	R	R	R	R	R	R
14	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R
15	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R
16	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R
17	R	R	R	R	R	R	R	R	R	R
18	R	R	R	R	R	R	R	R	R	R
19	DW	DW	DW	DW	DW	DW	W	W	W	DARK
20	DW	DW	DW	DW	DW	DW	DW	DW	DW	DARK
21	DW	DW	DW	DW	DW	DW	DW	DW	DW	DARK
22	DW	DW	DW	W	W	W	DW	DW	DW	DARK
23	DW	DW	DW	W	W	W	DW	DW	DW	DARK
24	DW	DW	DW	DW	DW	DW	DW	DW	DW	DARK
25	DW	DW	DW	DW	DW	DW	DW	DW	DW	DARK
26	DW	DW	DW	DW	DW	DW	W	W	W	DARK
27										
PHASE	1 & 5	ALL RED	1 & 6	ALL RED	2 & 5	ALL RED				

NOTES:

SUBMITTED: <u>RSC 12/12/2011</u>	CHECKED: _____	APPROVED: _____
IN SERVICE BY: _____	DATE: _____	TIME: _____

INT.#	Cabinet Type	System	INTERSECTION NAME:													TS.#				
790	TS2-2	TSS	Father Hurley Boulevard and Wisteria Drive													A.2				
			Hubbette:																	
			NBLT Father Hurley Boulevard	SB Father Hurley Boulevard	EB Wisteria Drive	SBLT Father Hurley Boulevard	NB Father Hurley Boulevard	WB Wisteria Drive												
2-1 CONTROLLER TIMING DATA																				
TIMING PLAN 1																				
PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
MINIMUM GREEN	5	5		5	5	5		5												
BICYCLE MINIMUM GREEN																				
CONDITIONAL SERVICE MINIMUM GREEN																				
DELAYED GREEN																				
WALK		7		7		7		7												
WALK 2																				
WALK MAX																				
PEDESTRIAN CLEARANCE		15		26		15		26												
PEDESTRIAN CLEARANCE 2																				
PEDESTRIAN CLEARANCE MAX																				
PEDESTRIAN CARRY OVER																				
VEHICLE EXTENSION	3.0			8.0	3.0			8.0												
VEHICLE EXTENSION 2																				
MAX1	15	25		45	25	25		45												
MAX2	20	60		50	40	60		60												
MAX3																				
DYNAMIC MAX																				
DYNAMIC MAX STEP																				
YELLOW CHANGE	3.5	4.0		4.0	3.5	4.0		4.0												
RED CLEARANCE	1.0	1.0		2.5	1.0	1.0		2.5												
RED MAX																				
RED REVERT	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
ACTUATIONS BEFORE GAP REDUCTION																				
SECONDS PER ACTIONS ADDED TO INITIAL																				
MAXIMUM ADDED INITIAL GREEN																				
TIME BEFORE GAP REDUCTION																				
CARS WAITING BEFORE GAP REDUCTION																				
STEP TO REDUCE																				
TIME TO REDUCE TO MINIMUM																				
MINIMUM GAP																				

* TIMING PURPOSES ONLY

TOD (Late) Flash 00:30 - 05:30 7 Days

Spec. Action Plan _____

Spec. Action Plan _____

Submitted by / Date: VP 04/19/2016

Checked by / Date: KHamid 3/22/17

Approved by / Date: KHamid 3/22/17

In Service by / Date/Time: 767/752 3/23/17 10:35

FATHER HURLEY
 RUNS IN A
 NORTH-SOUTH
 DIRECTION

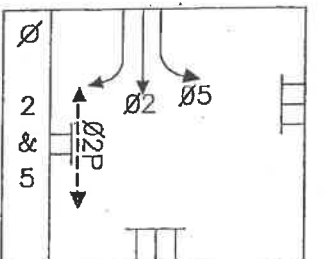
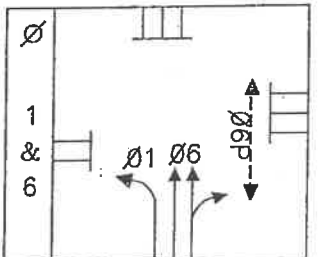
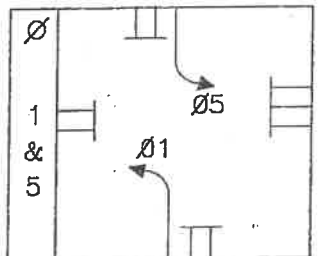
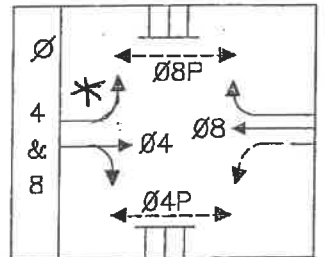
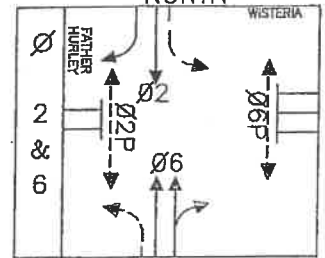
SEQUENCE OF OPERATION SHEET

TRAFFIC OPERATIONS SECTION
 DIVISION OF TRAFFIC ENGINEERING
 MONTGOMERY COUNTY, MARYLAND

NO. 790- A.0
 SHEET 1 OF 1
 PHASING
 NORTH

INTERSECTION: FATHER HURLEY BLVD. AND WISTERIA DRIVE

SIGNAL NO.	SIGNAL HEAD INDICATIONS				
	3,4,,7, 8, 9 10,11,12,13	1,2,5,6			14-21
TOTAL:	9	4			8
LEGEND	(R)	(R)	(R)	(←R)	
OPTICALLY LIMITED					
R RED	(Y)	(←Y) (Y)	(Y) (Y→)	(←Y)	
Y YELLOW	(G)	(←G) (G)	(G) (G→)	(←G)	
G GREEN	←ARROW				
←ARROW	F FLASHING				
	12"	12"	12"	12"	



SIGNAL NO.	SEQUENCE OF OPERATION																		FLASH
	INTERVAL																		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
1	G	G	Y	R	R	R	R	R	R	←R	←Y	R	←R	←Y	G	R	R	R	R
2	G	G	Y	R	R	R	R	R	R	←R	←Y	R	←R	←Y	G	R	R	R	R
3	G	G	Y	R	R	R	R	R	R	R	R	R	G	G	G	R	R	R	R
4	G	G	Y	R	R	R	R	R	R	R	R	R	G	G	G	R	R	R	R
5	G	G	Y	R	R	R	R	R	R	←R	←Y	R	←R	←Y	R	←R	←Y	R	R
6	G	G	Y	R	R	R	R	R	R	←R	←Y	R	←R	←Y	R	←R	←Y	R	R
7	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	G	G	G	R
8	R	R	R	R	G	G	G	Y	R	R	R	R	R	R	R	R	R	R	R
9	R	R	R	R	G	G	G	Y	R	R	R	R	R	R	R	R	R	R	R
10	R	R	R	R	G	G	G	Y	R	R	R	R	R	R	R	R	R	R	R
11	R	R	R	R	G	G	G	Y	R	R	R	R	R	R	R	R	R	R	R
12	R	R	R	R	G	G	G	Y	R	R	R	R	R	R	R	R	R	R	R
13	R	R	R	R	G	G	G	Y	R	R	R	R	R	R	R	R	R	R	R
14	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	W	W	W	DARK
15	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	W	W	DW	DW	DW	DARK
16	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	W	W	DW	DW	DW	DARK
17	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	W	W	W	DARK
18	DW	DW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DARK
19	DW	DW	DW	DW	W	FDW	DW	DW	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DARK
20	DW	DW	DW	DW	W	FDW	DW	DW	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DARK
21	DW	DW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DARK
PHASE	2 & 6	ALL RED	4 & 8	ALL RED	1 & 5	ALL RED	1 & 6	ALL RED	2 & 5	ALL RED									

NOTES: A.0 = NEW TRAFFIC SIGNAL WITH APS, CPS & LED SIGNALS.
 * - update lane use to match existing condition, STW 4/20/11

SUBMITTED: TSET 11-21-08	CHECKED: GB 11-21-08	APPROVED: KHamind 12/29/08
IN SERVICE BY: 764,782	DATE: 12-31-08	TIME: 0941

INT.#	Cabinet Type	System	INTERSECTION NAME:																TS.#				
617	ASC3 TS1	TSS	Father Hurley Blvd. & Middlebrook Dr. / Sweetgum Cir.																C.1				
	Base Mount		Hubbette:		GC																		
2-1 CONTROLLER TIMING DATA			SB Father Hurley	EB Sweetgum Circle	SBLT Father Hurley	NB Father Hurley	WB Middlebrook																
TIMING PLAN 1																							
PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16							
MINIMUM GREEN		5		5	5	5		5															
BICYCLE MINIMUM GREEN																							
CONDITIONAL SERVICE MINIMUM GREEN																							
DELAYED GREEN				5				5															
WALK		7		7		7		7															
WALK 2																							
WALK MAX																							
PEDESTRIAN CLEARANCE		27		22		27		22															
PEDESTRIAN CLEARANCE 2																							
PEDESTRIAN CLEARANCE MAX																							
PEDESTRIAN CARRY OVER																							
VEHICLE EXTENSION					3.0			4.0															
VEHICLE EXTENSION 2																							
MAX1		50		20	15	50		20															
MAX2		60		40	15	60		40															
MAX3																							
DYNAMIC MAX																							
DYNAMIC MAX STEP																							
YELLOW CHANGE		4.0		4.5	3.5	4.0		4.5															
RED CLEARANCE		2.0		5.5	2.5	2.0		5.5															
RED MAX																							
RED REVERT		5.0	5.0	5.0	5.0	5.0	5.0	5.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0							
ACTUATIONS BEFORE GAP REDUCTION																							
SECONDS PER ACTIONS ADDED TO INITIAL																							
MAXIMUM ADDED INITIAL GREEN																							
TIME BEFORE GAP REDUCTION																							
CARS WAITING BEFORE GAP REDUCTION																							
STEP TO REDUCE																							
TIME TO REDUCE TO MINIMUM																							
MINIMUM GAP																							

*TIMING PURPOSES ONLY

TOD (Late) Flash 00:30 - 05:30 7 Days

Spec. Action Plan _____

Spec. Action Plan _____

Submitted by / Date: LMB 1/9/2020

Checked by / Date VP 1/9/2020

Approved by / Date VP 1/9/2020

In Service by / Date/Time 2/9/01 4 2020 2:13pm

FATHER HURLEY
 RUNS IN A
 NORTH-SOUTH
 DIRECTION

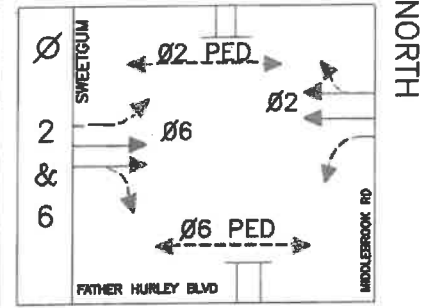
SEQUENCE OF OPERATION SHEET

TRAFFIC OPERATIONS SECTION
 DIVISION OF TRAFFIC ENGINEERING
 MONTGOMERY COUNTY, MARYLAND

NO. 617-C
 SHT. 1 OF 1
 PHASING

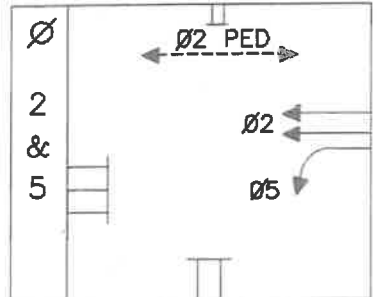
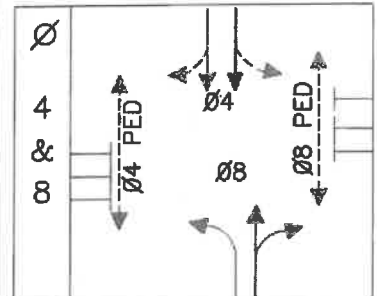
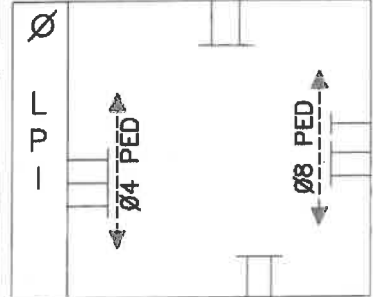
INTERSECTION: FATHER HURLEY BLVD & MIDDLEBROOK & SWEETGUM CIRCLE

SIGNAL NO.	SIGNAL HEAD INDICATIONS				
	1,2,3,5,7 8,9,10,11,12	4,5			13-24
TOTAL:	10	2			12
LEGEND	(R)	(R)	(R)		
OPTICALLY LIMITED	(Y)	(Y)	(Y)		
R RED	(G)	(G)	(G)		
Y YELLOW	(G)	(G)	(G)		
G GREEN	(G)	(G)	(G)		
← ARROW	(G)	(G)	(G)		
F FLASHING	12"	12"			12"



NORTH

SIGNAL NO.	SEQUENCE OF OPERATION																		F L P I
	INTERVAL																		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
1	G	Y	R	R	R	R	R	R	R	R	R	R							Y
2	G	Y	R	R	R	R	R	R	R	R	R	R							Y
3	G	Y	R	R	R	R	R	R	R	R	R	R							Y
4	G	Y	R	R	R	R	R	R	R	R	R	G							Y
5	G	Y	R	R	R	R	R	R	R	R	R	G							Y
6	G	Y	R	R	R	R	R	R	R	R	R	G							R
7	R	R	R	R	R	R	G	G	Y	R	R	R							R
8	R	R	R	R	R	R	G	G	Y	R	R	R							R
9	R	R	R	R	R	R	G	G	Y	R	R	R							R
10	R	R	R	R	R	R	G	G	Y	R	R	R							R
11	R	R	R	R	R	R	G	G	Y	R	R	R							R
12	R	R	R	R	R	R	G	G	Y	R	R	R							R
13	W	FDW	DW	DW	DW	DW	DW	DW	DW	W	W	W							DARK
14	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW							DARK
15	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW							DARK
16	W	FDW	DW	DW	DW	DW	DW	DW	DW	W	W	W							DARK
17	DW	DW	DW	DW	W	W	FDW	DW	DW	DW	DW	DW							DARK
18	DW	DW	DW	DW	W	W	FDW	DW	DW	DW	DW	DW							DARK
19	DW	DW	DW	DW	W	W	FDW	DW	DW	DW	DW	DW							DARK
20	DW	DW	DW	DW	W	W	FDW	DW	DW	DW	DW	DW							DARK
21	DW	DW	DW	DW	W	W	FDW	DW	DW	DW	DW	DW							DARK
22	DW	DW	DW	DW	W	W	FDW	DW	DW	DW	DW	DW							DARK
23	DW	DW	DW	DW	W	W	FDW	DW	DW	DW	DW	DW							DARK
24	DW	DW	DW	DW	W	W	FDW	DW	DW	DW	DW	DW							DARK
PHASE	2 & 6	ALL RED	LPI	4 & 8	ALL RED	2 & 5	ALL RED												



NOTES: C.O = IMPLEMENTS LPI FOR PHASES 4 & 8 (NORTH & SOUTH LEGS)

SUBMITTED: GTM 05-20-2019 CHECKED: KHamed 8/22/19 APPROVED: KHamed 8/22/19
 IN SERVICE BY: 7851-781 DATE: 8-22-19 TIME: 11:55

171761

APPENDIX D
EXISTING CONDITIONS CAPACITY

Queues

1: MD 118 & Waters Rd/Bowman Mill Dr

11/01/2022



Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	46	46	69	37	816	61	48	531
v/c Ratio	0.42	0.26	0.45	0.05	0.20	0.05	0.09	0.13
Control Delay	73.4	15.2	40.1	2.4	4.6	1.2	1.9	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.4	15.2	40.1	2.4	4.6	1.2	1.9	3.0
Queue Length 50th (ft)	44	1	27	4	71	0	4	29
Queue Length 95th (ft)	87	36	78	12	99	12	m9	35
Internal Link Dist (ft)	346		449		1184			711
Turn Bay Length (ft)		335		220		140	230	
Base Capacity (vph)	276	365	331	883	4088	1284	742	4094
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.13	0.21	0.04	0.20	0.05	0.06	0.13

























Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

1: MD 118 & Waters Rd/Bowman Mill Dr

11/01/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  			  	
Traffic Volume (vph)	31	11	42	22	5	37	34	751	56	44	472	17
Future Volume (vph)	31	11	42	22	5	37	34	751	56	44	472	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-2%			2%			1%				0%
Total Lost time (s)		6.5	6.5		6.5		4.5	5.5	5.5	4.5	5.5	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.91	1.00	1.00	0.91	
Fr _t		1.00	0.85		0.92		1.00	1.00	0.85	1.00	0.99	
Fl _t Protected		0.96	1.00		0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1814	1599		1671		1761	5060	1575	1770	5059	
Fl _t Permitted		0.72	1.00		0.87		0.44	1.00	1.00	0.33	1.00	
Satd. Flow (perm)		1363	1599		1472		824	5060	1575	613	5059	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	12	46	24	5	40	37	816	61	48	513	18
RTOR Reduction (vph)	0	0	43	0	37	0	0	0	13	0	1	0
Lane Group Flow (vph)	0	46	3	0	32	0	37	816	48	48	530	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4		4	8			6		6	2		
Actuated Green, G (s)		10.5	10.5		10.5		122.8	117.9	117.9	123.2	118.1	
Effective Green, g (s)		10.5	10.5		10.5		122.8	117.9	117.9	123.2	118.1	
Actuated g/C Ratio		0.07	0.07		0.07		0.82	0.79	0.79	0.82	0.79	
Clearance Time (s)		6.5	6.5		6.5		4.5	5.5	5.5	4.5	5.5	
Vehicle Extension (s)		5.0	5.0		5.0		3.0	0.2	0.2	3.0	0.2	
Lane Grp Cap (vph)		95	111		103		705	3977	1237	542	3983	
v/s Ratio Prot							0.00	c0.16		c0.00	0.10	
v/s Ratio Perm		c0.03	0.00		0.02		0.04		0.03	0.07		
v/c Ratio		0.48	0.03		0.31		0.05	0.21	0.04	0.09	0.13	
Uniform Delay, d ₁		67.1	65.0		66.3		2.5	4.1	3.5	2.5	3.8	
Progression Factor		0.95	0.87		1.00		1.00	1.00	1.00	0.74	0.71	
Incremental Delay, d ₂		7.9	0.2		3.5		0.0	0.1	0.1	0.1	0.1	
Delay (s)		72.0	57.0		69.9		2.6	4.2	3.6	1.9	2.8	
Level of Service		E	E		E		A	A	A	A	A	
Approach Delay (s)		64.5			69.9			4.1			2.7	
Approach LOS		E			E			A			A	
Intersection Summary												
HCM 2000 Control Delay			9.7				HCM 2000 Level of Service			A		
HCM 2000 Volume to Capacity ratio			0.22									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)			16.5		
Intersection Capacity Utilization			42.8%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

2: MD 118 & Wisteria Dr

11/01/2022




































Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	241	428	29	315	88	728	100	73	717
v/c Ratio	0.61	0.56	0.27	0.68	0.34	0.29	0.12	0.46	0.28
Control Delay	69.2	52.5	71.8	61.6	63.7	22.2	7.5	73.5	19.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.2	52.5	71.8	61.6	63.7	22.2	7.5	73.5	19.9
Queue Length 50th (ft)	117	198	28	140	42	157	3	69	127
Queue Length 95th (ft)	159	245	62	185	72	224	54	121	186
Internal Link Dist (ft)		277		457		711			585
Turn Bay Length (ft)	175		90		230		250	185	
Base Capacity (vph)	481	780	232	664	400	2544	842	206	2540
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.55	0.13	0.47	0.22	0.29	0.12	0.35	0.28

Intersection Summary

HCM Signalized Intersection Capacity Analysis

2: MD 118 & Wisteria Dr

11/01/2022





















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 		 	   		  	  	
Traffic Volume (vph)	222	324	70	27	209	81	81	670	92	67	488	172
Future Volume (vph)	222	324	70	27	209	81	81	670	92	67	488	172
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	12	12	12
Grade (%)		-5%			8%			0%				1%
Total Lost time (s)	5.0	6.5		5.0	6.5		4.5	6.0	6.0	4.5	6.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		0.97	0.91	1.00	1.00	0.91	
Frt	1.00	0.97		1.00	0.96		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3284	3296		1586	3038		3433	5085	1583	1761	4862	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3284	3296		1586	3038		3433	5085	1583	1761	4862	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	241	352	76	29	227	88	88	728	100	73	530	187
RTOR Reduction (vph)	0	12	0	0	29	0	0	0	51	0	34	0
Lane Group Flow (vph)	241	416	0	29	286	0	88	728	49	73	683	0
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases									6			
Actuated Green, G (s)	18.0	34.5		6.9	23.4		11.2	73.1	73.1	13.5	75.4	
Effective Green, g (s)	18.0	34.5		6.9	23.4		11.2	73.1	73.1	13.5	75.4	
Actuated g/C Ratio	0.12	0.23		0.05	0.16		0.07	0.49	0.49	0.09	0.50	
Clearance Time (s)	5.0	6.5		5.0	6.5		4.5	6.0	6.0	4.5	6.0	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	0.2	0.2	5.0	0.2	
Lane Grp Cap (vph)	394	758		72	473		256	2478	771	158	2443	
v/s Ratio Prot	c0.07	c0.13		0.02	0.09		0.03	c0.14		c0.04	0.14	
v/s Ratio Perm									0.03			
v/c Ratio	0.61	0.55		0.40	0.61		0.34	0.29	0.06	0.46	0.28	
Uniform Delay, d1	62.7	50.9		69.5	59.0		65.9	23.0	20.3	64.8	21.6	
Progression Factor	1.00	1.00		1.00	1.00		0.92	0.94	1.55	1.00	1.00	
Incremental Delay, d2	4.0	1.4		7.5	3.2		1.7	0.3	0.2	4.4	0.3	
Delay (s)	66.7	52.3		77.1	62.2		62.1	21.9	31.7	69.2	21.9	
Level of Service	E	D		E	E		E	C	C	E	C	
Approach Delay (s)		57.5			63.5			26.8			26.2	
Approach LOS		E			E			C			C	
Intersection Summary												
HCM 2000 Control Delay			38.8	HCM 2000 Level of Service				D				
HCM 2000 Volume to Capacity ratio			0.41									
Actuated Cycle Length (s)			150.0	Sum of lost time (s)				22.0				
Intersection Capacity Utilization			51.1%	ICU Level of Service				A				
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

3: Waters Rd & Wisteria Dr

11/01/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	460	40	50	332	13	37	1	143	11	0	0
Future Volume (Veh/h)	12	460	40	50	332	13	37	1	143	11	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			2%			-2%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	13	500	43	54	361	14	40	1	155	12	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
12												
Median type												
TWLTL TWLTL												
Median storage (veh)												
2 2												
Upstream signal (ft)												
1050												
pX, platoon unblocked												
vC, conflicting volume	375			543			836	1030	272	752	1045	188
vC1, stage 1 conf vol							548	548		476	476	
vC2, stage 2 conf vol							288	483		276	569	
vCu, unblocked vol	375			543			836	1030	272	752	1045	188
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			95			91	100	79	97	100	100
cM capacity (veh/h)	1180			1022			430	402	726	400	380	823
Direction, Lane #												
	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	13	333	210	54	241	134	196	12				
Volume Left	13	0	0	54	0	0	40	12				
Volume Right	0	0	43	0	0	14	155	0				
cSH	1180	1700	1700	1022	1700	1700	918	400				
Volume to Capacity	0.01	0.20	0.12	0.05	0.14	0.08	0.21	0.03				
Queue Length 95th (ft)	1	0	0	4	0	0	20	2				
Control Delay (s)	8.1	0.0	0.0	8.7	0.0	0.0	11.9	14.3				
Lane LOS	A			A			B	B				
Approach Delay (s)	0.2			1.1			11.9	14.3				
Approach LOS							B	B				
Intersection Summary												
Average Delay			2.6									
Intersection Capacity Utilization			36.2%			ICU Level of Service		A				
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

4: Waters Rd & Waterford Hills Blvd




















11/01/2022



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	136	48	18	46	41	54
Future Volume (Veh/h)	136	48	18	46	41	54
Sign Control	Stop			Free	Free	
Grade	1%			-2%	1%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	148	52	20	50	45	59
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)	1					
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)	755					
pX, platoon unblocked						
vC, conflicting volume	164	74	104			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	164	74	104			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	82	95	99			
cM capacity (veh/h)	815	987	1488			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	200	70	104			
Volume Left	148	20	0			
Volume Right	52	0	59			
cSH	1101	1488	1700			
Volume to Capacity	0.18	0.01	0.06			
Queue Length 95th (ft)	17	1	0			
Control Delay (s)	10.0	2.2	0.0			
Lane LOS	A	A				
Approach Delay (s)	10.0	2.2	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay	5.8					
Intersection Capacity Utilization	24.3%			ICU Level of Service	A	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
 5: Future Waters House Ave/Future Century Blvd & Wisteria Dr

11/01/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	492	5	0	360	72	0	0	1	106	3	50
Future Volume (Veh/h)	75	492	5	0	360	72	0	0	1	106	3	50
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	82	535	5	0	391	78	0	0	1	115	3	54
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
	TWLTL					TWLTL						
Median storage veh)	2					2						
Upstream signal (ft)						357						
pX, platoon unblocked	0.97						0.97	0.97		0.97	0.97	0.97
vC, conflicting volume	469			540			952	1170	270	862	1134	234
vC1, stage 1 conf vol							702	702		430	430	
vC2, stage 2 conf vol							251	469		432	704	
vCu, unblocked vol	383			540			883	1108	270	790	1071	141
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	93			100			100	100	100	75	99	94
cM capacity (veh/h)	1133			1025			345	351	728	453	367	853
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1	SB 2			
Volume Total	82	357	183	0	261	208	1	118	54			
Volume Left	82	0	0	0	0	0	0	115	0			
Volume Right	0	0	5	0	0	78	1	0	54			
cSH	1133	1700	1700	1700	1700	1700	728	450	853			
Volume to Capacity	0.07	0.21	0.11	0.00	0.15	0.12	0.00	0.26	0.06			
Queue Length 95th (ft)	6	0	0	0	0	0	0	26	5			
Control Delay (s)	8.4	0.0	0.0	0.0	0.0	0.0	10.0	15.8	9.5			
Lane LOS	A						A	C	A			
Approach Delay (s)	1.1			0.0			10.0	13.8				
Approach LOS							A	B				
Intersection Summary												
Average Delay			2.4									
Intersection Capacity Utilization			39.8%			ICU Level of Service			A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

6: Waters Rd & Driveway

11/01/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	182	0	0	95
Future Volume (Veh/h)	0	0	182	0	0	95
Sign Control	Stop		Free		Free	
Grade	0%		2%		1%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	198	0	0	103
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	966					
pX, platoon unblocked						
vC, conflicting volume	301	198			198	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	301	198			198	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	691	843			1375	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	0	198	103			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1375			
Volume to Capacity	0.00	0.12	0.00			
Queue Length 95th (ft)	0	0	0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			12.9%	ICU Level of Service	A	
Analysis Period (min)			15			

Queues

7: Father Hurley Blvd & Wisteria Dr

11/01/2022


























Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	157	277	16	182	117	45	307	284	461
v/c Ratio	0.63	0.62	0.09	0.40	0.24	0.08	0.17	0.38	0.22
Control Delay	57.1	49.7	39.9	44.8	7.6	10.6	18.8	11.5	13.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.1	49.7	39.9	44.8	7.6	10.6	18.8	11.5	13.5
Queue Length 50th (ft)	125	212	11	136	0	12	68	90	88
Queue Length 95th (ft)	205	309	31	208	47	35	131	177	155
Internal Link Dist (ft)		404		1255			557		1168
Turn Bay Length (ft)	160		225			280		200	
Base Capacity (vph)	457	816	313	839	777	727	1820	891	2058
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.34	0.05	0.22	0.15	0.06	0.17	0.32	0.22

Intersection Summary

HCM Signalized Intersection Capacity Analysis
7: Father Hurley Blvd & Wisteria Dr

11/01/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	144	199	56	15	167	108	41	252	30	261	317	107
Future Volume (vph)	144	199	56	15	167	108	41	252	30	261	317	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	4.5	5.0		4.5	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.98		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1801		1770	1863	1583	1770	3482		1770	3406	
Flt Permitted	0.55	1.00		0.37	1.00	1.00	0.49	1.00		0.52	1.00	
Satd. Flow (perm)	1016	1801		696	1863	1583	907	3482		971	3406	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	157	216	61	16	182	117	45	274	33	284	345	116
RTOR Reduction (vph)	0	7	0	0	0	88	0	4	0	0	14	0
Lane Group Flow (vph)	157	270	0	16	182	29	45	303	0	284	447	0
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8		8	6			2		
Actuated Green, G (s)	33.1	33.1		33.1	33.1	33.1	76.7	71.2		90.8	80.8	
Effective Green, g (s)	33.1	33.1		33.1	33.1	33.1	76.7	71.2		90.8	80.8	
Actuated g/C Ratio	0.24	0.24		0.24	0.24	0.24	0.57	0.53		0.67	0.60	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	4.5	5.0		4.5	5.0	
Vehicle Extension (s)	8.0	8.0		8.0	8.0	8.0	3.0	0.2		3.0	0.2	
Lane Grp Cap (vph)	248	440		170	455	386	548	1831		740	2032	
v/s Ratio Prot		0.15			0.10		0.00	0.09		c0.04	0.13	
v/s Ratio Perm	c0.15			0.02		0.02	0.04			c0.21		
v/c Ratio	0.63	0.61		0.09	0.40	0.07	0.08	0.17		0.38	0.22	
Uniform Delay, d1	45.7	45.5		39.6	42.8	39.4	13.1	16.7		8.9	12.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	11.2	5.9		1.0	2.5	0.4	0.1	0.2		0.3	0.2	
Delay (s)	56.9	51.3		40.6	45.3	39.7	13.1	16.9		9.3	12.9	
Level of Service	E	D		D	D	D	B	B		A	B	
Approach Delay (s)		53.4			43.0			16.4			11.5	
Approach LOS		D			D			B			B	
Intersection Summary												
HCM 2000 Control Delay			27.7				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.46									
Actuated Cycle Length (s)			135.4				Sum of lost time (s)				16.0	
Intersection Capacity Utilization			59.2%				ICU Level of Service				B	
Analysis Period (min)			15									

c Critical Lane Group

Queues

8: Father Hurley Blvd & Sweetgum Cir/Middlebrook Rd

11/01/2022



Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	26	80	145	4	685	293	771
v/c Ratio	0.08	0.53	0.49	0.01	0.40	0.78	0.29
Control Delay	39.4	61.9	15.1	20.5	20.3	58.9	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.4	61.9	15.1	20.5	20.3	58.9	5.2
Queue Length 50th (ft)	7	59	6	2	160	215	84
Queue Length 95th (ft)	21	107	65	10	252	296	130
Internal Link Dist (ft)	22		713		1168		560
Turn Bay Length (ft)				135		160	
Base Capacity (vph)	794	398	556	329	1694	397	2671
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.20	0.26	0.01	0.40	0.74	0.29
Intersection Summary							

HCM Signalized Intersection Capacity Analysis
 8: Father Hurley Blvd & Sweetgum Cir/Middlebrook Rd

11/01/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔		↔	↔		↔	↔↔		↔	↔↔	
Traffic Volume (vph)	9	10	5	74	8	125	4	465	166	270	703	6
Future Volume (vph)	9	10	5	74	8	125	4	465	166	270	703	6
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		10.0		10.0	10.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		0.95		1.00	1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt		0.97		1.00	0.86		1.00	0.96		1.00	1.00	
Flt Protected		0.98		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3357		1757	1579		1768	3387		1770	3534	
Flt Permitted		0.79		0.74	1.00		0.36	1.00		0.95	1.00	
Satd. Flow (perm)		2714		1367	1579		669	3387		1770	3534	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	10	11	5	80	9	136	4	505	180	293	764	7
RTOR Reduction (vph)	0	4	0	0	121	0	0	22	0	0	0	0
Lane Group Flow (vph)	0	22	0	80	24	0	4	663	0	293	771	0
Confl. Peds. (#/hr)	2		6	6		2	3		2	2		3
Turn Type	Perm	NA		Perm	NA		Perm	NA		Prot	NA	
Protected Phases		4			8			6		5	2	
Permitted Phases	4			8			6					
Actuated Green, G (s)		13.3		13.3	13.3		59.2	59.2		25.5	90.7	
Effective Green, g (s)		13.3		13.3	13.3		59.2	59.2		25.5	90.7	
Actuated g/C Ratio		0.11		0.11	0.11		0.49	0.49		0.21	0.76	
Clearance Time (s)		10.0		10.0	10.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		0.2		4.0	4.0		0.2	0.2		3.0	0.2	
Lane Grp Cap (vph)		300		151	175		330	1670		376	2671	
v/s Ratio Prot					0.02			c0.20		c0.17	0.22	
v/s Ratio Perm		0.01		c0.06			0.01					
v/c Ratio		0.07		0.53	0.14		0.01	0.40		0.78	0.29	
Uniform Delay, d1		47.8		50.4	48.2		15.5	19.2		44.6	4.6	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.0		4.3	0.5		0.1	0.7		9.8	0.3	
Delay (s)		47.9		54.7	48.7		15.6	19.9		54.4	4.8	
Level of Service		D		D	D		B	B		D	A	
Approach Delay (s)		47.9			50.8			19.8			18.5	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	23.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	73.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Queues

1: MD 118 & Waters Rd/Bowman Mill Dr

11/01/2022



Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	55	50	90	88	865	67	45	1020
v/c Ratio	0.49	0.27	0.56	0.20	0.22	0.05	0.09	0.27
Control Delay	76.8	17.0	51.8	3.5	5.3	1.3	2.0	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.8	17.0	51.8	3.5	5.3	1.3	2.0	3.9
Queue Length 50th (ft)	53	3	50	12	78	0	3	58
Queue Length 95th (ft)	m99	m39	107	27	114	14	7	68
Internal Link Dist (ft)	344		449		1184			711
Turn Bay Length (ft)		335		220		140	230	
Base Capacity (vph)	372	499	442	529	3914	1233	614	3811
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.10	0.20	0.17	0.22	0.05	0.07	0.27






















Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

1: MD 118 & Waters Rd/Bowman Mill Dr

11/01/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	15	46	35	5	43	81	796	62	41	884	54
Future Volume (vph)	36	15	46	35	5	43	81	796	62	41	884	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-2%			2%			1%				0%
Total Lost time (s)		6.5	6.5		6.5		4.5	5.5	5.5	4.5	5.5	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.91	1.00	1.00	0.91	
Fr _t		1.00	0.85		0.93		1.00	1.00	0.85	1.00	0.99	
Fl _t Protected		0.97	1.00		0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1817	1599		1679		1761	5060	1575	1770	5041	
Fl _t Permitted		0.68	1.00		0.84		0.26	1.00	1.00	0.31	1.00	
Satd. Flow (perm)		1283	1599		1436		473	5060	1575	586	5041	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	39	16	50	38	5	47	88	865	67	45	961	59
RTOR Reduction (vph)	0	0	46	0	34	0	0	0	16	0	2	0
Lane Group Flow (vph)	0	55	4	0	56	0	88	865	51	45	1018	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4		4	8			6		6	2		
Actuated Green, G (s)		13.3	13.3		13.3		121.9	115.1	115.1	118.5	113.4	
Effective Green, g (s)		13.3	13.3		13.3		121.9	115.1	115.1	118.5	113.4	
Actuated g/C Ratio		0.09	0.09		0.09		0.81	0.77	0.77	0.79	0.76	
Clearance Time (s)		6.5	6.5		6.5		4.5	5.5	5.5	4.5	5.5	
Vehicle Extension (s)		5.0	5.0		5.0		3.0	0.2	0.2	3.0	0.2	
Lane Grp Cap (vph)		113	141		127		442	3882	1208	503	3810	
v/s Ratio Prot							c0.01	0.17		0.00	c0.20	
v/s Ratio Perm		c0.04	0.00		0.04		0.15		0.03	0.07		
v/c Ratio		0.49	0.03		0.44		0.20	0.22	0.04	0.09	0.27	
Uniform Delay, d ₁		65.1	62.5		64.8		2.9	4.9	4.2	3.4	5.6	
Progression Factor		0.98	0.95		1.00		1.00	1.00	1.00	0.64	0.63	
Incremental Delay, d ₂		6.7	0.2		5.1		0.2	0.1	0.1	0.1	0.2	
Delay (s)		70.6	59.5		69.9		3.1	5.0	4.3	2.3	3.7	
Level of Service		E	E		E		A	A	A	A	A	
Approach Delay (s)		65.3			69.9			4.8			3.6	
Approach LOS		E			E			A			A	
Intersection Summary												
HCM 2000 Control Delay			9.6				HCM 2000 Level of Service			A		
HCM 2000 Volume to Capacity ratio			0.29									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)			16.5		
Intersection Capacity Utilization			48.0%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

2: MD 118 & Wisteria Dr

11/01/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	189	313	62	395	173	784	80	111	1158
v/c Ratio	0.55	0.47	0.45	0.72	0.51	0.32	0.10	0.57	0.48
Control Delay	69.7	48.0	74.3	54.8	70.6	23.6	3.3	74.1	26.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.7	48.0	74.3	54.8	70.6	23.6	3.3	74.1	26.3
Queue Length 50th (ft)	91	125	59	157	79	180	4	105	258
Queue Length 95th (ft)	131	168	107	206	93	256	37	166	358
Internal Link Dist (ft)		277		457		711			585
Turn Bay Length (ft)	175		90		230		250	185	
Base Capacity (vph)	415	741	200	709	652	2423	804	334	2411
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.42	0.31	0.56	0.27	0.32	0.10	0.33	0.48

Intersection Summary

HCM Signalized Intersection Capacity Analysis

2: MD 118 & Wisteria Dr

11/01/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↔		↔	↑↔		↔↔	↑↑↑	↔	↔	↑↑↑	
Traffic Volume (vph)	174	198	90	57	225	138	159	721	74	102	796	270
Future Volume (vph)	174	198	90	57	225	138	159	721	74	102	796	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	12	12	12
Grade (%)		-5%			8%			0%				1%
Total Lost time (s)	5.0	6.5		5.0	6.5		4.5	6.0	6.0	4.5	6.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		0.97	0.91	1.00	1.00	0.91	
Frt	1.00	0.95		1.00	0.94		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3284	3227		1586	2991		3433	5085	1583	1761	4868	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3284	3227		1586	2991		3433	5085	1583	1761	4868	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	189	215	98	62	245	150	173	784	80	111	865	293
RTOR Reduction (vph)	0	36	0	0	66	0	0	0	42	0	31	0
Lane Group Flow (vph)	189	277	0	62	329	0	173	784	38	111	1127	0
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases									6			
Actuated Green, G (s)	15.7	29.5		11.4	25.2		14.8	70.5	70.5	16.6	72.3	
Effective Green, g (s)	15.7	29.5		11.4	25.2		14.8	70.5	70.5	16.6	72.3	
Actuated g/C Ratio	0.10	0.20		0.08	0.17		0.10	0.47	0.47	0.11	0.48	
Clearance Time (s)	5.0	6.5		5.0	6.5		4.5	6.0	6.0	4.5	6.0	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	0.2	0.2	5.0	0.2	
Lane Grp Cap (vph)	343	634		120	502		338	2389	744	194	2346	
v/s Ratio Prot	c0.06	c0.09		0.04	c0.11		0.05	0.15		c0.06	c0.23	
v/s Ratio Perm									0.02			
v/c Ratio	0.55	0.44		0.52	0.66		0.51	0.33	0.05	0.57	0.48	
Uniform Delay, d1	63.8	52.9		66.7	58.3		64.2	24.9	21.6	63.3	26.2	
Progression Factor	1.00	1.00		1.00	1.00		1.02	0.89	0.85	1.00	1.00	
Incremental Delay, d2	3.2	1.0		7.3	4.1		2.6	0.4	0.1	6.4	0.7	
Delay (s)	67.0	54.0		73.9	62.5		68.1	22.5	18.5	69.7	26.9	
Level of Service	E	D		E	E		E	C	B	E	C	
Approach Delay (s)		58.9			64.0			29.8			30.6	
Approach LOS		E			E			C			C	

Intersection Summary





















HCM 2000 Control Delay	39.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

3: Waters Rd & Wisteria Dr

11/01/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	318	50	121	444	16	58	3	85	16	7	8
Future Volume (Veh/h)	15	318	50	121	444	16	58	3	85	16	7	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			2%			-2%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	16	346	54	132	483	17	63	3	92	17	8	9
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
12												
Median type												
TWLTL TWLTL												
Median storage (veh)												
2 2												
Upstream signal (ft)												
1050												
pX, platoon unblocked												
vC, conflicting volume	500			400			924	1169	200	962	1188	250
vC1, stage 1 conf vol							405	405		756	756	
vC2, stage 2 conf vol							518	764		206	432	
vCu, unblocked vol	500			400			924	1169	200	962	1188	250
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			89			83	99	89	94	97	99
cM capacity (veh/h)	1060			1155			371	319	807	300	311	750
Direction, Lane #												
	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	16	231	169	132	322	178	158	34				
Volume Left	16	0	0	132	0	0	63	17				
Volume Right	0	0	54	0	0	17	92	9				
cSH	1060	1700	1700	1155	1700	1700	883	360				
Volume to Capacity	0.02	0.14	0.10	0.11	0.19	0.10	0.18	0.09				
Queue Length 95th (ft)	1	0	0	10	0	0	16	8				
Control Delay (s)	8.4	0.0	0.0	8.5	0.0	0.0	12.9	16.0				
Lane LOS	A			A			B	C				
Approach Delay (s)	0.3			1.8			12.9	16.0				
Approach LOS							B	C				
Intersection Summary												
Average Delay			3.1									
Intersection Capacity Utilization			35.5%			ICU Level of Service		A				
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

4: Waters Rd & Waterford Hills Blvd

11/01/2022



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	79	30	82	67	45	145
Future Volume (Veh/h)	79	30	82	67	45	145
Sign Control	Stop			Free	Free	
Grade	1%			-2%	1%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	86	33	89	73	49	158
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)	1					
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)	763					
pX, platoon unblocked						
vC, conflicting volume	379	128	207			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	379	128	207			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	85	96	93			
cM capacity (veh/h)	582	922	1364			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	119	162	207			
Volume Left	86	89	0			
Volume Right	33	0	158			
cSH	806	1364	1700			
Volume to Capacity	0.15	0.07	0.12			
Queue Length 95th (ft)	13	5	0			
Control Delay (s)	11.4	4.5	0.0			
Lane LOS	B	A				
Approach Delay (s)	11.4	4.5	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay	4.3					
Intersection Capacity Utilization	33.7%			ICU Level of Service	A	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis

5: Future Waters House Ave/Future Century Boulevard & Wisteria Dr

11/01/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR												
Lane Configurations																								
Traffic Volume (veh/h)	121	242	2	7	420	226	1	3	11	163	3	190												
Future Volume (Veh/h)	121	242	2	7	420	226	1	3	11	163	3	190												
Sign Control		Free			Free			Stop			Stop													
Grade		0%			0%			0%			0%													
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92												
Hourly flow rate (vph)	132	263	2	8	457	246	1	3	12	177	3	207												
Pedestrians																								
Lane Width (ft)																								
Walking Speed (ft/s)																								
Percent Blockage																								
Right turn flare (veh)																								
Median type																								
	TWLTL					TWLTL																		
Median storage (veh)	2					2																		
Upstream signal (ft)						357																		
pX, platoon unblocked																								
vC, conflicting volume	703			265			981			1247			132			1005			1125			352		
vC1, stage 1 conf vol							528			528						596			596					
vC2, stage 2 conf vol							453			719						409			529					
vCu, unblocked vol	703			265			981			1247			132			1005			1125			352		
tC, single (s)	4.1			4.1			7.5			6.5			6.9			7.5			6.5			6.9		
tC, 2 stage (s)							6.5			5.5						6.5			5.5					
tF (s)	2.2			2.2			3.5			4.0			3.3			3.5			4.0			3.3		
p0 queue free %	85			99			100			99			99			51			99			68		
cM capacity (veh/h)	890			1296			224			268			892			360			356			645		
Direction, Lane #																								
	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1	SB 2															
Volume Total	132	175	90	8	305	398	16	180	207															
Volume Left	132	0	0	8	0	0	1	177	0															
Volume Right	0	0	2	0	0	246	12	0	207															
cSH	890	1700	1700	1296	1700	1700	550	360	645															
Volume to Capacity	0.15	0.10	0.05	0.01	0.18	0.23	0.03	0.50	0.32															
Queue Length 95th (ft)	13	0	0	0	0	0	2	67	35															
Control Delay (s)	9.7	0.0	0.0	7.8	0.0	0.0	11.7	24.6	13.2															
Lane LOS	A			A			B	C	B															
Approach Delay (s)	3.2			0.1			11.7			18.5														
Approach LOS							B			C														
Intersection Summary																								
Average Delay				5.8																				
Intersection Capacity Utilization				51.4%			ICU Level of Service			A														
Analysis Period (min)				15																				

HCM Unsignalized Intersection Capacity Analysis

6: Waters Rd & Driveway

11/01/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	146	0	0	190
Future Volume (Veh/h)	0	0	146	0	0	190
Sign Control	Stop		Free		Free	
Grade	0%		2%		1%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	159	0	0	207
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	957					
pX, platoon unblocked						
vC, conflicting volume	366	159			159	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	366	159			159	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	634	886			1420	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	0	159	207			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1420			
Volume to Capacity	0.00	0.09	0.00			
Queue Length 95th (ft)	0	0	0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay	0.0					
Intersection Capacity Utilization	13.3%		ICU Level of Service		A	
Analysis Period (min)	15					

Queues

7: Father Hurley Blvd & Wisteria Dr

11/01/2022


























Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	66	106	91	160	326	48	411	180	429
v/c Ratio	0.29	0.27	0.34	0.41	0.55	0.07	0.20	0.27	0.20
Control Delay	46.0	37.3	46.4	46.7	7.9	8.1	14.1	8.5	11.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.0	37.3	46.4	46.7	7.9	8.1	14.1	8.5	11.7
Queue Length 50th (ft)	47	64	66	117	0	11	77	44	74
Queue Length 95th (ft)	92	116	118	186	76	32	143	97	134
Internal Link Dist (ft)		404		1255			557		1168
Turn Bay Length (ft)	160		225			280		200	
Base Capacity (vph)	502	842	605	879	919	787	2032	894	2195
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.13	0.15	0.18	0.35	0.06	0.20	0.20	0.20

Intersection Summary

HCM Signalized Intersection Capacity Analysis
7: Father Hurley Blvd & Wisteria Dr

11/01/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	64	33	84	147	300	44	337	41	166	352	42
Future Volume (vph)	61	64	33	84	147	300	44	337	41	166	352	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	4.5	5.0		4.5	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1768		1770	1863	1583	1770	3481		1770	3482	
Flt Permitted	0.57	1.00		0.69	1.00	1.00	0.50	1.00		0.47	1.00	
Satd. Flow (perm)	1065	1768		1283	1863	1583	935	3481		871	3482	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	66	70	36	91	160	326	48	366	45	180	383	46
RTOR Reduction (vph)	0	13	0	0	0	258	0	3	0	0	4	0
Lane Group Flow (vph)	66	93	0	91	160	68	48	408	0	180	425	0
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8		8	6			2		
Actuated Green, G (s)	27.1	27.1		27.1	27.1	27.1	81.2	75.8		90.6	80.7	
Effective Green, g (s)	27.1	27.1		27.1	27.1	27.1	81.2	75.8		90.6	80.7	
Actuated g/C Ratio	0.21	0.21		0.21	0.21	0.21	0.63	0.59		0.70	0.62	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	4.5	5.0		4.5	5.0	
Vehicle Extension (s)	8.0	8.0		8.0	8.0	8.0	3.0	0.2		3.0	0.2	
Lane Grp Cap (vph)	223	370		269	390	332	622	2042		682	2174	
v/s Ratio Prot		0.05			c0.09		0.00	0.12		c0.02	0.12	
v/s Ratio Perm	0.06			0.07		0.04	0.05			c0.16		
v/c Ratio	0.30	0.25		0.34	0.41	0.21	0.08	0.20		0.26	0.20	
Uniform Delay, d1	43.0	42.6		43.4	44.1	42.2	9.2	12.5		6.6	10.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.2	1.5		3.2	3.0	1.3	0.1	0.2		0.2	0.2	
Delay (s)	46.2	44.1		46.6	47.1	43.5	9.2	12.7		6.8	10.6	
Level of Service	D	D		D	D	D	A	B		A	B	
Approach Delay (s)		44.9			45.0			12.4			9.5	
Approach LOS		D			D			B			A	
Intersection Summary												
HCM 2000 Control Delay			24.8				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.31									
Actuated Cycle Length (s)			129.2				Sum of lost time (s)				16.0	
Intersection Capacity Utilization			50.5%				ICU Level of Service				A	
Analysis Period (min)			15									

c Critical Lane Group

Queues

8: Father Hurley Blvd & Sweetgum Cir/Middlebrook Rd

11/01/2022






















Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	32	136	371	3	821	246	545
v/c Ratio	0.10	0.62	0.69	0.01	0.54	0.64	0.22
Control Delay	32.4	58.4	13.2	21.7	26.3	52.2	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.4	58.4	13.2	21.7	26.3	52.2	7.0
Queue Length 50th (ft)	8	100	19	1	234	174	68
Queue Length 95th (ft)	22	155	109	8	318	#297	116
Internal Link Dist (ft)	22		713		1168		560
Turn Bay Length (ft)				135		160	
Base Capacity (vph)	582	396	701	366	1527	383	2496
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.34	0.53	0.01	0.54	0.64	0.22

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
 8: Father Hurley Blvd & Sweetgum Cir/Middlebrook Rd

11/01/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	14	7	125	18	323	3	638	118	226	497	5
Future Volume (vph)	8	14	7	125	18	323	3	638	118	226	497	5
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		10.0		10.0	10.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		0.95		1.00	1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt		0.96		1.00	0.86		1.00	0.98		1.00	1.00	
Flt Protected		0.99		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3342		1757	1577		1767	3449		1770	3534	
Flt Permitted		0.58		0.74	1.00		0.45	1.00		0.95	1.00	
Satd. Flow (perm)		1978		1360	1577		834	3449		1770	3534	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	15	8	136	20	351	3	693	128	246	540	5
RTOR Reduction (vph)	0	7	0	0	287	0	0	12	0	0	0	0
Lane Group Flow (vph)	0	25	0	136	84	0	3	809	0	246	545	0
Confl. Peds. (#/hr)	2		6	6		2	3		2	2		3
Turn Type	Perm	NA		Perm	NA		Perm	NA		Prot	NA	
Protected Phases		4			8			6		5	2	
Permitted Phases	4			8			6					
Actuated Green, G (s)		19.3		19.3	19.3		52.7	52.7		26.0	84.7	
Effective Green, g (s)		19.3		19.3	19.3		52.7	52.7		26.0	84.7	
Actuated g/C Ratio		0.16		0.16	0.16		0.44	0.44		0.22	0.71	
Clearance Time (s)		10.0		10.0	10.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		0.2		4.0	4.0		0.2	0.2		3.0	0.2	
Lane Grp Cap (vph)		318		218	253		366	1514		383	2494	
v/s Ratio Prot					0.05			c0.23		c0.14	0.15	
v/s Ratio Perm		0.01		c0.10			0.00					
v/c Ratio		0.08		0.62	0.33		0.01	0.53		0.64	0.22	
Uniform Delay, d1		42.8		47.0	44.6		18.9	24.7		42.8	6.1	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.0		6.2	1.1		0.0	1.4		3.7	0.2	
Delay (s)		42.8		53.1	45.7		19.0	26.0		46.4	6.3	
Level of Service		D		D	D		B	C		D	A	
Approach Delay (s)		42.8			47.7			26.0			18.8	
Approach LOS		D			D			C			B	
Intersection Summary												
HCM 2000 Control Delay			28.7									C
HCM 2000 Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			120.0							22.0		
Intersection Capacity Utilization			80.5%									D
Analysis Period (min)			15									
c Critical Lane Group												

2: MD 118 & Wisteria Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.1	0.2	3.6	0.2	0.2	0.1	0.0	0.1	2.9	0.1	0.2
Total Del/Veh (s)	57.6	43.4	30.3	76.9	54.8	32.1	64.8	22.1	4.0	70.1	21.7	6.3

2: MD 118 & Wisteria Dr Performance by movement

Movement	All
Denied Del/Veh (s)	0.2
Total Del/Veh (s)	32.8

3: Waters Rd & Wisteria Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	All
Denied Del/Veh (s)	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Total Del/Veh (s)	4.0	1.7	1.4	4.6	0.6	0.5	18.3	6.5	1.3	15.5	2.1

5: Future Waters House Ave/Future Century Blvd & Wisteria Dr Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.0
Total Del/Veh (s)	6.4	2.6	2.6	1.6	1.6	2.7	17.2	23.7	3.5	3.8

Total Zone Performance

Denied Del/Veh (s)	0.4
Total Del/Veh (s)	675.5

Queuing and Blocking Report
Existing Conditions - AM Peak Hour

11/01/2022

Intersection: 2: MD 118 & Wisteria Dr

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB
Directions Served	L	L	T	TR	L	T	TR	L	L	T	T	T
Maximum Queue (ft)	172	186	232	227	109	200	231	87	104	197	203	177
Average Queue (ft)	87	111	136	133	35	112	111	29	43	122	117	89
95th Queue (ft)	151	170	213	205	90	187	199	69	85	189	183	159
Link Distance (ft)		258	258			464	464			712	712	712
Upstream Blk Time (%)			0	0								
Queuing Penalty (veh)			0	0								
Storage Bay Dist (ft)	175			260	90			230	230			
Storage Blk Time (%)	0	1	0	0	1	22				0		
Queuing Penalty (veh)	0	1	0	0	1	6				0		

Intersection: 2: MD 118 & Wisteria Dr

Movement	NB	SB	SB	SB	SB
Directions Served	R	L	T	T	TR
Maximum Queue (ft)	59	163	241	188	126
Average Queue (ft)	24	54	132	78	40
95th Queue (ft)	50	119	217	173	95
Link Distance (ft)			607	607	607
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	250	185			
Storage Blk Time (%)		0	2		
Queuing Penalty (veh)		1	1		

Intersection: 3: Waters Rd & Wisteria Dr

Movement	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	TR	L	T	TR	LT	R	LTR
Maximum Queue (ft)	6	0	51	4	0	63	57	23
Average Queue (ft)	0	0	13	0	0	22	18	7
95th Queue (ft)	4	0	35	4	0	51	58	23
Link Distance (ft)		1198		601	601	299		286
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	100		100				300	
Storage Blk Time (%)								
Queuing Penalty (veh)								

Queuing and Blocking Report
Existing Conditions - AM Peak Hour

11/01/2022

Intersection: 5: Future Waters House Ave/Future Century Blvd & Wisteria Dr

Movement	EB	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	T	TR	T	TR	LTR	LT	R
Maximum Queue (ft)	65	15	6	5	21	20	115	57
Average Queue (ft)	19	1	0	0	1	1	50	28
95th Queue (ft)	49	15	4	5	9	9	89	52
Link Distance (ft)		601	601	258	258	112	205	205
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	100							
Storage Blk Time (%)	0							
Queuing Penalty (veh)	0							

Zone Summary

Zone wide Queuing Penalty: 10

2: MD 118 & Wisteria Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.1	0.1	3.4	0.3	0.4	0.3	0.0	0.3	2.5	0.2	0.3
Total Del/Veh (s)	57.9	41.6	21.8	72.8	51.9	43.0	68.8	24.7	4.0	68.3	29.8	17.9

2: MD 118 & Wisteria Dr Performance by movement

Movement	All
Denied Del/Veh (s)	0.3
Total Del/Veh (s)	35.7

3: Waters Rd & Wisteria Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	1.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
Total Del/Veh (s)	4.1	1.1	0.8	4.1	0.8	0.7	29.1	36.0	1.2	26.1	28.3	8.4

3: Waters Rd & Wisteria Dr Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	3.3

5: Future Waters House Ave/Future Century Boulevard & Wisteria Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.1	0.1	0.2	0.2	0.2
Total Del/Veh (s)	9.3	1.9	1.5	3.3	1.8	2.0		18.1	4.1	24.4	29.8	4.9

5: Future Waters House Ave/Future Century Boulevard & Wisteria Dr Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	5.5

Total Zone Performance

Denied Del/Veh (s)	0.5
Total Del/Veh (s)	886.8

Queuing and Blocking Report
Existing Conditions - PM Peak Hour

11/01/2022

Intersection: 2: MD 118 & Wisteria Dr

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB
Directions Served	L	L	T	TR	L	T	TR	L	L	T	T	T
Maximum Queue (ft)	139	155	194	200	117	307	364	140	180	218	223	188
Average Queue (ft)	63	88	91	92	58	119	187	60	85	125	125	100
95th Queue (ft)	121	138	159	162	111	237	307	114	146	200	201	173
Link Distance (ft)		258	258			464	464			712	712	712
Upstream Blk Time (%)			0	0			0					
Queuing Penalty (veh)			0	0			0					
Storage Bay Dist (ft)	175			260	90			230	230			
Storage Blk Time (%)	0	0	0	0	5	13				0		0
Queuing Penalty (veh)	0	0	0	0	6	7				0		0

Intersection: 2: MD 118 & Wisteria Dr

Movement	NB	SB	SB	SB	SB
Directions Served	R	L	T	T	TR
Maximum Queue (ft)	57	229	342	302	300
Average Queue (ft)	19	98	208	165	142
95th Queue (ft)	43	193	305	266	259
Link Distance (ft)			607	607	607
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	250	185			
Storage Blk Time (%)		0	11		
Queuing Penalty (veh)		1	11		

Intersection: 3: Waters Rd & Wisteria Dr

Movement	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	L	T	TR	LT	R	LTR
Maximum Queue (ft)	5	59	2	3	98	59	57
Average Queue (ft)	0	19	0	0	36	6	20
95th Queue (ft)	3	44	1	2	79	35	45
Link Distance (ft)			599	599	305		286
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	100	100				300	
Storage Blk Time (%)		0					
Queuing Penalty (veh)		0					

Queuing and Blocking Report
Existing Conditions - PM Peak Hour

11/01/2022

Intersection: 5: Future Waters House Ave/Future Century Boulevard & Wisteria Dr

Movement	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	L	T	TR	LTR	LT	R
Maximum Queue (ft)	83	21	8	45	30	169	109
Average Queue (ft)	33	1	0	6	12	75	51
95th Queue (ft)	68	12	6	27	36	140	84
Link Distance (ft)			258	258	112	205	205
Upstream Blk Time (%)						0	
Queuing Penalty (veh)						0	
Storage Bay Dist (ft)	100	75					
Storage Blk Time (%)	0						
Queuing Penalty (veh)	0						

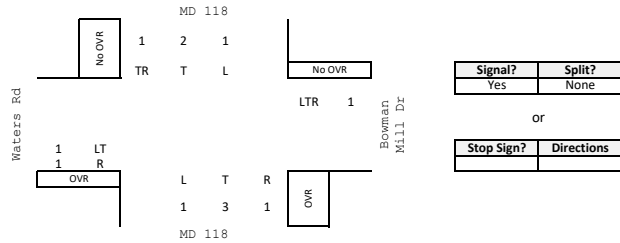
Zone Summary

Zone wide Queuing Penalty: 26

1 Critical Lane Volume and Level of Service Calculations

Intersection: 1: MD 118/Waters Rd
 Jurisdiction: Montgomery County, MD
 Scenario/Design Year: Existing Conditions
 Computed by: W+A

Intersection Lane Use & Traffic Control



AM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	LT	42		1.00	42	22	1.00	22	64	
	R	42		1.00	0					
WB	LTR	64		1.00	64	31	1.00	31	95	*
NB	T	751	0	0.37	278	44	1.00	44	322	*
	R	56		1.00	56				100	
SB	TR	489		0.37	181	34	1.00	34	215	
Note:									CLV	417

PM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	LT	51		1.00	51	35	1.00	35	86	
	R	46	0	1.00	46					
WB	LTR	83		1.00	83	36	1.00	36	119	*
NB	T	796	0	0.37	295	41	1.00	41	336	*
	R	62		1.00	62				103	
SB	TR	938		0.37	347	81	1.00	81	428	*
Note:									CLV	633

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap Vol.			Overlap		
		AM	PM	LUF	AM	PM	LUF	AM	PM	
Southbound	Yes	42	46	1.00	785	877	1.00	42	46	
Northbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0	
Eastbound	Yes	56	62	1.00	22	35	0.00	0	0	
Westbound	No	n/a	n/a	n/a	42	51	1.00	0	0	

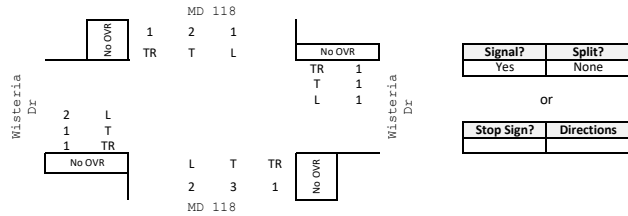
Montgomery County LATR

	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
1	1	1.00	
2	0.53	0.53	
3	0.37	0.37	
4		0.30	
5		0.25	

2
Critical Lane Volume
and
Level of Service Calculations

Intersection: 2: Wisteria Dr/MD 118
Jurisdiction: Montgomery County, MD
Scenario/Design Year: Existing Conditions
Computed by: W+A

Intersection Lane Use & Traffic Control



AM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	TR	394		0.53	209	27	1.00	27	236	
WB	TR	290		0.53	154	222	0.53	118	272	*
NB	TR	762		0.30	229	67	1.00	67	296	*
SB	TR	660		0.37	244	81	0.53	43	287	
Note:									CLV	568

PM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	TR	288		0.53	153	57	1.00	57	210	
WB	TR	363		0.53	192	174	0.53	92	284	*
NB	TR	795		0.30	239	102	1.00	102	341	
SB	TR	1066		0.37	394	159	0.53	84	478	*
Note:									CLV	762

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Left Vol.			Overlap	
		AM	PM	LUF	AM	PM	LUF	AM	PM
Eastbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Westbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Northbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Southbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0

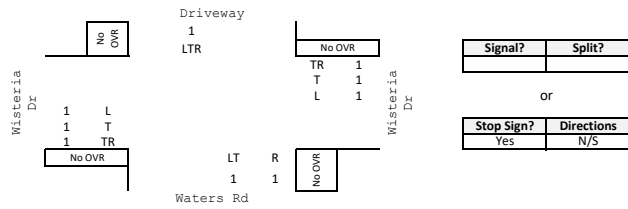
Montgomery County LATR

Number of Lanes	Lane Use Factors	
	Left Turn LUF	Through LUF
1	1	1.00
2	0.53	0.53
3	0.37	0.37
4		0.30
5		0.25

Critical Lane Volume and Level of Service Calculations

Intersection: 3: Waters Rd/Wisteria Dr
 Jurisdiction: Montgomery County, MD
 Scenario/Design Year: Existing Conditions
 Computed by: W+A

Intersection Lane Use & Traffic Control



AM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	TR	500		0.53	265 0	50	1.00	50	315	*
WB	TR	345		0.53	183 0	12	1.00	12	195	
NB	LT	38		1.00	38	11	1.00	11	49	*
SB	LTR	11		1.00	11 0	37	1.00	37	48	
Note:									CLV	469

PM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	TR	368		0.53	195 0	121	1.00	121	316	*
WB	TR	460		0.53	244 0	15	1.00	15	259	
NB	LT	61		1.00	61	16	1.00	16	77	*
SB	LTR	31		1.00	31 0	58	1.00	58	89	
Note:									CLV	417

Right Turn Overlap

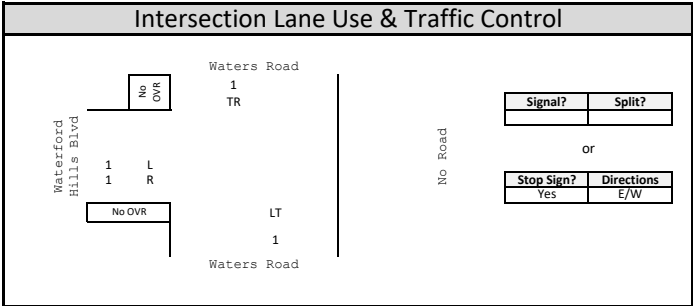
Approach	Excl. Right	Right Vol.			Adjacent Left Vol.			Overlap	
		AM	PM	LUF	AM	PM	LUF	AM	PM
Eastbound	No	n/a	n/a	n/a	n/a	n/a	1.00	0	0
Westbound	No	n/a	n/a	n/a	n/a	n/a	1.00	0	0
Northbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Southbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0

Montgomery County LATR

Number of Lanes	Lane Use Factors	
	Left Turn LUF	Through LUF
1	1	1.00
2	0.53	0.53
3	0.37	0.37
4		0.30
5		0.25

4
Critical Lane Volume
and
Level of Service Calculations

Intersection: 4: Waters Rd/Waterford Hills Blvd
 Jurisdiction: Montgomery County, MD
 Scenario/Design Year: Existing Conditions
 Computed by: W+A



AM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	L	136		1.00	136				136	*
WB	R	48		1.00	48				48	
NB	LT	64		1.00	64				64	
SB	TR	95		1.00	95	18	1.00	18	113	*
Note:									CLV	249

Direction	Lane Group	Volume	LUF	Opposing Lefts	Opposing LUF	Opposing Volume	CLV
EB	L	136	1.00				136
WB	R	48	1.00				48
NB	LT	64	1.00				64
SB	TR	95	1.00	18	1.00	18	113

PM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	L	79		1.00	79				79	*
WB	R	30		1.00	30				30	
NB	LT	149		1.00	149				149	
SB	TR	190		1.00	190	82	1.00	82	272	*
Note:									CLV	351

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Left Vol.			Overlap		
		AM	PM	LUF	AM	PM	LUF	AM	PM	
Southbound	No	n/a	n/a		n/a	n/a		1.00	0	0
Northbound	No	n/a	n/a		n/a	n/a		n/a	0	0
Eastbound	No	n/a	n/a		n/a	n/a		n/a	0	0
Westbound	No	n/a	n/a		n/a	n/a		n/a	0	0

Montgomery County LATR

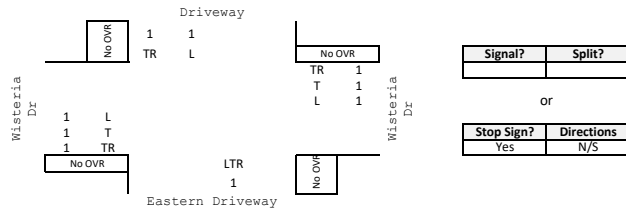
Number of Lanes	Lane Use Factors	
	Left Turn LUF	Through LUF
1	1	1.00
2	0.53	0.53
3	0.37	0.37
4		0.30
5		0.25

Direction	Lane Group	Volume	LUF	Opposing Lefts	Opposing LUF	Opposing Volume	CLV
EB	L	79	1.00				79
WB	R	30	1.00				30
NB	LT	149	1.00				149
SB	TR	190	1.00	82	1.00	82	272

5
Critical Lane Volume
and
Level of Service Calculations

Intersection: 5: Commercial Driveway/Wisteria Dr/Future Waters House Avenue
Jurisdiction: Montgomery County, MD
Scenario/Design Year: Existing Conditions
Computed by: W+A

Intersection Lane Use & Traffic Control



AM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	TR	497		0.53	263	0	1.00	0	263	0
WB	TR	432		0.53	229	75	1.00	75	304	*
NB	LTR	1		1.00	1	106	1.00	106	107	*
SB	TR	53		1.00	53	0	1.00	0	53	
Note:									CLV	411

PM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	TR	244		0.53	129	7	1.00	7	136	
WB	TR	646		0.53	342	121	1.00	121	463	*
NB	LTR	15		1.00	15	163	1.00	163	178	*
SB	TR	193		1.00	193	1	1.00	1	194	*
Note:									CLV	657

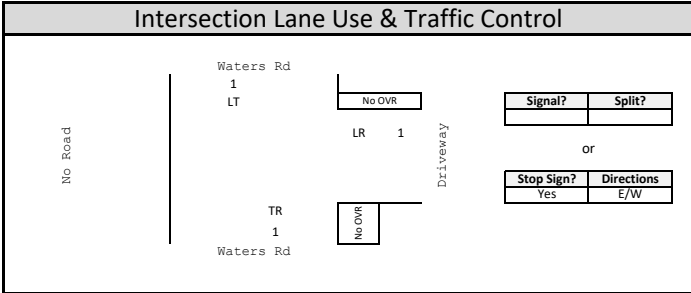
Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Left Vol.			Overlap	
		AM	PM	LUF	AM	PM	LUF	AM	PM
Southbound	No	n/a	n/a	1.00	n/a	n/a	n/a	0	0
Northbound	No	n/a	n/a	1.00	n/a	n/a	n/a	0	0
Eastbound	No	n/a	n/a	1.00	n/a	n/a	n/a	0	0
Westbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0

Montgomery County LATR

Number of Lanes	Lane Use Factors	
	Left Turn LUF	Through LUF
1	1	1.00
2	0.53	0.53
3	0.37	0.37
4		0.30
5		0.25

6 Critical Lane Volume and Level of Service Calculations	Intersection: <u>Future Intersection</u>
	Jurisdiction: <u>Montgomery County, MD</u>
	Scenario/Design Year: <u>Existing Conditions</u>
	Computed by: <u>W+A</u>



AM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB									0	*
WB	LR	0		1.00	0				0	*
NB	TR	182		1.00	182	0	1.00	0	182	*
SB	TL	95		1.00	95				95	*
Note:									CLV	182

PM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB									0	*
WB	LR	0		1.00	0				0	*
NB	TR	146		1.00	146	0	1.00	0	146	*
SB	TL	190		1.00	190				190	*
Note:									CLV	190

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap Vol.			Overlap	
		AM	PM	LUF	AM	PM	LUF	AM	PM
Southbound	No	n/a	n/a	n/a	182	146	1.00	0	0
Northbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Eastbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Westbound	No	n/a	n/a	n/a	0	0	1.00	0	0

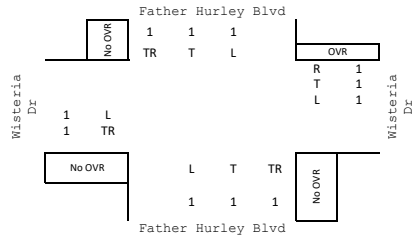
Montgomery County LATR

Number of Lanes	Lane Use Factors	
	Left Turn LUF	Through LUF
1	1	1.00
2	0.53	0.53
3	0.37	0.37
4		0.30
5		0.25

7
Critical Lane Volume
and
Level of Service Calculations

Intersection: 7: Father Hurley Blvd/Wisteria Dr
Jurisdiction: Montgomery County, MD
Scenario/Design Year: Existing Conditions
Computed by: W+A

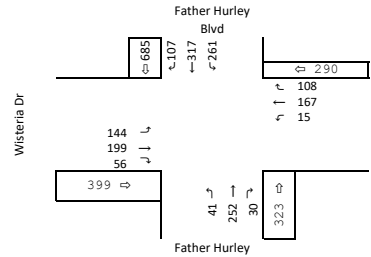
Intersection Lane Use & Traffic Control



Signal?	Split?
Yes	None

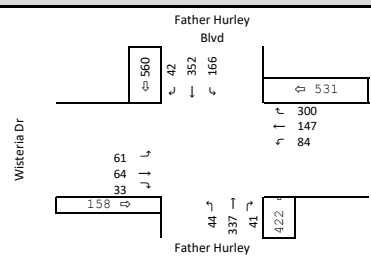
Stop Sign?	Directions
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AM Peak Hour Critical Lane Volume Analysis



Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	TR	255		1.00	255	15	1.00	15	270	
WB	T	167	108	1.00	167	0	1.00	144	311	*
NB	TR	282		0.53	149	261	1.00	261	410	*
SB	TR	424		0.53	225	41	1.00	41	266	
Note:									CLV	721

PM Peak Hour Critical Lane Volume Analysis



Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	TR	97		1.00	97	84	1.00	84	181	
WB	R	147	0	1.00	147	61	1.00	61	208	*
NB	TR	378		0.53	200	166	1.00	166	366	*
SB	TR	394		0.53	209	44	1.00	44	253	
Note:									CLV	727

Right Turn Overlap

Approach	Excl Right	Right Vol.			Adjacent Left Vol.			Overlap		
		AM	PM	LUF	AM	PM	LUF	AM	PM	
Southbound	No	n/a	n/a		n/a	n/a		n/a	0	0
Northbound	Yes	108	300	1.00	261	166	1.00	108	166	
Eastbound	No	n/a	n/a		n/a	n/a		1.00	0	0
Westbound	No	n/a	n/a		n/a	n/a		n/a	0	0

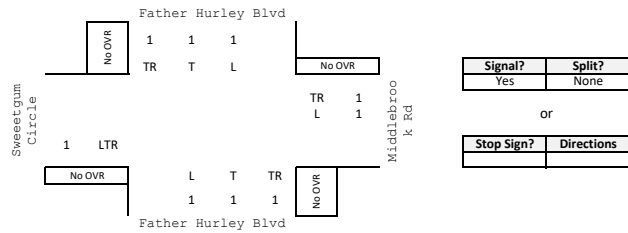
Montgomery County LATR

	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
1	1	1.00	
2	0.53	0.53	
3	0.37	0.37	
4		0.30	
5		0.25	

8
Critical Lane Volume
and
Level of Service Calculations

Intersection: Father Hurley Blvd / Middlebrook Rd
 Jurisdiction: Montgomery County, MD
 Scenario/Design Year: Existing Conditions
 Computed by: W+A

Intersection Lane Use & Traffic Control



AM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	LTR	24		1.00	24	74	1.00	74	98	
WB	TR	133		1.00	133	9	1.00	9	142	*
NB	TR	631		0.53	334	270	1.00	270	604	*
SB	TR	709		0.53	376	4	1.00	4	380	
Note:									CLV	746

PM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	LTR	29		1.00	29	125	1.00	125	154	
WB	TR	341		1.00	341	8	1.00	8	349	*
NB	TR	756		0.53	401	226	1.00	226	627	*
SB	TR	502		0.53	266	3	1.00	3	269	
Note:									CLV	976

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Left Vol.			Overlap	
		AM	PM	LUF	AM	PM	LUF	AM	PM
Southbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Northbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Eastbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Westbound	No	n/a	n/a	n/a	n/a	n/a	1.00	0	0

Montgomery County LATR

Number of Lanes	Lane Use Factors	
	Left Turn LUF	Through LUF
1	1	1.00
2	0.53	0.53
3	0.37	0.37
4		0.30
5		0.25

APPENDIX E
FORECASTING WORKSHEETS

I: MD 118/Waters Rd Trip Distribution												
Traffic Component	Southbound MD 118			Westbound Bowman Mill Dr			Northbound MD 118			Eastbound Waters Rd		
	Right	Through	Left	Right	Through	Left	Right	Through	Left	Right	Through	Left
Site Developments												
Net New Trips (Total minus Diverted Link)	43%						25%			-25%		
Diverted Link Trips IN	AM	IN	-45%				-55%	55%				
Diverted Link Trips	AM	OUT								45%		
Diverted Link Trips IN	PM	IN	-55%				-45%	45%				
Diverted Link Trips	PM	OUT								55%		
Pipeline Development												
Wisteria Business Park			-13%					13%				
Qaigen Research Park			70%					-70%				
Germantown Estate			15%					-15%				
Fairchild Apartments			-20%					20%				
Liberty Mill			15%					-15%				
I: MD 118/Waters Rd AM Peak Hour												
Traffic Component	Southbound MD 118			Westbound Bowman Mill Dr			Northbound MD 118			Eastbound Waters Rd		
	Right	Through	Left	Right	Through	Left	Right	Through	Left	Right	Through	Left
Existing Traffic Volume	17	472	44	37	5	22	56	751	34	42	11	31
Volume Adjustments (RIRO at #5)	17	472	44	37	5	22	56	751	34	42	11	31
Pipeline Development	IN	OUT										
Wisteria Business Park	47	40	-	5	-	-	-	6	-	-	-	-
Qaigen Research Park	78	24	-	55	-	-	-	17	-	-	-	-
Germantown Estate	32	5	-	5	-	-	-	1	-	-	-	-
Fairchild Apartments	17	47	-	9	-	-	-	3	-	-	-	-
Liberty Mill	12	8	-	2	-	-	-	1	-	-	-	-
Total Pipeline Trips	186	124	-	76	-	-	-	28	-	-	-	-
2025 Background	17	548	44	37	5	22	56	779	34	42	11	31
Site Development	IN	OUT										
Net New Trips (Total minus Diverted Link)	67	55	29	-	-	-	-	-	17	14	-	-
Diverted Link Trips IN	32	31	-	(14)	-	-	-	(18)	18	-	-	-
Diverted Link Trips OUT	32	31	-	-	-	-	-	-	-	14	-	-
2025 Total Future			46	534	44	37	5	22	56	761	69	31
I: MD 118/Waters Rd PM Peak Hour												
Traffic Component	Southbound MD 118			Westbound Bowman Mill Dr			Northbound MD 118			Eastbound Waters Rd		
	Right	Through	Left	Right	Through	Left	Right	Through	Left	Right	Through	Left
Existing Traffic Volume	54	884	41	43	5	35	62	796	81	46	15	36
Volume Adjustments (RIRO at #5)	59	884	41	43	5	35	62	794	83	46	15	36
Pipeline Development	IN	OUT										
Wisteria Business Park	141	127	-	17	-	-	-	18	-	-	-	-
Qaigen Research Park	34	77	-	24	-	-	-	54	-	-	-	-
Germantown Estate	3	14	-	-	-	-	-	2	-	-	-	-
Fairchild Apartments	50	32	-	6	-	-	-	10	-	-	-	-
Liberty Mill	11	17	-	2	-	-	-	3	-	-	-	-
Total Pipeline Trips	239	267	-	49	-	-	-	87	-	-	-	-
2025 Background	59	933	41	43	5	35	62	881	83	46	15	36
Site Development	IN	OUT										
Net New Trips (Total minus Diverted Link)	76	75	33	-	-	-	-	-	19	19	-	-
Diverted Link Trips IN	52	50	-	(29)	-	-	-	(23)	23	-	-	-
Diverted Link Trips OUT	52	50	-	-	-	-	-	-	-	27	-	-
2025 Total Future			92	904	41	43	5	35	62	858	125	36

2: Wisteria Dr/MD 118 Trip Distribution														
Traffic Component			Southbound MD 118			Westbound Wisteria Dr			Northbound MD 118			Eastbound Wisteria Dr		
			Right	Through	Left	Right	Through	Left	Right	Through	Left	Right	Through	Left
Site Developments			15%	43%		8%						-8%	-58%	
Diverted Link Trips IN	AM	IN	45%	-45%						-55%				
Diverted Link Trips	AM	OUT											55%	
Diverted Link Trips IN	PM	IN	55%	-55%						-45%				
Diverted Link Trips	PM	OUT											45%	
Pipeline Development														
Wisteria Business Park					19%	-19%	-13%		13%	-40%	-15%		13%	
Qaigen Research Park				40%		15%							15%	
Germantown Estate				15%										
Fairchild Apartments				-20%						20%				
Liberty Mill				15%						-15%				
2: Wisteria Dr/MD 118 AM Peak Hour														
Traffic Component			Southbound MD 118			Westbound Wisteria Dr			Northbound MD 118			Eastbound Wisteria Dr		
			Right	Through	Left	Right	Through	Left	Right	Through	Left	Right	Through	Left
Existing Traffic Volume			172	488	67	81	209	27	92	670	81	70	324	222
Volume Adjustments (RIRO at #5)			172	488	67	81	209	27	92	670	81	70	324	222
Pipeline Development			IN	OUT										
Wisteria Business Park			47	40	-	9	8	5	-	6	-	-	6	5
Qaigen Research Park			78	24	-	31	12	-	-	4	10	4	-	12
Germantown Estate			32	5	-	5	-	-	-	1	-	-	-	-
Fairchild Apartments			17	47	-	9	-	-	-	3	-	-	-	-
Liberty Mill			12	8	-	2	-	-	-	1	-	-	-	-
Total Pipeline Trips			-	47	9	20	5	-	10	15	4	-	6	17
2025 Background			172	535	76	101	214	27	102	685	85	70	330	239
Site Development			IN	OUT										
			67	55	10	29	-	5	-	-	-	-	4	32
					14	(14)	-	-	-	(18)	-	-	-	-
					-	-	-	-	-	-	-	-	-	17
2025 Total Future			196	550	76	101	219	27	102	667	85	70	334	288
2: Wisteria Dr/MD 118 PM Peak Hour														
Traffic Component			Southbound MD 118			Westbound Wisteria Dr			Northbound MD 118			Eastbound Wisteria Dr		
			Right	Through	Left	Right	Through	Left	Right	Through	Left	Right	Through	Left
Existing Traffic Volume			270	796	102	138	225	57	74	721	159	90	198	174
Volume Adjustments (RIRO at #5)			267	799	102	138	223	59	74	721	157	90	198	178
Pipeline Development			IN	OUT										
Wisteria Business Park			141	127	-	27	24	17	-	18	-	-	18	17
Qaigen Research Park			34	77	-	14	5	-	-	12	31	12	-	5
Germantown Estate			3	14	-	-	-	-	-	2	-	-	-	-
Fairchild Apartments			50	32	-	6	-	-	-	10	-	-	-	-
Liberty Mill			11	17	-	2	-	-	-	3	-	-	-	-
Total Pipeline Trips			239	267	-	22	27	29	17	-	30	46	12	22
2025 Background			267	821	129	167	240	59	104	767	169	90	216	200
Site Development			IN	OUT										
Net New Trips (Total minus Diverted Link)			76	75	11	33	-	6	-	-	-	-	6	44
					29	(29)	-	-	-	(23)	-	-	-	-
					-	-	-	-	-	-	-	-	-	22
2025 Total Future			307	825	129	167	246	59	104	744	169	90	222	266

3: Waters Rd/Wisteria Dr Trip Distribution												
Traffic Component	Southbound Driveway			Westbound Wisteria Dr			Northbound Waters Rd			Eastbound Wisteria Dr		
	Right	Through	Left	Right	Through	Left	Right	Through	Left	Right	Through	Left
Site Developments												
Diverted Link Trips IN	AM	IN				23%			-9%			9%
Diverted Link Trips	AM	OUT				45%						
Diverted Link Trips IN	PM	IN				55%						
Diverted Link Trips	PM	OUT										
Pipeline Development												
Wisteria Business Park						-13%						13%
Qaigen Research Park						-15%						15%
Germantown Estate												
Fairchild Apartments												
Liberty Mill												
3: Waters Rd/Wisteria Dr AM Peak Hour												
Traffic Component	Southbound Driveway			Westbound Wisteria Dr			Northbound Waters Rd			Eastbound Wisteria Dr		
	Right	Through	Left	Right	Through	Left	Right	Through	Left	Right	Through	Left
Existing Traffic Volume	0	0	11	13	332	50	143	1	37	40	460	12
Volume Adjustments (RIRO at #5)	0	-	11	13	332	50	143	1	37	40	460	12
Pipeline Development	IN	OUT										
Wisteria Business Park	47	40	-	-	5	-	-	-	-	-	6	-
Qaigen Research Park	78	24	-	-	4	-	-	-	-	-	12	-
Germantown Estate	32	5	-	-	-	-	-	-	-	-	-	-
Fairchild Apartments	17	47	-	-	-	-	-	-	-	-	-	-
Liberty Mill	12	8	-	-	-	-	-	-	-	-	-	-
Total Pipeline Trips			-	-	9	-	-	-	-	-	18	-
2025 Background	-	-	11	13	341	50	143	1	37	40	478	12
Site Development	OUT	-										
	67	55	-	-	15	-	-	-	5	6	-	-
			-	-	14	-	-	-	-	-	-	-
			-	-	-	-	-	-	-	-	-	-
2025 Total Future	-	-	11	13	341	79	143	1	42	46	478	12
3: Waters Rd/Wisteria Dr PM Peak Hour												
Traffic Component	Southbound Driveway			Westbound Wisteria Dr			Northbound Waters Rd			Eastbound Wisteria Dr		
	Right	Through	Left	Right	Through	Left	Right	Through	Left	Right	Through	Left
Existing Traffic Volume	8	7	16	16	444	121	85	3	58	50	318	15
Volume Adjustments (RIRO at #5)	8	7	16	16	444	121	85	3	65	50	318	15
Pipeline Development	OUT	-										
Wisteria Business Park	141	127	-	-	17	-	-	-	-	-	18	-
Qaigen Research Park	34	77	-	-	12	-	-	-	-	-	5	-
Germantown Estate	3	14	-	-	-	-	-	-	-	-	-	-
Fairchild Apartments	50	32	-	-	-	-	-	-	-	-	-	-
Liberty Mill	11	17	-	-	-	-	-	-	-	-	-	-
Total Pipeline Trips	239	267	-	-	29	-	-	-	-	-	23	-
2025 Background	8	7	16	16	473	121	85	3	65	50	341	15
Site Development	OUT	-										
Net New Trips (Total minus Diverted Link)	76	75	-	-	18	-	-	-	7	7	-	-
			-	-	29	-	-	-	-	-	-	-
			-	-	-	-	-	-	-	-	-	-
2025 Total Future	8	7	16	16	473	139	85	3	72	57	341	15

4: Waters Rd/Waterford Hills Blvd Trip Distribution														
Traffic Component			Southbound Waters Rd			Northbound Waters Rd			Eastbound Waterford Hills Blvd					
			Right	Through	Left	Right	Through	Left	Right	Through	Left			
Site Developments			-25%			68%								
Diverted Link Trips IN	AM	IN												
Diverted Link Trips	AM	OUT		45%										
Diverted Link Trips IN	PM	IN							45%					
Diverted Link Trips	PM	OUT		55%										
Pipeline Development														
Wisteria Business Park														
Qaigen Research Park														
Germantown Estate														
Fairchild Apartments														
Liberty Mill														
4: Waters Rd/Waterford Hills Blvd AM Peak Hour														
Traffic Component			Southbound Waters Rd			Northbound Waters Rd			Eastbound Waterford Hills Blvd					
			Right	Through	Left	Right	Through	Left	Right	Through	Left			
Existing Traffic Volume			54	41	0				0	46	18	48	0	136
Volume Adjustments (RIRO at #5)			54	41	-	-	-	-	-	46	18	48	-	136
Pipeline Development			IN	OUT										
Wisteria Business Park			47	40	-	-	-	-	-	-	-	-	-	-
Qaigen Research Park			78	24	-	-	-	-	-	-	-	-	-	-
Germantown Estate			32	5	-	-	-	-	-	-	-	-	-	-
Fairchild Apartments			17	47	-	-	-	-	-	-	-	-	-	-
Liberty Mill			12	8	-	-	-	-	-	-	-	-	-	-
Total Pipeline Trips			-	-	-	-	-	-	-	-	-	-	-	-
2025 Background			54	41	-	-	-	-	-	46	18	48	-	136
Site Development			-	-	-	-	-	-	-	-	-	-	-	-
			67	55	-	-	-	-	-	46	-	-	-	-
			-	-	-	-	-	-	-	18	-	-	-	-
			-	14	-	-	-	-	-	-	-	-	-	-
			-	-	-	-	-	-	-	-	-	-	-	-
2025 Total Future			54	69	-	-	-	-	-	110	18	48	-	136
4: Waters Rd/Waterford Hills Blvd PM Peak Hour														
Traffic Component			Southbound Waters Rd			Northbound Waters Rd			Eastbound Waterford Hills Blvd					
			Right	Through	Left	Right	Through	Left	Right	Through	Left			
Existing Traffic Volume			145	45	-				-	67	82	30	-	79
Volume Adjustments (RIRO at #5)			145	45	-	-	-	-	-	74	82	30	-	79
Pipeline Development			-	-										
Wisteria Business Park			141	127	-	-	-	-	-	-	-	-	-	-
Qaigen Research Park			34	77	-	-	-	-	-	-	-	-	-	-
Germantown Estate			3	14	-	-	-	-	-	-	-	-	-	-
Fairchild Apartments			50	32	-	-	-	-	-	-	-	-	-	-
Liberty Mill			11	17	-	-	-	-	-	-	-	-	-	-
Total Pipeline Trips			239	267	-	-	-	-	-	-	-	-	-	-
2025 Background			145	45	-	-	-	-	-	74	82	30	-	79
Site Development			-	-	-	-	-	-	-	-	-	-	-	-
Net New Trips (Total minus Diverted Link)			76	75	-	19	-	-	-	52	-	-	-	-
			-	-	-	-	-	-	-	23	-	-	-	-
			-	27	-	-	-	-	-	-	-	-	-	-
2025 Total Future			145	91	-	-	-	-	-	149	82	30	-	79

5: Commercial Driveway/Wisteria Dr/Future Waters House Avenue Trip Distribution														
Traffic Component	Southbound Commercial Driveway			Westbound Wisteria Dr			Northbound Future Waters House Avenue			Eastbound Wisteria Dr				
	Right	Through	Left	Right	Through	Left	Right	Through	Left	Right	Through	Left		
Site Developments														
Diverted Link Trips IN	AM	IN												
Diverted Link Trips	AM	OUT												
Diverted Link Trips IN	PM	IN												
Diverted Link Trips	PM	OUT												
Pipeline Development														
Wisteria Business Park														
Qaigen Research Park														
Germantown Estate														
Fairchild Apartments														
Liberty Mill														
5: Commercial Driveway/Wisteria Dr/Future Waters House Avenue AM Peak Hour														
Traffic Component	Southbound Commercial Driveway			Westbound Wisteria Dr			Northbound Future Waters House Avenue			Eastbound Wisteria Dr				
	Right	Through	Left	Right	Through	Left	Right	Through	Left	Right	Through	Left		
Existing Traffic Volume														
			50	3	106	72	360	0	1	0	0	5	492	75
Volume Adjustments (RIRO at #5)														
			50	-	106	72	360	-	1	-	-	8	492	75
Pipeline Development														
	IN	OUT												
Wisteria Business Park	47	40	-	-	-	-	6	-	-	-	-	-	7	-
Qaigen Research Park	78	24	-	-	-	-	4	-	-	-	-	-	12	-
Germantown Estate	32	5	-	-	-	-	-	-	-	-	-	-	-	-
Fairchild Apartments	17	47	-	-	-	-	-	-	-	-	-	-	-	-
Liberty Mill	12	8	-	-	-	-	-	-	-	-	-	-	-	-
Total Pipeline Trips														
			-	-	-	-	10	-	-	-	-	-	19	-
2025 Background														
			50	-	106	72	370	-	1	-	-	8	511	75
Site Development														
	-	-												
	67	55	-	-	-	-	15	-	36	-	-	-	-	-
			-	-	-	-	14	-	18	-	-	-	-	-
			-	-	-	-	-	-	-	-	-	-	-	-
2025 Total Future														
			50	-	106	72	399	-	55	-	-	8	511	75
5: Commercial Driveway/Wisteria Dr/Future Waters House Avenue PM Peak Hour														
Traffic Component	Southbound Commercial Driveway			Westbound Wisteria Dr			Northbound Future Waters House Avenue			Eastbound Wisteria Dr				
	Right	Through	Left	Right	Through	Left	Right	Through	Left	Right	Through	Left		
Existing Traffic Volume														
			190	3	163	226	420	7	11	3	1	2	242	121
Volume Adjustments (RIRO at #5)														
			190	-	163	226	420	-	15	-	-	12	242	121
Pipeline Development														
	-	-												
Wisteria Business Park	141	127	-	-	-	-	18	-	-	-	-	-	20	-
Qaigen Research Park	34	77	-	-	-	-	12	-	-	-	-	-	5	-
Germantown Estate	3	14	-	-	-	-	-	-	-	-	-	-	-	-
Fairchild Apartments	50	32	-	-	-	-	-	-	-	-	-	-	-	-
Liberty Mill	11	17	-	-	-	-	-	-	-	-	-	-	-	-
Total Pipeline Trips														
	239	267	-	-	-	-	30	-	-	-	-	-	25	-
2025 Background														
			190	-	163	226	450	-	15	-	-	12	267	121
Site Development														
	-	-												
Net New Trips (Total minus Diverted Link)	76	75	-	-	-	-	18	-	50	-	-	-	-	-
			-	-	-	-	29	-	23	-	-	-	-	-
			-	-	-	-	-	-	-	-	-	-	-	-
2025 Total Future														
			190	-	163	226	497	-	88	-	-	12	267	121

7: Father Hurley Blvd/Wisteria Dr Trip Distribution												
Traffic Component	Southbound Father Hurley Blvd			Westbound Wisteria Dr			Northbound Father Hurley Blvd			Eastbound Wisteria Dr		
	Right	Through	Left	Right	Through	Left	Right	Through	Left	Right	Through	Left
Site Developments												
			9%			-9%						
Pipeline Development												
Wisteria Business Park			9%			-9%			-2%			2%
Qaigen Research Park			9%			-9%			-3%			3%
Germantown Estate												
Fairchild Apartments												
Liberty Mill												
7: Father Hurley Blvd/Wisteria Dr AM Peak Hour												
Traffic Component	Southbound Father Hurley Blvd			Westbound Wisteria Dr			Northbound Father Hurley Blvd			Eastbound Wisteria Dr		
	Right	Through	Left	Right	Through	Left	Right	Through	Left	Right	Through	Left
Existing Traffic Volume	107	317	261	108	167	15	30	252	41	56	199	144
Volume Adjustments (RIRO at #5)	107	317	261	108	167	15	30	252	41	56	199	144
Pipeline Development	IN	OUT										
Wisteria Business Park	47	40	-	4	1	1	1	-	-	-	1	-
Qaigen Research Park	78	24	-	7	1	1	2	-	-	-	2	-
Germantown Estate	32	5	-	-	-	-	-	-	-	-	-	-
Fairchild Apartments	17	47	-	-	-	-	-	-	-	-	-	-
Liberty Mill	12	8	-	-	-	-	-	-	-	-	-	-
Total Pipeline Trips			11	6	2	2	3	-	-	-	3	-
2025 Background	107	317	272	114	169	17	33	252	41	56	202	144
Site Development	-	-										
	67	55	6	5	-	-	-	-	-	-	-	-
2025 Total Future	107	317	278	119	169	17	33	252	41	56	202	144
7: Father Hurley Blvd/Wisteria Dr PM Peak Hour												
Traffic Component	Southbound Father Hurley Blvd			Westbound Wisteria Dr			Northbound Father Hurley Blvd			Eastbound Wisteria Dr		
	Right	Through	Left	Right	Through	Left	Right	Through	Left	Right	Through	Left
Existing Traffic Volume	42	352	166	300	147	84	41	337	44	33	64	61
Volume Adjustments (RIRO at #5)	42	352	166	300	147	84	41	337	44	33	64	61
Pipeline Development	-	-										
Wisteria Business Park	141	127	-	13	3	3	3	-	-	-	3	-
Qaigen Research Park	34	77	-	3	2	2	1	-	-	-	1	-
Germantown Estate	3	14	-	-	-	-	-	-	-	-	-	-
Fairchild Apartments	50	32	-	-	-	-	-	-	-	-	-	-
Liberty Mill	11	17	-	-	-	-	-	-	-	-	-	-
Total Pipeline Trips	239	267	16	18	5	5	4	-	-	-	4	-
2025 Background	42	352	182	318	152	89	45	337	44	33	68	61
Site Development	-	-										
Net New Trips (Total minus Diverted Link)	76	75	7	7	-	-	-	-	-	-	-	-
2025 Total Future	42	352	189	325	152	89	45	337	44	33	68	61

APPENDIX F
FUTURE BACKGROUND CONDITIONS CAPACITY

Queues

1: MD 118 & Waters Rd/Bowman Mill Dr

11/01/2022



Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	46	46	69	37	847	61	48	614
v/c Ratio	0.42	0.26	0.45	0.05	0.21	0.05	0.09	0.15
Control Delay	73.1	14.9	40.1	2.4	4.7	1.2	2.0	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.1	14.9	40.1	2.4	4.7	1.2	2.0	3.0
Queue Length 50th (ft)	44	1	27	4	74	0	5	33
Queue Length 95th (ft)	m86	m35	78	12	104	12	m9	39
Internal Link Dist (ft)	338		449		1184			711
Turn Bay Length (ft)		335		220		140	230	
Base Capacity (vph)	276	365	331	838	4088	1284	728	4098
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.13	0.21	0.04	0.21	0.05	0.07	0.15






















Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

1: MD 118 & Waters Rd/Bowman Mill Dr

11/01/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	11	42	22	5	37	34	779	56	44	548	17
Future Volume (vph)	31	11	42	22	5	37	34	779	56	44	548	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-2%			2%			1%				0%
Total Lost time (s)		6.5	6.5		6.5		4.5	5.5	5.5	4.5	5.5	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.91	1.00	1.00	0.91	
Fr _t		1.00	0.85		0.92		1.00	1.00	0.85	1.00	1.00	
Fl _t Protected		0.96	1.00		0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1814	1599		1671		1761	5060	1575	1770	5063	
Fl _t Permitted		0.72	1.00		0.87		0.41	1.00	1.00	0.32	1.00	
Satd. Flow (perm)		1363	1599		1472		757	5060	1575	592	5063	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	12	46	24	5	40	37	847	61	48	596	18
RTOR Reduction (vph)	0	0	43	0	37	0	0	0	13	0	1	0
Lane Group Flow (vph)	0	46	3	0	32	0	37	847	48	48	613	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		1	6		5		2
Permitted Phases	4		4	8			6		6	2		
Actuated Green, G (s)		10.5	10.5		10.5		122.8	117.9	117.9	123.2	118.1	
Effective Green, g (s)		10.5	10.5		10.5		122.8	117.9	117.9	123.2	118.1	
Actuated g/C Ratio		0.07	0.07		0.07		0.82	0.79	0.79	0.82	0.79	
Clearance Time (s)		6.5	6.5		6.5		4.5	5.5	5.5	4.5	5.5	
Vehicle Extension (s)		5.0	5.0		5.0		3.0	0.2	0.2	3.0	0.2	
Lane Grp Cap (vph)		95	111		103		652	3977	1237	526	3986	
v/s Ratio Prot							0.00	c0.17		c0.00	0.12	
v/s Ratio Perm		c0.03	0.00		0.02		0.04		0.03	0.07		
v/c Ratio		0.48	0.03		0.31		0.06	0.21	0.04	0.09	0.15	
Uniform Delay, d ₁		67.1	65.0		66.3		2.5	4.1	3.5	2.5	3.9	
Progression Factor		0.95	0.85		1.00		1.00	1.00	1.00	0.75	0.70	
Incremental Delay, d ₂		7.9	0.2		3.5		0.0	0.1	0.1	0.1	0.1	
Delay (s)		71.8	55.2		69.9		2.6	4.2	3.6	1.9	2.8	
Level of Service		E	E		E		A	A	A	A	A	
Approach Delay (s)		63.5			69.9			4.1			2.7	
Approach LOS		E			E			A			A	
Intersection Summary												
HCM 2000 Control Delay			9.3				HCM 2000 Level of Service			A		
HCM 2000 Volume to Capacity ratio			0.23									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)			16.5		
Intersection Capacity Utilization			43.4%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

2: MD 118 & Wisteria Dr

11/01/2022





































Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	260	435	29	343	92	745	111	83	769
v/c Ratio	0.64	0.54	0.27	0.69	0.36	0.30	0.14	0.50	0.31
Control Delay	69.5	50.6	71.8	59.0	63.9	24.0	8.1	73.8	21.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.5	50.6	71.8	59.0	63.9	24.0	8.1	73.8	21.7
Queue Length 50th (ft)	126	197	28	146	45	167	5	79	146
Queue Length 95th (ft)	171	244	62	193	73	238	58	132	209
Internal Link Dist (ft)		277		457		711			585
Turn Bay Length (ft)	175		90		230		250	185	
Base Capacity (vph)	481	811	232	671	400	2453	821	209	2480
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.54	0.13	0.51	0.23	0.30	0.14	0.40	0.31

Intersection Summary

HCM Signalized Intersection Capacity Analysis

2: MD 118 & Wisteria Dr

11/01/2022





















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 		 	  		  	 	  
Traffic Volume (vph)	239	330	70	27	214	101	85	685	102	76	535	172
Future Volume (vph)	239	330	70	27	214	101	85	685	102	76	535	172
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	12	12	12
Grade (%)		-5%			8%			0%				1%
Total Lost time (s)	5.0	6.5		5.0	6.5		4.5	6.0	6.0	4.5	6.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		0.97	0.91	1.00	1.00	0.91	
Frt	1.00	0.97		1.00	0.95		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3284	3297		1586	3019		3433	5085	1583	1761	4875	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3284	3297		1586	3019		3433	5085	1583	1761	4875	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	260	359	76	29	233	110	92	745	111	83	582	187
RTOR Reduction (vph)	0	11	0	0	39	0	0	0	59	0	32	0
Lane Group Flow (vph)	260	424	0	29	304	0	92	745	52	83	737	0
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases									6			
Actuated Green, G (s)	18.7	36.4		6.9	24.6		11.3	70.4	70.4	14.3	73.4	
Effective Green, g (s)	18.7	36.4		6.9	24.6		11.3	70.4	70.4	14.3	73.4	
Actuated g/C Ratio	0.12	0.24		0.05	0.16		0.08	0.47	0.47	0.10	0.49	
Clearance Time (s)	5.0	6.5		5.0	6.5		4.5	6.0	6.0	4.5	6.0	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	0.2	0.2	5.0	0.2	
Lane Grp Cap (vph)	409	800		72	495		258	2386	742	167	2385	
v/s Ratio Prot	c0.08	0.13		0.02	c0.10		0.03	0.15		c0.05	c0.15	
v/s Ratio Perm									0.03			
v/c Ratio	0.64	0.53		0.40	0.61		0.36	0.31	0.07	0.50	0.31	
Uniform Delay, d1	62.4	49.4		69.5	58.3		65.9	24.7	21.8	64.4	23.0	
Progression Factor	1.00	1.00		1.00	1.00		0.92	0.94	1.65	1.00	1.00	
Incremental Delay, d2	4.5	1.2		7.5	3.2		1.7	0.3	0.2	4.8	0.3	
Delay (s)	66.9	50.6		77.1	61.5		62.3	23.6	36.3	69.2	23.4	
Level of Service	E	D		E	E		E	C	D	E	C	
Approach Delay (s)		56.7			62.7			28.9			27.8	
Approach LOS		E			E			C			C	
Intersection Summary												
HCM 2000 Control Delay			39.7			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.44									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			22.0			
Intersection Capacity Utilization			52.6%			ICU Level of Service				A		
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

3: Waters Rd & Wisteria Dr

11/01/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	478	40	50	341	13	37	1	143	11	0	0
Future Volume (Veh/h)	12	478	40	50	341	13	37	1	143	11	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			2%			-2%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	13	520	43	54	371	14	40	1	155	12	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
12												
Median type												
TWLTL TWLTL												
Median storage (veh)												
2 2												
Upstream signal (ft)												
1050												
pX, platoon unblocked												
vC, conflicting volume	385			563			861	1060	282	772	1075	192
vC1, stage 1 conf vol							568	568		486	486	
vC2, stage 2 conf vol							294	493		286	589	
vCu, unblocked vol	385			563			861	1060	282	772	1075	192
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			95			90	100	78	97	100	100
cM capacity (veh/h)	1170			1005			419	394	715	391	371	817
Direction, Lane #												
	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	13	347	216	54	247	138	196	12				
Volume Left	13	0	0	54	0	0	40	12				
Volume Right	0	0	43	0	0	14	155	0				
cSH	1170	1700	1700	1005	1700	1700	905	391				
Volume to Capacity	0.01	0.20	0.13	0.05	0.15	0.08	0.22	0.03				
Queue Length 95th (ft)	1	0	0	4	0	0	21	2				
Control Delay (s)	8.1	0.0	0.0	8.8	0.0	0.0	12.1	14.5				
Lane LOS	A			A			B	B				
Approach Delay (s)	0.2			1.1			12.1	14.5				
Approach LOS							B	B				
Intersection Summary												
Average Delay			2.6									
Intersection Capacity Utilization			36.7%			ICU Level of Service		A				
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

4: Waters Rd & Waterford Hills Blvd




















11/01/2022



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	136	48	18	46	41	54
Future Volume (Veh/h)	136	48	18	46	41	54
Sign Control	Stop			Free	Free	
Grade	1%			-2%	1%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	148	52	20	50	45	59
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)	1					
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)	758					
pX, platoon unblocked						
vC, conflicting volume	164	74	104			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	164	74	104			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	82	95	99			
cM capacity (veh/h)	815	987	1488			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	200	70	104			
Volume Left	148	20	0			
Volume Right	52	0	59			
cSH	1101	1488	1700			
Volume to Capacity	0.18	0.01	0.06			
Queue Length 95th (ft)	17	1	0			
Control Delay (s)	10.0	2.2	0.0			
Lane LOS	A	A				
Approach Delay (s)	10.0	2.2	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay	5.8					
Intersection Capacity Utilization	24.3%			ICU Level of Service	A	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
 5: Future Waters House Ave/Future Century Blvd & Wisteria Dr










11/01/2022

																								
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR												
Lane Configurations																								
Traffic Volume (veh/h)	75	511	5	0	370	72	0	0	1	106	3	50												
Future Volume (Veh/h)	75	511	5	0	370	72	0	0	1	106	3	50												
Sign Control		Free			Free			Stop			Stop													
Grade		0%			0%			0%			0%													
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92												
Hourly flow rate (vph)	82	555	5	0	402	78	0	0	1	115	3	54												
Pedestrians																								
Lane Width (ft)																								
Walking Speed (ft/s)																								
Percent Blockage																								
Right turn flare (veh)																								
Median type																								
	TWLTL					TWLTL																		
Median storage (veh)	2					2																		
Upstream signal (ft)						357																		
pX, platoon unblocked																								
vC, conflicting volume	480			560			978			1202			280			884			1165			240		
vC1, stage 1 conf vol							722			722						441			441					
vC2, stage 2 conf vol							256			480						442			724					
vCu, unblocked vol	480			560			978			1202			280			884			1165			240		
tC, single (s)	4.1			4.1			7.5			6.5			6.9			7.5			6.5			6.9		
tC, 2 stage (s)							6.5			5.5						6.5			5.5					
tF (s)	2.2			2.2			3.5			4.0			3.3			3.5			4.0			3.3		
p0 queue free %	92			100			100			100			100			73			99			93		
cM capacity (veh/h)	1079			1007			327			333			717			425			352			761		
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1	SB 2															
Volume Total	82	370	190	0	268	212	1	118	54															
Volume Left	82	0	0	0	0	0	0	115	0															
Volume Right	0	0	5	0	0	78	1	0	54															
cSH	1079	1700	1700	1700	1700	1700	717	423	761															
Volume to Capacity	0.08	0.22	0.11	0.00	0.16	0.12	0.00	0.28	0.07															
Queue Length 95th (ft)	6	0	0	0	0	0	0	28	6															
Control Delay (s)	8.6	0.0	0.0	0.0	0.0	0.0	10.0	16.8	10.1															
Lane LOS	A						B			C			B											
Approach Delay (s)	1.1			0.0			10.0			14.7														
Approach LOS							B			B														
Intersection Summary																								
Average Delay				2.5																				
Intersection Capacity Utilization				40.3%			ICU Level of Service						A											
Analysis Period (min)				15																				

HCM Unsignalized Intersection Capacity Analysis

6: Waters Rd & Driveway

11/01/2022

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	182	0	0	95
Future Volume (Veh/h)	0	0	182	0	0	95
Sign Control	Stop		Free		Free	
Grade	0%		2%		1%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	198	0	0	103
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	943					
pX, platoon unblocked						
vC, conflicting volume	301	198			198	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	301	198			198	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	691	843			1375	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	0	198	103			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1375			
Volume to Capacity	0.00	0.12	0.00			
Queue Length 95th (ft)	0	0	0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			12.9%	ICU Level of Service		A
Analysis Period (min)			15			

Queues

7: Father Hurley Blvd & Wisteria Dr

11/01/2022


























Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	157	281	18	184	124	45	310	296	461
v/c Ratio	0.63	0.62	0.11	0.40	0.26	0.08	0.17	0.40	0.22
Control Delay	57.0	49.9	40.2	44.8	7.4	10.7	19.2	11.7	13.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.0	49.9	40.2	44.8	7.4	10.7	19.2	11.7	13.5
Queue Length 50th (ft)	125	216	12	137	0	12	70	95	89
Queue Length 95th (ft)	205	315	35	209	49	35	133	185	155
Internal Link Dist (ft)		404		1255			557		1168
Turn Bay Length (ft)	160		225			280		200	
Base Capacity (vph)	454	815	308	837	780	724	1801	888	2055
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.34	0.06	0.22	0.16	0.06	0.17	0.33	0.22

Intersection Summary

HCM Signalized Intersection Capacity Analysis
7: Father Hurley Blvd & Wisteria Dr

11/01/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	144	202	56	17	169	114	41	252	33	272	317	107
Future Volume (vph)	144	202	56	17	169	114	41	252	33	272	317	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	4.5	5.0		4.5	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.98		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1802		1770	1863	1583	1770	3478		1770	3406	
Flt Permitted	0.54	1.00		0.37	1.00	1.00	0.49	1.00		0.52	1.00	
Satd. Flow (perm)	1011	1802		687	1863	1583	907	3478		966	3406	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	157	220	61	18	184	124	45	274	36	296	345	116
RTOR Reduction (vph)	0	7	0	0	0	93	0	4	0	0	14	0
Lane Group Flow (vph)	157	274	0	18	184	31	45	306	0	296	447	0
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8		8	6			2		
Actuated Green, G (s)	33.4	33.4		33.4	33.4	33.4	76.2	70.7		90.8	80.8	
Effective Green, g (s)	33.4	33.4		33.4	33.4	33.4	76.2	70.7		90.8	80.8	
Actuated g/C Ratio	0.25	0.25		0.25	0.25	0.25	0.56	0.52		0.67	0.60	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	4.5	5.0		4.5	5.0	
Vehicle Extension (s)	8.0	8.0		8.0	8.0	8.0	3.0	0.2		3.0	0.2	
Lane Grp Cap (vph)	248	443		169	458	389	544	1812		738	2028	
v/s Ratio Prot		0.15			0.10		0.00	0.09		c0.05	0.13	
v/s Ratio Perm	c0.16			0.03		0.02	0.04			c0.22		
v/c Ratio	0.63	0.62		0.11	0.40	0.08	0.08	0.17		0.40	0.22	
Uniform Delay, d1	45.7	45.5		39.6	42.8	39.3	13.4	17.1		9.1	12.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	11.2	5.9		1.2	2.5	0.4	0.1	0.2		0.4	0.3	
Delay (s)	56.9	51.4		40.8	45.3	39.7	13.5	17.3		9.5	13.0	
Level of Service	E	D		D	D	D	B	B		A	B	
Approach Delay (s)		53.4			42.9			16.8			11.6	
Approach LOS		D			D			B			B	
Intersection Summary												
HCM 2000 Control Delay			27.8									HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio			0.48									
Actuated Cycle Length (s)			135.7								16.0	Sum of lost time (s)
Intersection Capacity Utilization			60.0%									ICU Level of Service B
Analysis Period (min)			15									

c Critical Lane Group

Queues

8: Father Hurley Blvd & Sweetgum Cir/Middlebrook Rd

11/01/2022






















Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	26	80	145	4	692	293	783
v/c Ratio	0.08	0.53	0.49	0.01	0.41	0.78	0.29
Control Delay	39.4	61.9	15.1	20.5	20.4	58.9	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.4	61.9	15.1	20.5	20.4	58.9	5.3
Queue Length 50th (ft)	7	59	6	2	163	215	85
Queue Length 95th (ft)	21	107	65	10	256	296	133
Internal Link Dist (ft)	22		713		1168		560
Turn Bay Length (ft)				135		160	
Base Capacity (vph)	794	398	556	326	1693	397	2671
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.20	0.26	0.01	0.41	0.74	0.29

Intersection Summary

HCM Signalized Intersection Capacity Analysis
 8: Father Hurley Blvd & Sweetgum Cir/Middlebrook Rd

11/01/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	10	5	74	8	125	4	471	166	270	714	6
Future Volume (vph)	9	10	5	74	8	125	4	471	166	270	714	6
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		10.0		10.0	10.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		0.95		1.00	1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt		0.97		1.00	0.86		1.00	0.96		1.00	1.00	
Flt Protected		0.98		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3357		1757	1579		1768	3389		1770	3534	
Flt Permitted		0.79		0.74	1.00		0.36	1.00		0.95	1.00	
Satd. Flow (perm)		2714		1367	1579		661	3389		1770	3534	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	10	11	5	80	9	136	4	512	180	293	776	7
RTOR Reduction (vph)	0	4	0	0	121	0	0	22	0	0	0	0
Lane Group Flow (vph)	0	22	0	80	24	0	4	670	0	293	783	0
Confl. Peds. (#/hr)	2		6	6		2	3		2	2		3
Turn Type	Perm	NA		Perm	NA		Perm	NA		Prot	NA	
Protected Phases		4			8			6		5	2	
Permitted Phases	4			8			6					
Actuated Green, G (s)		13.3		13.3	13.3		59.2	59.2		25.5	90.7	
Effective Green, g (s)		13.3		13.3	13.3		59.2	59.2		25.5	90.7	
Actuated g/C Ratio		0.11		0.11	0.11		0.49	0.49		0.21	0.76	
Clearance Time (s)		10.0		10.0	10.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		0.2		4.0	4.0		0.2	0.2		3.0	0.2	
Lane Grp Cap (vph)		300		151	175		326	1671		376	2671	
v/s Ratio Prot					0.02			c0.20		c0.17	0.22	
v/s Ratio Perm		0.01		c0.06			0.01					
v/c Ratio		0.07		0.53	0.14		0.01	0.40		0.78	0.29	
Uniform Delay, d1		47.8		50.4	48.2		15.5	19.2		44.6	4.6	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.0		4.3	0.5		0.1	0.7		9.8	0.3	
Delay (s)		47.9		54.7	48.7		15.6	19.9		54.4	4.9	
Level of Service		D		D	D		B	B		D	A	
Approach Delay (s)		47.9			50.8			19.9			18.4	
Approach LOS		D			D			B			B	
Intersection Summary												
HCM 2000 Control Delay			22.9									C
HCM 2000 Volume to Capacity ratio			0.52									
Actuated Cycle Length (s)			120.0							22.0		
Intersection Capacity Utilization			73.3%									D
Analysis Period (min)			15									
c Critical Lane Group												

Queues

1: MD 118 & Waters Rd/Bowman Mill Dr

11/01/2022



Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	55	50	90	88	960	67	45	1073
v/c Ratio	0.49	0.27	0.56	0.21	0.25	0.05	0.09	0.28
Control Delay	76.3	16.5	51.8	3.6	5.5	1.7	2.0	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.3	16.5	51.8	3.6	5.5	1.7	2.0	3.9
Queue Length 50th (ft)	53	3	50	12	89	1	3	61
Queue Length 95th (ft)	m97	m38	107	27	128	16	m7	71
Internal Link Dist (ft)	358		449		1184			711
Turn Bay Length (ft)		335		220		140	230	
Base Capacity (vph)	372	499	442	508	3914	1231	570	3814
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.10	0.20	0.17	0.25	0.05	0.08	0.28






















Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

1: MD 118 & Waters Rd/Bowman Mill Dr

11/01/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	15	46	35	5	43	81	883	62	41	933	54
Future Volume (vph)	36	15	46	35	5	43	81	883	62	41	933	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-2%			2%			1%				0%
Total Lost time (s)		6.5	6.5		6.5		4.5	5.5	5.5	4.5	5.5	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.91	1.00	1.00	0.91	
Fr _t		1.00	0.85		0.93		1.00	1.00	0.85	1.00	0.99	
Fl _t Protected		0.97	1.00		0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1817	1599		1679		1761	5060	1575	1770	5043	
Fl _t Permitted		0.68	1.00		0.84		0.24	1.00	1.00	0.28	1.00	
Satd. Flow (perm)		1283	1599		1436		445	5060	1575	527	5043	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	39	16	50	38	5	47	88	960	67	45	1014	59
RTOR Reduction (vph)	0	0	46	0	34	0	0	0	14	0	2	0
Lane Group Flow (vph)	0	55	4	0	56	0	88	960	53	45	1071	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4		4	8			6		6	2		
Actuated Green, G (s)		13.3	13.3		13.3		121.9	115.1	115.1	118.5	113.4	
Effective Green, g (s)		13.3	13.3		13.3		121.9	115.1	115.1	118.5	113.4	
Actuated g/C Ratio		0.09	0.09		0.09		0.81	0.77	0.77	0.79	0.76	
Clearance Time (s)		6.5	6.5		6.5		4.5	5.5	5.5	4.5	5.5	
Vehicle Extension (s)		5.0	5.0		5.0		3.0	0.2	0.2	3.0	0.2	
Lane Grp Cap (vph)		113	141		127		421	3882	1208	458	3812	
v/s Ratio Prot							c0.01	0.19		0.00	c0.21	
v/s Ratio Perm		c0.04	0.00		0.04		0.16		0.03	0.07		
v/c Ratio		0.49	0.03		0.44		0.21	0.25	0.04	0.10	0.28	
Uniform Delay, d ₁		65.1	62.5		64.8		2.9	5.0	4.2	3.4	5.7	
Progression Factor		0.97	0.92		1.00		1.00	1.00	1.00	0.64	0.62	
Incremental Delay, d ₂		6.7	0.2		5.1		0.2	0.2	0.1	0.1	0.2	
Delay (s)		70.0	57.4		69.9		3.2	5.2	4.3	2.3	3.7	
Level of Service		E	E		E		A	A	A	A	A	
Approach Delay (s)		64.0			69.9			5.0			3.6	
Approach LOS		E			E			A			A	
Intersection Summary												
HCM 2000 Control Delay			9.3				HCM 2000 Level of Service			A		
HCM 2000 Volume to Capacity ratio			0.30									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)			16.5		
Intersection Capacity Utilization			49.0%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

2: MD 118 & Wisteria Dr

11/01/2022


































Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	213	333	62	445	186	834	113	140	1182
v/c Ratio	0.59	0.47	0.45	0.75	0.53	0.37	0.15	0.63	0.51
Control Delay	70.3	47.9	74.3	52.2	66.0	26.9	5.0	74.1	28.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.3	47.9	74.3	52.2	66.0	26.9	5.0	74.1	28.5
Queue Length 50th (ft)	103	136	59	169	77	204	9	132	276
Queue Length 95th (ft)	146	181	107	221	96	285	53	199	376
Internal Link Dist (ft)		277		457		711			585
Turn Bay Length (ft)	175		90		230		250	185	
Base Capacity (vph)	415	751	200	729	652	2269	769	334	2324
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.44	0.31	0.61	0.29	0.37	0.15	0.42	0.51

Intersection Summary

HCM Signalized Intersection Capacity Analysis

2: MD 118 & Wisteria Dr

11/01/2022





















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 		 	  		  	 	
Traffic Volume (vph)	196	216	90	57	242	167	171	767	104	129	818	270
Future Volume (vph)	196	216	90	57	242	167	171	767	104	129	818	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	12	12	12
Grade (%)		-5%			8%			0%				1%
Total Lost time (s)	5.0	6.5		5.0	6.5		4.5	6.0	6.0	4.5	6.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		0.97	0.91	1.00	1.00	0.91	
Frt	1.00	0.96		1.00	0.94		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3284	3236		1586	2977		3433	5085	1583	1761	4872	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3284	3236		1586	2977		3433	5085	1583	1761	4872	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	213	235	98	62	263	182	186	834	113	140	889	293
RTOR Reduction (vph)	0	31	0	0	88	0	0	0	63	0	31	0
Lane Group Flow (vph)	213	302	0	62	357	0	186	834	50	140	1151	0
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases									6			
Actuated Green, G (s)	16.5	31.6		11.4	26.5		15.3	66.0	66.0	19.0	69.7	
Effective Green, g (s)	16.5	31.6		11.4	26.5		15.3	66.0	66.0	19.0	69.7	
Actuated g/C Ratio	0.11	0.21		0.08	0.18		0.10	0.44	0.44	0.13	0.46	
Clearance Time (s)	5.0	6.5		5.0	6.5		4.5	6.0	6.0	4.5	6.0	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	0.2	0.2	5.0	0.2	
Lane Grp Cap (vph)	361	681		120	525		350	2237	696	223	2263	
v/s Ratio Prot	c0.06	0.09		0.04	c0.12		0.05	0.16		c0.08	c0.24	
v/s Ratio Perm									0.03			
v/c Ratio	0.59	0.44		0.52	0.68		0.53	0.37	0.07	0.63	0.51	
Uniform Delay, d1	63.5	51.5		66.7	57.8		63.9	28.1	24.3	62.1	28.1	
Progression Factor	1.00	1.00		1.00	1.00		0.95	0.90	0.85	1.00	1.00	
Incremental Delay, d2	3.9	1.0		7.3	4.5		2.8	0.5	0.2	7.6	0.8	
Delay (s)	67.4	52.5		73.9	62.3		63.6	25.7	20.8	69.8	29.0	
Level of Service	E	D		E	E		E	C	C	E	C	
Approach Delay (s)		58.3			63.7			31.4			33.3	
Approach LOS		E			E			C			C	
Intersection Summary												
HCM 2000 Control Delay			41.0				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			22.0			
Intersection Capacity Utilization			62.7%			ICU Level of Service			B			
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

3: Waters Rd & Wisteria Dr

11/01/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	341	50	121	473	16	58	3	85	16	7	8
Future Volume (Veh/h)	15	341	50	121	473	16	58	3	85	16	7	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			2%			-2%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	16	371	54	132	514	17	63	3	92	17	8	9
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
12												
Median type												
TWLTL TWLTL												
Median storage (veh)												
2 2												
Upstream signal (ft)												
1050												
pX, platoon unblocked												
vC, conflicting volume												
531 425 964 1225 212 1006 1244 266												
vC1, stage 1 conf vol												
430 430 786 786												
vC2, stage 2 conf vol												
534 795 219 457												
vCu, unblocked vol												
531 425 964 1225 212 1006 1244 266												
tC, single (s)												
4.1 4.1 7.5 6.5 6.9 7.5 6.5 6.9												
tC, 2 stage (s)												
6.5 5.5 6.5 5.5												
tF (s)												
2.2 2.2 3.5 4.0 3.3 3.5 4.0 3.3												
p0 queue free %												
98 88 82 99 88 94 97 99												
cM capacity (veh/h)												
1033 1131 359 307 793 287 298 733												
Direction, Lane #												
EB 1 EB 2 EB 3 WB 1 WB 2 WB 3 NB 1 SB 1												
Volume Total												
16 247 178 132 343 188 158 34												
Volume Left												
16 0 0 132 0 0 63 17												
Volume Right												
0 0 54 0 0 17 92 9												
cSH												
1033 1700 1700 1131 1700 1700 853 345												
Volume to Capacity												
0.02 0.15 0.10 0.12 0.20 0.11 0.19 0.10												
Queue Length 95th (ft)												
1 0 0 10 0 0 17 8												
Control Delay (s)												
8.5 0.0 0.0 8.6 0.0 0.0 13.2 16.6												
Lane LOS												
A A B C												
Approach Delay (s)												
0.3 1.7 13.2 16.6												
Approach LOS												
B C												
Intersection Summary												
Average Delay												
3.0												
Intersection Capacity Utilization												
36.1% ICU Level of Service												
A												
Analysis Period (min)												
15												

HCM Unsignalized Intersection Capacity Analysis

4: Waters Rd & Waterford Hills Blvd

11/01/2022



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	79	30	82	67	45	145
Future Volume (Veh/h)	79	30	82	67	45	145
Sign Control	Stop			Free	Free	
Grade	1%			-2%	1%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	86	33	89	73	49	158
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)	1					
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)	754					
pX, platoon unblocked						
vC, conflicting volume	379	128	207			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	379	128	207			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	85	96	93			
cM capacity (veh/h)	582	922	1364			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	119	162	207			
Volume Left	86	89	0			
Volume Right	33	0	158			
cSH	806	1364	1700			
Volume to Capacity	0.15	0.07	0.12			
Queue Length 95th (ft)	13	5	0			
Control Delay (s)	11.4	4.5	0.0			
Lane LOS	B	A				
Approach Delay (s)	11.4	4.5	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay	4.3					
Intersection Capacity Utilization	33.7%			ICU Level of Service	A	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis

5: Future Waters House Ave/Future Century Boulevard & Wisteria Dr










11/01/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR						
Lane Configurations																		
Traffic Volume (veh/h)	121	267	2	7	450	226	1	3	11	163	3	190						
Future Volume (Veh/h)	121	267	2	7	450	226	1	3	11	163	3	190						
Sign Control	Free			Free			Stop			Stop								
Grade	0%			0%			0%			0%								
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92						
Hourly flow rate (vph)	132	290	2	8	489	246	1	3	12	177	3	207						
Pedestrians																		
Lane Width (ft)																		
Walking Speed (ft/s)																		
Percent Blockage																		
Right turn flare (veh)																		
Median type																		
	TWLTL			TWLTL														
Median storage (veh)	2			2														
Upstream signal (ft)				357														
pX, platoon unblocked																		
vC, conflicting volume	735				292		1024		1306		146		1050		1184		368	
vC1, stage 1 conf vol							555		555				628		628			
vC2, stage 2 conf vol							469		751				422		556			
vCu, unblocked vol	735				292		1024		1306		146		1050		1184		368	
tC, single (s)	4.1				4.1		7.5		6.5		6.9		7.5		6.5		6.9	
tC, 2 stage (s)							6.5		5.5				6.5		5.5			
tF (s)	2.2				2.2		3.5		4.0		3.3		3.5		4.0		3.3	
p0 queue free %	85				99		100		99		99		49		99		67	
cM capacity (veh/h)	866				1267		212		255		875		345		341		630	
Direction, Lane #																		
	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1	SB 2									
Volume Total	132	193	99	8	326	409	16	180	207									
Volume Left	132	0	0	8	0	0	1	177	0									
Volume Right	0	0	2	0	0	246	12	0	207									
cSH	866	1700	1700	1267	1700	1700	529	345	630									
Volume to Capacity	0.15	0.11	0.06	0.01	0.19	0.24	0.03	0.52	0.33									
Queue Length 95th (ft)	13	0	0	0	0	0	2	72	36									
Control Delay (s)	9.9	0.0	0.0	7.9	0.0	0.0	12.0	26.3	13.5									
Lane LOS	A			A			B	D	B									
Approach Delay (s)	3.1			0.1			12.0	19.4										
Approach LOS							B	C										
Intersection Summary																		
Average Delay	5.8																	
Intersection Capacity Utilization	52.2%			ICU Level of Service					A									
Analysis Period (min)	15																	

HCM Unsignalized Intersection Capacity Analysis
6: Waters Rd & Driveway

11/01/2022

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	146	0	0	190
Future Volume (Veh/h)	0	0	146	0	0	190
Sign Control	Stop		Free		Free	
Grade	0%		2%		1%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	159	0	0	207
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (ft)			956			
pX, platoon unblocked						
vC, conflicting volume	366	159			159	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	366	159			159	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	634	886			1420	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	0	159	207			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1420			
Volume to Capacity	0.00	0.09	0.00			
Queue Length 95th (ft)	0	0	0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			13.3%	ICU Level of Service		A
Analysis Period (min)			15			

Queues

7: Father Hurley Blvd & Wisteria Dr

11/01/2022


























Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	66	110	97	165	346	48	415	198	429
v/c Ratio	0.29	0.28	0.35	0.40	0.56	0.08	0.21	0.29	0.20
Control Delay	45.4	37.6	46.3	46.2	7.7	8.6	15.1	9.1	12.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.4	37.6	46.3	46.2	7.7	8.6	15.1	9.1	12.3
Queue Length 50th (ft)	47	67	70	121	0	11	81	51	77
Queue Length 95th (ft)	92	121	124	190	76	33	153	112	140
Internal Link Dist (ft)		404		1255			557		1168
Turn Bay Length (ft)	160		225			280		200	
Base Capacity (vph)	491	835	593	870	923	779	1991	882	2173
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.13	0.16	0.19	0.37	0.06	0.21	0.22	0.20

Intersection Summary

HCM Signalized Intersection Capacity Analysis
7: Father Hurley Blvd & Wisteria Dr

11/01/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	68	33	89	152	318	44	337	45	182	352	42
Future Volume (vph)	61	68	33	89	152	318	44	337	45	182	352	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	4.5	5.0		4.5	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1771		1770	1863	1583	1770	3477		1770	3482	
Flt Permitted	0.57	1.00		0.68	1.00	1.00	0.50	1.00		0.46	1.00	
Satd. Flow (perm)	1052	1771		1271	1863	1583	935	3477		863	3482	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	66	74	36	97	165	346	48	366	49	198	383	46
RTOR Reduction (vph)	0	12	0	0	0	271	0	4	0	0	4	0
Lane Group Flow (vph)	66	98	0	97	165	75	48	411	0	198	425	0
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8		8	6			2		
Actuated Green, G (s)	28.4	28.4		28.4	28.4	28.4	80.6	75.2		90.7	80.8	
Effective Green, g (s)	28.4	28.4		28.4	28.4	28.4	80.6	75.2		90.7	80.8	
Actuated g/C Ratio	0.22	0.22		0.22	0.22	0.22	0.62	0.58		0.69	0.62	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	4.5	5.0		4.5	5.0	
Vehicle Extension (s)	8.0	8.0		8.0	8.0	8.0	3.0	0.2		3.0	0.2	
Lane Grp Cap (vph)	228	385		276	405	344	611	2002		675	2154	
v/s Ratio Prot		0.06			c0.09		0.00	0.12		c0.02	0.12	
v/s Ratio Perm	0.06			0.08		0.05	0.05			c0.18		
v/c Ratio	0.29	0.26		0.35	0.41	0.22	0.08	0.21		0.29	0.20	
Uniform Delay, d1	42.7	42.3		43.3	43.9	42.0	9.8	13.3		7.1	10.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.0	1.5		3.3	2.8	1.4	0.1	0.2		0.2	0.2	
Delay (s)	45.7	43.8		46.6	46.7	43.4	9.9	13.6		7.4	11.0	
Level of Service	D	D		D	D	D	A	B		A	B	
Approach Delay (s)		44.5			44.8			13.2			9.9	
Approach LOS		D			D			B			A	
Intersection Summary												
HCM 2000 Control Delay			25.3				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.33									
Actuated Cycle Length (s)			130.6				Sum of lost time (s)				16.0	
Intersection Capacity Utilization			51.7%				ICU Level of Service				A	
Analysis Period (min)			15									

c Critical Lane Group

Queues

8: Father Hurley Blvd & Sweetgum Cir/Middlebrook Rd

11/01/2022























Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	32	136	371	3	841	246	563
v/c Ratio	0.10	0.62	0.69	0.01	0.55	0.64	0.23
Control Delay	32.4	58.4	13.8	21.7	26.6	52.2	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.4	58.4	13.8	21.7	26.6	52.2	7.1
Queue Length 50th (ft)	8	100	23	1	242	174	71
Queue Length 95th (ft)	22	155	113	8	328	#297	120
Internal Link Dist (ft)	22		713		1168		560
Turn Bay Length (ft)				135		160	
Base Capacity (vph)	582	396	698	360	1527	383	2496
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.34	0.53	0.01	0.55	0.64	0.23

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
 8: Father Hurley Blvd & Sweetgum Cir/Middlebrook Rd

11/01/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	14	7	125	18	323	3	656	118	226	513	5
Future Volume (vph)	8	14	7	125	18	323	3	656	118	226	513	5
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		10.0		10.0	10.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		0.95		1.00	1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt		0.96		1.00	0.86		1.00	0.98		1.00	1.00	
Flt Protected		0.99		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3342		1757	1577		1767	3451		1770	3534	
Flt Permitted		0.58		0.74	1.00		0.44	1.00		0.95	1.00	
Satd. Flow (perm)		1978		1360	1577		820	3451		1770	3534	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	15	8	136	20	351	3	713	128	246	558	5
RTOR Reduction (vph)	0	7	0	0	283	0	0	11	0	0	0	0
Lane Group Flow (vph)	0	25	0	136	88	0	3	830	0	246	563	0
Confl. Peds. (#/hr)	2		6	6		2	3		2	2		3
Turn Type	Perm	NA		Perm	NA		Perm	NA		Prot	NA	
Protected Phases		4			8			6		5	2	
Permitted Phases	4			8			6					
Actuated Green, G (s)		19.3		19.3	19.3		52.7	52.7		26.0	84.7	
Effective Green, g (s)		19.3		19.3	19.3		52.7	52.7		26.0	84.7	
Actuated g/C Ratio		0.16		0.16	0.16		0.44	0.44		0.22	0.71	
Clearance Time (s)		10.0		10.0	10.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		0.2		4.0	4.0		0.2	0.2		3.0	0.2	
Lane Grp Cap (vph)		318		218	253		360	1515		383	2494	
v/s Ratio Prot					0.06			c0.24		c0.14	0.16	
v/s Ratio Perm		0.01		c0.10			0.00					
v/c Ratio		0.08		0.62	0.35		0.01	0.55		0.64	0.23	
Uniform Delay, d1		42.8		47.0	44.8		18.9	24.8		42.8	6.2	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.0		6.2	1.1		0.0	1.4		3.7	0.2	
Delay (s)		42.8		53.1	45.9		19.0	26.3		46.4	6.4	
Level of Service		D		D	D		B	C		D	A	
Approach Delay (s)		42.8			47.8			26.3			18.6	
Approach LOS		D			D			C			B	
Intersection Summary												
HCM 2000 Control Delay			28.7									C
HCM 2000 Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			120.0							22.0		
Intersection Capacity Utilization			80.5%									D
Analysis Period (min)			15									
c Critical Lane Group												

2: MD 118 & Wisteria Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.1	0.2	3.4	0.2	0.3	0.1	0.0	0.1	2.9	0.2	0.2
Total Del/Veh (s)	58.0	43.3	31.1	76.1	54.2	30.8	63.6	22.6	4.0	67.8	23.8	8.3

2: MD 118 & Wisteria Dr Performance by movement

Movement	All
Denied Del/Veh (s)	0.2
Total Del/Veh (s)	33.6

3: Waters Rd & Wisteria Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	All
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Total Del/Veh (s)	3.8	1.7	1.5	4.8	0.6	0.4	20.1	11.3	1.5	22.4	2.3

5: Future Waters House Ave/Future Century Blvd & Wisteria Dr Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.0
Total Del/Veh (s)	6.7	2.6	3.8	1.7	1.8	5.6	17.5	14.5	3.6	3.9

Total Zone Performance

Denied Del/Veh (s)	0.4
Total Del/Veh (s)	718.1

Queuing and Blocking Report
 Future Background Conditions - AM Peak Hour

11/01/2022

Intersection: 2: MD 118 & Wisteria Dr

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB
Directions Served	L	L	T	TR	L	T	TR	L	L	T	T	T
Maximum Queue (ft)	199	225	243	236	115	216	237	94	111	204	202	176
Average Queue (ft)	95	118	144	141	33	118	121	31	43	126	121	88
95th Queue (ft)	165	182	221	220	90	196	210	71	87	190	183	156
Link Distance (ft)		258	258			464	464			707	707	707
Upstream Blk Time (%)		0	0	0								
Queuing Penalty (veh)		0	0	0								
Storage Bay Dist (ft)	175			260	90			230	230			
Storage Blk Time (%)	0	2	0	0	1	23				0		
Queuing Penalty (veh)	1	2	0	0	1	6				0		

Intersection: 2: MD 118 & Wisteria Dr

Movement	NB	SB	SB	SB	SB
Directions Served	R	L	T	T	TR
Maximum Queue (ft)	63	194	248	215	169
Average Queue (ft)	24	65	141	92	51
95th Queue (ft)	51	141	223	188	125
Link Distance (ft)			607	607	607
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	250	185			
Storage Blk Time (%)		0	2		
Queuing Penalty (veh)		0	2		

Intersection: 3: Waters Rd & Wisteria Dr

Movement	EB	WB	NB	NB	SB
Directions Served	L	L	LT	R	LTR
Maximum Queue (ft)	2	46	73	66	35
Average Queue (ft)	0	12	25	21	8
95th Queue (ft)	1	34	56	64	26
Link Distance (ft)			313		286
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	100	100		300	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Queuing and Blocking Report
 Future Background Conditions - AM Peak Hour

11/01/2022

Intersection: 5: Future Waters House Ave/Future Century Blvd & Wisteria Dr

Movement	EB	EB	EB	WB	NB	SB	SB
Directions Served	L	T	TR	TR	LTR	LT	R
Maximum Queue (ft)	61	2	8	17	20	107	61
Average Queue (ft)	17	0	0	1	1	51	29
95th Queue (ft)	46	2	5	9	10	91	54
Link Distance (ft)		598	598	258	112	205	205
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	100						
Storage Blk Time (%)	0						
Queuing Penalty (veh)	0						

Zone Summary

Zone wide Queuing Penalty: 13

2: MD 118 & Wisteria Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.1	0.1	3.3	0.3	0.4	0.3	0.0	0.3	2.4	0.2	0.3
Total Del/Veh (s)	59.3	40.6	22.4	76.6	54.7	44.1	68.9	28.1	4.7	67.8	31.4	19.4

2: MD 118 & Wisteria Dr Performance by movement

Movement	All
Denied Del/Veh (s)	0.3
Total Del/Veh (s)	37.6

3: Waters Rd & Wisteria Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	1.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
Total Del/Veh (s)	4.4	1.2	0.9	4.4	0.8	0.8	30.8	28.9	1.2	28.7	30.1	8.4

3: Waters Rd & Wisteria Dr Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	3.4

5: Future Waters House Ave/Future Century Boulevard & Wisteria Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.2	0.1	0.4	0.2	0.3
Total Del/Veh (s)	10.1	1.9	1.4	3.2	1.9	2.1		29.2	6.6	33.2	37.3	5.0

5: Future Waters House Ave/Future Century Boulevard & Wisteria Dr Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	6.5

Total Zone Performance

Denied Del/Veh (s)	0.5
Total Del/Veh (s)	1024.2

Queuing and Blocking Report
 Future Background Conditions - PM Peak Hour

11/01/2022

Intersection: 2: MD 118 & Wisteria Dr

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB
Directions Served	L	L	T	TR	L	T	TR	L	L	T	T	T
Maximum Queue (ft)	139	154	194	205	117	293	378	149	200	242	249	234
Average Queue (ft)	70	93	99	97	59	132	212	65	89	144	146	120
95th Queue (ft)	123	141	169	170	116	257	354	123	159	217	221	200
Link Distance (ft)		258	258			464	464			708	708	708
Upstream Blk Time (%)			0	0			0					
Queuing Penalty (veh)			0	0			0					
Storage Bay Dist (ft)	175			260	90			230	230			
Storage Blk Time (%)	0	0	0	0	7	17		0	0	0		0
Queuing Penalty (veh)	0	0	0	0	8	9		0	0	0		0

Intersection: 2: MD 118 & Wisteria Dr

Movement	NB	SB	SB	SB	SB
Directions Served	R	L	T	T	TR
Maximum Queue (ft)	78	229	377	322	302
Average Queue (ft)	26	128	217	171	152
95th Queue (ft)	56	235	326	275	271
Link Distance (ft)			607	607	607
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	250	185			
Storage Blk Time (%)		1	14		
Queuing Penalty (veh)		4	18		

Intersection: 3: Waters Rd & Wisteria Dr

Movement	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	L	T	TR	LT	R	LTR
Maximum Queue (ft)	6	58	1	0	99	53	52
Average Queue (ft)	1	20	0	0	39	8	17
95th Queue (ft)	4	45	1	0	80	40	41
Link Distance (ft)			599	599	309		286
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	100	100				300	
Storage Blk Time (%)							
Queuing Penalty (veh)							

Queuing and Blocking Report
 Future Background Conditions - PM Peak Hour

11/01/2022

Intersection: 5: Future Waters House Ave/Future Century Boulevard & Wisteria Dr

Movement	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	L	T	TR	LTR	LT	R
Maximum Queue (ft)	90	24	15	40	51	197	149
Average Queue (ft)	36	1	0	5	13	86	52
95th Queue (ft)	71	12	8	24	41	165	97
Link Distance (ft)			258	258	112	205	205
Upstream Blk Time (%)						1	0
Queuing Penalty (veh)						0	0
Storage Bay Dist (ft)	100	75					
Storage Blk Time (%)	0						
Queuing Penalty (veh)	0						

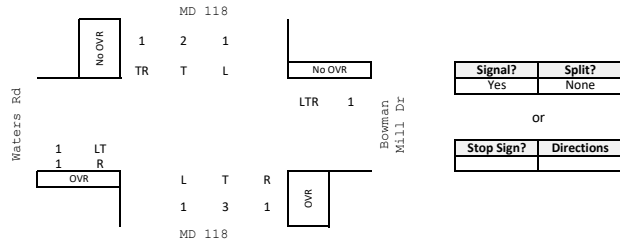
Zone Summary

Zone wide Queuing Penalty: 41

1
Critical Lane Volume
and
Level of Service Calculations

Intersection: 1: MD 118/Waters Rd
Jurisdiction: Montgomery County, MD
Scenario/Design Year: Future Background Conditions
Computed by: W+A

Intersection Lane Use & Traffic Control



AM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	LT	42		1.00	42	22	1.00	22	64	
	R	42	42	1.00	0					
WB	LTR	64		1.00	64	31	1.00	31	95	*
NB	T	779	0	0.37	288	44	1.00	44	332	*
	R	56		1.00	56				100	
SB	TR	565		0.37	209	34	1.00	34	243	
Note:									CLV	427

PM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	LT	51		1.00	51	35	1.00	35	86	
	R	46	0	1.00	46					
WB	LTR	83		1.00	83	36	1.00	36	119	*
NB	T	881	0	0.37	326	41	1.00	41	367	*
	R	62		1.00	62				103	
SB	TR	992		0.37	367	83	1.00	83	450	*
Note:									CLV	655

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap Vol.			Overlap		
		AM	PM	LUF	AM	PM	LUF	AM	PM	
Southbound	Yes	42	46	1.00	813	964	1.00	42	46	
Northbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0	
Eastbound	Yes	56	62	1.00	22	35	0.00	0	0	
Westbound	No	n/a	n/a	n/a	42	51	1.00	0	0	

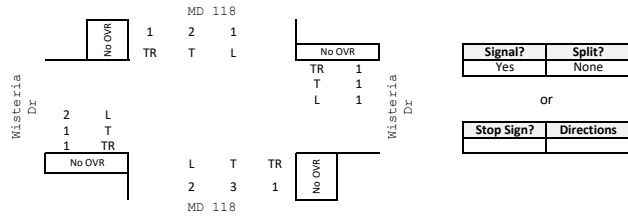
Montgomery County LATR

	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
1	1	1.00	
2	0.53	0.53	
3	0.37	0.37	
4		0.30	
5		0.25	

2
Critical Lane Volume
and
Level of Service Calculations

Intersection: 2: Wisteria Dr/MD 118
Jurisdiction: Montgomery County, MD
Scenario/Design Year: Future Background Conditions
Computed by: W+A

Intersection Lane Use & Traffic Control



AM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	TR	400		0.53	212	27	1.00	27	239	
WB	TR	315		0.53	167	239	0.53	127	294	*
NB	TR	787		0.30	236	76	1.00	76	312	*
SB	TR	707		0.37	262	85	0.53	45	307	
Note:									CLV	606

PM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	TR	306		0.53	162	59	1.00	59	221	
WB	TR	407		0.53	216	200	0.53	106	322	*
NB	TR	871		0.30	261	129	1.00	129	390	
SB	TR	1088		0.37	403	169	0.53	90	493	*
Note:									CLV	815

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Left Vol.			Overlap		
		AM	PM	LUF	AM	PM	LUF	AM	PM	
Eastbound	No	n/a	n/a		n/a	n/a		n/a	0	0
Westbound	No	n/a	n/a		n/a	n/a		n/a	0	0
Northbound	No	n/a	n/a		n/a	n/a		n/a	0	0
Southbound	No	n/a	n/a		n/a	n/a		n/a	0	0

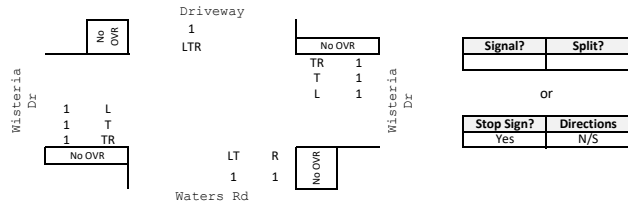
Montgomery County LATR

Number of Lanes	Lane Use Factors	
	Left Turn LUF	Through LUF
1	1	1.00
2	0.53	0.53
3	0.37	0.37
4		0.30
5		0.25

Critical Lane Volume and Level of Service Calculations

Intersection: 3: Waters Rd/Wisteria Dr
 Jurisdiction: Montgomery County, MD
 Scenario/Design Year: Future Background Conditions
 Computed by: W+A

Intersection Lane Use & Traffic Control



AM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	TR	518		0.53	2750	50	1.00	50	325	*
WB	TR	354		0.53	1880	12	1.00	12	200	
NB	LT	38		1.00	38	11	1.00	11	49	*
SB	LTR	11		1.00	11	37	1.00	37	48	
Note:									CLV	479

PM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	TR	391		0.53	2070	121	1.00	121	328	*
WB	TR	489		0.53	2590	15	1.00	15	274	
NB	LT	68		1.00	68	16	1.00	16	84	*
SB	LTR	31		1.00	31	65	1.00	65	96	
Note:									CLV	429

Right Turn Overlap

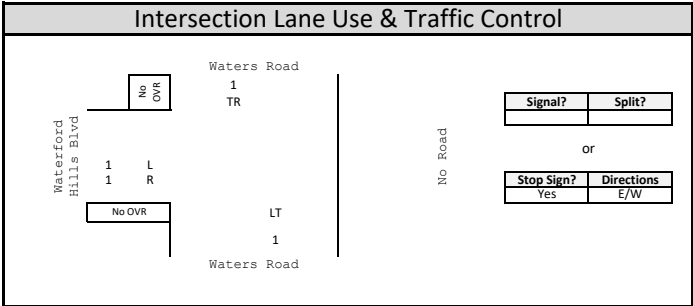
Approach	Excl. Right	Right Vol.			Adjacent Left Vol.			Overlap	
		AM	PM	LUF	AM	PM	LUF	AM	PM
Eastbound	No	n/a	n/a	n/a	n/a	n/a	1.00	0	0
Westbound	No	n/a	n/a	n/a	n/a	n/a	1.00	0	0
Northbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Southbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0

Montgomery County LATR

Number of Lanes	Lane Use Factors	
	Left Turn LUF	Through LUF
1	1	1.00
2	0.53	0.53
3	0.37	0.37
4		0.30
5		0.25

4 Critical Lane Volume and Level of Service Calculations

Intersection: 4: Waters Rd/Waterford Hills Blvd
 Jurisdiction: Montgomery County, MD
 Scenario/Design Year: Future Background Conditions
 Computed by: W+A



AM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	L	136		1.00	136				136	*
WB	R	48		1.00	48				48	
NB	LT	64		1.00	64				64	
SB	TR	95		1.00	95	18	1.00	18	113	*
Note:									CLV	249

Approach	Excl. Right	Right Vol.	Adjacent Left Vol.	Overlap
Southbound	No	n/a	n/a	1.00
Northbound	No	n/a	n/a	n/a
Eastbound	No	n/a	n/a	n/a
Westbound	No	n/a	n/a	n/a

PM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	L	79		1.00	79				79	*
WB	R	30		1.00	30				30	
NB	LT	156		1.00	156				156	
SB	TR	190		1.00	190	82	1.00	82	272	*
Note:									CLV	351

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Left Vol.			Overlap	
		AM	PM	LUF	AM	PM	LUF	AM	PM
Southbound	No	n/a	n/a		n/a	n/a		1.00	0
Northbound	No	n/a	n/a		n/a	n/a		n/a	0
Eastbound	No	n/a	n/a		n/a	n/a		n/a	0
Westbound	No	n/a	n/a		n/a	n/a		n/a	0

Montgomery County LATR

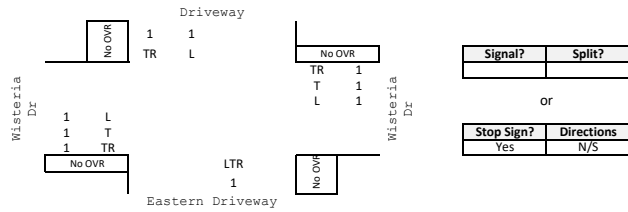
Number of Lanes	Lane Use Factors	
	Left Turn LUF	Through LUF
1	1	1.00
2	0.53	0.53
3	0.37	0.37
4		0.30
5		0.25

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	L	79		1.00	79				79	*
WB	R	30		1.00	30				30	
NB	LT	156		1.00	156				156	
SB	TR	190		1.00	190	82	1.00	82	272	*
Note:									CLV	351

5
Critical Lane Volume
and
Level of Service Calculations

Intersection: 5: Commercial Driveway/Wisteria Dr/Future Waters House Avenue
Jurisdiction: Montgomery County, MD
Scenario/Design Year: Future Background Conditions
Computed by: W+A

Intersection Lane Use & Traffic Control



AM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	TR	519		0.53	275	0	1.00	0	275	0
WB	TR	442		0.53	234	75	1.00	75	309	75
NB	LTR	1		1.00	1	106	1.00	106	107	0
SB	TR	50		1.00	50	0	1.00	0	50	0
Note:									CLV	416

PM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	TR	279		0.53	148	0	1.00	0	148	0
WB	TR	676		0.53	358	121	1.00	121	479	121
NB	LTR	15		1.00	15	163	1.00	163	178	0
SB	TR	190		1.00	190	0	1.00	0	190	0
Note:									CLV	669

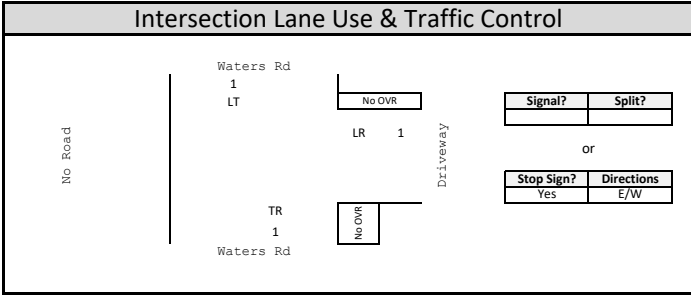
Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Left Vol.			Overlap	
		AM	PM	LUF	AM	PM	LUF	AM	PM
Southbound	No	n/a	n/a	1.00	n/a	n/a	n/a	0	0
Northbound	No	n/a	n/a	1.00	n/a	n/a	n/a	0	0
Eastbound	No	n/a	n/a	1.00	n/a	n/a	n/a	0	0
Westbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0

Montgomery County LATR

Number of Lanes	Lane Use Factors	
	Left Turn LUF	Through LUF
1	1	1.00
2	0.53	0.53
3	0.37	0.37
4		0.30
5		0.25

6 Critical Lane Volume and Level of Service Calculations	Intersection: <u>Future Intersection</u>
	Jurisdiction: <u>Montgomery County, MD</u>
	Scenario/Design Year: <u>Future Background Conditions</u>
	Computed by: <u>W+A</u>



AM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB									0	*
WB	LR	0		1.00	0				0	*
NB	TR	182		1.00	182	0	1.00	0	182	*
SB	TL	95		1.00	95				95	*
Note:									CLV	182

PM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB									0	*
WB	LR	0		1.00	0				0	*
NB	TR	152		1.00	152	0	1.00	0	152	*
SB	TL	190		1.00	190				190	*
Note:									CLV	190

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap Vol.			Overlap	
		AM	PM	LUF	AM	PM	LUF	AM	PM
Southbound	No	n/a	n/a	n/a	182	152	1.00	0	0
Northbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Eastbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Westbound	No	n/a	n/a	n/a	0	0	1.00	0	0

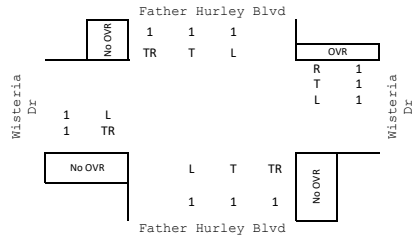
Montgomery County LATR

	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
1	1	1.00	1.00
2	0.53	0.53	0.53
3	0.37	0.37	0.37
4		0.30	0.30
5		0.25	0.25

7
Critical Lane Volume
and
Level of Service Calculations

Intersection: 7: Father Hurley Blvd/Wisteria Dr
Jurisdiction: Montgomery County, MD
Scenario/Design Year: Future Background Conditions
Computed by: W+A

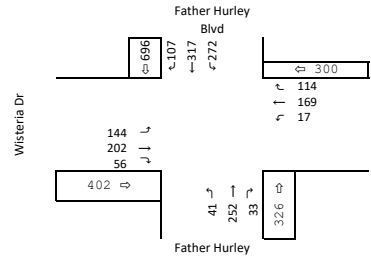
Intersection Lane Use & Traffic Control



Signal?	Split?
Yes	None

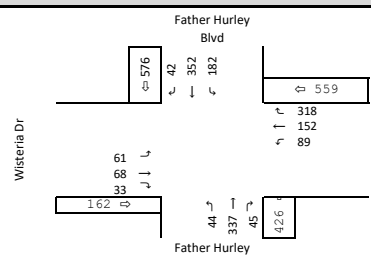
Stop Sign?	Directions
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AM Peak Hour Critical Lane Volume Analysis



Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	TR	258		1.00	258	17	1.00	17	275	
WB	T	169	114	1.00	169	0	1.00	144	313	*
NB	TR	285		0.53	151	272	1.00	272	423	*
SB	TR	424		0.53	225	41	1.00	41	266	
Note:									CLV	736

PM Peak Hour Critical Lane Volume Analysis



Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	TR	101		1.00	101	89	1.00	89	190	
WB	R	152	0	1.00	152	61	1.00	61	213	*
NB	TR	382		0.53	202	182	1.00	182	384	*
SB	TR	394		0.53	209	44	1.00	44	253	
Note:									CLV	763

Right Turn Overlap

Approach	Excl Right	Right Vol.			Adjacent Left Vol.			Overlap		
		AM	PM	LUF	AM	PM	LUF	AM	PM	
Southbound	No	n/a	n/a		n/a	n/a		n/a	0	0
Northbound	Yes	114	318	1.00	272	182	1.00	114	182	
Eastbound	No	n/a	n/a		n/a	n/a		1.00	0	0
Westbound	No	n/a	n/a		n/a	n/a		n/a	0	0

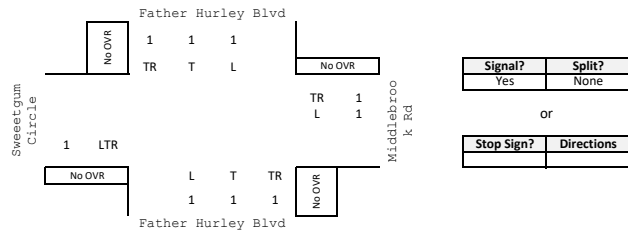
Montgomery County LATR

Number of Lanes	Lane Use Factors	
	Left Turn LUF	Through LUF
1	1	1.00
2	0.53	0.53
3	0.37	0.37
4		0.30
5		0.25

8
Critical Lane Volume
and
Level of Service Calculations

Intersection: Father Hurley Blvd / Middlebrook Rd
 Jurisdiction: Montgomery County, MD
 Scenario/Design Year: Future Background Conditions
 Computed by: W+A

Intersection Lane Use & Traffic Control



AM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	LTR	24		1.00	24	74	1.00	74	98	
WB	TR	133		1.00	133	9	1.00	9	142	*
NB	TR	637		0.53	338	270	1.00	270	608	*
SB	TR	720		0.53	382	4	1.00	4	386	
Note:									CLV	750

PM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	LTR	29		1.00	29	125	1.00	125	154	
WB	TR	341		1.00	341	8	1.00	8	349	*
NB	TR	774		0.53	410	226	1.00	226	636	*
SB	TR	518		0.53	275	3	1.00	3	278	
Note:									CLV	985

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Left Vol.			Overlap	
		AM	PM	LUF	AM	PM	LUF	AM	PM
Southbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Northbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Eastbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Westbound	No	n/a	n/a	n/a	n/a	n/a	1.00	0	0

Montgomery County LATR

Number of Lanes	Lane Use Factors	
	Left Turn LUF	Through LUF
1	1	1.00
2	0.53	0.53
3	0.37	0.37
4		0.30
5		0.25

APPENDIX G
TOTAL FUTURE CONDITIONS CAPACITY

Queues

1: MD 118 & Waters Rd/Bowman Mill Dr

11/17/2022



Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	46	76	69	75	827	61	48	630
v/c Ratio	0.42	0.38	0.45	0.12	0.21	0.05	0.09	0.16
Control Delay	71.8	16.0	40.1	2.6	4.9	1.2	2.0	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.8	16.0	40.1	2.6	4.9	1.2	2.0	3.5
Queue Length 50th (ft)	44	5	27	9	72	0	4	33
Queue Length 95th (ft)	m86	47	78	21	101	12	m9	39
Internal Link Dist (ft)	349		449		1184			711
Turn Bay Length (ft)		335		220		140	230	
Base Capacity (vph)	279	385	331	810	3955	1244	729	3850
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.20	0.21	0.09	0.21	0.05	0.07	0.16


























Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

1: MD 118 & Waters Rd/Bowman Mill Dr

11/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  			  	
Traffic Volume (vph)	31	11	70	22	5	37	69	761	56	44	534	46
Future Volume (vph)	31	11	70	22	5	37	69	761	56	44	534	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-2%			2%			1%				0%
Total Lost time (s)		6.5	6.5		6.5		4.5	5.5	5.5	4.5	5.5	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.91	1.00	1.00	0.91	
Fr _t		1.00	0.85		0.92		1.00	1.00	0.85	1.00	0.99	
Fl _t Protected		0.96	1.00		0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1814	1599		1671		1761	5060	1575	1770	5025	
Fl _t Permitted		0.73	1.00		0.87		0.40	1.00	1.00	0.33	1.00	
Satd. Flow (perm)		1374	1599		1472		735	5060	1575	611	5025	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	12	76	24	5	40	75	827	61	48	580	50
RTOR Reduction (vph)	0	0	70	0	37	0	0	0	14	0	3	0
Lane Group Flow (vph)	0	46	6	0	32	0	75	827	47	48	627	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4		4	8			6		6	2		
Actuated Green, G (s)		12.1	12.1		12.1		122.9	116.3	116.3	119.9	114.8	
Effective Green, g (s)		12.1	12.1		12.1		122.9	116.3	116.3	119.9	114.8	
Actuated g/C Ratio		0.08	0.08		0.08		0.82	0.78	0.78	0.80	0.77	
Clearance Time (s)		6.5	6.5		6.5		4.5	5.5	5.5	4.5	5.5	
Vehicle Extension (s)		5.0	5.0		5.0		3.0	0.2	0.2	3.0	0.2	
Lane Grp Cap (vph)		110	128		118		647	3923	1221	527	3845	
v/s Ratio Prot							c0.01	c0.16		0.00	0.12	
v/s Ratio Perm		c0.03	0.00		0.02		0.09		0.03	0.07		
v/c Ratio		0.42	0.05		0.27		0.12	0.21	0.04	0.09	0.16	
Uniform Delay, d ₁		65.6	63.6		64.8		2.6	4.5	3.9	3.1	4.7	
Progression Factor		0.94	0.83		1.00		1.00	1.00	1.00	0.75	0.70	
Incremental Delay, d ₂		5.3	0.3		2.6		0.1	0.1	0.1	0.1	0.1	
Delay (s)		66.7	53.4		67.4		2.6	4.6	4.0	2.4	3.4	
Level of Service		E	D		E		A	A	A	A	A	
Approach Delay (s)		58.4			67.4			4.4			3.3	
Approach LOS		E			E			A			A	
Intersection Summary												
HCM 2000 Control Delay			10.0				HCM 2000 Level of Service			A		
HCM 2000 Volume to Capacity ratio			0.23									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)			16.5		
Intersection Capacity Utilization			43.0%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

2: MD 118 & Wisteria Dr

11/17/2022



































Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	313	439	29	348	92	725	111	83	811
v/c Ratio	0.71	0.52	0.27	0.69	0.36	0.30	0.14	0.50	0.34
Control Delay	71.2	49.0	71.8	59.2	64.0	24.8	8.5	73.8	22.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.2	49.0	71.8	59.2	64.0	24.8	8.5	73.8	22.7
Queue Length 50th (ft)	152	195	28	149	45	168	4	79	161
Queue Length 95th (ft)	204	245	62	196	74	232	59	132	221
Internal Link Dist (ft)		277		457		711			585
Turn Bay Length (ft)	175		90		230		250	185	
Base Capacity (vph)	481	851	232	670	400	2391	803	209	2418
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.65	0.52	0.13	0.52	0.23	0.30	0.14	0.40	0.34

Intersection Summary

HCM Signalized Intersection Capacity Analysis

2: MD 118 & Wisteria Dr

11/17/2022



















													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	 	 		 	 		 	  		  	 	 	
Traffic Volume (vph)	288	334	70	27	219	101	85	667	102	76	550	196	
Future Volume (vph)	288	334	70	27	219	101	85	667	102	76	550	196	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	10	10	10	10	10	10	12	12	12	12	12	12	
Grade (%)		-5%			8%			0%				1%	
Total Lost time (s)	5.0	6.5		5.0	6.5		4.5	6.0	6.0	4.5	6.0		
Lane Util. Factor	0.97	0.95		1.00	0.95		0.97	0.91	1.00	1.00	0.91		
Frt	1.00	0.97		1.00	0.95		1.00	1.00	0.85	1.00	0.96		
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)	3284	3298		1586	3021		3433	5085	1583	1761	4861		
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00		
Satd. Flow (perm)	3284	3298		1586	3021		3433	5085	1583	1761	4861		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	313	363	76	29	238	110	92	725	111	83	598	213	
RTOR Reduction (vph)	0	11	0	0	38	0	0	0	60	0	36	0	
Lane Group Flow (vph)	313	428	0	29	310	0	92	725	51	83	775	0	
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA		
Protected Phases	7	4		3	8		1	6		5	2		
Permitted Phases									6				
Actuated Green, G (s)	20.2	38.2		6.9	24.9		11.3	68.6	68.6	14.3	71.6		
Effective Green, g (s)	20.2	38.2		6.9	24.9		11.3	68.6	68.6	14.3	71.6		
Actuated g/C Ratio	0.13	0.25		0.05	0.17		0.08	0.46	0.46	0.10	0.48		
Clearance Time (s)	5.0	6.5		5.0	6.5		4.5	6.0	6.0	4.5	6.0		
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	0.2	0.2	5.0	0.2		
Lane Grp Cap (vph)	442	839		72	501		258	2325	723	167	2320		
v/s Ratio Prot	c0.10	0.13		0.02	c0.10		0.03	0.14		c0.05	c0.16		
v/s Ratio Perm									0.03				
v/c Ratio	0.71	0.51		0.40	0.62		0.36	0.31	0.07	0.50	0.33		
Uniform Delay, d1	62.1	47.9		69.5	58.1		65.9	25.8	22.8	64.4	24.4		
Progression Factor	1.00	1.00		1.00	1.00		0.92	0.94	1.70	1.00	1.00		
Incremental Delay, d2	6.4	1.0		7.5	3.3		1.7	0.3	0.2	4.8	0.4		
Delay (s)	68.5	48.9		77.1	61.4		62.4	24.5	38.9	69.2	24.8		
Level of Service	E	D		E	E		E	C	D	E	C		
Approach Delay (s)		57.1			62.6			30.0			28.9		
Approach LOS		E			E			C			C		
Intersection Summary													
HCM 2000 Control Delay			40.7									HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.47										
Actuated Cycle Length (s)			150.0									Sum of lost time (s)	22.0
Intersection Capacity Utilization			55.0%									ICU Level of Service	B
Analysis Period (min)			15										

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

3: Waters Rd & Wisteria Dr

11/17/2022

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	12	478	46	79	341	13	42	1	143	11	0	0	
Future Volume (Veh/h)	12	478	46	79	341	13	42	1	143	11	0	0	
Sign Control		Free			Free			Stop			Stop		
Grade		0%			0%			2%			-2%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	13	520	50	86	371	14	46	1	155	12	0	0	
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)													
Median type	TWLTL			TWLTL									
Median storage (veh)	2			2									
Upstream signal (ft)				1050									
pX, platoon unblocked													
vC, conflicting volume	385			570			928			1128			
vC1, stage 1 conf vol							571			571			
vC2, stage 2 conf vol							358			557			
vCu, unblocked vol	385			570			928			1128			
tC, single (s)	4.1			4.1			7.5			6.5			
tC, 2 stage (s)							6.5			5.5			
tF (s)	2.2			2.2			3.5			4.0			
p0 queue free %	99			91			88			100			
cM capacity (veh/h)	1170			999			396			367			
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1					
Volume Total	13	347	223	86	247	138	202	12					
Volume Left	13	0	0	86	0	0	46	12					
Volume Right	0	0	50	0	0	14	155	0					
cSH	1170	1700	1700	999	1700	1700	600	353					
Volume to Capacity	0.01	0.20	0.13	0.09	0.15	0.08	0.34	0.03					
Queue Length 95th (ft)	1	0	0	7	0	0	37	3					
Control Delay (s)	8.1	0.0	0.0	8.9	0.0	0.0	14.0	15.6					
Lane LOS	A			A			B	C					
Approach Delay (s)	0.2			1.6			14.0	15.6					
Approach LOS							B	C					
Intersection Summary													
Average Delay	3.1												
Intersection Capacity Utilization	39.3%			ICU Level of Service					A				
Analysis Period (min)	15												

HCM Unsignalized Intersection Capacity Analysis
 4: Waters Rd & Waterford Hills Blvd



















11/17/2022



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	136	48	18	110	69	54
Future Volume (Veh/h)	136	48	18	110	69	54
Sign Control	Stop			Free	Free	
Grade	1%			-2%	1%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	148	52	20	120	75	59
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)	1					
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)	747					
pX, platoon unblocked						
vC, conflicting volume	264	104	134			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	264	104	134			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	79	95	99			
cM capacity (veh/h)	714	950	1451			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	200	140	134			
Volume Left	148	20	0			
Volume Right	52	0	59			
cSH	965	1451	1700			
Volume to Capacity	0.21	0.01	0.08			
Queue Length 95th (ft)	19	1	0			
Control Delay (s)	10.7	1.2	0.0			
Lane LOS	B	A				
Approach Delay (s)	10.7	1.2	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay	4.9					
Intersection Capacity Utilization	31.2%			ICU Level of Service	A	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
 5: Future Waters House Ave/Future Century Blvd & Wisteria Dr

11/17/2022

															
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR			
Lane Configurations															
Traffic Volume (veh/h)	75	511	8	0	399	72	0	0	55	106	0	50			
Future Volume (Veh/h)	75	511	8	0	399	72	0	0	55	106	0	50			
Sign Control	Free			Free			Stop			Stop					
Grade	0%			0%			0%			0%					
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	82	555	9	0	434	78	0	0	60	115	0	54			
Pedestrians															
Lane Width (ft)															
Walking Speed (ft/s)															
Percent Blockage															
Right turn flare (veh)															
Median type	TWLTL				TWLTL										
Median storage (veh)	2				2										
Upstream signal (ft)					357										
pX, platoon unblocked															
vC, conflicting volume	512			564			994			1236			282		
vC1, stage 1 conf vol							724			724			473		
vC2, stage 2 conf vol							271			512			502		
vCu, unblocked vol	512			564			994			1236			282		
tC, single (s)	4.1			4.1			7.5			6.5			6.9		
tC, 2 stage (s)							6.5			5.5			6.5		
tF (s)	2.2			2.2			3.5			4.0			3.3		
p0 queue free %	92			100			100			100			92		
cM capacity (veh/h)	1050			1004			324			326			715		
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1	SB 2							
Volume Total	82	370	194	289	223	60	115	54							
Volume Left	82	0	0	0	0	0	115	0							
Volume Right	0	0	9	0	78	60	0	54							
cSH	1050	1700	1700	1700	1700	715	370	743							
Volume to Capacity	0.08	0.22	0.11	0.17	0.13	0.08	0.31	0.07							
Queue Length 95th (ft)	6	0	0	0	0	7	33	6							
Control Delay (s)	8.7	0.0	0.0	0.0	0.0	10.5	19.1	10.2							
Lane LOS	A					B	C	B							
Approach Delay (s)	1.1			0.0		10.5	16.2								
Approach LOS						B	C								
Intersection Summary															
Average Delay	2.9														
Intersection Capacity Utilization	33.7%			ICU Level of Service					A						
Analysis Period (min)	15														

HCM Unsignalized Intersection Capacity Analysis

6: Waters Rd & Driveway

11/17/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	28	5	182	64	35	95
Future Volume (Veh/h)	28	5	182	64	35	95
Sign Control	Stop		Free		Free	
Grade	0%		2%		1%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	30	5	198	70	38	103
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	938					
pX, platoon unblocked						
vC, conflicting volume	412	233			268	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	412	233			268	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	99			97	
cM capacity (veh/h)	579	806			1296	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	35	268	141			
Volume Left	30	0	38			
Volume Right	5	70	0			
cSH	603	1700	1296			
Volume to Capacity	0.06	0.16	0.03			
Queue Length 95th (ft)	5	0	2			
Control Delay (s)	11.3	0.0	2.3			
Lane LOS	B		A			
Approach Delay (s)	11.3	0.0	2.3			
Approach LOS	B					
Intersection Summary						
Average Delay			1.6			
Intersection Capacity Utilization			33.7%	ICU Level of Service	A	
Analysis Period (min)			15			

Queues

7: Father Hurley Blvd & Wisteria Dr

11/17/2022


























Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	157	281	18	184	129	45	310	302	461
v/c Ratio	0.63	0.62	0.11	0.40	0.26	0.08	0.17	0.41	0.22
Control Delay	57.0	49.9	40.2	44.8	7.4	10.8	19.3	11.8	13.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.0	49.9	40.2	44.8	7.4	10.8	19.3	11.8	13.5
Queue Length 50th (ft)	125	216	12	137	0	12	71	97	89
Queue Length 95th (ft)	205	315	35	209	49	35	134	189	155
Internal Link Dist (ft)		404		1255			557		1168
Turn Bay Length (ft)	160		225			280		200	
Base Capacity (vph)	454	815	308	837	782	723	1796	887	2055
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.34	0.06	0.22	0.16	0.06	0.17	0.34	0.22

Intersection Summary

HCM Signalized Intersection Capacity Analysis
7: Father Hurley Blvd & Wisteria Dr

11/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	144	202	56	17	169	119	41	252	33	278	317	107
Future Volume (vph)	144	202	56	17	169	119	41	252	33	278	317	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	4.5	5.0		4.5	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.98		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1802		1770	1863	1583	1770	3478		1770	3406	
Flt Permitted	0.54	1.00		0.37	1.00	1.00	0.49	1.00		0.52	1.00	
Satd. Flow (perm)	1011	1802		687	1863	1583	907	3478		965	3406	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	157	220	61	18	184	129	45	274	36	302	345	116
RTOR Reduction (vph)	0	7	0	0	0	97	0	4	0	0	14	0
Lane Group Flow (vph)	157	274	0	18	184	32	45	306	0	302	447	0
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8		8	6			2		
Actuated Green, G (s)	33.4	33.4		33.4	33.4	33.4	76.0	70.5		90.8	80.8	
Effective Green, g (s)	33.4	33.4		33.4	33.4	33.4	76.0	70.5		90.8	80.8	
Actuated g/C Ratio	0.25	0.25		0.25	0.25	0.25	0.56	0.52		0.67	0.60	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	4.5	5.0		4.5	5.0	
Vehicle Extension (s)	8.0	8.0		8.0	8.0	8.0	3.0	0.2		3.0	0.2	
Lane Grp Cap (vph)	248	443		169	458	389	542	1806		739	2028	
v/s Ratio Prot		0.15			0.10		0.00	0.09		c0.05	0.13	
v/s Ratio Perm	c0.16			0.03		0.02	0.04			c0.23		
v/c Ratio	0.63	0.62		0.11	0.40	0.08	0.08	0.17		0.41	0.22	
Uniform Delay, d1	45.7	45.5		39.6	42.8	39.4	13.5	17.2		9.1	12.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	11.2	5.9		1.2	2.5	0.4	0.1	0.2		0.4	0.3	
Delay (s)	56.9	51.4		40.8	45.3	39.7	13.5	17.4		9.5	13.0	
Level of Service	E	D		D	D	D	B	B		A	B	
Approach Delay (s)		53.4			42.9			16.9			11.6	
Approach LOS		D			D			B			B	
Intersection Summary												
HCM 2000 Control Delay			27.8				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.48									
Actuated Cycle Length (s)			135.7				Sum of lost time (s)				16.0	
Intersection Capacity Utilization			60.4%				ICU Level of Service				B	
Analysis Period (min)			15									

c Critical Lane Group

Queues

8: Father Hurley Blvd & Sweetgum Cir/Middlebrook Rd

11/17/2022






















Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	26	80	145	4	697	293	790
v/c Ratio	0.08	0.53	0.49	0.01	0.41	0.78	0.30
Control Delay	39.4	61.9	15.1	20.5	20.5	58.9	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.4	61.9	15.1	20.5	20.5	58.9	5.3
Queue Length 50th (ft)	7	59	6	2	164	215	86
Queue Length 95th (ft)	21	107	65	10	258	296	134
Internal Link Dist (ft)	22		713		1168		560
Turn Bay Length (ft)				135		160	
Base Capacity (vph)	794	398	556	324	1693	397	2671
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.20	0.26	0.01	0.41	0.74	0.30

Intersection Summary

HCM Signalized Intersection Capacity Analysis
 8: Father Hurley Blvd & Sweetgum Cir/Middlebrook Rd

11/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	10	5	74	8	125	4	476	166	270	720	6
Future Volume (vph)	9	10	5	74	8	125	4	476	166	270	720	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		10.0		10.0	10.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		0.95		1.00	1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt		0.97		1.00	0.86		1.00	0.96		1.00	1.00	
Flt Protected		0.98		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3357		1757	1579		1768	3390		1770	3534	
Flt Permitted		0.79		0.74	1.00		0.35	1.00		0.95	1.00	
Satd. Flow (perm)		2714		1367	1579		657	3390		1770	3534	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	10	11	5	80	9	136	4	517	180	293	783	7
RTOR Reduction (vph)	0	4	0	0	121	0	0	22	0	0	0	0
Lane Group Flow (vph)	0	22	0	80	24	0	4	675	0	293	790	0
Confl. Peds. (#/hr)	2		6	6		2	3		2	2		3
Turn Type	Perm	NA		Perm	NA		Perm	NA		Prot	NA	
Protected Phases		4			8			6		5	2	
Permitted Phases	4			8			6					
Actuated Green, G (s)		13.3		13.3	13.3		59.2	59.2		25.5	90.7	
Effective Green, g (s)		13.3		13.3	13.3		59.2	59.2		25.5	90.7	
Actuated g/C Ratio		0.11		0.11	0.11		0.49	0.49		0.21	0.76	
Clearance Time (s)		10.0		10.0	10.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		0.2		4.0	4.0		0.2	0.2		3.0	0.2	
Lane Grp Cap (vph)		300		151	175		324	1672		376	2671	
v/s Ratio Prot					0.02			c0.20		c0.17	0.22	
v/s Ratio Perm		0.01		c0.06			0.01					
v/c Ratio		0.07		0.53	0.14		0.01	0.40		0.78	0.30	
Uniform Delay, d1		47.8		50.4	48.2		15.5	19.2		44.6	4.6	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.0		4.3	0.5		0.1	0.7		9.8	0.3	
Delay (s)		47.9		54.7	48.7		15.6	20.0		54.4	4.9	
Level of Service		D		D	D		B	B		D	A	
Approach Delay (s)		47.9			50.8			19.9			18.3	
Approach LOS		D			D			B			B	
Intersection Summary												
HCM 2000 Control Delay			22.8									C
HCM 2000 Volume to Capacity ratio			0.52									
Actuated Cycle Length (s)			120.0							22.0		
Intersection Capacity Utilization			73.3%									D
Analysis Period (min)			15									
c Critical Lane Group												

Queues

1: MD 118 & Waters Rd/Bowman Mill Dr

11/17/2022



Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	46	76	69	75	827	61	48	630
v/c Ratio	0.42	0.38	0.45	0.12	0.21	0.05	0.09	0.16
Control Delay	75.5	19.5	40.1	2.6	4.9	1.2	2.0	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.5	19.5	40.1	2.6	4.9	1.2	2.0	3.5
Queue Length 50th (ft)	44	6	27	9	72	0	4	33
Queue Length 95th (ft)	83	48	78	21	101	12	m9	39
Internal Link Dist (ft)	353		449		1184			711
Turn Bay Length (ft)		335		220		140	230	
Base Capacity (vph)	279	385	331	810	3955	1244	729	3850
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.20	0.21	0.09	0.21	0.05	0.07	0.16






















Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

1: MD 118 & Waters Rd/Bowman Mill Dr

11/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	11	70	22	5	37	69	761	56	44	534	46
Future Volume (vph)	31	11	70	22	5	37	69	761	56	44	534	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-2%			2%			1%				0%
Total Lost time (s)		6.5	6.5		6.5		4.5	5.5	5.5	4.5	5.5	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.91	1.00	1.00	0.91	
Frt		1.00	0.85		0.92		1.00	1.00	0.85	1.00	0.99	
Flt Protected		0.96	1.00		0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1814	1599		1671		1761	5060	1575	1770	5025	
Flt Permitted		0.73	1.00		0.87		0.40	1.00	1.00	0.33	1.00	
Satd. Flow (perm)		1374	1599		1472		735	5060	1575	611	5025	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	12	76	24	5	40	75	827	61	48	580	50
RTOR Reduction (vph)	0	0	70	0	37	0	0	0	14	0	3	0
Lane Group Flow (vph)	0	46	6	0	32	0	75	827	47	48	627	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		1	6		5		2
Permitted Phases	4		4	8			6		6	2		
Actuated Green, G (s)		12.1	12.1		12.1		122.9	116.3	116.3	119.9	114.8	
Effective Green, g (s)		12.1	12.1		12.1		122.9	116.3	116.3	119.9	114.8	
Actuated g/C Ratio		0.08	0.08		0.08		0.82	0.78	0.78	0.80	0.77	
Clearance Time (s)		6.5	6.5		6.5		4.5	5.5	5.5	4.5	5.5	
Vehicle Extension (s)		5.0	5.0		5.0		3.0	0.2	0.2	3.0	0.2	
Lane Grp Cap (vph)		110	128		118		647	3923	1221	527	3845	
v/s Ratio Prot							c0.01	c0.16		0.00	0.12	
v/s Ratio Perm		c0.03	0.00		0.02		0.09		0.03	0.07		
v/c Ratio		0.42	0.05		0.27		0.12	0.21	0.04	0.09	0.16	
Uniform Delay, d1		65.6	63.6		64.8		2.6	4.5	3.9	3.1	4.7	
Progression Factor		0.99	1.11		1.00		1.00	1.00	1.00	0.75	0.70	
Incremental Delay, d2		5.3	0.3		2.6		0.1	0.1	0.1	0.1	0.1	
Delay (s)		70.5	71.0		67.4		2.6	4.6	4.0	2.4	3.4	
Level of Service		E	E		E		A	A	A	A	A	
Approach Delay (s)		70.8			67.4			4.4			3.3	
Approach LOS		E			E			A			A	
Intersection Summary												
HCM 2000 Control Delay			10.8				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.23									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)			16.5		
Intersection Capacity Utilization			43.0%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

2: MD 118 & Wisteria Dr

11/17/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	313	439	29	348	92	725	111	83	811
v/c Ratio	0.71	0.52	0.27	0.69	0.36	0.30	0.14	0.50	0.34
Control Delay	67.6	48.5	71.8	59.2	64.1	24.8	8.5	73.8	22.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.6	48.5	71.8	59.2	64.1	24.8	8.5	73.8	22.7
Queue Length 50th (ft)	155	196	28	149	45	168	4	79	161
Queue Length 95th (ft)	169	264	62	196	74	232	59	132	221
Internal Link Dist (ft)		277		457		711			585
Turn Bay Length (ft)	175		90		230		250	185	
Base Capacity (vph)	481	851	232	670	400	2391	803	209	2418
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.65	0.52	0.13	0.52	0.23	0.30	0.14	0.40	0.34

Intersection Summary

HCM Signalized Intersection Capacity Analysis

2: MD 118 & Wisteria Dr

11/17/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↕↔		↔	↕↔		↔↔	↕↕↕	↔	↔	↕↕↕	
Traffic Volume (vph)	288	334	70	27	219	101	85	667	102	76	550	196
Future Volume (vph)	288	334	70	27	219	101	85	667	102	76	550	196
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	12	12	12
Grade (%)		-5%			8%			0%				1%
Total Lost time (s)	5.0	6.5		5.0	6.5		4.5	6.0	6.0	4.5	6.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		0.97	0.91	1.00	1.00	0.91	
Frt	1.00	0.97		1.00	0.95		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3284	3298		1586	3021		3433	5085	1583	1761	4861	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3284	3298		1586	3021		3433	5085	1583	1761	4861	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	313	363	76	29	238	110	92	725	111	83	598	213
RTOR Reduction (vph)	0	11	0	0	38	0	0	0	60	0	36	0
Lane Group Flow (vph)	313	428	0	29	310	0	92	725	51	83	775	0
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases									6			
Actuated Green, G (s)	20.2	38.2		6.9	24.9		11.3	68.6	68.6	14.3	71.6	
Effective Green, g (s)	20.2	38.2		6.9	24.9		11.3	68.6	68.6	14.3	71.6	
Actuated g/C Ratio	0.13	0.25		0.05	0.17		0.08	0.46	0.46	0.10	0.48	
Clearance Time (s)	5.0	6.5		5.0	6.5		4.5	6.0	6.0	4.5	6.0	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	0.2	0.2	5.0	0.2	
Lane Grp Cap (vph)	442	839		72	501		258	2325	723	167	2320	
v/s Ratio Prot	c0.10	0.13		0.02	c0.10		0.03	0.14		c0.05	c0.16	
v/s Ratio Perm									0.03			
v/c Ratio	0.71	0.51		0.40	0.62		0.36	0.31	0.07	0.50	0.33	
Uniform Delay, d1	62.1	47.9		69.5	58.1		65.9	25.8	22.8	64.4	24.4	
Progression Factor	0.94	0.99		1.00	1.00		0.92	0.94	1.70	1.00	1.00	
Incremental Delay, d2	6.3	1.0		7.5	3.3		1.7	0.3	0.2	4.8	0.4	
Delay (s)	64.9	48.5		77.1	61.4		62.5	24.4	39.0	69.2	24.8	
Level of Service	E	D		E	E		E	C	D	E	C	
Approach Delay (s)		55.3			62.6			30.0			28.9	
Approach LOS		E			E			C			C	

Intersection Summary

HCM 2000 Control Delay	40.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	55.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Queues

3: Waters Rd & Wisteria Dr

11/17/2022



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	13	570	86	385	202	12
v/c Ratio	0.02	0.34	0.18	0.19	0.64	0.08
Control Delay	8.9	14.2	7.9	8.9	37.7	33.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.9	14.2	7.9	8.9	37.7	33.8
Queue Length 50th (ft)	2	77	16	45	96	5
Queue Length 95th (ft)	12	164	61	127	133	21
Internal Link Dist (ft)		1255		613	298	289
Turn Bay Length (ft)	100		100			
Base Capacity (vph)	572	1660	468	1994	439	144
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.34	0.18	0.19	0.46	0.08

Intersection Summary

HCM Signalized Intersection Capacity Analysis

3: Waters Rd & Wisteria Dr

11/17/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	478	46	79	341	13	42	1	143	11	0	0
Future Volume (vph)	12	478	46	79	341	13	42	1	143	11	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	13	13	13	15	15	15
Grade (%)		0%			0%			2%			-2%	
Total Lost time (s)	5.5	5.5		5.5	5.5			5.5			5.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	0.99		1.00	0.99			0.90			1.00	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.95	
Satd. Flow (prot)	1652	3260		1652	3285			1689			1966	
Flt Permitted	0.52	1.00		0.35	1.00			0.99			0.95	
Satd. Flow (perm)	911	3260		614	3285			1689			1966	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	13	520	50	86	371	14	46	1	155	12	0	0
RTOR Reduction (vph)	0	8	0	0	3	0	0	0	0	0	0	0
Lane Group Flow (vph)	13	562	0	86	382	0	0	202	0	0	12	0
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA		Split	NA	
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6			2								
Actuated Green, G (s)	33.7	32.6		41.9	36.7			14.1			1.1	
Effective Green, g (s)	33.7	32.6		41.9	36.7			14.1			1.1	
Actuated g/C Ratio	0.45	0.43		0.56	0.49			0.19			0.01	
Clearance Time (s)	5.5	5.5		5.5	5.5			5.5			5.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	420	1417		414	1607			317			28	
v/s Ratio Prot	0.00	c0.17		c0.01	c0.12			c0.12			c0.01	
v/s Ratio Perm	0.01			0.10								
v/c Ratio	0.03	0.40		0.21	0.24			0.64			0.43	
Uniform Delay, d1	11.5	14.5		8.1	11.1			28.1			36.6	
Progression Factor	1.00	1.00		0.98	0.97			1.04			1.00	
Incremental Delay, d2	0.0	0.8		0.2	0.3			4.2			10.2	
Delay (s)	11.5	15.3		8.2	11.1			33.3			46.8	
Level of Service	B	B		A	B			C			D	
Approach Delay (s)		15.2			10.5			33.3			46.8	
Approach LOS		B			B			C			D	

Intersection Summary

HCM 2000 Control Delay	16.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	43.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

4: Waters Rd & Waterford Hills Blvd



















11/17/2022



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	136	48	18	110	69	54
Future Volume (Veh/h)	136	48	18	110	69	54
Sign Control	Stop			Free	Free	
Grade	1%			-2%	1%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	148	52	20	120	75	59
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)	1					
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)				755	590	
pX, platoon unblocked						
vC, conflicting volume	264	104	134			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	264	104	134			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	79	95	99			
cM capacity (veh/h)	714	950	1451			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	200	140	134			
Volume Left	148	20	0			
Volume Right	52	0	59			
cSH	965	1451	1700			
Volume to Capacity	0.21	0.01	0.08			
Queue Length 95th (ft)	19	1	0			
Control Delay (s)	10.7	1.2	0.0			
Lane LOS	B	A				
Approach Delay (s)	10.7	1.2	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay	4.9					
Intersection Capacity Utilization	31.2%			ICU Level of Service	A	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
 5: Future Waters House Ave/Future Century Blvd & Wisteria Dr

11/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	511	8	0	399	72	0	0	55	106	0	50
Future Volume (Veh/h)	75	511	8	0	399	72	0	0	55	106	0	50
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	82	555	9	0	434	78	0	0	60	115	0	54
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
	TWLTL				TWLTL							
Median storage (veh)	2				2							
Upstream signal (ft)	693				357							
pX, platoon unblocked				0.98			0.98	0.98	0.98	0.98	0.98	
vC, conflicting volume	512			564			994	1236	282	974	1201	256
vC1, stage 1 conf vol							724	724		473	473	
vC2, stage 2 conf vol							271	512		502	728	
vCu, unblocked vol	512			517			955	1201	229	935	1166	256
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	92			100			100	100	92	70	100	93
cM capacity (veh/h)	1050			1025			336	332	759	383	353	743
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1	SB 2				
Volume Total	82	370	194	289	223	60	115	54				
Volume Left	82	0	0	0	0	0	115	0				
Volume Right	0	0	9	0	78	60	0	54				
cSH	1050	1700	1700	1700	1700	759	383	743				
Volume to Capacity	0.08	0.22	0.11	0.17	0.13	0.08	0.30	0.07				
Queue Length 95th (ft)	6	0	0	0	0	6	31	6				
Control Delay (s)	8.7	0.0	0.0	0.0	0.0	10.2	18.4	10.2				
Lane LOS	A					B	C	B				
Approach Delay (s)	1.1			0.0		10.2	15.8					
Approach LOS						B	C					
Intersection Summary												
Average Delay				2.9								
Intersection Capacity Utilization			33.7%			ICU Level of Service			A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

6: Waters Rd & Driveway

11/17/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	28	5	182	64	35	95
Future Volume (Veh/h)	28	5	182	64	35	95
Sign Control	Stop		Free			Free
Grade	0%		2%			1%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	30	5	198	70	38	103
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)			967			378
pX, platoon unblocked						
vC, conflicting volume	412	233			268	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	412	233			268	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	99			97	
cM capacity (veh/h)	579	806			1296	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	35	268	141			
Volume Left	30	0	38			
Volume Right	5	70	0			
cSH	603	1700	1296			
Volume to Capacity	0.06	0.16	0.03			
Queue Length 95th (ft)	5	0	2			
Control Delay (s)	11.3	0.0	2.3			
Lane LOS	B		A			
Approach Delay (s)	11.3	0.0	2.3			
Approach LOS	B					
Intersection Summary						
Average Delay			1.6			
Intersection Capacity Utilization			33.7%	ICU Level of Service	A	
Analysis Period (min)			15			

Queues

7: Father Hurley Blvd & Wisteria Dr

11/17/2022


























Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	157	281	18	184	129	45	310	302	461
v/c Ratio	0.63	0.62	0.11	0.40	0.26	0.08	0.17	0.41	0.22
Control Delay	57.0	49.9	40.2	44.8	7.4	10.8	19.3	11.8	13.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.0	49.9	40.2	44.8	7.4	10.8	19.3	11.8	13.5
Queue Length 50th (ft)	125	216	12	137	0	12	71	97	89
Queue Length 95th (ft)	205	315	35	209	49	35	134	189	155
Internal Link Dist (ft)		404		1255			557		1168
Turn Bay Length (ft)	160		225			280		200	
Base Capacity (vph)	454	815	308	837	782	723	1796	887	2055
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.34	0.06	0.22	0.16	0.06	0.17	0.34	0.22

Intersection Summary

HCM Signalized Intersection Capacity Analysis
7: Father Hurley Blvd & Wisteria Dr

11/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	144	202	56	17	169	119	41	252	33	278	317	107
Future Volume (vph)	144	202	56	17	169	119	41	252	33	278	317	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	4.5	5.0		4.5	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.98		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1802		1770	1863	1583	1770	3478		1770	3406	
Flt Permitted	0.54	1.00		0.37	1.00	1.00	0.49	1.00		0.52	1.00	
Satd. Flow (perm)	1011	1802		687	1863	1583	907	3478		965	3406	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	157	220	61	18	184	129	45	274	36	302	345	116
RTOR Reduction (vph)	0	7	0	0	0	97	0	4	0	0	14	0
Lane Group Flow (vph)	157	274	0	18	184	32	45	306	0	302	447	0
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8		8	6			2		
Actuated Green, G (s)	33.4	33.4		33.4	33.4	33.4	76.0	70.5		90.8	80.8	
Effective Green, g (s)	33.4	33.4		33.4	33.4	33.4	76.0	70.5		90.8	80.8	
Actuated g/C Ratio	0.25	0.25		0.25	0.25	0.25	0.56	0.52		0.67	0.60	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	4.5	5.0		4.5	5.0	
Vehicle Extension (s)	8.0	8.0		8.0	8.0	8.0	3.0	0.2		3.0	0.2	
Lane Grp Cap (vph)	248	443		169	458	389	542	1806		739	2028	
v/s Ratio Prot		0.15			0.10		0.00	0.09		c0.05	0.13	
v/s Ratio Perm	c0.16			0.03		0.02	0.04			c0.23		
v/c Ratio	0.63	0.62		0.11	0.40	0.08	0.08	0.17		0.41	0.22	
Uniform Delay, d1	45.7	45.5		39.6	42.8	39.4	13.5	17.2		9.1	12.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	11.2	5.9		1.2	2.5	0.4	0.1	0.2		0.4	0.3	
Delay (s)	56.9	51.4		40.8	45.3	39.7	13.5	17.4		9.5	13.0	
Level of Service	E	D		D	D	D	B	B		A	B	
Approach Delay (s)		53.4			42.9			16.9			11.6	
Approach LOS		D			D			B			B	
Intersection Summary												
HCM 2000 Control Delay			27.8				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.48									
Actuated Cycle Length (s)			135.7				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			60.4%				ICU Level of Service			B		
Analysis Period (min)			15									

c Critical Lane Group

Queues

8: Father Hurley Blvd & Sweetgum Cir/Middlebrook Rd

11/17/2022



Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	26	80	145	4	697	293	790
v/c Ratio	0.08	0.53	0.49	0.01	0.41	0.78	0.30
Control Delay	39.4	61.9	15.1	20.5	20.5	58.9	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.4	61.9	15.1	20.5	20.5	58.9	5.3
Queue Length 50th (ft)	7	59	6	2	164	215	86
Queue Length 95th (ft)	21	107	65	10	258	296	134
Internal Link Dist (ft)	22		713		1168		560
Turn Bay Length (ft)				135		160	
Base Capacity (vph)	794	398	556	324	1693	397	2671
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.20	0.26	0.01	0.41	0.74	0.30

Intersection Summary

HCM Signalized Intersection Capacity Analysis
 8: Father Hurley Blvd & Sweetgum Cir/Middlebrook Rd

11/17/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔		↔	↔		↔	↔↔		↔	↔↔	
Traffic Volume (vph)	9	10	5	74	8	125	4	476	166	270	720	6
Future Volume (vph)	9	10	5	74	8	125	4	476	166	270	720	6
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		10.0		10.0	10.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		0.95		1.00	1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt		0.97		1.00	0.86		1.00	0.96		1.00	1.00	
Flt Protected		0.98		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3357		1757	1579		1768	3390		1770	3534	
Flt Permitted		0.79		0.74	1.00		0.35	1.00		0.95	1.00	
Satd. Flow (perm)		2714		1367	1579		657	3390		1770	3534	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	10	11	5	80	9	136	4	517	180	293	783	7
RTOR Reduction (vph)	0	4	0	0	121	0	0	22	0	0	0	0
Lane Group Flow (vph)	0	22	0	80	24	0	4	675	0	293	790	0
Confl. Peds. (#/hr)	2		6	6		2	3		2	2		3
Turn Type	Perm	NA		Perm	NA		Perm	NA		Prot	NA	
Protected Phases		4			8			6		5	2	
Permitted Phases	4			8			6					
Actuated Green, G (s)		13.3		13.3	13.3		59.2	59.2		25.5	90.7	
Effective Green, g (s)		13.3		13.3	13.3		59.2	59.2		25.5	90.7	
Actuated g/C Ratio		0.11		0.11	0.11		0.49	0.49		0.21	0.76	
Clearance Time (s)		10.0		10.0	10.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		0.2		4.0	4.0		0.2	0.2		3.0	0.2	
Lane Grp Cap (vph)		300		151	175		324	1672		376	2671	
v/s Ratio Prot					0.02			c0.20		c0.17	0.22	
v/s Ratio Perm		0.01		c0.06			0.01					
v/c Ratio		0.07		0.53	0.14		0.01	0.40		0.78	0.30	
Uniform Delay, d1		47.8		50.4	48.2		15.5	19.2		44.6	4.6	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.0		4.3	0.5		0.1	0.7		9.8	0.3	
Delay (s)		47.9		54.7	48.7		15.6	20.0		54.4	4.9	
Level of Service		D		D	D		B	B		D	A	
Approach Delay (s)		47.9			50.8			19.9			18.3	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	22.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	73.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Queues

1: MD 118 & Waters Rd/Bowman Mill Dr

11/17/2022



Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	55	100	90	136	933	67	45	1083
v/c Ratio	0.49	0.43	0.56	0.32	0.24	0.05	0.09	0.29
Control Delay	75.8	15.5	51.8	4.5	5.4	1.6	2.0	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.8	15.5	51.8	4.5	5.4	1.6	2.0	4.0
Queue Length 50th (ft)	52	6	50	19	86	1	3	62
Queue Length 95th (ft)	m95	m57	107	39	124	15	m7	72
Internal Link Dist (ft)	360		449		1184			711
Turn Bay Length (ft)		335		220		140	230	
Base Capacity (vph)	372	534	442	502	3914	1232	585	3765
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.19	0.20	0.27	0.24	0.05	0.08	0.29






















Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

1: MD 118 & Waters Rd/Bowman Mill Dr

11/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	15	92	35	5	43	125	858	62	41	904	92
Future Volume (vph)	36	15	92	35	5	43	125	858	62	41	904	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-2%			2%			1%				0%
Total Lost time (s)		6.5	6.5		6.5		4.5	5.5	5.5	4.5	5.5	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.91	1.00	1.00	0.91	
Frt		1.00	0.85		0.93		1.00	1.00	0.85	1.00	0.99	
Flt Protected		0.97	1.00		0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1817	1599		1679		1761	5060	1575	1770	5015	
Flt Permitted		0.68	1.00		0.84		0.23	1.00	1.00	0.29	1.00	
Satd. Flow (perm)		1283	1599		1436		435	5060	1575	547	5015	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	39	16	100	38	5	47	136	933	67	45	983	100
RTOR Reduction (vph)	0	0	91	0	34	0	0	0	14	0	4	0
Lane Group Flow (vph)	0	55	9	0	56	0	136	933	53	45	1079	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		1	6		5		2
Permitted Phases	4		4	8			6		6	2		
Actuated Green, G (s)		13.3	13.3		13.3		122.8	115.1	115.1	117.6	112.5	
Effective Green, g (s)		13.3	13.3		13.3		122.8	115.1	115.1	117.6	112.5	
Actuated g/C Ratio		0.09	0.09		0.09		0.82	0.77	0.77	0.78	0.75	
Clearance Time (s)		6.5	6.5		6.5		4.5	5.5	5.5	4.5	5.5	
Vehicle Extension (s)		5.0	5.0		5.0		3.0	0.2	0.2	3.0	0.2	
Lane Grp Cap (vph)		113	141		127		424	3882	1208	470	3761	
v/s Ratio Prot							c0.02	0.18		0.00	0.22	
v/s Ratio Perm		c0.04	0.01		0.04		c0.25		0.03	0.07		
v/c Ratio		0.49	0.06		0.44		0.32	0.24	0.04	0.10	0.29	
Uniform Delay, d1		65.1	62.6		64.8		3.0	5.0	4.2	3.6	6.0	
Progression Factor		0.96	0.91		1.00		1.00	1.00	1.00	0.64	0.61	
Incremental Delay, d2		6.7	0.4		5.1		0.4	0.1	0.1	0.1	0.2	
Delay (s)		69.5	57.2		69.9		3.4	5.1	4.3	2.4	3.8	
Level of Service		E	E		E		A	A	A	A	A	
Approach Delay (s)		61.6			69.9			4.9			3.8	
Approach LOS		E			E			A			A	
Intersection Summary												
HCM 2000 Control Delay			10.2				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.34									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)				16.5	
Intersection Capacity Utilization			51.7%				ICU Level of Service				A	
Analysis Period (min)			15									
c Critical Lane Group												

Queues

2: MD 118 & Wisteria Dr

11/17/2022


































Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	288	339	64	449	184	809	113	140	1231
v/c Ratio	0.73	0.45	0.46	0.75	0.53	0.37	0.15	0.63	0.55
Control Delay	74.7	46.9	74.5	52.9	62.9	28.0	5.2	74.1	30.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.7	46.9	74.5	52.9	62.9	28.0	5.2	74.1	30.0
Queue Length 50th (ft)	141	137	61	173	72	204	8	132	301
Queue Length 95th (ft)	193	185	109	225	96	277	53	199	395
Internal Link Dist (ft)		277		457		711			585
Turn Bay Length (ft)	175		90		230		250	185	
Base Capacity (vph)	415	766	200	725	652	2202	749	334	2258
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.44	0.32	0.62	0.28	0.37	0.15	0.42	0.55

Intersection Summary

HCM Signalized Intersection Capacity Analysis

2: MD 118 & Wisteria Dr




















11/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 		 	  		 	  	
Traffic Volume (vph)	265	222	90	59	246	167	169	744	104	129	825	307
Future Volume (vph)	265	222	90	59	246	167	169	744	104	129	825	307
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	12	12	12
Grade (%)		-5%			8%			0%				1%
Total Lost time (s)	5.0	6.5		5.0	6.5		4.5	6.0	6.0	4.5	6.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		0.97	0.91	1.00	1.00	0.91	
Frt	1.00	0.96		1.00	0.94		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3284	3239		1586	2978		3433	5085	1583	1761	4854	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3284	3239		1586	2978		3433	5085	1583	1761	4854	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	288	241	98	64	267	182	184	809	113	140	897	334
RTOR Reduction (vph)	0	30	0	0	85	0	0	0	65	0	36	0
Lane Group Flow (vph)	288	309	0	64	364	0	184	809	48	140	1195	0
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases									6			
Actuated Green, G (s)	18.1	33.4		11.6	26.9		15.3	64.0	64.0	19.0	67.7	
Effective Green, g (s)	18.1	33.4		11.6	26.9		15.3	64.0	64.0	19.0	67.7	
Actuated g/C Ratio	0.12	0.22		0.08	0.18		0.10	0.43	0.43	0.13	0.45	
Clearance Time (s)	5.0	6.5		5.0	6.5		4.5	6.0	6.0	4.5	6.0	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	0.2	0.2	5.0	0.2	
Lane Grp Cap (vph)	396	721		122	534		350	2169	675	223	2190	
v/s Ratio Prot	c0.09	0.10		0.04	c0.12		0.05	0.16		c0.08	c0.25	
v/s Ratio Perm									0.03			
v/c Ratio	0.73	0.43		0.52	0.68		0.53	0.37	0.07	0.63	0.55	
Uniform Delay, d1	63.6	50.1		66.5	57.6		63.9	29.3	25.4	62.1	30.0	
Progression Factor	1.00	1.00		1.00	1.00		0.90	0.90	0.89	1.00	1.00	
Incremental Delay, d2	8.0	0.9		7.5	4.6		2.7	0.5	0.2	7.6	1.0	
Delay (s)	71.5	51.0		74.1	62.2		60.4	27.0	22.8	69.8	30.9	
Level of Service	E	D		E	E		E	C	C	E	C	
Approach Delay (s)		60.4			63.7			32.1			34.9	
Approach LOS		E			E			C			C	
Intersection Summary												
HCM 2000 Control Delay			42.5				HCM 2000 Level of Service				D	
HCM 2000 Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)				22.0	
Intersection Capacity Utilization			65.7%				ICU Level of Service				C	
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 3: Waters Rd & Wisteria Dr

11/17/2022

																		
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR						
Lane Configurations																		
Traffic Volume (veh/h)	15	341	57	139	473	16	72	3	85	16	7	8						
Future Volume (Veh/h)	15	341	57	139	473	16	72	3	85	16	7	8						
Sign Control		Free			Free			Stop			Stop							
Grade		0%			0%			2%			-2%							
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92						
Hourly flow rate (vph)	16	371	62	151	514	17	78	3	92	17	8	9						
Pedestrians																		
Lane Width (ft)																		
Walking Speed (ft/s)																		
Percent Blockage																		
Right turn flare (veh)																		
Median type	TWLTL				TWLTL													
Median storage (veh)	2				2													
Upstream signal (ft)					1050													
pX, platoon unblocked																		
vC, conflicting volume	531			433			1006		1267		216		1044		1290		266	
vC1, stage 1 conf vol							434		434				824		824			
vC2, stage 2 conf vol							572		833				219		465			
vCu, unblocked vol	531			433			1006		1267		216		1044		1290		266	
tC, single (s)	4.1			4.1			7.5		6.5		6.9		7.5		6.5		6.9	
tC, 2 stage (s)							6.5		5.5				6.5		5.5			
tF (s)	2.2			2.2			3.5		4.0		3.3		3.5		4.0		3.3	
p0 queue free %	98			87			77		99		88		94		97		99	
cM capacity (veh/h)	1033			1123			337		289		788		267		280		733	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1										
Volume Total	16	247	186	151	343	188	173	34										
Volume Left	16	0	0	151	0	0	78	17										
Volume Right	0	0	62	0	0	17	92	9										
cSH	1033	1700	1700	1123	1700	1700	482	326										
Volume to Capacity	0.02	0.15	0.11	0.13	0.20	0.11	0.36	0.10										
Queue Length 95th (ft)	1	0	0	12	0	0	40	9										
Control Delay (s)	8.5	0.0	0.0	8.7	0.0	0.0	16.6	17.3										
Lane LOS	A			A			C		C									
Approach Delay (s)	0.3			1.9			16.6		17.3									
Approach LOS							C		C									
Intersection Summary																		
Average Delay	3.7																	
Intersection Capacity Utilization	40.1%			ICU Level of Service					A									
Analysis Period (min)	15																	

HCM Unsignalized Intersection Capacity Analysis

4: Waters Rd & Waterford Hills Blvd

11/17/2022



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	79	30	82	149	91	145
Future Volume (Veh/h)	79	30	82	149	91	145
Sign Control	Stop			Free	Free	
Grade	1%			-2%	1%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	86	33	89	162	99	158
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)	1					
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)	759					
pX, platoon unblocked						
vC, conflicting volume	518	178	257			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	518	178	257			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	82	96	93			
cM capacity (veh/h)	482	865	1308			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	119	251	257			
Volume Left	86	89	0			
Volume Right	33	0	158			
cSH	667	1308	1700			
Volume to Capacity	0.18	0.07	0.15			
Queue Length 95th (ft)	16	5	0			
Control Delay (s)	12.8	3.2	0.0			
Lane LOS	B	A				
Approach Delay (s)	12.8	3.2	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay	3.7					
Intersection Capacity Utilization	40.4%			ICU Level of Service	A	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis










5: Future Waters House Ave/Future Century Boulevard & Wisteria Dr

11/17/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	121	267	12	0	497	226	0	0	87	163	0	190
Future Volume (Veh/h)	121	267	12	0	497	226	0	0	87	163	0	190
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	132	290	13	0	540	246	0	0	95	177	0	207
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
	TWLTL				TWLTL							
Median storage (veh)	2				2							
Upstream signal (ft)					357							
pX, platoon unblocked												
vC, conflicting volume	786				303		1038		1346		393	
vC1, stage 1 conf vol							560		560		663	
vC2, stage 2 conf vol							477		786		567	
vCu, unblocked vol	786				303		1038		1346		393	
tC, single (s)	4.1				4.1		7.5		6.5		6.9	
tC, 2 stage (s)							6.5		5.5		6.5	
tF (s)	2.2				2.2		3.5		4.0		3.3	
p0 queue free %	84				100		100		100		89	
cM capacity (veh/h)	829				1255		206		244		868	
Direction, Lane #												
	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1	SB 2				
Volume Total	132	193	110	360	426	95	177	207				
Volume Left	132	0	0	0	0	0	177	0				
Volume Right	0	0	13	0	246	95	0	207				
cSH	829	1700	1700	1700	1700	868	299	606				
Volume to Capacity	0.16	0.11	0.06	0.21	0.25	0.11	0.59	0.34				
Queue Length 95th (ft)	14	0	0	0	0	9	88	38				
Control Delay (s)	10.2	0.0	0.0	0.0	0.0	9.7	33.1	14.0				
Lane LOS	B					A	D	B				
Approach Delay (s)	3.1			0.0		9.7	22.8					
Approach LOS						A	C					
Intersection Summary												
Average Delay			6.5									
Intersection Capacity Utilization			46.7%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
6: Waters Rd & Driveway

11/17/2022

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	46	7	152	75	53	190
Future Volume (Veh/h)	46	7	152	75	53	190
Sign Control	Stop		Free		Free	
Grade	0%		2%		1%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	50	8	165	82	58	207
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	957					
pX, platoon unblocked						
vC, conflicting volume	529	206			247	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	529	206			247	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	90	99			96	
cM capacity (veh/h)	488	835			1319	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	58	247	265			
Volume Left	50	0	58			
Volume Right	8	82	0			
cSH	517	1700	1319			
Volume to Capacity	0.11	0.15	0.04			
Queue Length 95th (ft)	9	0	3			
Control Delay (s)	12.8	0.0	2.0			
Lane LOS	B		A			
Approach Delay (s)	12.8	0.0	2.0			
Approach LOS	B					
Intersection Summary						
Average Delay	2.2					
Intersection Capacity Utilization	38.8%		ICU Level of Service		A	
Analysis Period (min)	15					

Queues

7: Father Hurley Blvd & Wisteria Dr

11/17/2022


























Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	66	110	97	165	353	48	415	205	429
v/c Ratio	0.29	0.27	0.35	0.40	0.57	0.08	0.21	0.30	0.20
Control Delay	45.3	37.5	46.2	46.1	7.7	8.7	15.3	9.3	12.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.3	37.5	46.2	46.1	7.7	8.7	15.3	9.3	12.3
Queue Length 50th (ft)	47	67	70	121	0	11	81	53	77
Queue Length 95th (ft)	92	121	124	190	77	33	153	116	140
Internal Link Dist (ft)		404		1255			557		1168
Turn Bay Length (ft)	160		225			280		200	
Base Capacity (vph)	491	834	592	869	926	777	1982	880	2170
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.13	0.16	0.19	0.38	0.06	0.21	0.23	0.20

Intersection Summary

HCM Signalized Intersection Capacity Analysis
7: Father Hurley Blvd & Wisteria Dr

11/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	68	33	89	152	325	44	337	45	189	352	42
Future Volume (vph)	61	68	33	89	152	325	44	337	45	189	352	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	4.5	5.0		4.5	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1771		1770	1863	1583	1770	3477		1770	3482	
Flt Permitted	0.57	1.00		0.68	1.00	1.00	0.50	1.00		0.46	1.00	
Satd. Flow (perm)	1054	1771		1271	1863	1583	935	3477		862	3482	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	66	74	36	97	165	353	48	366	49	205	383	46
RTOR Reduction (vph)	0	12	0	0	0	276	0	4	0	0	4	0
Lane Group Flow (vph)	66	98	0	97	165	77	48	411	0	205	425	0
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8		8	6			2		
Actuated Green, G (s)	28.6	28.6		28.6	28.6	28.6	80.4	75.0		90.7	80.8	
Effective Green, g (s)	28.6	28.6		28.6	28.6	28.6	80.4	75.0		90.7	80.8	
Actuated g/C Ratio	0.22	0.22		0.22	0.22	0.22	0.61	0.57		0.69	0.62	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	4.5	5.0		4.5	5.0	
Vehicle Extension (s)	8.0	8.0		8.0	8.0	8.0	3.0	0.2		3.0	0.2	
Lane Grp Cap (vph)	230	387		277	407	346	609	1993		675	2150	
v/s Ratio Prot		0.06			c0.09		0.00	0.12		c0.03	0.12	
v/s Ratio Perm	0.06			0.08		0.05	0.05			c0.18		
v/c Ratio	0.29	0.25		0.35	0.41	0.22	0.08	0.21		0.30	0.20	
Uniform Delay, d1	42.6	42.3		43.2	43.8	42.0	10.0	13.5		7.2	10.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.9	1.5		3.3	2.8	1.4	0.1	0.2		0.3	0.2	
Delay (s)	45.5	43.8		46.5	46.6	43.4	10.0	13.7		7.5	11.1	
Level of Service	D	D		D	D	D	B	B		A	B	
Approach Delay (s)		44.4			44.7			13.4			9.9	
Approach LOS		D			D			B			A	
Intersection Summary												
HCM 2000 Control Delay			25.3				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.34									
Actuated Cycle Length (s)			130.8			Sum of lost time (s)				16.0		
Intersection Capacity Utilization			52.1%			ICU Level of Service				A		
Analysis Period (min)			15									

c Critical Lane Group

Queues

8: Father Hurley Blvd & Sweetgum Cir/Middlebrook Rd

11/17/2022



Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	32	136	371	3	849	246	570
v/c Ratio	0.10	0.62	0.69	0.01	0.56	0.64	0.23
Control Delay	32.4	58.4	14.0	21.7	26.7	52.2	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.4	58.4	14.0	21.7	26.7	52.2	7.1
Queue Length 50th (ft)	8	100	24	1	245	174	72
Queue Length 95th (ft)	22	155	115	8	333	#297	122
Internal Link Dist (ft)	22		713		1168		560
Turn Bay Length (ft)				135		160	
Base Capacity (vph)	582	396	696	358	1527	383	2496
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.34	0.53	0.01	0.56	0.64	0.23

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
 8: Father Hurley Blvd & Sweetgum Cir/Middlebrook Rd

11/17/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔		↔	↔		↔	↔↔		↔	↔↔	
Traffic Volume (vph)	8	14	7	125	18	323	3	663	118	226	520	5
Future Volume (vph)	8	14	7	125	18	323	3	663	118	226	520	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		10.0		10.0	10.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		0.95		1.00	1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt		0.96		1.00	0.86		1.00	0.98		1.00	1.00	
Flt Protected		0.99		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3342		1757	1577		1767	3452		1770	3534	
Flt Permitted		0.58		0.74	1.00		0.44	1.00		0.95	1.00	
Satd. Flow (perm)		1978		1360	1577		814	3452		1770	3534	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	15	8	136	20	351	3	721	128	246	565	5
RTOR Reduction (vph)	0	7	0	0	281	0	0	11	0	0	0	0
Lane Group Flow (vph)	0	25	0	136	90	0	3	838	0	246	570	0
Confl. Peds. (#/hr)	2		6	6		2	3		2	2		3
Turn Type	Perm	NA		Perm	NA		Perm	NA		Prot	NA	
Protected Phases		4			8			6		5	2	
Permitted Phases	4			8			6					
Actuated Green, G (s)		19.3		19.3	19.3		52.7	52.7		26.0	84.7	
Effective Green, g (s)		19.3		19.3	19.3		52.7	52.7		26.0	84.7	
Actuated g/C Ratio		0.16		0.16	0.16		0.44	0.44		0.22	0.71	
Clearance Time (s)		10.0		10.0	10.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		0.2		4.0	4.0		0.2	0.2		3.0	0.2	
Lane Grp Cap (vph)		318		218	253		357	1516		383	2494	
v/s Ratio Prot					0.06			c0.24		c0.14	0.16	
v/s Ratio Perm		0.01		c0.10			0.00					
v/c Ratio		0.08		0.62	0.36		0.01	0.55		0.64	0.23	
Uniform Delay, d1		42.8		47.0	44.8		18.9	24.9		42.8	6.2	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.0		6.2	1.2		0.0	1.5		3.7	0.2	
Delay (s)		42.8		53.1	46.0		19.0	26.4		46.4	6.4	
Level of Service		D		D	D		B	C		D	A	
Approach Delay (s)		42.8			47.9			26.4			18.5	
Approach LOS		D			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	28.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	80.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Queues

1: MD 118 & Waters Rd/Bowman Mill Dr

11/17/2022



Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	55	100	90	136	933	67	45	1083
v/c Ratio	0.49	0.43	0.56	0.32	0.24	0.05	0.09	0.29
Control Delay	74.3	15.1	51.8	4.5	5.4	1.6	2.0	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.3	15.1	51.8	4.5	5.4	1.6	2.0	4.0
Queue Length 50th (ft)	51	7	50	19	86	1	3	62
Queue Length 95th (ft)	91	38	107	39	124	15	m7	73
Internal Link Dist (ft)	350		449		1184			711
Turn Bay Length (ft)		335		220		140	230	
Base Capacity (vph)	372	534	442	502	3914	1232	585	3765
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.19	0.20	0.27	0.24	0.05	0.08	0.29

























Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

1: MD 118 & Waters Rd/Bowman Mill Dr

11/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  			  	
Traffic Volume (vph)	36	15	92	35	5	43	125	858	62	41	904	92
Future Volume (vph)	36	15	92	35	5	43	125	858	62	41	904	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-2%			2%			1%				0%
Total Lost time (s)		6.5	6.5		6.5		4.5	5.5	5.5	4.5	5.5	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.91	1.00	1.00	0.91	
Fr _t		1.00	0.85		0.93		1.00	1.00	0.85	1.00	0.99	
Fl _t Protected		0.97	1.00		0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1817	1599		1679		1761	5060	1575	1770	5015	
Fl _t Permitted		0.68	1.00		0.84		0.23	1.00	1.00	0.29	1.00	
Satd. Flow (perm)		1283	1599		1436		435	5060	1575	547	5015	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	39	16	100	38	5	47	136	933	67	45	983	100
RTOR Reduction (vph)	0	0	91	0	34	0	0	0	14	0	4	0
Lane Group Flow (vph)	0	55	9	0	56	0	136	933	53	45	1079	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4		4	8			6		6	2		
Actuated Green, G (s)		13.3	13.3		13.3		122.8	115.1	115.1	117.6	112.5	
Effective Green, g (s)		13.3	13.3		13.3		122.8	115.1	115.1	117.6	112.5	
Actuated g/C Ratio		0.09	0.09		0.09		0.82	0.77	0.77	0.78	0.75	
Clearance Time (s)		6.5	6.5		6.5		4.5	5.5	5.5	4.5	5.5	
Vehicle Extension (s)		5.0	5.0		5.0		3.0	0.2	0.2	3.0	0.2	
Lane Grp Cap (vph)		113	141		127		424	3882	1208	470	3761	
v/s Ratio Prot							c0.02	0.18		0.00	0.22	
v/s Ratio Perm		c0.04	0.01		0.04		c0.25		0.03	0.07		
v/c Ratio		0.49	0.06		0.44		0.32	0.24	0.04	0.10	0.29	
Uniform Delay, d ₁		65.1	62.6		64.8		3.0	5.0	4.2	3.6	6.0	
Progression Factor		0.94	0.87		1.00		1.00	1.00	1.00	0.64	0.62	
Incremental Delay, d ₂		6.7	0.4		5.1		0.4	0.1	0.1	0.1	0.2	
Delay (s)		67.9	55.0		69.9		3.4	5.1	4.3	2.4	3.8	
Level of Service		E	E		E		A	A	A	A	A	
Approach Delay (s)		59.6			69.9			4.9			3.8	
Approach LOS		E			E			A			A	
Intersection Summary												
HCM 2000 Control Delay			10.1				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.34									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)				16.5	
Intersection Capacity Utilization			51.7%				ICU Level of Service				A	
Analysis Period (min)			15									
c Critical Lane Group												

Queues

2: MD 118 & Wisteria Dr

11/17/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	288	339	64	449	184	809	113	140	1231
v/c Ratio	0.73	0.45	0.46	0.75	0.53	0.37	0.15	0.63	0.55
Control Delay	78.5	46.6	74.5	52.9	63.0	28.0	5.2	74.1	30.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.5	46.6	74.5	52.9	63.0	28.0	5.2	74.1	30.0
Queue Length 50th (ft)	129	141	61	173	72	204	8	132	301
Queue Length 95th (ft)	200	196	109	225	96	277	53	199	395
Internal Link Dist (ft)		277		457		711			585
Turn Bay Length (ft)	175		90		230		250	185	
Base Capacity (vph)	415	766	200	725	652	2202	749	334	2258
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.44	0.32	0.62	0.28	0.37	0.15	0.42	0.55

Intersection Summary

HCM Signalized Intersection Capacity Analysis

2: MD 118 & Wisteria Dr

11/17/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↕↔		↔	↕↔		↔↔	↕↕↕	↔	↔	↕↕↕	
Traffic Volume (vph)	265	222	90	59	246	167	169	744	104	129	825	307
Future Volume (vph)	265	222	90	59	246	167	169	744	104	129	825	307
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	12	12	12
Grade (%)		-5%			8%			0%				1%
Total Lost time (s)	5.0	6.5		5.0	6.5		4.5	6.0	6.0	4.5	6.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		0.97	0.91	1.00	1.00	0.91	
Frt	1.00	0.96		1.00	0.94		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3284	3239		1586	2978		3433	5085	1583	1761	4854	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3284	3239		1586	2978		3433	5085	1583	1761	4854	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	288	241	98	64	267	182	184	809	113	140	897	334
RTOR Reduction (vph)	0	30	0	0	85	0	0	0	65	0	36	0
Lane Group Flow (vph)	288	309	0	64	364	0	184	809	48	140	1195	0
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases									6			
Actuated Green, G (s)	18.1	33.4		11.6	26.9		15.3	64.0	64.0	19.0	67.7	
Effective Green, g (s)	18.1	33.4		11.6	26.9		15.3	64.0	64.0	19.0	67.7	
Actuated g/C Ratio	0.12	0.22		0.08	0.18		0.10	0.43	0.43	0.13	0.45	
Clearance Time (s)	5.0	6.5		5.0	6.5		4.5	6.0	6.0	4.5	6.0	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	0.2	0.2	5.0	0.2	
Lane Grp Cap (vph)	396	721		122	534		350	2169	675	223	2190	
v/s Ratio Prot	c0.09	0.10		0.04	c0.12		0.05	0.16		c0.08	c0.25	
v/s Ratio Perm									0.03			
v/c Ratio	0.73	0.43		0.52	0.68		0.53	0.37	0.07	0.63	0.55	
Uniform Delay, d1	63.6	50.1		66.5	57.6		63.9	29.3	25.4	62.1	30.0	
Progression Factor	1.06	0.99		1.00	1.00		0.90	0.90	0.89	1.00	1.00	
Incremental Delay, d2	7.9	0.9		7.5	4.6		2.7	0.5	0.2	7.6	1.0	
Delay (s)	75.3	50.6		74.1	62.2		60.5	27.0	22.7	69.8	30.9	
Level of Service	E	D		E	E		E	C	C	E	C	
Approach Delay (s)		62.0			63.7			32.1			34.9	
Approach LOS		E			E			C			C	

Intersection Summary

HCM 2000 Control Delay	42.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Queues

3: Waters Rd & Wisteria Dr

11/17/2022






















Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	16	433	151	531	173	34
v/c Ratio	0.03	0.30	0.28	0.27	0.59	0.24
Control Delay	9.5	15.5	7.3	8.7	37.6	31.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.5	15.5	7.3	8.7	37.6	31.2
Queue Length 50th (ft)	2	52	25	52	90	11
Queue Length 95th (ft)	13	121	74	161	133	38
Internal Link Dist (ft)		1255		613	315	289
Turn Bay Length (ft)	100		100			
Base Capacity (vph)	481	1466	545	1964	426	140
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.30	0.28	0.27	0.41	0.24

Intersection Summary

HCM Signalized Intersection Capacity Analysis
3: Waters Rd & Wisteria Dr

11/17/2022

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	15	341	57	139	473	16	72	3	85	16	7	8	
Future Volume (vph)	15	341	57	139	473	16	72	3	85	16	7	8	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	10	10	10	10	10	10	13	13	13	15	15	15	
Grade (%)		0%			0%			2%			-2%		
Total Lost time (s)	5.5	5.5		5.5	5.5			5.5			5.5		
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00		
Frt	1.00	0.98		1.00	1.00			0.93			0.96		
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98		
Satd. Flow (prot)	1652	3232		1652	3287			1730			1947		
Flt Permitted	0.45	1.00		0.41	1.00			0.98			0.98		
Satd. Flow (perm)	791	3232		713	3287			1730			1947		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	16	371	62	151	514	17	78	3	92	17	8	9	
RTOR Reduction (vph)	0	15	0	0	3	0	0	0	0	0	9	0	
Lane Group Flow (vph)	16	418	0	151	528	0	0	173	0	0	25	0	
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA		Split	NA		
Protected Phases	1	6		5	2		4	4		3	3		
Permitted Phases	6			2									
Actuated Green, G (s)	31.6	30.4		43.8	37.1			12.7			2.0		
Effective Green, g (s)	31.6	30.4		43.8	37.1			12.7			2.0		
Actuated g/C Ratio	0.42	0.41		0.58	0.49			0.17			0.03		
Clearance Time (s)	5.5	5.5		5.5	5.5			5.5			5.5		
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0		
Lane Grp Cap (vph)	347	1310		515	1625			292			51		
v/s Ratio Prot	0.00	0.13		c0.03	c0.16			c0.10			c0.01		
v/s Ratio Perm	0.02			0.14									
v/c Ratio	0.05	0.32		0.29	0.33			0.59			0.49		
Uniform Delay, d1	12.7	15.2		7.5	11.4			28.8			36.0		
Progression Factor	1.00	1.00		0.80	0.86			1.03			1.00		
Incremental Delay, d2	0.1	0.6		0.3	0.5			3.2			7.4		
Delay (s)	12.7	15.9		6.3	10.4			32.9			43.4		
Level of Service	B	B		A	B			C			D		
Approach Delay (s)		15.8			9.5			32.9			43.4		
Approach LOS		B			A			C			D		
Intersection Summary													
HCM 2000 Control Delay			15.5									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.41										
Actuated Cycle Length (s)			75.0									Sum of lost time (s)	22.0
Intersection Capacity Utilization			43.8%									ICU Level of Service	A
Analysis Period (min)			15										

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
4: Waters Rd & Waterford Hills Blvd

11/17/2022





















Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	79	30	82	149	91	145
Future Volume (Veh/h)	79	30	82	149	91	145
Sign Control	Stop			Free	Free	
Grade	1%			-2%	1%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	86	33	89	162	99	158
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)	1					
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)				757	580	
pX, platoon unblocked						
vC, conflicting volume	518	178	257			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	518	178	257			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	82	96	93			
cM capacity (veh/h)	482	865	1308			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	119	251	257			
Volume Left	86	89	0			
Volume Right	33	0	158			
cSH	667	1308	1700			
Volume to Capacity	0.18	0.07	0.15			
Queue Length 95th (ft)	16	5	0			
Control Delay (s)	12.8	3.2	0.0			
Lane LOS	B	A				
Approach Delay (s)	12.8	3.2	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay	3.7					
Intersection Capacity Utilization	40.4%			ICU Level of Service	A	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis

5: Future Waters House Ave/Future Century Boulevard & Wisteria Dr

11/17/2022

																		
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR						
Lane Configurations																		
Traffic Volume (veh/h)	121	267	12	0	497	226	0	0	87	163	0	190						
Future Volume (Veh/h)	121	267	12	0	497	226	0	0	87	163	0	190						
Sign Control		Free			Free			Stop			Stop							
Grade		0%			0%			0%			0%							
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92						
Hourly flow rate (vph)	132	290	13	0	540	246	0	0	95	177	0	207						
Pedestrians																		
Lane Width (ft)																		
Walking Speed (ft/s)																		
Percent Blockage																		
Right turn flare (veh)																		
Median type																		
	TWLTL					TWLTL												
Median storage (veh)	2					2												
Upstream signal (ft)	693					357												
pX, platoon unblocked																		
vC, conflicting volume	786			303			1038		1346		152		1167		1230		393	
vC1, stage 1 conf vol							560		560				663		663			
vC2, stage 2 conf vol							477		786				504		567			
vCu, unblocked vol	786			303			1038		1346		152		1167		1230		393	
tC, single (s)	4.1			4.1			7.5		6.5		6.9		7.5		6.5		6.9	
tC, 2 stage (s)							6.5		5.5				6.5		5.5			
tF (s)	2.2			2.2			3.5		4.0		3.3		3.5		4.0		3.3	
p0 queue free %	84			100			100		100		89		41		100		66	
cM capacity (veh/h)	829			1255			206		244		868		299		334		606	
Direction, Lane #																		
	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1	SB 2										
Volume Total	132	193	110	360	426	95	177	207										
Volume Left	132	0	0	0	0	0	177	0										
Volume Right	0	0	13	0	246	95	0	207										
cSH	829	1700	1700	1700	1700	868	299	606										
Volume to Capacity	0.16	0.11	0.06	0.21	0.25	0.11	0.59	0.34										
Queue Length 95th (ft)	14	0	0	0	0	9	88	38										
Control Delay (s)	10.2	0.0	0.0	0.0	0.0	9.7	33.1	14.0										
Lane LOS	B						A		D		B							
Approach Delay (s)	3.1			0.0			9.7		22.8									
Approach LOS							A		C									
Intersection Summary																		
Average Delay	6.5																	
Intersection Capacity Utilization	46.7%			ICU Level of Service					A									
Analysis Period (min)	15																	

HCM Unsignalized Intersection Capacity Analysis

6: Waters Rd & Driveway

11/17/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	46	7	152	75	53	190
Future Volume (Veh/h)	46	7	152	75	53	190
Sign Control	Stop		Free		Free	
Grade	0%		2%		1%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	50	8	165	82	58	207
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	942			395		
pX, platoon unblocked	0.99					
vC, conflicting volume	529	206			247	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	518	206			247	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	90	99			96	
cM capacity (veh/h)	489	835			1319	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	58	247	265			
Volume Left	50	0	58			
Volume Right	8	82	0			
cSH	519	1700	1319			
Volume to Capacity	0.11	0.15	0.04			
Queue Length 95th (ft)	9	0	3			
Control Delay (s)	12.8	0.0	2.0			
Lane LOS	B		A			
Approach Delay (s)	12.8	0.0	2.0			
Approach LOS	B					
Intersection Summary						
Average Delay			2.2			
Intersection Capacity Utilization			38.8%	ICU Level of Service		A
Analysis Period (min)			15			

Queues

7: Father Hurley Blvd & Wisteria Dr

11/17/2022


























Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	66	110	97	165	353	48	415	205	429
v/c Ratio	0.29	0.27	0.35	0.40	0.57	0.08	0.21	0.30	0.20
Control Delay	45.3	37.5	46.2	46.1	7.7	8.7	15.3	9.3	12.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.3	37.5	46.2	46.1	7.7	8.7	15.3	9.3	12.3
Queue Length 50th (ft)	47	67	70	121	0	11	81	53	77
Queue Length 95th (ft)	92	121	124	190	77	33	153	116	140
Internal Link Dist (ft)		404		1255			557		1168
Turn Bay Length (ft)	160		225			280		200	
Base Capacity (vph)	491	834	592	869	926	777	1982	880	2170
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.13	0.16	0.19	0.38	0.06	0.21	0.23	0.20

Intersection Summary

HCM Signalized Intersection Capacity Analysis
7: Father Hurley Blvd & Wisteria Dr

11/17/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	68	33	89	152	325	44	337	45	189	352	42
Future Volume (vph)	61	68	33	89	152	325	44	337	45	189	352	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	4.5	5.0		4.5	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1771		1770	1863	1583	1770	3477		1770	3482	
Flt Permitted	0.57	1.00		0.68	1.00	1.00	0.50	1.00		0.46	1.00	
Satd. Flow (perm)	1054	1771		1271	1863	1583	935	3477		862	3482	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	66	74	36	97	165	353	48	366	49	205	383	46
RTOR Reduction (vph)	0	12	0	0	0	276	0	4	0	0	4	0
Lane Group Flow (vph)	66	98	0	97	165	77	48	411	0	205	425	0
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8		8	6			2		
Actuated Green, G (s)	28.6	28.6		28.6	28.6	28.6	80.4	75.0		90.7	80.8	
Effective Green, g (s)	28.6	28.6		28.6	28.6	28.6	80.4	75.0		90.7	80.8	
Actuated g/C Ratio	0.22	0.22		0.22	0.22	0.22	0.61	0.57		0.69	0.62	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	4.5	5.0		4.5	5.0	
Vehicle Extension (s)	8.0	8.0		8.0	8.0	8.0	3.0	0.2		3.0	0.2	
Lane Grp Cap (vph)	230	387		277	407	346	609	1993		675	2150	
v/s Ratio Prot		0.06			c0.09		0.00	0.12		c0.03	0.12	
v/s Ratio Perm	0.06			0.08		0.05	0.05			c0.18		
v/c Ratio	0.29	0.25		0.35	0.41	0.22	0.08	0.21		0.30	0.20	
Uniform Delay, d1	42.6	42.3		43.2	43.8	42.0	10.0	13.5		7.2	10.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.9	1.5		3.3	2.8	1.4	0.1	0.2		0.3	0.2	
Delay (s)	45.5	43.8		46.5	46.6	43.4	10.0	13.7		7.5	11.1	
Level of Service	D	D		D	D	D	B	B		A	B	
Approach Delay (s)		44.4			44.7			13.4			9.9	
Approach LOS		D			D			B			A	
Intersection Summary												
HCM 2000 Control Delay			25.3				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.34									
Actuated Cycle Length (s)			130.8				Sum of lost time (s)				16.0	
Intersection Capacity Utilization			52.1%				ICU Level of Service				A	
Analysis Period (min)			15									

c Critical Lane Group

Queues

8: Father Hurley Blvd & Sweetgum Cir/Middlebrook Rd

11/17/2022






















Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	32	136	371	3	849	246	570
v/c Ratio	0.10	0.62	0.69	0.01	0.56	0.64	0.23
Control Delay	32.4	58.4	14.0	21.7	26.7	52.2	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.4	58.4	14.0	21.7	26.7	52.2	7.1
Queue Length 50th (ft)	8	100	24	1	245	174	72
Queue Length 95th (ft)	22	155	115	8	333	#297	122
Internal Link Dist (ft)	22		713		1168		560
Turn Bay Length (ft)				135		160	
Base Capacity (vph)	582	396	696	358	1527	383	2496
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.34	0.53	0.01	0.56	0.64	0.23

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
 8: Father Hurley Blvd & Sweetgum Cir/Middlebrook Rd

11/17/2022

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	8	14	7	125	18	323	3	663	118	226	520	5	
Future Volume (vph)	8	14	7	125	18	323	3	663	118	226	520	5	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		10.0		10.0	10.0		6.0	6.0		6.0	6.0		
Lane Util. Factor		0.95		1.00	1.00		1.00	0.95		1.00	0.95		
Frbp, ped/bikes		1.00		1.00	0.99		1.00	1.00		1.00	1.00		
Flpb, ped/bikes		1.00		0.99	1.00		1.00	1.00		1.00	1.00		
Frt		0.96		1.00	0.86		1.00	0.98		1.00	1.00		
Flt Protected		0.99		0.95	1.00		0.95	1.00		0.95	1.00		
Satd. Flow (prot)		3342		1757	1577		1767	3452		1770	3534		
Flt Permitted		0.58		0.74	1.00		0.44	1.00		0.95	1.00		
Satd. Flow (perm)		1978		1360	1577		814	3452		1770	3534		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	9	15	8	136	20	351	3	721	128	246	565	5	
RTOR Reduction (vph)	0	7	0	0	281	0	0	11	0	0	0	0	
Lane Group Flow (vph)	0	25	0	136	90	0	3	838	0	246	570	0	
Confl. Peds. (#/hr)	2		6	6		2	3		2	2		3	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Prot	NA		
Protected Phases		4			8			6		5	2		
Permitted Phases	4			8			6						
Actuated Green, G (s)		19.3		19.3	19.3		52.7	52.7		26.0	84.7		
Effective Green, g (s)		19.3		19.3	19.3		52.7	52.7		26.0	84.7		
Actuated g/C Ratio		0.16		0.16	0.16		0.44	0.44		0.22	0.71		
Clearance Time (s)		10.0		10.0	10.0		6.0	6.0		6.0	6.0		
Vehicle Extension (s)		0.2		4.0	4.0		0.2	0.2		3.0	0.2		
Lane Grp Cap (vph)		318		218	253		357	1516		383	2494		
v/s Ratio Prot					0.06			c0.24		c0.14	0.16		
v/s Ratio Perm		0.01		c0.10			0.00						
v/c Ratio		0.08		0.62	0.36		0.01	0.55		0.64	0.23		
Uniform Delay, d1		42.8		47.0	44.8		18.9	24.9		42.8	6.2		
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00		
Incremental Delay, d2		0.0		6.2	1.2		0.0	1.5		3.7	0.2		
Delay (s)		42.8		53.1	46.0		19.0	26.4		46.4	6.4		
Level of Service		D		D	D		B	C		D	A		
Approach Delay (s)		42.8			47.9			26.4			18.5		
Approach LOS		D			D			C			B		
Intersection Summary													
HCM 2000 Control Delay			28.6									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.59										
Actuated Cycle Length (s)			120.0									Sum of lost time (s)	22.0
Intersection Capacity Utilization			80.5%									ICU Level of Service	D
Analysis Period (min)			15										
c Critical Lane Group													

2: MD 118 & Wisteria Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.1	0.1	3.6	0.2	0.3	0.1	0.0	0.1	2.8	0.2	0.3
Total Del/Veh (s)	58.6	44.0	30.5	83.1	55.0	30.4	64.8	23.2	4.2	68.5	24.3	11.1

2: MD 118 & Wisteria Dr Performance by movement

Movement	All
Denied Del/Veh (s)	0.2
Total Del/Veh (s)	34.4

3: Waters Rd & Wisteria Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	All
Denied Del/Veh (s)	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Total Del/Veh (s)	3.4	1.7	1.6	4.9	0.7	0.5	23.5	10.0	1.9	19.7	2.6

5: Future Waters House Ave/Future Century Blvd & Wisteria Dr Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	NBR	SBL	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0
Total Del/Veh (s)	7.4	3.2	3.8	1.6	1.5	7.3	19.7	4.1	4.2

6: Waters Rd & Driveway Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	5.5	2.8	0.7	0.5	2.9	0.5	1.2

Total Zone Performance

Denied Del/Veh (s)	0.4
Total Del/Veh (s)	817.3

Queuing and Blocking Report

Total Future Conditions - AM Peak Hour (RIRO) Short STOP

11/17/2022

Intersection: 2: MD 118 & Wisteria Dr

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB
Directions Served	L	L	T	TR	L	T	TR	L	L	T	T	T
Maximum Queue (ft)	200	222	240	242	120	231	227	98	120	219	217	193
Average Queue (ft)	108	133	147	141	38	122	118	34	47	125	120	91
95th Queue (ft)	176	201	220	214	92	202	204	75	96	194	188	160
Link Distance (ft)		254	254			464	464			706	706	706
Upstream Blk Time (%)		0	0	0								
Queuing Penalty (veh)		0	1	0								
Storage Bay Dist (ft)	175			260	90			230	230			
Storage Blk Time (%)	0	4	0	0	0	27				0		0
Queuing Penalty (veh)	1	5	1	0	0	7				0		0

Intersection: 2: MD 118 & Wisteria Dr

Movement	NB	SB	SB	SB	SB
Directions Served	R	L	T	T	TR
Maximum Queue (ft)	66	175	236	216	197
Average Queue (ft)	24	60	142	96	73
95th Queue (ft)	50	125	219	190	160
Link Distance (ft)			607	607	607
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	250	185			
Storage Blk Time (%)			2		
Queuing Penalty (veh)			1		

Intersection: 3: Waters Rd & Wisteria Dr

Movement	EB	EB	WB	NB	SB
Directions Served	L	T	L	LTR	LTR
Maximum Queue (ft)	2	2	61	83	33
Average Queue (ft)	0	0	13	32	8
95th Queue (ft)	1	1	37	67	26
Link Distance (ft)		1198		316	286
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	100		100		
Storage Blk Time (%)			0		
Queuing Penalty (veh)			0		

Queuing and Blocking Report

Total Future Conditions - AM Peak Hour (RIRO) Short STOP

11/17/2022

Intersection: 5: Future Waters House Ave/Future Century Blvd & Wisteria Dr

Movement	EB	EB	WB	NB	SB	SB
Directions Served	L	TR	TR	R	L	R
Maximum Queue (ft)	62	14	10	66	100	59
Average Queue (ft)	21	1	1	30	47	28
95th Queue (ft)	52	7	6	58	86	52
Link Distance (ft)		602	254	113	204	204
Upstream Blk Time (%)				0		
Queuing Penalty (veh)				0		
Storage Bay Dist (ft)	100					
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 6: Waters Rd & Driveway

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	51	4	54
Average Queue (ft)	17	0	10
95th Queue (ft)	39	3	38
Link Distance (ft)	138	103	316
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Zone Summary

Zone wide Queuing Penalty: 17

2: MD 118 & Wisteria Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	3.5	0.2	0.2	0.1	0.0	0.1	2.8	0.2	0.3
Total Del/Veh (s)	57.8	42.7	32.4	82.1	53.6	30.1	66.6	23.5	4.1	71.8	24.4	10.4

2: MD 118 & Wisteria Dr Performance by movement

Movement	All
Denied Del/Veh (s)	0.2
Total Del/Veh (s)	34.3

3: Waters Rd & Wisteria Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	All
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Total Del/Veh (s)	8.5	9.7	5.3	8.6	4.9	2.4	27.2	9.1	3.0	37.9	8.1

5: Future Waters House Ave/Future Century Blvd & Wisteria Dr Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	NBR	SBL	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.0
Total Del/Veh (s)	12.4	7.8	8.7	1.8	1.7	6.7	20.1	4.0	6.6

6: Waters Rd & Driveway Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	5.4	2.7	0.7	0.5	2.8	0.7	1.2

Total Zone Performance

Denied Del/Veh (s)	0.4
Total Del/Veh (s)	875.8

Queuing and Blocking Report
 Total Future Conditions - AM Peak Hour (RIRO) - SIG

11/17/2022

Intersection: 2: MD 118 & Wisteria Dr

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB
Directions Served	L	L	T	TR	L	T	TR	L	L	T	T	T
Maximum Queue (ft)	194	233	246	232	120	235	238	94	106	206	200	178
Average Queue (ft)	106	130	145	139	41	123	121	31	46	129	122	90
95th Queue (ft)	171	193	222	212	99	208	214	72	88	192	183	160
Link Distance (ft)		254	254			464	464			712	712	712
Upstream Blk Time (%)		0	0	0								
Queuing Penalty (veh)		1	1	0								
Storage Bay Dist (ft)	175			260	90			230	230			
Storage Blk Time (%)	1	2	0	0	1	25				0		
Queuing Penalty (veh)	1	3	1	0	1	7				0		

Intersection: 2: MD 118 & Wisteria Dr

Movement	NB	SB	SB	SB	SB
Directions Served	R	L	T	T	TR
Maximum Queue (ft)	67	190	252	205	192
Average Queue (ft)	24	60	145	98	72
95th Queue (ft)	51	128	226	189	156
Link Distance (ft)			607	607	607
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	250	185			
Storage Blk Time (%)		0	3		
Queuing Penalty (veh)		0	2		

Intersection: 3: Waters Rd & Wisteria Dr

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LTR
Maximum Queue (ft)	33	138	122	62	69	67	179	42
Average Queue (ft)	1	38	30	18	16	14	48	9
95th Queue (ft)	18	100	87	45	48	47	127	31
Link Distance (ft)		1198	1198		603	603	298	286
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	100			100				
Storage Blk Time (%)		1			0			
Queuing Penalty (veh)		0			0			

Queuing and Blocking Report
 Total Future Conditions - AM Peak Hour (RIRO) - SIG

11/17/2022

Intersection: 5: Future Waters House Ave/Future Century Blvd & Wisteria Dr

Movement	EB	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	T	TR	T	TR	R	L	R
Maximum Queue (ft)	66	20	38	39	51	70	120	60
Average Queue (ft)	22	1	2	3	4	30	50	27
95th Queue (ft)	55	13	25	23	26	58	93	51
Link Distance (ft)		603	603	254	254	113	204	204
Upstream Blk Time (%)						0		
Queuing Penalty (veh)						0		
Storage Bay Dist (ft)	100							
Storage Blk Time (%)	0	0						
Queuing Penalty (veh)	0	0						

Intersection: 6: Waters Rd & Driveway

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	43	53
Average Queue (ft)	16	8
95th Queue (ft)	37	35
Link Distance (ft)	140	298
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Zone Summary

Zone wide Queuing Penalty: 18

2: MD 118 & Wisteria Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.2	0.0	0.2	3.3	0.3	0.4	0.4	0.0	0.3	2.5	0.2	0.4
Total Del/Veh (s)	60.1	39.6	22.8	78.6	54.6	44.3	66.5	27.8	4.5	69.9	32.2	22.2

2: MD 118 & Wisteria Dr Performance by movement

Movement	All
Denied Del/Veh (s)	0.3
Total Del/Veh (s)	38.5

3: Waters Rd & Wisteria Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	1.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
Total Del/Veh (s)	4.5	1.3	0.9	4.4	0.9	0.8	39.6	30.3	3.6	32.3	36.5	8.6

3: Waters Rd & Wisteria Dr Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	4.3

5: Future Waters House Ave/Future Century Boulevard & Wisteria Dr Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	NBR	SBL	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.2	1.8	2.0	0.4
Total Del/Veh (s)	11.0	2.5	2.3	1.9	2.0	6.1	46.7	6.0	8.1

6: Waters Rd & Driveway Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.1	0.2	0.0	0.0	0.1	0.0	0.0
Total Del/Veh (s)	7.4	3.3	0.7	0.5	3.0	0.8	1.6

Total Zone Performance

Denied Del/Veh (s)	0.7
Total Del/Veh (s)	902.5

Queuing and Blocking Report
 Total Future Conditions - PM Peak Hour (RIRO) - Short STOP

11/17/2022

Intersection: 2: MD 118 & Wisteria Dr

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB
Directions Served	L	L	T	TR	L	T	TR	L	L	T	T	T
Maximum Queue (ft)	196	217	175	186	120	293	361	139	184	240	233	208
Average Queue (ft)	106	126	100	99	64	138	200	65	85	139	138	109
95th Queue (ft)	173	187	161	166	125	254	335	120	146	215	213	188
Link Distance (ft)		254	254			464	464			712	712	712
Upstream Blk Time (%)		0					0					
Queuing Penalty (veh)		0					0					
Storage Bay Dist (ft)	175			260	90			230	230			
Storage Blk Time (%)	1	2			8	20				0		0
Queuing Penalty (veh)	1	2			10	12				0		0

Intersection: 2: MD 118 & Wisteria Dr

Movement	NB	SB	SB	SB	SB
Directions Served	R	L	T	T	TR
Maximum Queue (ft)	71	229	384	355	379
Average Queue (ft)	25	133	216	175	182
95th Queue (ft)	54	237	332	296	320
Link Distance (ft)			607	607	607
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	250	185			
Storage Blk Time (%)		2	13		
Queuing Penalty (veh)		5	16		

Intersection: 3: Waters Rd & Wisteria Dr

Movement	EB	WB	WB	WB	NB	SB
Directions Served	L	L	T	TR	LTR	LTR
Maximum Queue (ft)	5	63	1	6	169	63
Average Queue (ft)	0	18	0	0	53	18
95th Queue (ft)	3	43	1	5	115	45
Link Distance (ft)			603	603	307	286
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	100	100				
Storage Blk Time (%)		0				
Queuing Penalty (veh)		0				

Queuing and Blocking Report

Total Future Conditions - PM Peak Hour (RIRO) - Short STOP

11/17/2022

Intersection: 5: Future Waters House Ave/Future Century Boulevard & Wisteria Dr

Movement	EB	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	T	TR	T	TR	R	L	R
Maximum Queue (ft)	90	3	2	23	59	78	213	174
Average Queue (ft)	38	0	0	1	8	37	103	58
95th Queue (ft)	73	3	2	12	33	65	197	128
Link Distance (ft)		603	603	254	254	113	204	204
Upstream Blk Time (%)							5	2
Queuing Penalty (veh)							0	0
Storage Bay Dist (ft)	100							
Storage Blk Time (%)	0							
Queuing Penalty (veh)	0							

Intersection: 6: Waters Rd & Driveway

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	53	2	78
Average Queue (ft)	15	0	15
95th Queue (ft)	35	2	51
Link Distance (ft)	156	102	307
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Zone Summary

Zone wide Queuing Penalty: 47

2: MD 118 & Wisteria Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.0	0.1	3.4	0.3	0.4	0.4	0.0	0.3	2.4	0.2	0.4
Total Del/Veh (s)	61.6	41.8	22.5	74.4	54.5	44.7	69.1	27.3	4.5	69.7	31.4	22.4

2: MD 118 & Wisteria Dr Performance by movement

Movement	All
Denied Del/Veh (s)	0.3
Total Del/Veh (s)	38.4

3: Waters Rd & Wisteria Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	1.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1
Total Del/Veh (s)	9.9	10.0	5.2	9.2	5.4	4.1	27.7	24.8	2.7	40.0	42.3	12.2

3: Waters Rd & Wisteria Dr Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	8.8

5: Future Waters House Ave/Future Century Boulevard & Wisteria Dr Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	NBR	SBL	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.1	6.7	5.6	1.3
Total Del/Veh (s)	18.5	7.2	4.5	2.8	2.5	7.5	72.3	7.5	12.8

6: Waters Rd & Driveway Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0	0.1	0.0
Total Del/Veh (s)	6.6	3.1	0.7	0.5	3.4	1.0	1.6

Total Zone Performance

Denied Del/Veh (s)	1.3
Total Del/Veh (s)	948.0

Queuing and Blocking Report
 Total Future Conditions - PM Peak Hour (RIRO) - SIG

11/17/2022

Intersection: 2: MD 118 & Wisteria Dr

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB
Directions Served	L	L	T	TR	L	T	TR	L	L	T	T	T
Maximum Queue (ft)	199	236	182	178	120	301	370	134	177	235	226	194
Average Queue (ft)	106	130	94	97	66	136	208	62	87	135	136	112
95th Queue (ft)	173	204	156	163	124	254	331	117	149	211	204	181
Link Distance (ft)		254	254			464	464			703	703	703
Upstream Blk Time (%)		0					0					
Queuing Penalty (veh)		1					0					
Storage Bay Dist (ft)	175			260	90			230	230			
Storage Blk Time (%)	1	3			7	18		0	0			0
Queuing Penalty (veh)	1	4			9	11		0	0			0

Intersection: 2: MD 118 & Wisteria Dr

Movement	NB	SB	SB	SB	SB
Directions Served	R	L	T	T	TR
Maximum Queue (ft)	65	229	366	310	350
Average Queue (ft)	25	119	208	169	186
95th Queue (ft)	52	223	307	267	315
Link Distance (ft)			607	607	607
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	250	185			
Storage Blk Time (%)		2	12		
Queuing Penalty (veh)		4	15		

Intersection: 3: Waters Rd & Wisteria Dr

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LTR
Maximum Queue (ft)	9	90	91	82	97	109	162	60
Average Queue (ft)	1	26	18	29	26	30	58	21
95th Queue (ft)	6	73	62	63	72	81	121	52
Link Distance (ft)		1198	1198		602	602	317	286
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	100			100				
Storage Blk Time (%)		0		0	0			
Queuing Penalty (veh)		0		0	0			

Intersection: 5: Future Waters House Ave/Future Century Boulevard & Wisteria Dr

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	T	T	TR	R	L	R
Maximum Queue (ft)	112	39	108	134	86	224	221
Average Queue (ft)	46	2	12	20	37	129	77
95th Queue (ft)	89	28	59	78	67	235	176
Link Distance (ft)		602	254	254	113	204	204
Upstream Blk Time (%)					0	14	4
Queuing Penalty (veh)					0	0	0
Storage Bay Dist (ft)	100						
Storage Blk Time (%)	1						
Queuing Penalty (veh)	1						

Intersection: 6: Waters Rd & Driveway

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	54	9	78
Average Queue (ft)	15	0	16
95th Queue (ft)	34	6	54
Link Distance (ft)	157	88	317
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

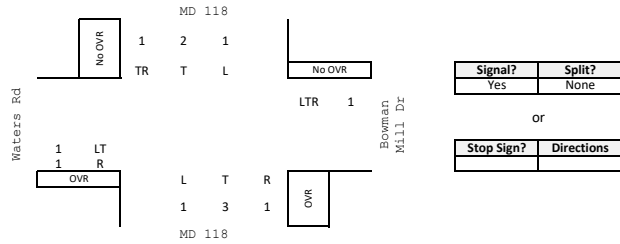
Zone Summary

Zone wide Queuing Penalty: 47

1
Critical Lane Volume
and
Level of Service Calculations

Intersection: 1: MD 118/Waters Rd
Jurisdiction: Montgomery County, MD
Scenario/Design Year: Total Future Conditions
Computed by: W+A

Intersection Lane Use & Traffic Control



AM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	LT	42		1.00	42	22	1.00	22	64	
	R	70		1.00	70					
WB	LTR	64		1.00	64	31	1.00	31	95	*
NB	T	761	0	0.37	282	44	1.00	44	326	*
	R	56		1.00	56				100	
SB	TR	580		0.37	215	69	1.00	69	284	
Note:									CLV	421

PM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	LT	51		1.00	51	35	1.00	35	86	
	R	92	0	1.00	92					
WB	LTR	83		1.00	83	36	1.00	36	119	*
NB	T	858	0	0.37	317	41	1.00	41	358	*
	R	62		1.00	62				103	
SB	TR	996		0.37	369	125	1.00	125	494	*
Note:									CLV	699

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap Vol.			Overlap		
		AM	PM	LUF	AM	PM	LUF	AM	PM	
Southbound	Yes	70	92	1.00	830	983	1.00	70	92	
Northbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0	
Eastbound	Yes	56	62	1.00	22	35	0.00	0	0	
Westbound	No	n/a	n/a	n/a	42	51	1.00	0	0	

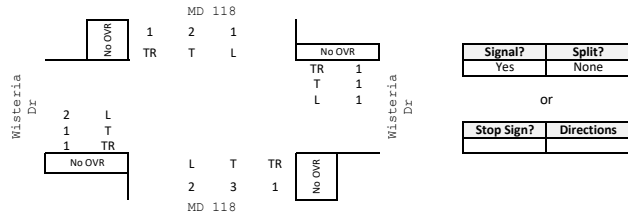
Montgomery County LATR

	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
1	1	1.00	
2	0.53	0.53	
3	0.37	0.37	
4		0.30	
5		0.25	

2 Critical Lane Volume and Level of Service Calculations

Intersection: 2: Wisteria Dr/MD 118
 Jurisdiction: Montgomery County, MD
 Scenario/Design Year: Total Future Conditions
 Computed by: W+A

Intersection Lane Use & Traffic Control



AM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	TR	404		0.53	214	27	1.00	27	241	
WB	TR	320		0.53	170	288	0.53	153	323	*
NB	TR	769		0.30	231	76	1.00	76	307	
SB	TR	746		0.37	276	85	0.53	45	321	*
Note:									CLV	644

PM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	TR	312		0.53	165	59	1.00	59	224	
WB	TR	413		0.53	219	266	0.53	141	360	*
NB	TR	848		0.30	254	129	1.00	129	383	
SB	TR	1132		0.37	419	169	0.53	90	509	*
Note:									CLV	869

Right Turn Overlap

Approach	Excl. Right	Right Vol.		Adjacent Left Vol.			Overlap	
		AM	PM	AM	PM	LUF	AM	PM
Eastbound	No	n/a	n/a	n/a	n/a	n/a	0	0
Westbound	No	n/a	n/a	n/a	n/a	n/a	0	0
Northbound	No	n/a	n/a	n/a	n/a	n/a	0	0
Southbound	No	n/a	n/a	n/a	n/a	n/a	0	0

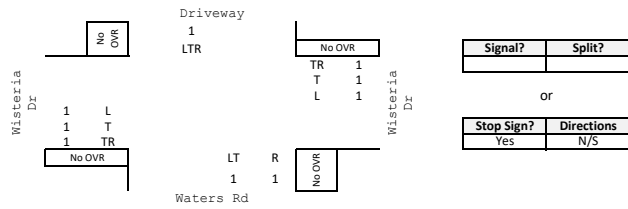
Montgomery County LATR

Number of Lanes	Lane Use Factors	
	Left Turn LUF	Through LUF
1	1	1.00
2	0.53	0.53
3	0.37	0.37
4		0.30
5		0.25

Critical Lane Volume and Level of Service Calculations

Intersection: 3: Waters Rd/Wisteria Dr
 Jurisdiction: Montgomery County, MD
 Scenario/Design Year: Total Future Conditions
 Computed by: W+A

Intersection Lane Use & Traffic Control



AM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	TR	524		0.53	278 0	79	1.00	79	357	*
WB	TR	354		0.53	188 0	12	1.00	12	200	
NB	LT	43		1.00	43	11	1.00	11	54	*
SB	LTR	11		1.00	11	42	1.00	42	53	
Note:									CLV	511

PM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	TR	398		0.53	211 0	139	1.00	139	350 139	*
WB	TR	489		0.53	259 0	15	1.00	15	274 15	
NB	LT	75		1.00	75	16	1.00	16	91	*
SB	LTR	31		1.00	31	72	1.00	72	103 72	*
Note:									CLV	453

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Left Vol.			Overlap	
		AM	PM	LUF	AM	PM	LUF	AM	PM
Eastbound	No	n/a	n/a	n/a	n/a	n/a	1.00	0	0
Westbound	No	n/a	n/a	n/a	n/a	n/a	1.00	0	0
Northbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Southbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0

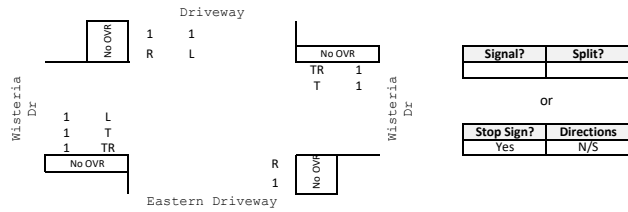
Montgomery County LATR

Number of Lanes	Lane Use Factors	
	Left Turn LUF	Through LUF
1	1	1.00
2	0.53	0.53
3	0.37	0.37
4	0.30	0.30
5	0.25	0.25

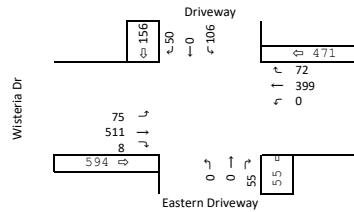
5
Critical Lane Volume
and
Level of Service Calculations

Intersection: 5: Commercial Driveway/Wisteria Dr/Future Waters House Avenue
Jurisdiction: Montgomery County, MD
Scenario/Design Year: Total Future Conditions
Computed by: W+A

Intersection Lane Use & Traffic Control

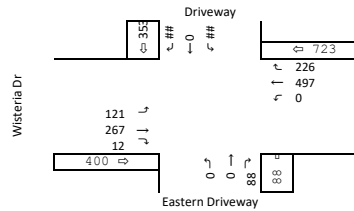


AM Peak Hour Critical Lane Volume Analysis



Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	TR	519		0.53	275				275	
WB	TR	471		0.53	250	75	1.00	75	325	*
NB	R	55		1.00	55	106	1.00	106	161	*
SB	R	50		1.00	50				50	
Note:									CLV	486

PM Peak Hour Critical Lane Volume Analysis



Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	TR	279		0.53	148				148	
WB	TR	723		0.53	383	121	1.00	121	504	*
NB	R	88		1.00	88	163	1.00	163	251	*
SB	R	190		1.00	190				190	
Note:									CLV	755

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Left Vol.			Overlap	
		AM	PM	LUF	AM	PM	LUF	AM	PM
Southbound	No	n/a	n/a	1.00	n/a	n/a	n/a	0	0
Northbound	No	n/a	n/a	1.00	n/a	n/a	n/a	0	0
Eastbound	No	n/a	n/a	1.00	n/a	n/a	n/a	0	0
Westbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0

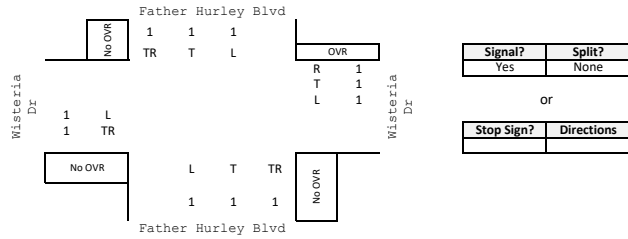
Montgomery County LATR

Number of Lanes	Lane Use Factors	
	Left Turn LUF	Through LUF
1	1	1.00
2	0.53	0.53
3	0.37	0.37
4		0.30
5		0.25

7
Critical Lane Volume
and
Level of Service Calculations

Intersection: 7: Father Hurley Blvd/Wisteria Dr
Jurisdiction: Montgomery County, MD
Scenario/Design Year: Total Future Conditions
Computed by: W+A

Intersection Lane Use & Traffic Control



AM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	TR	258		1.00	258	17	1.00	17	275	
WB	T	169	119	1.00	169	144	1.00	144	313	*
NB	TR	285		0.53	151	278	1.00	278	429	*
SB	TR	424		0.53	225	41	1.00	41	266	
Note:									CLV	742

PM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	TR	101		1.00	101	89	1.00	89	190	
WB	R	152	0	1.00	152	61	1.00	61	213	*
NB	TR	382		0.53	202	189	1.00	189	391	*
SB	TR	394		0.53	209	44	1.00	44	253	
Note:									CLV	777

Right Turn Overlap

Approach	Excl Right	Right Vol.			Adjacent Left Vol.			Overlap	
		AM	PM	LUF	AM	PM	LUF	AM	PM
Southbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Northbound	Yes	119	325	1.00	278	189	1.00	119	189
Eastbound	No	n/a	n/a	n/a	n/a	n/a	1.00	0	0
Westbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0

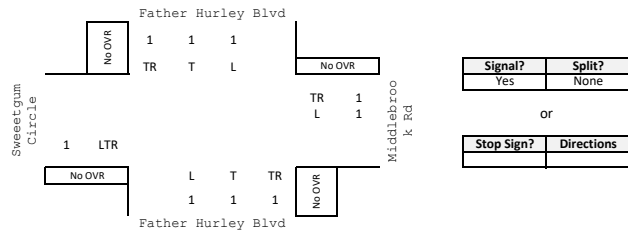
Montgomery County LATR

Number of Lanes	Lane Use Factors	
	Left Turn LUF	Through LUF
1	1	1.00
2	0.53	0.53
3	0.37	0.37
4		0.30
5		0.25

8
Critical Lane Volume
and
Level of Service Calculations

Intersection: Father Hurley Blvd / Middlebrook Rd
 Jurisdiction: Montgomery County, MD
 Scenario/Design Year: Total Future Conditions
 Computed by: W+A

Intersection Lane Use & Traffic Control



AM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	LTR	24		1.00	24	74	1.00	74	98	
WB	TR	133		1.00	133	9	1.00	9	142	*
NB	TR	642		0.53	340	270	1.00	270	610	*
SB	TR	726		0.53	385	4	1.00	4	389	
Note:									CLV	752

PM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	LTR	29		1.00	29	125	1.00	125	154	
WB	TR	341		1.00	341	8	1.00	8	349	*
NB	TR	781		0.53	414	226	1.00	226	640	*
SB	TR	525		0.53	278	3	1.00	3	281	
Note:									CLV	989

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Left Vol.			Overlap	
		AM	PM	LUF	AM	PM	LUF	AM	PM
Southbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Northbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Eastbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Westbound	No	n/a	n/a	n/a	n/a	n/a	1.00	0	0

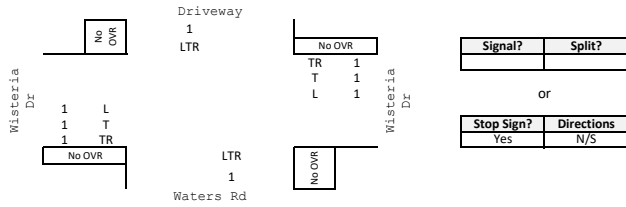
Montgomery County LATR

Number of Lanes	Lane Use Factors	
	Left Turn LUF	Through LUF
1	1	1.00
2	0.53	0.53
3	0.37	0.37
4		0.30
5		0.25

Critical Lane Volume and Level of Service Calculations

Intersection: 3: Waters Rd/Wisteria Dr
 Jurisdiction: Montgomery County, MD
 Scenario/Design Year: Total Future Conditions (Signalized)
 Computed by: W+A

Intersection Lane Use & Traffic Control



AM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	TR	524		0.53	2780	79	1.00	79	357	*
WB	TR	354		0.53	1880	12	1.00	12	200	
NB	LTR	186		1.00	186	11	1.00	11	197	*
SB	LTR	11		1.00	11	42	1.00	42	53	
Note:									CLV	554

PM Peak Hour Critical Lane Volume Analysis

Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	TR	398		0.53	2110	139	1.00	139	350	*
WB	TR	489		0.53	2590	15	1.00	15	274	
NB	LT	160		1.00	160	16	1.00	16	176	*
SB	LTR	31		1.00	31	72	1.00	72	103	
Note:									CLV	526

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Left Vol.			Overlap	
		AM	PM	LUF	AM	PM	LUF	AM	PM
Eastbound	No	n/a	n/a	n/a	n/a	n/a	1.00	0	0
Westbound	No	n/a	n/a	n/a	n/a	n/a	1.00	0	0
Northbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Southbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0

Montgomery County LATR

Number of Lanes	Lane Use Factors	
	Left Turn LUF	Through LUF
1	1	1.00
2	0.53	0.53
3	0.37	0.37
4		0.30
5		0.25