



WELLS + ASSOCIATES

PIKE CENTER

LOCAL AREA TRANSPORTATION REVIEW

July 19, 2024



**Exhibit 15
H-155**

PIKE CENTER

Local Area Transportation Review Montgomery County, Maryland

July 19, 2024

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PIKE CENTER

Section 1 INTRODUCTION

OVERVIEW

This report details a Local Area Transportation Review (LATR) for Pike Center, located at 12101 Rockville Pike in Rockville, Maryland. The subject site is located along the west side of Rockville Pike (MD 355) and south of Twinbrook Parkway, as shown in Figure 1-1. The site is located within the North Bethesda Orange Policy Area of Montgomery County. The study intersections are in the North Bethesda Orange Policy Area, Twinbrook Red Policy Area, White Flint Red Policy Area, and City of Rockville. This study was prepared in support of the Local Map Amendment (LMA) application in accordance with the Maryland-National Capital Park and Planning Commission (M-NCPPC) 2023 LATR Guidelines.

The Applicant, KIMCO Realty, Co., proposes to redevelop the approximately 81,000 square feet (S.F.) of existing retail and commercial uses with up to 290 mid-rise and 470 high-rise apartment dwelling units and up to 90,000 S.F. of retail space (potentially a supermarket). The proposed development is expected to occur in two phases with phase one expected to be built approximately in 2034 and phase two approximately in 2039.

The site has five (5) existing access points on Rockville Pike (MD 355), Bou Avenue, and Chapman Avenue: a right-in/right-out serving a connected gas station on Rockville Pike (MD 355), a full access driveway on Bou Avenue east of Rockville Pike (MD 355), and two full access driveways on Chapman Avenue with one located north and the other south of Rollins Avenue.

The Applicant is proposing one (1) new point of access via the extension of Rollins Avenue from Chapman Avenue to Rockville Pike (MD 355) to materialize the county's proposed roadway network. The Applicant is also proposing to close access to the site via the right-in/right-out with the gas station as the gas station is planned to be redeveloped, and the southern entrance on Chapman Avenue. The site plan is shown on Figure 1-2.

A LATR Transportation Study is required for this Local Map Amendment application 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, Maryland State Highway Administration and Montgomery County Department of Transportation (MCDOT) Staff. The Scope of Work Agreement is included in Appendix A.

EXECUTIVE SUMMARY

The proposed Pike Center redevelopment proposes removing 81,000 S.F. of retail and commercial space to be replaced with up to 90,000 S.F. of retail and commercial, 290 mid-rise multifamily dwelling units and 470 high-rise multifamily dwelling units. This project is subject to the LATR system adequacy tests, based on the number of peak hour person trips the site will generate, as outlined in Montgomery County's Growth and Infrastructure Policy (GIP) and the LATR 2023 Guidelines. The following summarizes the findings and conclusions of the four adequacy tests and Vision Zero evaluations of this Local Area Transportation Review for the redevelopment of Pike Center:

1. The redevelopment of Pike Center would replace approximately 81,000 square feet (S.F.) of retail and commercial uses with up to 290 mid-rise and 470 high-rise apartment dwelling units and up to 90,000 S.F. of retail space. The proposed development is expected to occur in two phases with phase one expected to be built approximately in 2034 and phase two approximately in 2039.
2. Pike Center is expected to generate 612 AM peak hour and 936 PM peak hour net new person trips, and 324 AM peak hour and 492 PM peak hour net new auto-driver (vehicle) trips under buildout conditions in Phase 2.
3. The redevelopment of Pike Center will construct the extension of Rollins Avenue between Chapman Avenue and Rockville Pike (MD 355). This new facility will complete part of master planned roads in the area, better manage traffic movements into and out of the site and provide a pedestrian and bicycle connection through the property.
4. The AM and PM peak hour average vehicle delays at the study intersections within the North Bethesda Orange Policy Area currently operate within the applicable congestion standard of 71 seconds per vehicle. The study intersections within the City of Rockville, Twinbrook Red Policy Area and White Flint Red Policy Area are not subject to the Motor Vehicle Test. However, for information purposes, an analysis was conducted at each of these intersections.
5. Under future conditions without the proposed Pike Center redevelopment, the study intersections within the North Bethesda Policy Area would continue to operate within the applicable congestion standard threshold during both the AM and PM peak hours.
6. Under future conditions with the proposed Pike Center redevelopment, the study intersections within the North Bethesda Policy Area would continue to operate within the applicable congestion standard threshold during the AM and PM peak hours.

7. Based on the Pedestrian System Adequacy Test, mitigation is required to improve the existing undesirable pedestrian level of comfort ratings for segments along Rockville Pike (MD 355), and to address ADA noncompliance for crosswalk ramps within the study area. At the time of Preliminary Plan/Site Plan, the Applicant will work with Staff to determine the improvements and the fair share contribution to improve the PLOC in the study area.
8. Mitigation is required to pass the Bicycle System Adequacy Test due to an elevated level of traffic stress under existing conditions along Rockville Pike (MD 355). The Applicant will, at the time of Preliminary Plan/Site Plan, coordinate with Planning Staff to determine the fair share contribution toward the mitigation. The Applicant is also proposing enhanced bicycle infrastructure along the site frontages, bolstering comfortability and adherence to the Bicycle Master Plan.
9. Four (4) bus stops within the study area do not have bus shelters. Mitigation is required to pass the Bus Transit System Adequacy Test. The Applicant will, at the time of Preliminary Plan/Site Plan, coordinate with Planning Staff to determine the fair share contribution toward the mitigation.
10. A review of crash history within the 1,000 feet study area radius found that 314 crashes occurred between 2019 and 2024. Of the 314 reported crashes, 308 crashes were reported as minor/no injury crashes, and one (1) was classified as fatal. The majority of crashes involved vehicles only (81 percent). The remaining crashes were related to pedestrians (14 percent) and bicycles (five percent). It is noted that the site is located within a High Injury Network along Rockville Pike (MD 355) north of Randolph Road.
11. The results of the speed study indicate that the Rockville Pike (MD 355), Chapman Avenue, and Twinbrook Parkway road segments experience 85th percentile speeds that are within the acceptable 120 percent of the posted speed limit. Data for Bou Avenue shows that the 85th percentile speed exceeds the 120 percent posted speed standard. The Applicant proposes to provide curb parking along the Bou Avenue frontage between the site driveway and Chapman Avenue that may reduce speeds in this area. However, additional speed reduction measures and enforcement should be considered to further reduce speeds in this segment.
12. The location and design of the proposed site access roads minimizes turning movement conflicts on Chapman Avenue, Bou Avenue, and Rockville Pike (MD 355). Sidewalks and crosswalks will be provided within and along the property frontage to ensure safe pedestrian access to and from the site. The shared use paths along the site frontage provide a low level of traffic stress for bicyclists travelling to or from the site.

DESCRIPTION OF MULTI-MODAL ADEQUACY TESTS

The following section describes the various multi-modal tests for determining transportation adequacy per the 2023 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 Orange North Bethesda Policy Area is an overall average vehicle delay of 71 seconds per vehicle.

The intersections within the City of Rockville and Twinbrook and White Flint Red Policy Areas are not subject to the Vehicle Test; however, an analysis was conducted for informational purposes. The capacity analysis and results for those intersections in the Red Policy Area and City of Rockville are presented in Appendix F of this report. The Policy Area designation for each of the study intersections is noted below.

The scope of the study intersections is based on the motor vehicle trip generation. For sites generating more than 250 peak hour vehicle trips but less than 750, the study area is required to include a minimum of two (2) significant intersection transportation studies in each direction. The proposed development will generate 324 AM and 492 PM net new peak hour vehicle trips. The following study area was identified in consultation with Staff during the scoping process:

1. Rockville Pike (MD 355) / Bou Avenue – Orange Policy Area
2. Rockville Pike (MD 355) / Federal Plaza / Pike Center – Orange Policy Area
3. Rockville Pike (MD 355) / Gas Station Driveway – Orange Policy Area
4. Rockville Pike (MD 355) / Rollins Avenue / Twinbrook Parkway – Red Policy Area
5. Chapman Avenue / Twinbrook Parkway – Red Policy Area
6. Chapman Avenue / Pike Center Driveway North – Orange Policy Area
7. Chapman Avenue / Rollins Avenue – Orange Policy Area
8. Chapman Avenue / Pike Center Driveway South – Orange Policy Area
9. Bou Avenue / Chapman Avenue – Orange Policy Area
10. Bou Avenue / Pike Center – Orange Policy Area
11. East Jefferson Street / Rollins Avenue – City of Rockville
12. Rockville Pike (MD 355) / Halpine Road – Red Policy Area
13. Twinbrook Parkway / Parklawn Drive – Red Policy Area
14. Nebel Street / Randolph Road – Red Policy Area
15. Rockville Pike (MD 355) / Hubbard Drive – Orange Policy Area
16. Chapman Avenue / Randolph Road – Red Policy Area
17. Chapman Avenue / Thompson Avenue – Red Policy Area

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 address 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 LATR 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”. 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 four (4) bus shelters within 1,500 feet of the site.

Vision Zero

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 high injury network, 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 most 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 120%, 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 Kensington/Wheaton 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 the 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 the published Institute of Transportation Engineers (ITE) Trip Generation, 11th Edition rates.
 - 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), Hord Copland Macht, VIKA Maryland, KIMCO Realty, Inc., and Wells + Associates Inc.

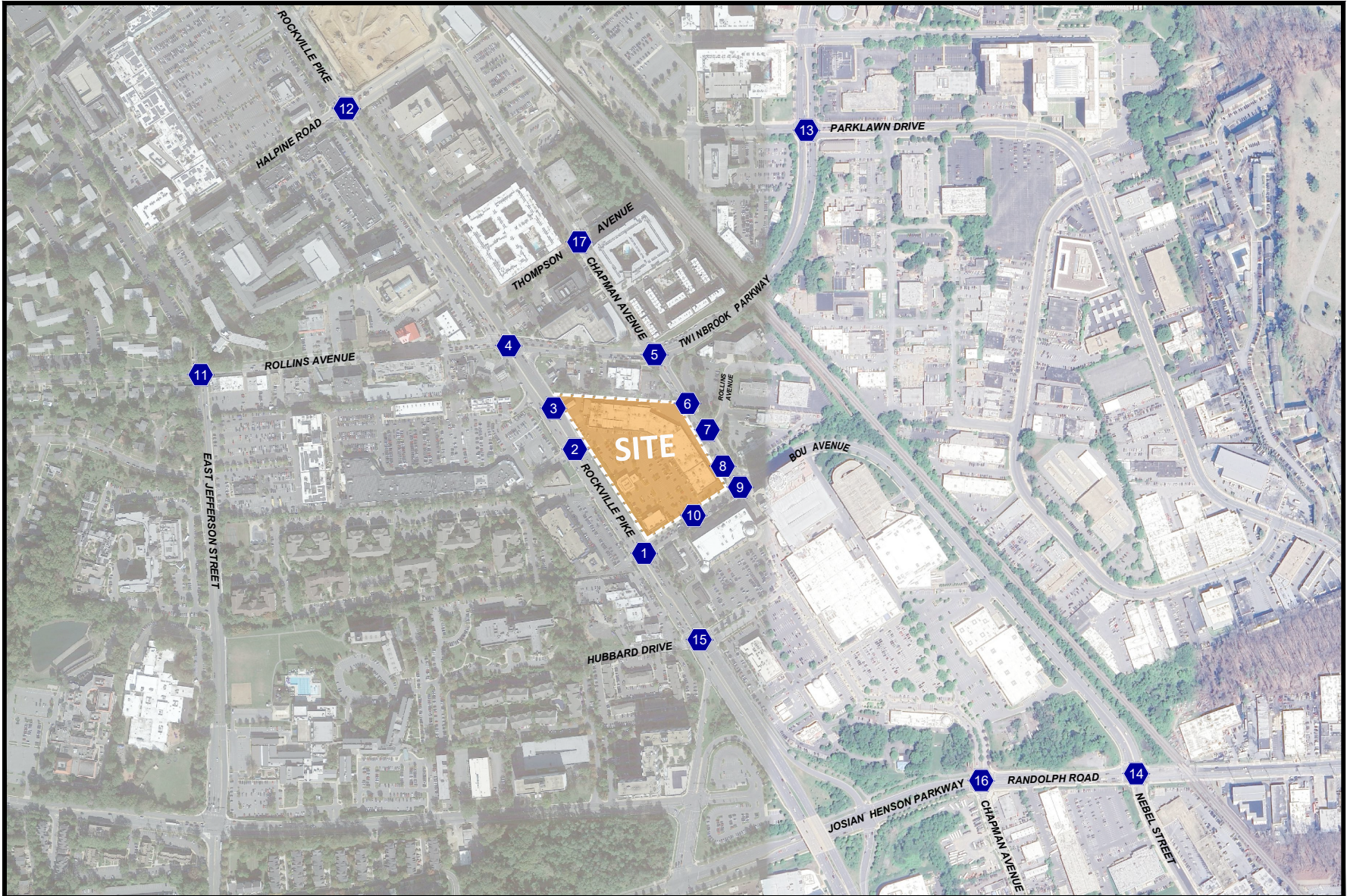



Figure 1-1
Site Location and Study Intersections

 Study Intersection



NORTH
Pike Center
Montgomery County, Maryland

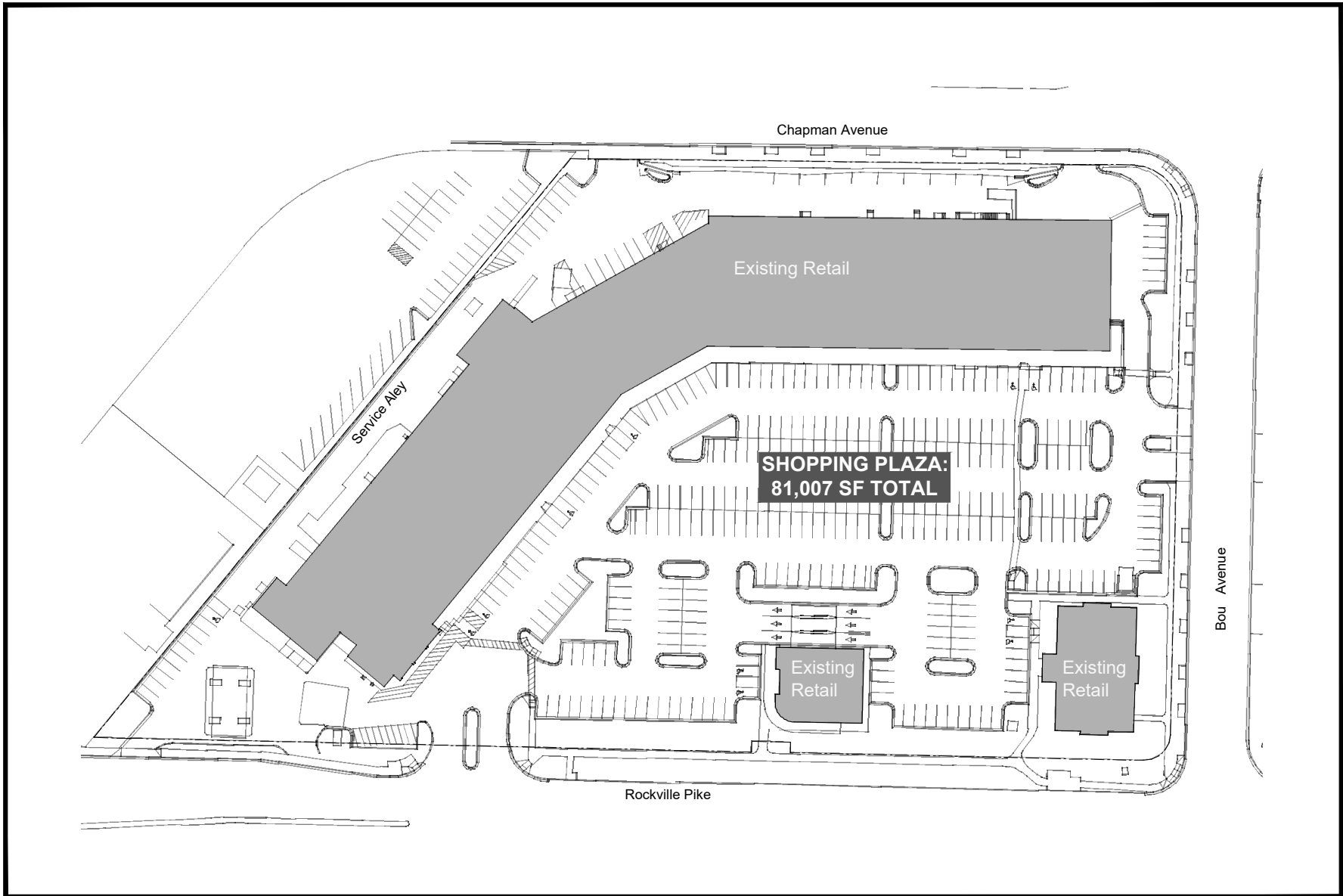


Figure 1-2
Existing Site Plan
Plan Provided by: VIKA



NORTH

Pike Center
Montgomery County, Maryland

SECTION 2 BACKGROUND DATA

OVERVIEW

This section presents the following background information for the LATR:

- Description of the proposed site uses
- 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 USES

The proposed Pike Center project includes replacing the existing 81,000 S.F. shopping center with 90,000 S.F. of commercial and retail space (potentially a supermarket), 470 high-rise, and 290 mid-rise dwelling units. The proposed development is expected to occur in two phases with a phase one buildout approximately in 2034 and phase two approximately in 2039. The phasing plans are shown on Figures 2-1 and 2-2.

VEHICULAR ACCESS

The existing site access to the public road network is provided via five (5) access points, which include a full-movement, signalized intersection on Rockville Pike (MD 355), a right-in/right-out driveway on Rockville Pike (MD 355), a driveway on Bou Avenue, and two driveways on Chapman Avenue. Specifically:

1. A right-in/right-out driveway along Rockville Pike (MD 355) that serves the existing gas station.
2. The main signalized site driveway intersection of Rockville Pike (MD 355) opposite Federal Plaza.
3. A service entrance driveway on Chapman Avenue north of Rollins Avenue.
4. A service entrance driveway on Chapman Avenue south of Rollins Avenue.
5. A full access driveway on Bou Avenue.

Two (2) new access points to the property will be provided during Phase 1 via the planned extension of Rollins Avenue between Chapman Avenue and Rockville Pike (MD 355.). The Chapman Avenue intersection will provide full movements while the Rockville Pike connection will function as a right-in/right-out between Bou Avenue and the existing main signalized site driveway. In Phase 1, the southern entrance to the site along Chapman Avenue will be eliminated

and during Phase 2, the gas station right-in/right-out will be eliminated, and the station is anticipated to be relocated. The vehicular access for the site is shown on Figure 1-2.

PUBLIC ROAD NETWORK

Existing Network/Site Access

Regional access is provided by Rockville Pike (MD 355), Randolph Road, and Montrose Road/Josiah Henson Parkway. Local access to the site is provided via Twinbrook Parkway, Chapman Avenue, Bou Avenue, Rollins Avenue.

Rockville Pike (MD 355) is a state-maintained, six-lane divided Downtown Boulevard. Traffic signals and additional turn lanes are typically provided at major intersections. There is a posted speed limit of 40 mph.

Randolph Road is a six-lane divided boulevard per the Master Plan of Highways and Transitways Functional Classification. Traffic signals and additional turn lanes are typically provided at major intersections. Randolph Road provides regional access and has a posted speed limit of 40 mph.

Montrose Road/Josiah Henson Parkway is a four-lane divided Downtown Boulevard and provides a bypass route onto Rockville Pike (MD 355). Traffic signals and additional turn lanes are typically provided at major intersections. There is a posted speed limit of 35 mph.

Twinbrook Parkway is a four-lane divided Town Center Boulevard per the Master Plan of Highways and Transitways Functional Classification and Arterial within the City of Rockville. Traffic signals and additional turn lanes are typically provided at major intersections. There is a posted speed limit of 30 mph.

Chapman Avenue is a four-lane undivided downtown street per the Master Plan of Highways and Transitways Functional Classification. There is a posted speed limit of 30 mph.

Bou Avenue is a four-lane undivided Downtown Boulevard per the Master Plan of Highways and Transitways Functional Classification. There is a posted speed limit of 25 mph.

Rollins Avenue is a two-lane undivided business district road per the City of Rockville. There is a posted speed limit of 30 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, a sidepath is currently provided along the west side of Chapman Avenue from the Pike Center north driveway to Bou Avenue. A sidepath is currently provided along the north and east side of Bou Avenue from Rockville Pike (MD 355) to Randolph Road. A sidepath is currently provided along the east side of Rockville Pike (MD 355) from Rose Avenue to Hubbard Drive. In the City of Rockville, a painted separated bike lane is currently provided on both sides of Chapman Avenue from Twinbrook Parkway to Thompson Avenue. Bicycle facilities are not currently provided along other roadways in the study area.

Per the Bicycle Master Plan, in the study area, two-way separated bike lanes are planned along the east and west side of Rockville Pike (MD 355) from Randolph Road to Twinbrook Parkway. The City of Rockville classifies this improvement as a “cycletrack”, that extends further north past the study area. Two-way separated bike lanes are planned for the east and west sides of Hoya Street. In the City of Rockville, a shared roadway is planned for Twinbrook Parkway and Rollins Avenue from Chapman Avenue to East Jefferson Street. An exhibit showing the Bicycle Master Plan is shown in Section 4 of this report.

Sidewalks

Sidewalks are provided along all public roads within the study area.

Transit Service

Pike Center is well served by both Ride-On and Metrobus routes, as well as Metrorail at Twinbrook station. The following bus routes are proximate to the subject site:

- Ride-On Route 5 provides service between Twinbrook station and Silver Spring station. This bus route makes stops at White Flint and Grosvenor-Strathmore stations.
- Ride-On Route 10 provides service between Twinbrook station and New Hampshire Avenue at Powder Mill Road. This bus route makes a stop at Glenmont station.
- Ride-On Route 42 provides service between Westfield Montgomery Mall and White Flint Station.
- Ride-On Route 101 provides service between the Lakeforest Transit Center and National Institutes of Health Medical Center station with stops at the Shady Grove, Rockville, and White Flint Metrorail stations.
- Ride-On Route 46 provides service between Montgomery College and the National Institute of Health (NIH) Medical Center station.
- Ride-On Route 26 provides service between the Glenmont station and Montgomery Mall Transit Center.

- Ride-On Route 44 provides service between Rockville Station and Twinbrook Station.
- Ride-On Route 45 provides service between the Rockville Regional Transit Center and the Twinbrook Station.
- Metrobus Route C2 and C4 provides service between Greenbelt station and Twinbrook station.

All bus routes and schedules are included in Appendix B.

Twinbrook Station, north of the subject sites provides Red Line Metrorail service to Washington DC, Union Station, and the MARC train.

PROGRAMMED and PLANNED IMPROVEMENTS

No pipeline transportation or Capital Improvement Projects were identified as applying within the scope of this project.

STUDY AREA DEFINITION

The LATR study area was established in accordance with M-NCPPC's LATR Guidelines and through consultation with M-NCPPC, MCDOT, and MD SHA Staff. The signed scoping agreement is provided in Appendix A. The following intersections and driveways are included in the study:

1. Rockville Pike (MD 355) / Bou Avenue – Orange Policy Area
2. Rockville Pike (MD 355) / Federal Plaza / Pike Center – Orange Policy Area
3. Rockville Pike (MD 355) / Gas Station Driveway – Orange Policy Area
4. Rockville Pike (MD 355) / Rollins Avenue / Twinbrook Parkway – Red Policy Area
5. Chapman Avenue / Twinbrook Parkway – Red Policy Area
6. Chapman Avenue / Pike Center Driveway North – Orange Policy Area
7. Chapman Avenue / Rollins Avenue – Orange Policy Area
8. Chapman Avenue / Pike Center Driveway South – Orange Policy Area
9. Bou Avenue / Chapman Avenue – Orange Policy Area
10. Bou Avenue / Pike Center – Orange Policy Area
11. East Jefferson Street / Rollins Avenue – City of Rockville
12. Rockville Pike (MD 355) / Halpine Road – Red Policy Area
13. Twinbrook Parkway / Parklawn Drive – Red Policy Area
14. Nebel Street / Randolph Road – Red Policy Area
15. Rockville Pike (MD 355) / Hubbard Drive – Orange Policy Area
16. Chapman Avenue / Randolph Road – Red Policy Area
17. Chapman Avenue / Thompson Avenue – Red Policy Area

Figure 2-3 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 Tuesday March 19, 2024, and Thursday May 2, 2024, from 6:30 AM to 9:30 AM and from 4:00 PM to 7:00 PM. Figure 2-4 shows the existing AM and PM peak hour vehicular traffic volumes. Pedestrian and bicycle volumes at the study intersections are summarized on Figures 2-5 and 2-6, respectively, and the detailed count data is provided in Appendix C.

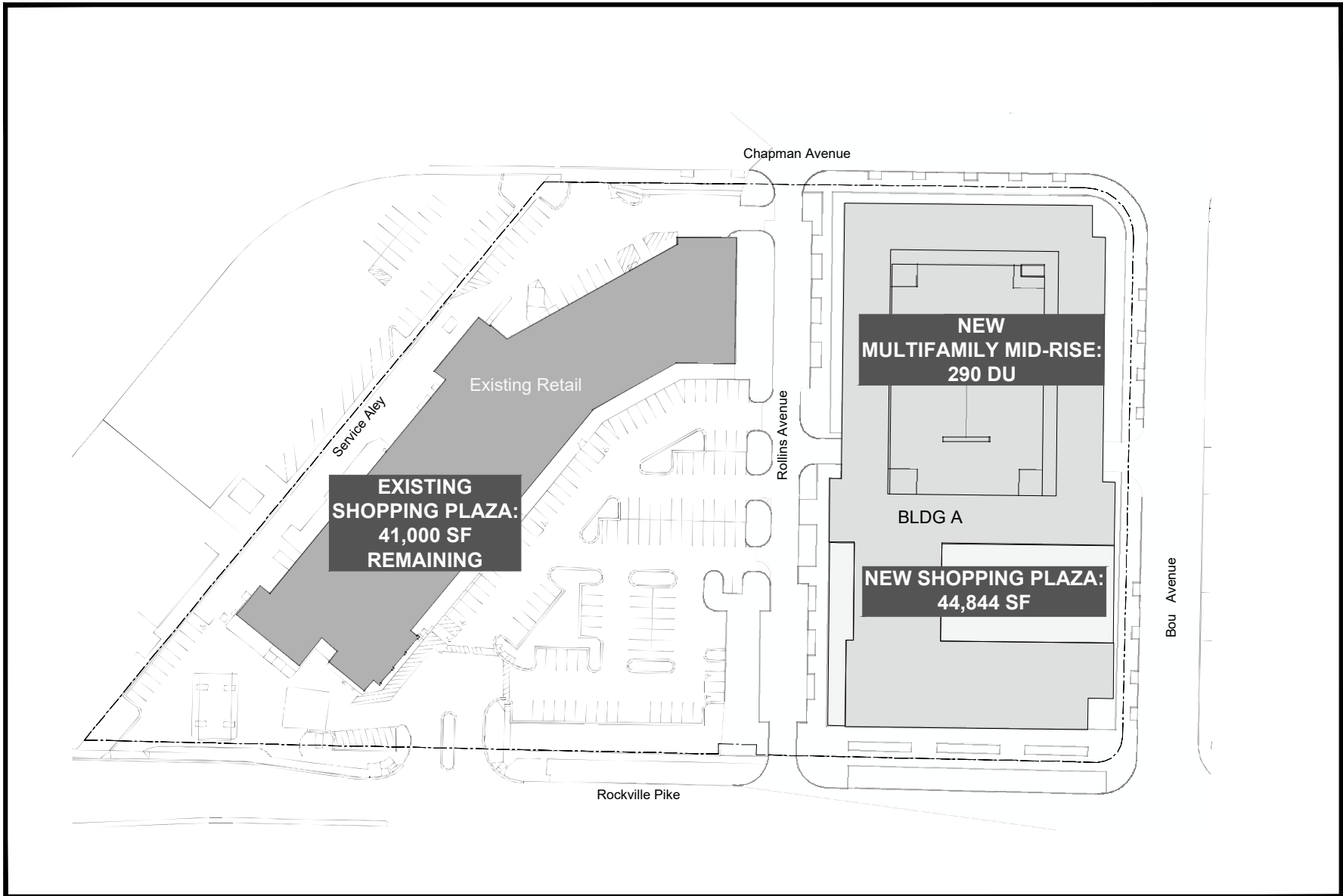


Figure 2-1
Conceptual Site Plan: Phase 1
Plan Provided by: VIKA



NORTH

Pike Center
Montgomery County, Maryland

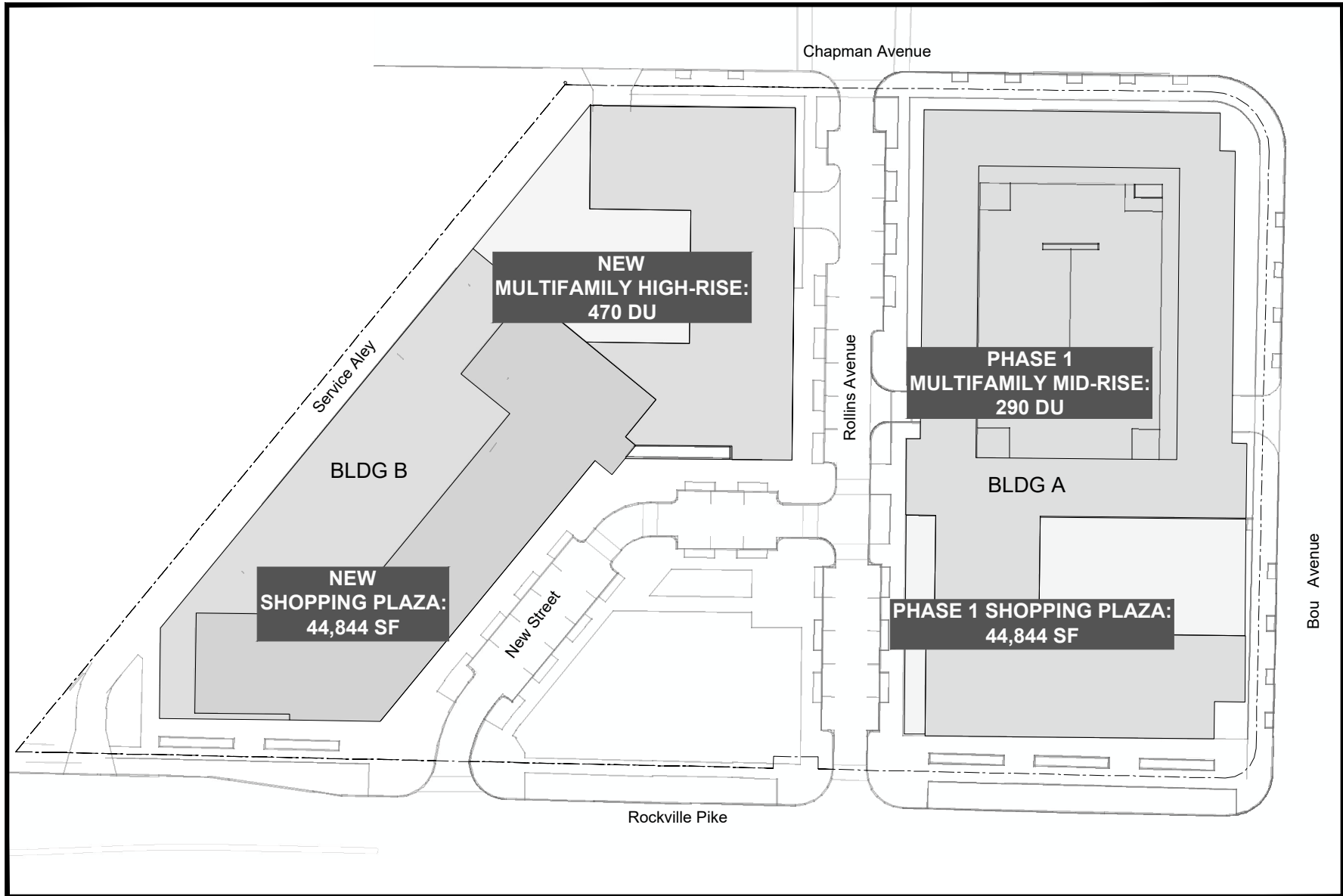
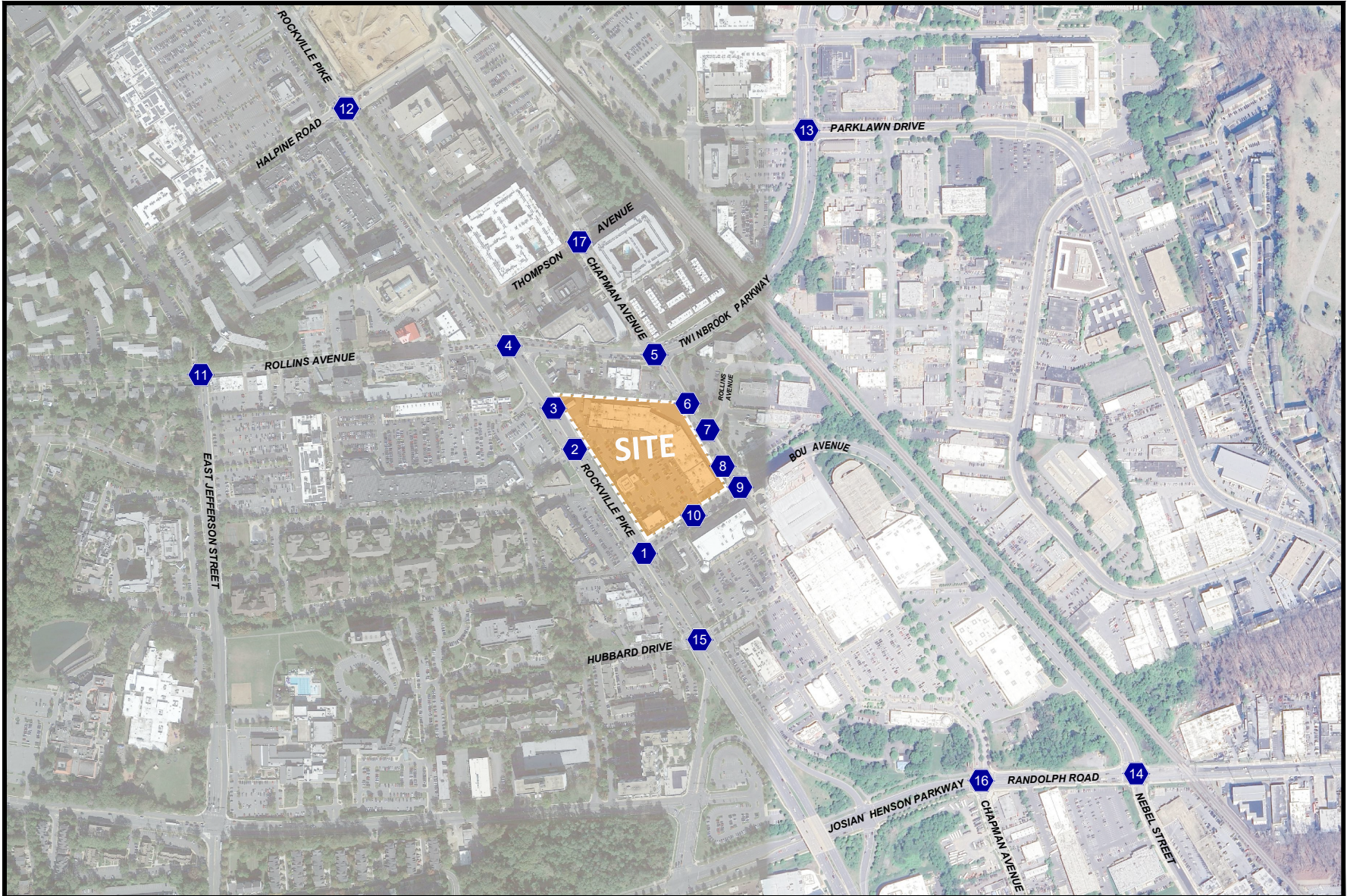


Figure 2-2
Conceptual Site Plan: Phase 2
Plan Provided by: VIKA



NORTH

Pike Center
Montgomery County, Maryland



Site Location and Study Intersections

X Study Intersection



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Montgomery County, Maryland

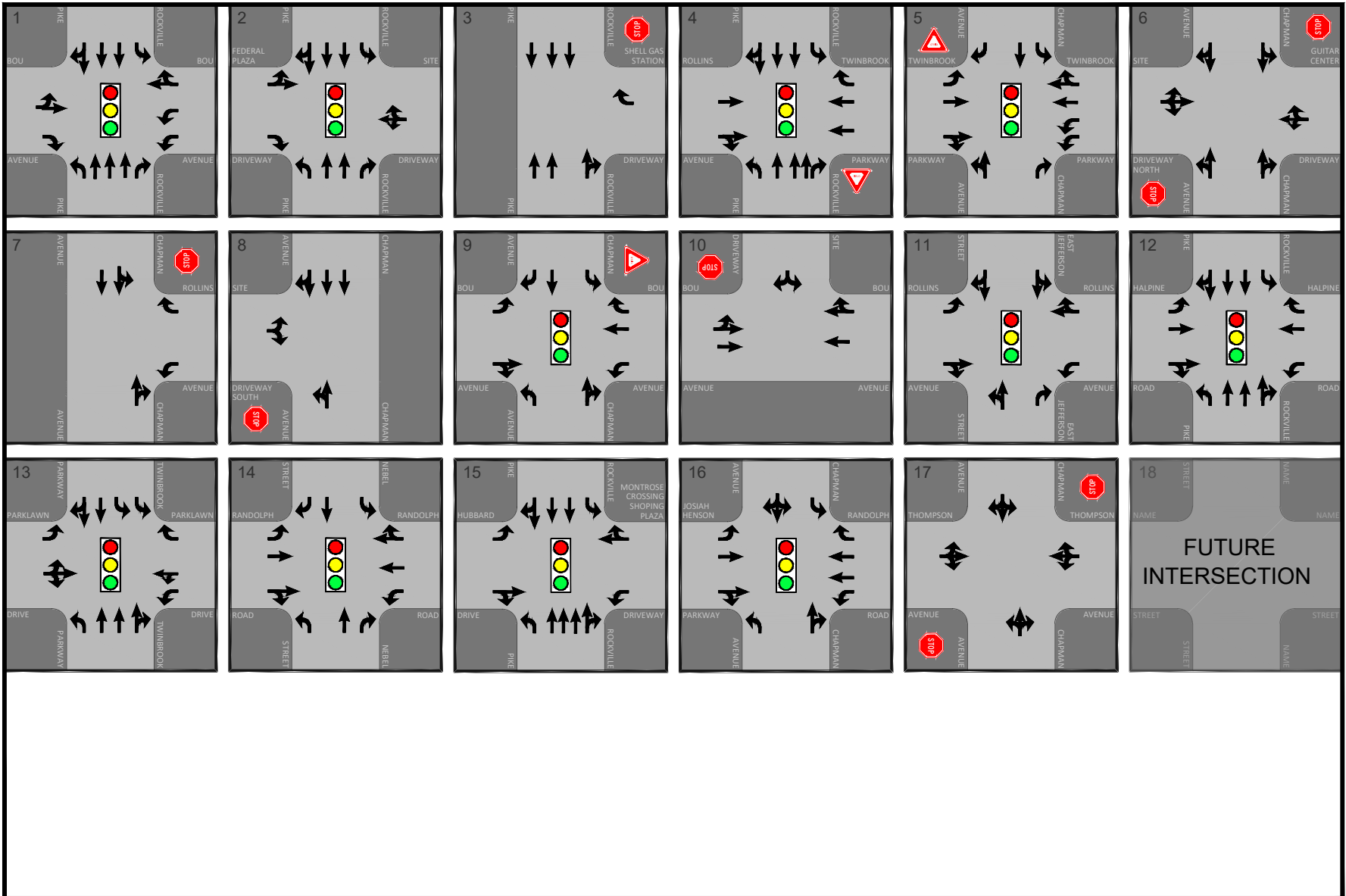


Figure 2-3
Existing Lane Use and Traffic Control



NORTH
Pike Center
Montgomery County, Maryland

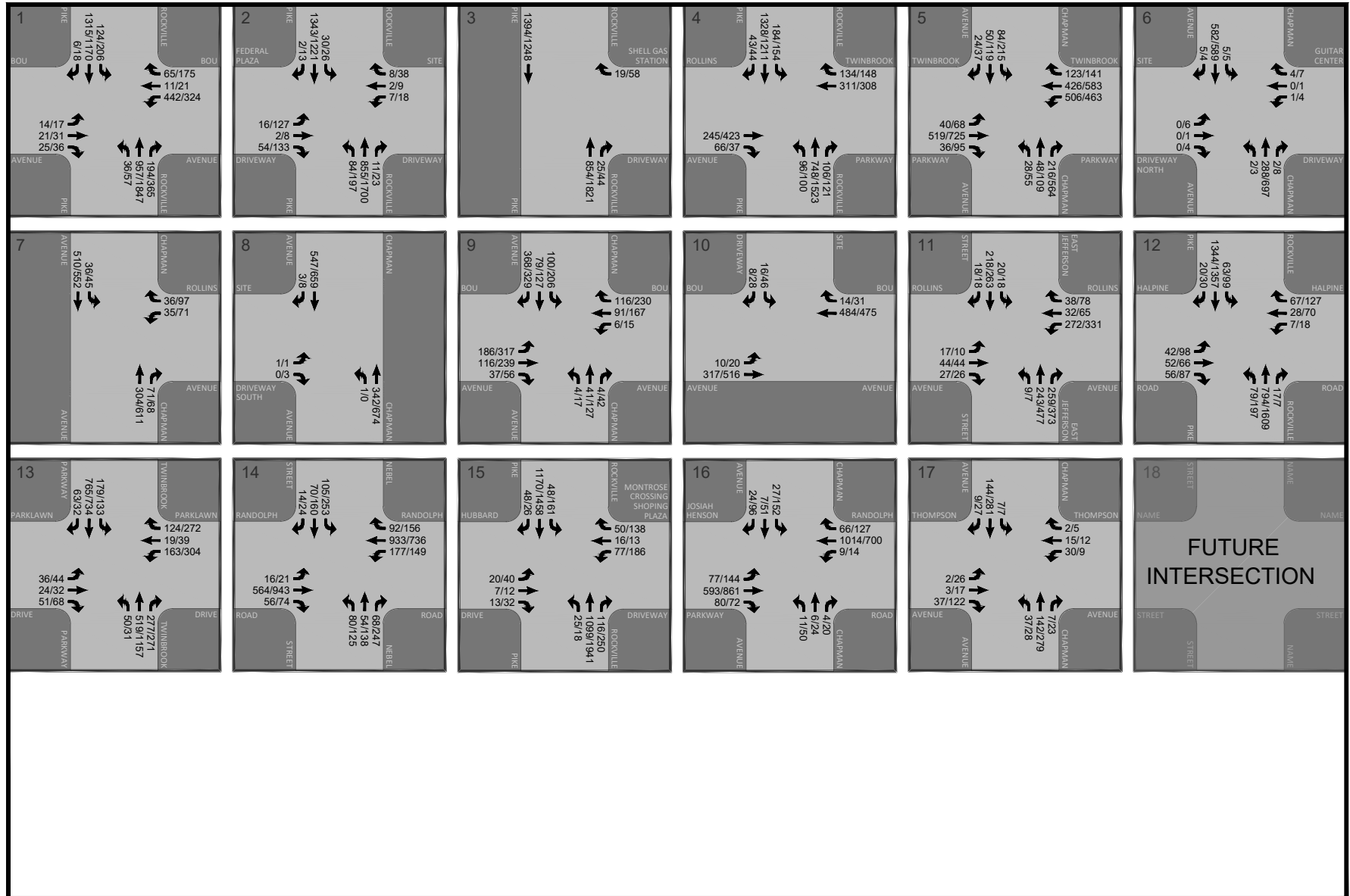


Figure 2-4
Existing Traffic Counts

AM PEAK HOUR
PM PEAK HOUR
000 / 000



NORTH
Pike Center
Montgomery County, Maryland

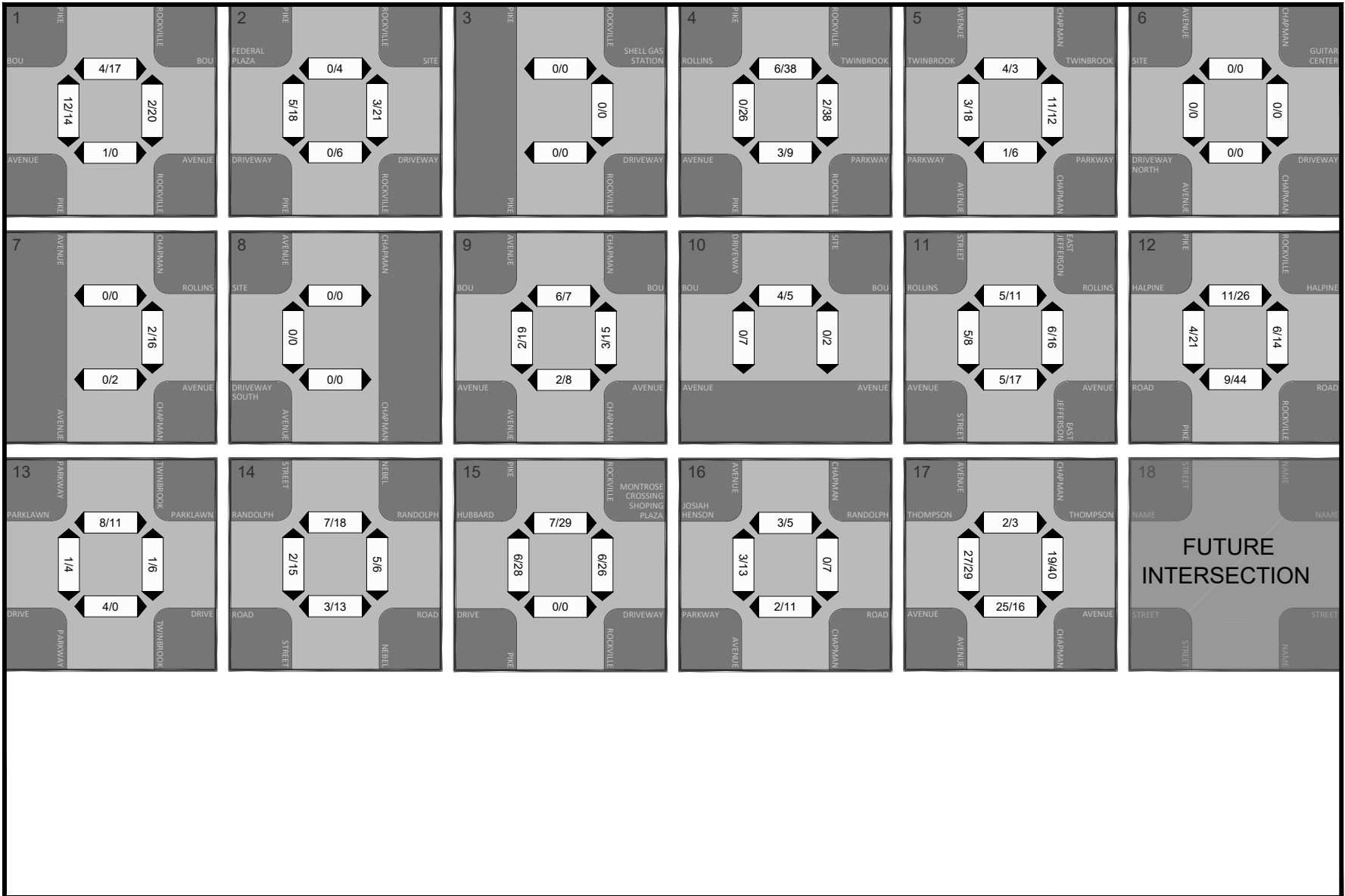


Figure 2-5
Existing Pedestrian Counts

AM PEAK HOUR
PM PEAK HOUR
000 / 000



NORTH
Pike Center
Montgomery County, Maryland

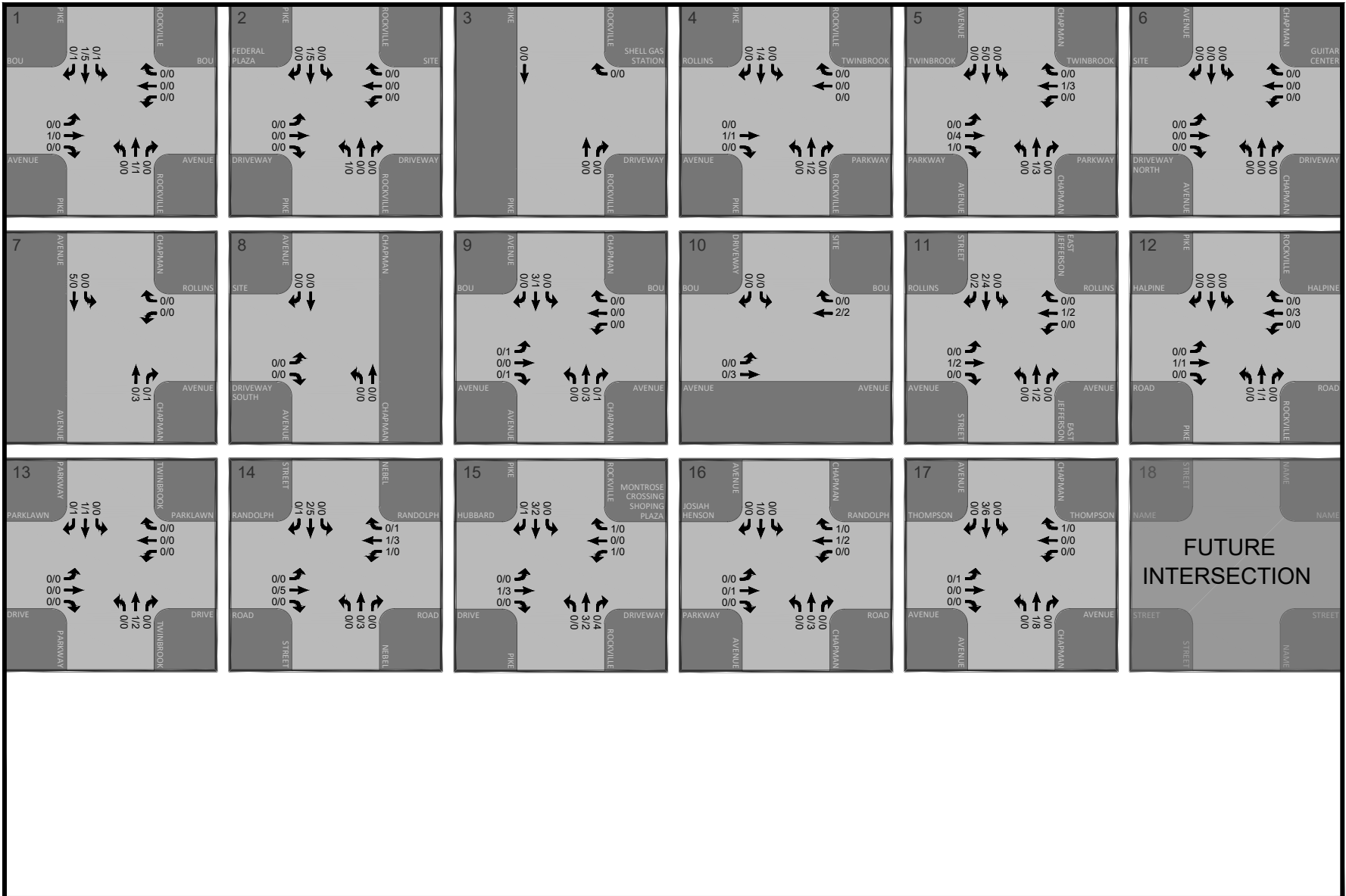


Figure 2-6
Existing Bicycle Counts

AM PEAK HOUR
PM PEAK HOUR
000 / 000



NORTH
Pike Center
Montgomery County, Maryland

SECTION 3 MOTOR VEHICLE ADEQUACY TEST

OVERVIEW

This section of the report 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 key intersections; a summary of site and pipeline trip generation projections; and analysis of future average vehicle delay with and without the site development.

CONGESTION STANDARD

The study intersections, including the site driveways, are located within either the North Bethesda Orange, Twinbrook Red, or White Flint Red Policy Area of Montgomery County, or the City of Rockville depending on the specific intersection. In Orange Policy Areas, the level of congestion is determined using the Highway Capacity Manual delay-based level of service methodology. **In Red Policy Areas and the City of Rockville, intersections are not subject to a Motor Vehicle test; however, delay-based level of service results are presented in the appendix of this Report.**

The congestion standard (HCM delay based) for intersections within the North Bethesda Policy Area is an overall average vehicle delay of 71 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 intersection analysis for the intersection in the Red Policy Area has been provided for informational purposes only.

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 the City of Rockville and Montgomery County Department of Transportation (MCDOT) are shown in Appendix D, the existing vehicular traffic volumes shown on Figure 2-2, and the HCM 2000 and 6th Edition methodology for signalized and unsignalized intersections respectively, where available. HCM worksheets for each study intersection are presented in Appendix E. The results of the existing analyses are summarized in Table 3-1.

The analysis shows that under existing conditions, all the study intersections in the Orange Policy Area currently operate within the 71 second per vehicle delay standard.

The HCM worksheets and results for intersections in the Red Policy Area and City of Rockville are shown in Appendix E.

Table 3-1
Pike Center
Existing Conditions Level of Service Summary^{1,2,3}

Approach/ Lane Group	Existing Conditions			
	AM Peak Hour		PM Peak Hour	
	LOS	Delay (s)	LOS	Delay (s)
1. Rockville Pike / Bou Avenue -- Orange Policy Area				
Overall	D	35.7	D	39.3
2. Rockville Pike / Pike Center Driveway / Federal Plaza Driveway -- Orange Policy Area				
Overall	A	9.6	C	21.7
3. Rockville Pike/ Shell Gas Station Driveway - Unsignalized -- Orange Policy Area				
WBR	B	13.8	D	33.9
NBTR	-	-	-	0.0
SBT	-	-	-	0.0
Overall	-	-	-	-
6. Chapman Ave / Pike Center Driveway North - Unsignalized -- Orange Policy Area				
EBLTR	A	0.0	C	21.8
WBLTR	B	10.7	C	19.2
NBL	A	9.0	A	8.9
NBT	A	0.0	A	0.0
SBL	A	8.0	A	9.4
SBT	A	0.0	A	0.1
Overall	-	-	-	-
7. Chapman Ave / Rollins Ave - Unsignalized -- Orange Policy Area				
WBL	C	15.5	D	29.2
WBR	B	10.5	C	15.0
EBL	-	-	-	-
NBL	-	-	-	-
NBTR	-	-	-	-
SBL	A	8.2	A	9.2
SBT	A	0.2	A	0.3
Average for WBL	-	-	-	-
Average for EBL	-	-	-	-
8. Chapman Ave / Pike Center Driveway South - Unsignalized -- Orange Policy Area				
EBLR	C	18.4	C	16.9
NBL	B	11.2	A	0.0
NBT	A	0.0	-	-
SBT	-	-	-	-
SBR	-	-	-	-
Overall	-	-	-	-
9. Chapman Ave / Bou Ave -- Orange Policy Area				
Overall	C	25.5	C	31.8
10. Bou Ave / Pike Center Driveway - Unsignalized -- Orange Policy Area				
EBL	A	8.5	A	8.5
EBT	A	0.1	A	0.1
WBT	-	-	-	-
WBR	-	-	-	-
SBLR	B	13.8	C	16.3
Overall	-	-	-	-
15. Rockville Pike / Hubbard Dr / Plaza Driveway -- Orange Policy Area				
Overall	B	11.2	C	25.3
18. Rockville Pike (MD 355) / Rollins Ave Extension - Unsignalized -- Orange Policy Area				
WBR	FUTURE			
NBT				
NBR				
SBT				
Overall				

Notes:

- Capacity analysis based on Highway Capacity Manual 2000 methodology for signalized and 6th for unsignalized intersections, using Synchro 11 unless otherwise noted
 - Bold roadways indicate N/S direction.
 - Red Policy Area/City of Rockville intersection analyses located in the appendix.
- *. Asterisks mark the use of the LATR HCM Average Delay Formula for a specific movement.

FUTURE BACKGROUND CONDITIONS

Fifteen (15) 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 on Figure 3-1.

- [Twinbrook Parkway](#): Planned for 49 mid-rise dwelling units and 4,089 S.F. of retail.
- [12500 Ardennes Avenue](#): Planned for 213 mid-rise dwelling units.
- [Twinbrook Quarter Phase 1A](#): Planned for 460 mid-rise dwelling units, 270,000 S.F. of office use, 12,000 S.F. of restaurant use, 17,000 S.F. of retail use, and 92,000 S.F. of supermarket use.
- [Federal Plaza West](#): Planned for 500 mid-rise dwelling units and 109,000 S.F. of retail use.
- [Wilgus](#): Planned for 604 mid-rise dwelling units, 141 single family attached dwelling units, and 15,000 S.F. of retail use.
- [2115 East Jefferson](#): Planned for 86 single family dwelling units.
- [Washington Science Center](#): Planned for 141,500 S.F. of office uses.
- [East Village at North Bethesda Gateway](#): Planned for 279 mid-rise dwelling units and 30,500 S.F. of retail use.
- [MHP Nebel Street](#): Planned for 163 mid-rise dwelling units.
- [Pike and Rose](#): Planned for 205 mid-rise dwelling units, and 520,000 S.F. of commercial and retail uses.
- [Grand Park Development](#): Planned for 790 mid-rise dwelling units and 392,500 S.F. of additional uses.
- [Evolution Labs North Bethesda](#): Planned for 709,500 S.F. of research and development uses.
- [North Bethesda Town Center](#): Planned for 697 mid-rise dwelling units, 809,000 S.F. of office use, and 153,000 S.F. of retail use.
- [Saul Centers White Flint West](#): Planned for 655 mid-rise dwelling units, 29,000 S.F. of retail use, and 175,000 S.F. of office use.

- **North Bethesda Market 2:** Planned for 470 mid-rise dwelling units, 45,000 S.F. of office use, 9,000 S.F. of retail use, and 13,500 S.F. of restaurant use.

Pipeline Trip Generation

The trip generation for the pipeline development was either obtained from the respective LATR traffic study for the development or estimated based on the LATR Guidelines methodology. The pipeline developments are forecasted to add 3,853 AM peak hour trips and 3,463 PM peak hour trips to the area road network at full capacity. The trip generation for the pipeline development is shown on Table 3-2.

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 on 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 the Pike Center proposed development. 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 2-4). The resulting background future traffic forecasts are summarized on Figure 3-3.

Vehicular Analysis

The future background peak hour average vehicle delays were calculated based on the existing lane use and traffic control shown on Figure 2-3, existing traffic signal phasing/timing obtained from the City of Rockville and MCDOT shown in Appendix D, the future background traffic forecasts shown on Figure 3-3, and the HCM 2000 and 6th Edition methodology for signalized and unsignalized intersections where available. HCM worksheets for each study intersection are presented in Appendix F.

The results of the future background analyses are summarized in Table 3-3 and indicate that of all of the study intersections in the Orange Policy Area would continue to operate within the applicable congestion standard with the exception of the westbound right turn movement from the existing gas station driveway to northbound Rockville Pike (MD 355) during the PM peak hour.

The HCM and CLV worksheets for the study intersections in the Orange Policy area, Red Policy Area, and City of Rockville are shown in Appendix F.

Table 3-2
Pike Center
Pipeline Development Trip Generation ⁽¹⁾

Land Use	LUC	Amount	Unit	ITE Trip Generation						2023 LATR Trip Generation Rate Adjustment Factors /				
				AM Peak Hour			PM Peak Hour			ADT	AM Peak Hour		PM Peak Hour	
				In	Out	Total	In	Out	Total		Auto Driver (Vehicle Trips)	Total Person Trips	Auto Driver (Vehicle Trips)	Total Person Trips
1. Twinbrook Parkway ⁽²⁾	Twinbrook			-15	-7	-22	9	11	20	119	-16	-30	16	31
2. 12500 Ardennes Avenue ⁽²⁾	Twinbrook	Net New Trips		-21	58	37	43	-7	36	663	30	67	30	67
3. Twinbrook Quarter Phase 1A ⁽⁴⁾	Rockville City	Net New Trips		461	265	726	148	293	441	3,195	662	1,010	413	615
4. Federal Plaza West ⁽³⁾	North Bethesda	Net New Trips		14	133	147	71	36	107	1,236	129	237	99	179
5. Wilgus ⁽³⁾	North Bethesda	Net New Trips		78	177	255	220	158	378	4,523	207	386	301	565
6. 2115 East Jefferson ⁽³⁾	North Bethesda	Net New Trips		-173	4	-169	-7	-150	-157	-840	-149	-216	-138	-197
7. Washington Science Center ⁽³⁾	North Bethesda	Net New Trips		15	3	18	3	13	16	123	15	23	15	22
8. East Village at North Bethesda Gateway ⁽⁵⁾	White Flint	Total To use		-70	85	16	105	-18	87	782	11	51	62	147
9. MHP-Nebel Street ⁽⁵⁾	White Flint	Net New Trips		7	23	30	20	13	32	366	47	91	51	99
10. Pike and Rose ⁽³⁾	North Bethesda	Net New Trips		2,204	1,259	3,463	2,002	2,217	4,219	36,441	2,780	4,779	3,360	5,787
11. Grand Park Development ⁽³⁾	North Bethesda	Net New Trips		108	316	424	91	-56	35	4,863	318	683	-9	170
12. Evolution Labs North Bethesda ⁽³⁾	North Bethesda	Net New Trips		538	118	656	99	522	621	7,129	538	862	509	816
13. North Bethesda Town Center	White Flint	Net New Trips		932	414	1,345	488	936	1,424	13,465	1,038	1,850	1,090	1,957
14. Saul Centers White Flint West ⁽³⁾	North Bethesda	Net New Trips		245	201	446	151	270	421	3,525	392	644	371	606
15. North Bethesda Market II ⁽³⁾	North Bethesda	Net New Trips		-81	188	107	184	-33	151	2,575	62	193	93	251
Total Pipeline Development Unbuilt New Trips				2,495	2,197	4,692	1,852	2,431	4,282	49,213	3,853	6,776	3,463	6,245

Notes:
(1) Trip Generation based on the Institute of Transportation Engineers' (ITE) Trip Generation Manual, 11th Edition.
(2) Twinbrook Policy Area
(3) North Bethesda Policy Area
(4) Rockville City Policy Area
(5) White Flint Policy Area
(6) "*" Indicates ITE Trip Generation lacks weekday ADT data for specific land use code
(7) Land Use Code does not have Weekday AM Values Present

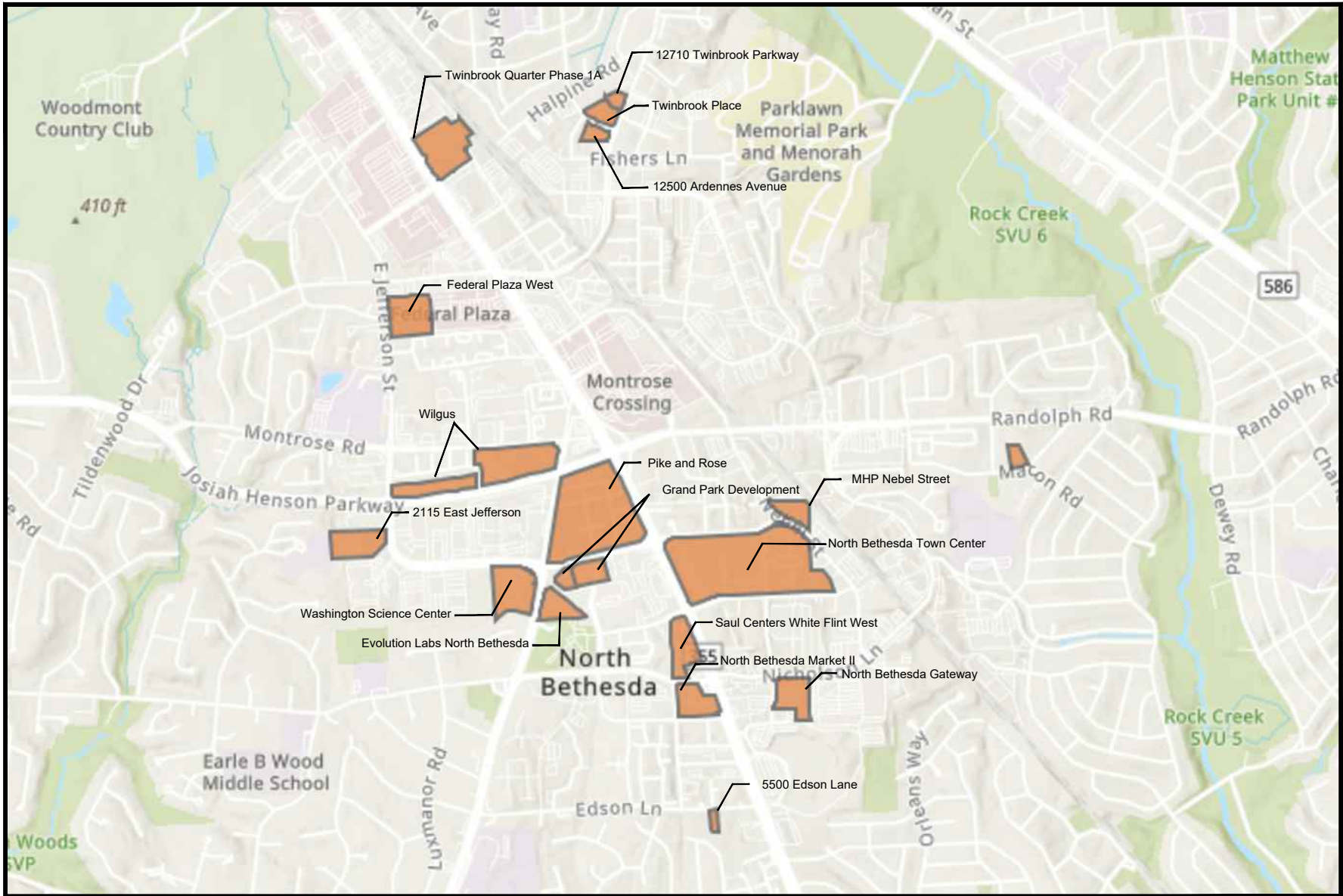
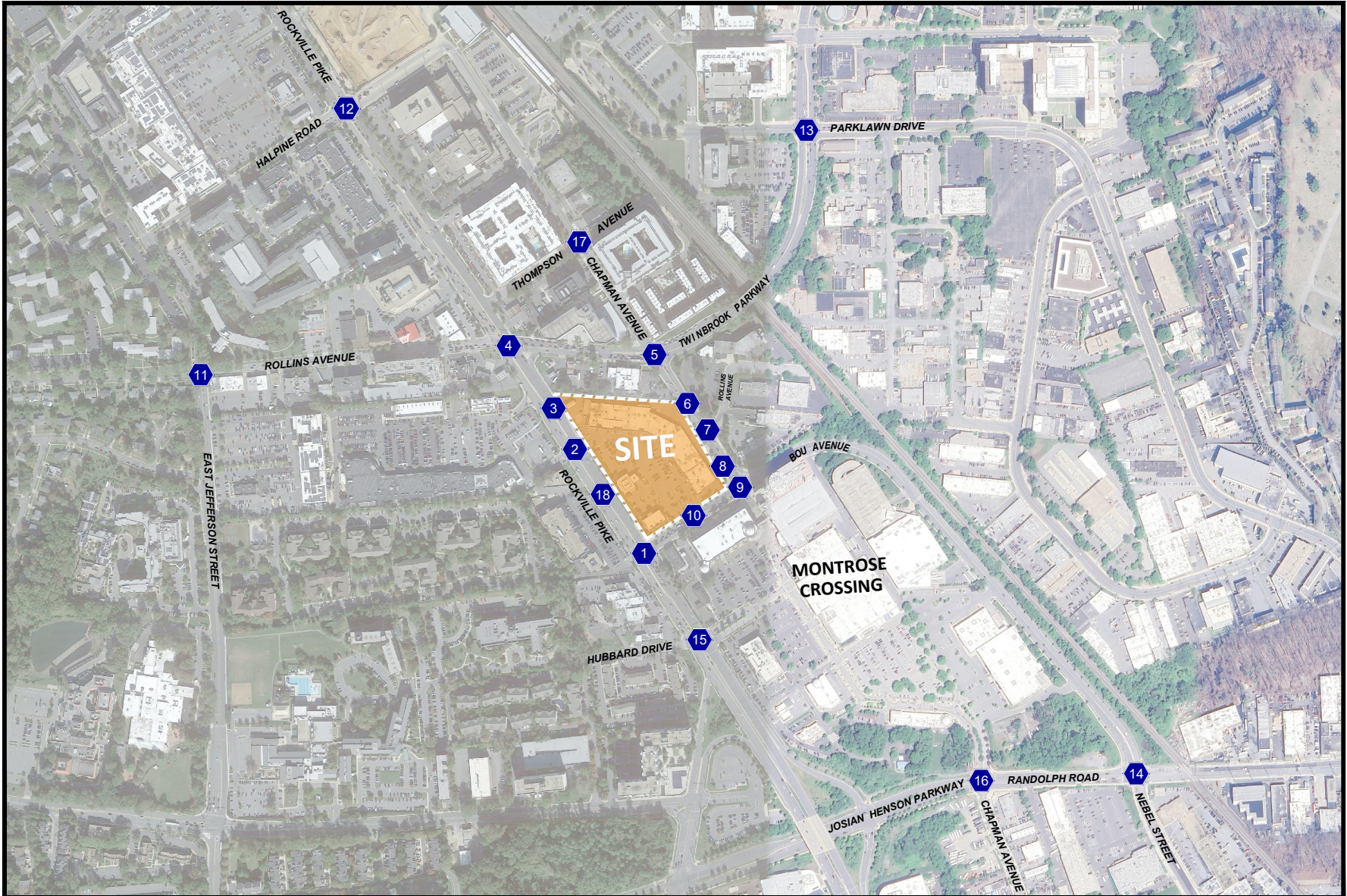


Figure 3-1
Pipeline Development
Source: MCATLAS, "Pipelines"



NORTH

Pike Center
Montgomery County, Maryland



Site Location and Study Intersections

X Study Intersection



NORTH
Pike Center

Montgomery County, Maryland



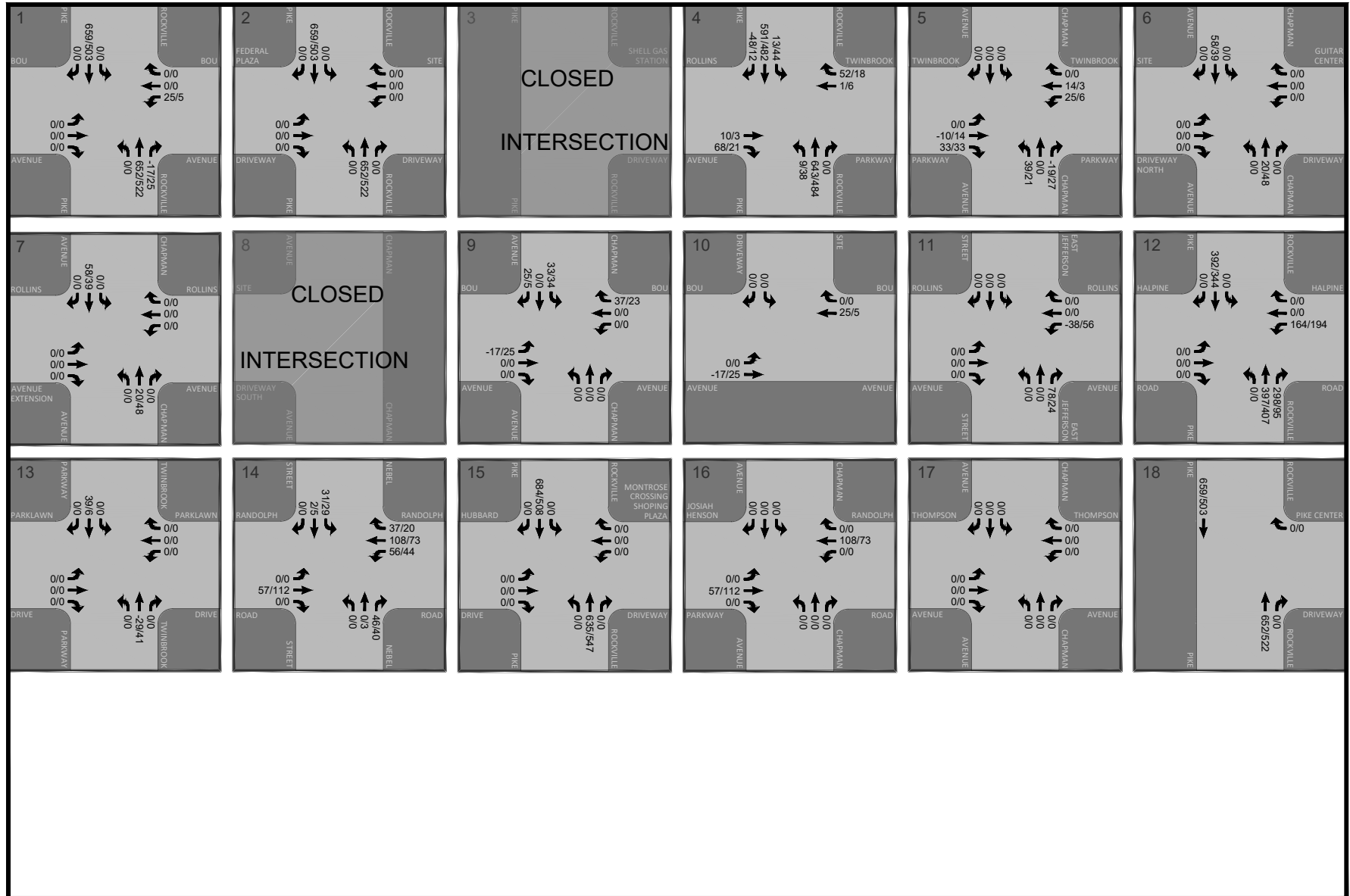


Figure 3-2
Pipeline Trip Assignments

AM PEAK HOUR
PM PEAK HOUR
000 / 000



NORTH
Pike Center
Montgomery County, Maryland

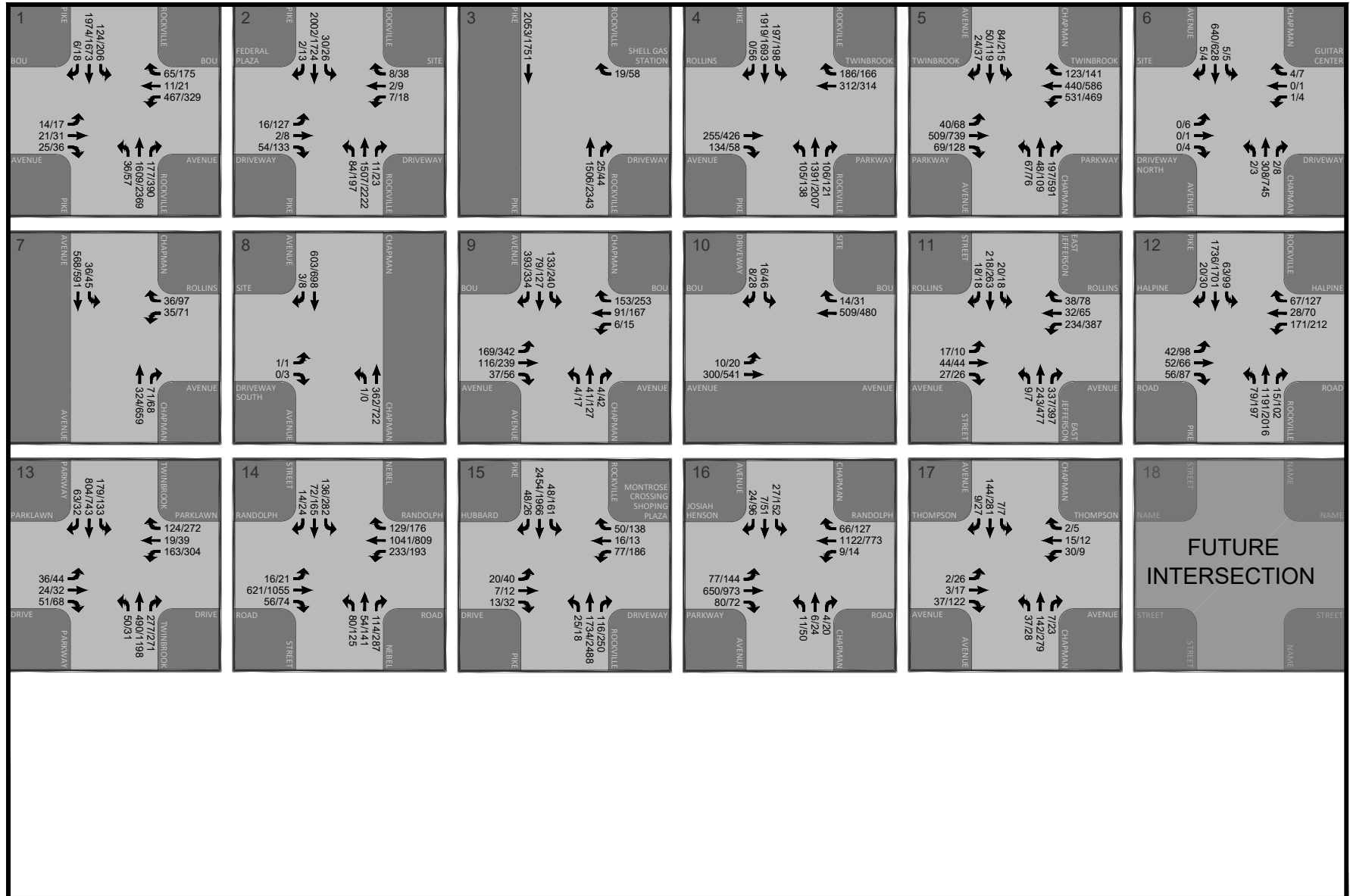


Figure 3-3
Background Traffic Volumes

AM PEAK HOUR
PM PEAK HOUR
000 / 000



NORTH
Pike Center
Montgomery County, Maryland

Table 3-3
Pike Center
Background Conditions Level of Service Summary^{1,2,3}

Approach/ Lane Group	Existing Conditions				2034 Future Conditions without Development			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)
1. Rockville Pike / Bou Avenue -- Orange Policy Area								
Overall	D	35.7	D	39.3	D	39.3	D	44.8
2. Rockville Pike / Pike Center Driveway / Federal Plaza Driveway -- Orange Policy Area								
Overall	A	9.6	C	21.7	B	10.8	C	26.9
3. Rockville Pike/ Shell Gas Station Driveway - Unsignalized -- Orange Policy Area								
WBR	B	13.8	D	33.9	C	21.5	F	67.6
NBTR	-	-	-	0.0	-	-	-	-
SBT	-	-	-	0.0	-	-	-	-
Overall	-	-	-	-	-	-	A*	1.3
6. Chapman Ave / Pike Center Driveway North - Unsignalized -- Orange Policy Area								
EBLTR	A	0.0	C	21.8	A	0.0	C	24.0
WBLTR	B	10.7	C	19.2	B	11.0	C	21.0
NBL	A	9.0	A	8.9	A	9.3	A	9.1
NBT	A	0.0	A	0.0	A	0.0	A	0.0
SBL	A	8.0	A	9.4	A	8.0	A	9.6
SBT	A	0.0	A	0.1	A	0.0	A	0.1
Overall	-	-	-	-	-	-	-	-
7. Chapman Ave / Rollins Ave - Unsignalized -- Orange Policy Area								
WBL	C	15.5	D	29.2	C	16.4	D	33.3
WBR	B	10.5	C	15.0	B	10.7	C	15.9
EBL	-	-	-	-	-	-	-	-
NBL	-	-	-	-	-	-	-	-
NBTR	-	-	-	-	-	-	-	-
SBL	A	8.2	A	9.2	A	8.2	A	9.4
SBT	A	0.2	A	0.3	A	0.2	A	0.3
Average for WBL	-	-	-	-	-	-	-	-
Average for EBL	-	-	-	-	-	-	-	-
8. Chapman Ave / Pike Center Driveway South - Unsignalized -- Orange Policy Area								
EBLR	C	18.4	C	16.9	C	19.9	C	18.0
NBL	B	11.2	A	0.0	B	11.7	A	0.0
NBT	A	0.0	-	-	A	0.0	-	-
SBT	-	-	-	-	-	-	-	-
SBR	-	-	-	-	-	-	-	-
Overall	-	-	-	-	-	-	-	-
9. Chapman Ave / Bou Ave -- Orange Policy Area								
Overall	C	25.5	C	31.8	C	26.0	C	34.3
10. Bou Ave / Pike Center Driveway - Unsignalized -- Orange Policy Area								
EBL	A	8.5	A	8.5	A	8.6	A	8.5
EBT	A	0.1	A	0.1	A	0.1	A	0.1
WBT	-	-	-	-	-	-	-	-
WBR	-	-	-	-	-	-	-	-
SBLR	B	13.8	C	16.3	B	14.0	C	16.6
Overall	-	-	-	-	-	-	-	-
15. Rockville Pike / Hubbard Dr / Plaza Driveway -- Orange Policy Area								
Overall	B	11.2	C	25.3	B	12.5	C	27.8
18. Rockville Pike (MD 355) / Rollins Ave Extension - Unsignalized -- Orange Policy Area								
WBR	FUTURE							
NBT								
NBR								
SBT								
Overall								

Notes:

1. Capacity analysis based on Highway Capacity Manual 2000 methodology for signalized and 6th for unsignalized intersections, using Synchro 11 unless otherwise noted.

2. Bold roadways indicate N/S direction.

3. Red Policy Area/City of Rockville intersection analyses located in the appendix.

*. Asterisks mark the use of the LATR HCM Average Delay

Formula for a specific movement.

TOTAL FUTURE CONDITIONS

The total future condition analyzes the impact of the proposed Pike Center development, which includes the anticipated removal of 40,000 S.F. of shopping plaza in Phase 1 while keeping approximately 41,000 S.F. in operation. The approximately 40,000 S.F. is anticipated to be replaced with an approximately 44,844 S.F. shopping plaza with 290 mid-rise dwelling units. During Phase 2, the remaining 41,000 S.F. from Phase 1 will be replaced with approximately 45,196 S.F. of shopping plaza and 470 high-rise dwelling units. The total buildout for Pike Center is anticipated to equate to 90,000 S.F. of shopping plaza, 470 high-rise dwelling units, and 290 mid-rise dwelling units.

Trip Generation

Trip generation calculations for Pike Center were based on ITE 11th Edition trip generation rates and the North Bethesda Policy Area adjustment factors and non-auto mode split percentages provided in the LATR Guidelines. The trip generation summary for phases 1 and 2 is shown in Tables 3-4 and 3-5.

Pike Center, as shown in the Multimodal Trip Generation section of Table 3-4, in Phase 1, is expected to generate 595 AM peak hour and 1,245 PM peak hour total person trips, and 311 AM peak hour and 646 PM peak hour total auto-driver (vehicle) trips from the proposed uses, based on the LATR Guidelines methodology for calculating person and vehicle trips. The existing uses generate 192 AM peak hour and 578 PM peak hour person trips, and 99 AM peak hour and 298 PM peak hour vehicle trips. Therefore, the proposed re-development in Phase 1 will generate 403 AM peak hour and 667 PM peak hour new person trips and 212 AM peak hour and 348 PM peak hour new vehicle trips. Pass-by trip generation estimates were based on ITE 11th Edition rates and are presented in Table 3-4. As shown, 106 inbound and 115 outbound trips were assigned to the site driveways from MD 355 for the PM peak hour.

Phase 2 of the proposed re-development is expected to generate 804 AM peak hour and 1,514 PM peak hour total person trips, and 423 AM and 790 PM Peak hour total auto-driver (vehicle) trips from the proposed uses. Therefore, after Phase 2 the proposed re-development is expected to generate 612 AM peak hour and 936 PM peak hour total person trips, and 324 AM peak hour and 492 PM peak hour total auto-driver (vehicle) trips. Pass-by trip generation volumes were based on ITE 11th Edition rates and are presented in Table 3-5, 110 inbound and 120 outbound trips were rerouted for the PM peak hour.

Site Trip Distributions

The peak hour site trip distributions were developed based on assumptions documented in the LATR Guidelines and confirmed through the scoping process. (See Appendix A). The site vehicle trips were assigned to the area road network based on the following distributions:

<u>Direction – To/From</u>	<u>Percent</u>
Randolph Road	6
Rockville Pike (MD 355) North of Twinbrook Parkway	34
Montrose Road/Josiah Henson Parkway	39
Rockville Pike (MD 355) South of Randolph Road	12
MD 187 South of Josiah Henson Parkway	9
<u>Total</u>	<u>100</u>

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 Figures 3-4 and 3-5. Pass-by volumes were assumed to be drawn from Rockville Pike (MD 355) with distributions based on the location of on-site parking facilities and regional distributions. Figures displaying pass-by intersection volumes can be found in Appendix G.

Total Future Forecasts

The total future traffic forecasts represent future conditions with Pike Center. The AM and PM peak hour total future traffic forecasts were developed by adding the proposed new site traffic assignments, shown on Figure 3-4, to the future background traffic forecasts, shown on Figure 3-3. The AM and PM total future traffic forecasts are shown on Figures 3-6 and 3-7.

The total future traffic forecasts account for the existing traffic that would be expected to use the new Rollins Avenue extension through the site. Although this roadway is planned to promote pedestrian movements and traffic calming features, a minor portion of existing traffic was assumed to use this route given the direct connection to Rockville Pike (MD 355) and the intent to better distribute traffic over the road network. Traffic adjustments are contained in Appendix H.

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 3-8 and 3-9, existing traffic signal phasing/timing obtained from the City of Rockville and MCDOT shown in Appendix D, the total future traffic forecasts, and the HCM 2000 and 6th Edition methodology for signalized and unsignalized intersections where available. HCM worksheets for each study intersection are presented in Appendix I. The results of the total future analyses are summarized in Table 3-6.

Under total future conditions, the study intersections in the Orange Policy Area are expected to operate within the applicable congestion standard in all cases, except for:

- Certain unsignalized intersection movements are expected to operate beyond capacity based on the HCM methodology but would operate within acceptable levels based on the average delay.

At the time of Preliminary Plan/Site Plan, the Applicant will work with Planning Staff and MCDOT to identify what off-site improvements are feasible and within the Proportionality Guide Calculation.

The HCM and CLV worksheets for the intersections in the City of Rockville, Orange Policy Area, and Red Policy Area are shown in Appendix I.

Table 3-4
Pike Center
Phase 1 Trip Generation ⁽¹⁾

Land Use	LUC	Amount	Unit	ITE Trip Generation						Montgomery County Trip Generation			
				AM Peak Hour			PM Peak Hour			AM Peak Hour		PM Peak Hour	
				In	Out	Total	In	Out	Total	Auto Driver	Person Trips	Auto Driver	Person Trips
Existing Uses													
Shopping Plaza -No Supermarket (40-150K)	821	81,007	SF	87	53	140	206	214	420	99	192	298	578
							(82)	(86)	(168)			(119)	(231)
							<u>124</u>	<u>128</u>	<u>252</u>			<u>179</u>	<u>347</u>
Existing Total:													
Phase 1 Development Plan													
Existing Development (To Be Demolished)													
Shopping Plaza -No Supermarket (40-150K)		40,007	SF										
Remainder		41,000	SF										
New Development (To Be Built)													
New Shopping Plaza -Yes Supermarket (40-150K)	821	44,844	SF										
Remainder still in operation		41,000	SF										
Total Phase 1 Development													
Multifamily Housing (Mid-Rise)	221	290	DU	27	89	116	69	44	113	96	178	94	175
Shopping Plaza -Yes Supermarket (40-150K)	821	85,844	SF	188	115	303	373	404	777	215	417	552	1,070
							(149)	(162)	(311)			(221)	(428)
							<u>224</u>	<u>243</u>	<u>466</u>			<u>331</u>	<u>642</u>
Retail Subtotal:													
Phase 1 Total Trips (with Pass-by)				<u>215</u>	<u>204</u>	<u>419</u>	<u>293</u>	<u>287</u>	<u>580</u>	<u>311</u>	<u>595</u>	<u>425</u>	<u>817</u>
Phase 1 Total Trips				<u>215</u>	<u>204</u>	<u>419</u>	<u>442</u>	<u>449</u>	<u>891</u>	<u>311</u>	<u>595</u>	<u>646</u>	<u>1,245</u>
Phase 1 New Trips (with Pass-by)				128	151	279	169	159	328	212	403	246	470
Phase 1 Net New Trips				128	151	279	236	235	471	212	403	348	667

Notes: (1) Trip Generation based on the Institute of Transportation Engineers' (ITE) Trip Generation Manual, 11th Edition.

Pass-by Site Trips

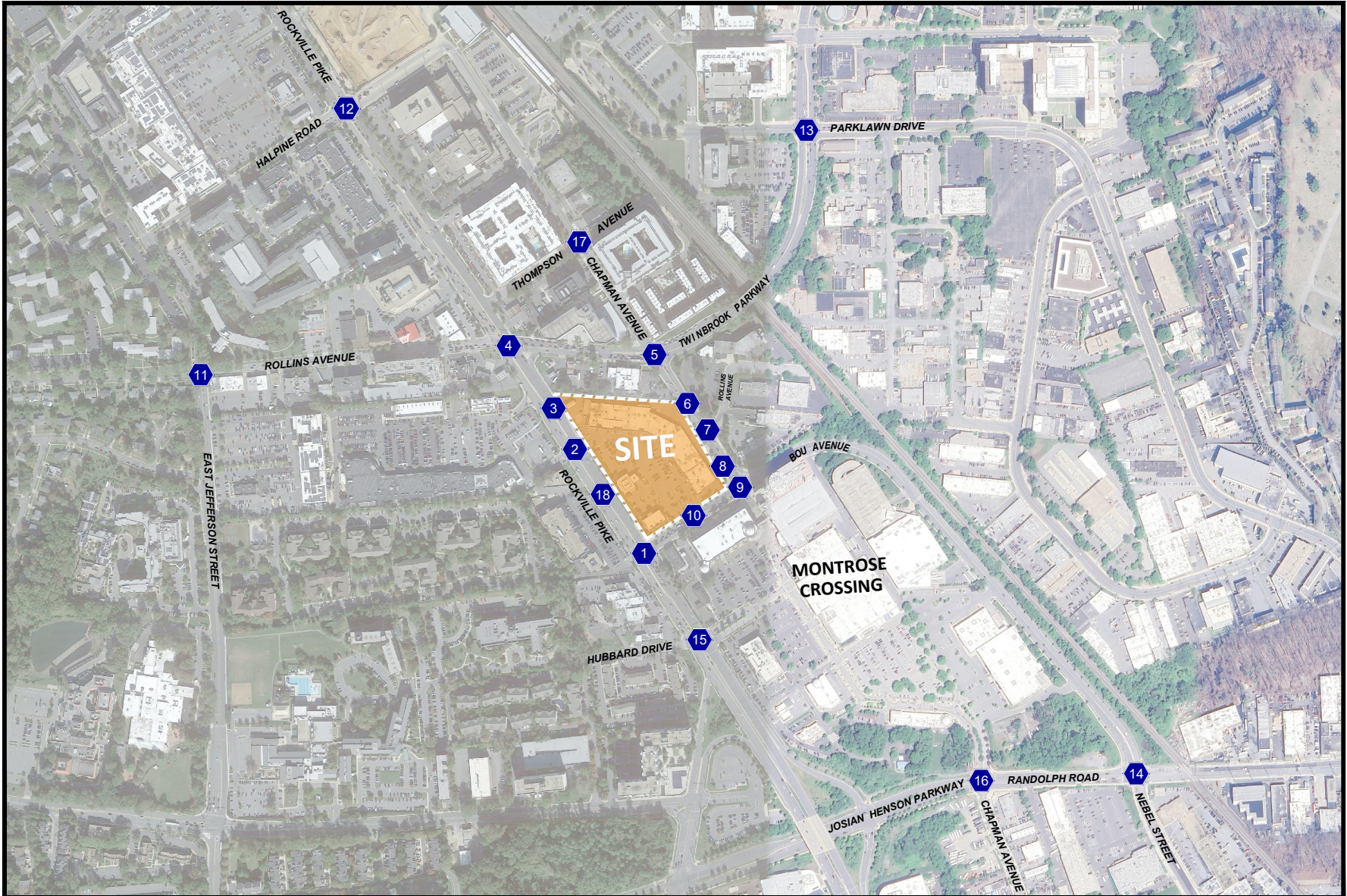
Land Use	LUC	Amount	Unit	PM Peak Hour		
				In	Out	Auto Driver Total
Existing Uses						
Shopping Plaza -No Supermarket (40-150K)	821	81,007	SF	146	152	298
				(58)	(61)	(119)
Existing Total:				<u>88</u>	<u>91</u>	<u>179</u>
Total Phase 1 Development						
Multifamily Housing (Mid-Rise)	221	290	DU	57	37	94
Shopping Plaza -Yes Supermarket (40-150K)	821	85,844	SF	265	287	552
				(106)	(115)	(221)
Retail Subtotal:				<u>159</u>	<u>172</u>	<u>331</u>
Phase 1 Total Pass-by Site Trips				<u>216</u>	<u>209</u>	<u>425</u>

Table 3-5
Pike Center
Phase 2 Trip Generation ⁽¹⁾

Land Use	LUC	Amount	Unit	ITE Trip Generation						Montgomery County Trip Generation				
				AM Peak Hour			PM Peak Hour			AM Peak Hour		PM Peak Hour		
				In	Out	Total	In	Out	Total	Auto Driver	Person Trips	Auto Driver	Person Trips	
Existing Uses														
Shopping Plaza -No Supermarket (40-150K)	821	81,007	SF	87	53	140	206	214	420	99	192	298	578	
							(82)	(86)	(168)			(119)	(231)	
							<u>124</u>	<u>128</u>	<u>252</u>			<u>179</u>	<u>347</u>	
Existing Total:														
Existing Phase 1 Development														
Total Shopping Plaza -Yes Supermarket (40-150K) - (Phase 1)	821	85,844	SF											
Remainder from Phase 1 (To Be Demolished)		41,000	SF											
Phase 1 remainder still in operation		<u>44,844</u>	SF											
New Retail Development (To Be Built)														
New Shopping Plaza -No Supermarket (40-150K)	821	<u>45,156</u>	SF											
Total Buildout Retail														
Shopping Plaza -Yes Supermarket (40-150K)	821	90,000	SF	197	121	318	388	421	809	226	438	575	1,114	
							(155)	(168)	(324)			(230)	(446)	
							<u>233</u>	<u>253</u>	<u>485</u>			<u>345</u>	<u>668</u>	
Retail Subtotal:														
Existing Phase 1 Development														
Multifamily Housing (Mid-Rise) - (Phase 1)	221	290	DU	27	89	116	69	44	113	96	178	94	175	
New Residential Development (To Be Built)														
Multifamily Housing (High-Rise)	222	470	DU	32	90	122	90	55	145	101	188	121	225	
<i>Phase 2 Total Trips (with Pass-by)</i>				<u>256</u>	<u>300</u>	<u>556</u>	<u>392</u>	<u>352</u>	<u>744</u>	<u>423</u>	<u>804</u>	<u>560</u>	<u>1,068</u>	
<i>Phase 2 Total Trips</i>				<u>256</u>	<u>300</u>	<u>556</u>	<u>547</u>	<u>521</u>	<u>1,068</u>	<u>423</u>	<u>804</u>	<u>790</u>	<u>1,514</u>	
Phase 2 New Trips (with Pass-by)				169	247	416	268	224	492	324	612	381	722	
Phase 2 Net New Trips				169	247	416	341	307	648	324	612	492	936	

Notes: (1) Trip Generation based on the Institute of Transportation Engineers' (ITE) Trip Generation Manual, 11th Edition.

Land Use	LUC	Amount	Unit	PM Peak Hour		
				In	Out	Auto Driver Total
Existing Uses						
Shopping Plaza -No Supermarket (40-150K)	821	81,007	SF	146	152	298
				(58)	(61)	(119)
				<u>88</u>	<u>91</u>	<u>179</u>
Existing Total:						
Total Buildout Retail						
Shopping Plaza -Yes Supermarket (40-150K)	821	90,000	SF	276	299	575
				(110)	(120)	(230)
				<u>166</u>	<u>179</u>	<u>345</u>
Retail Subtotal:						
Existing Phase 1 Development						
Multifamily Housing (Mid-Rise) - (Phase 1)	221	290	DU	57	37	94
New Residential Development (To Be Built)						
Multifamily Housing (High-Rise)	222	470	DU	75	46	121
<i>Phase 2 Total Trips</i>				<u>298</u>	<u>262</u>	<u>560</u>



Site Location and Study Intersections

X Study Intersection



NORTH
Pike Center

Montgomery County, Maryland

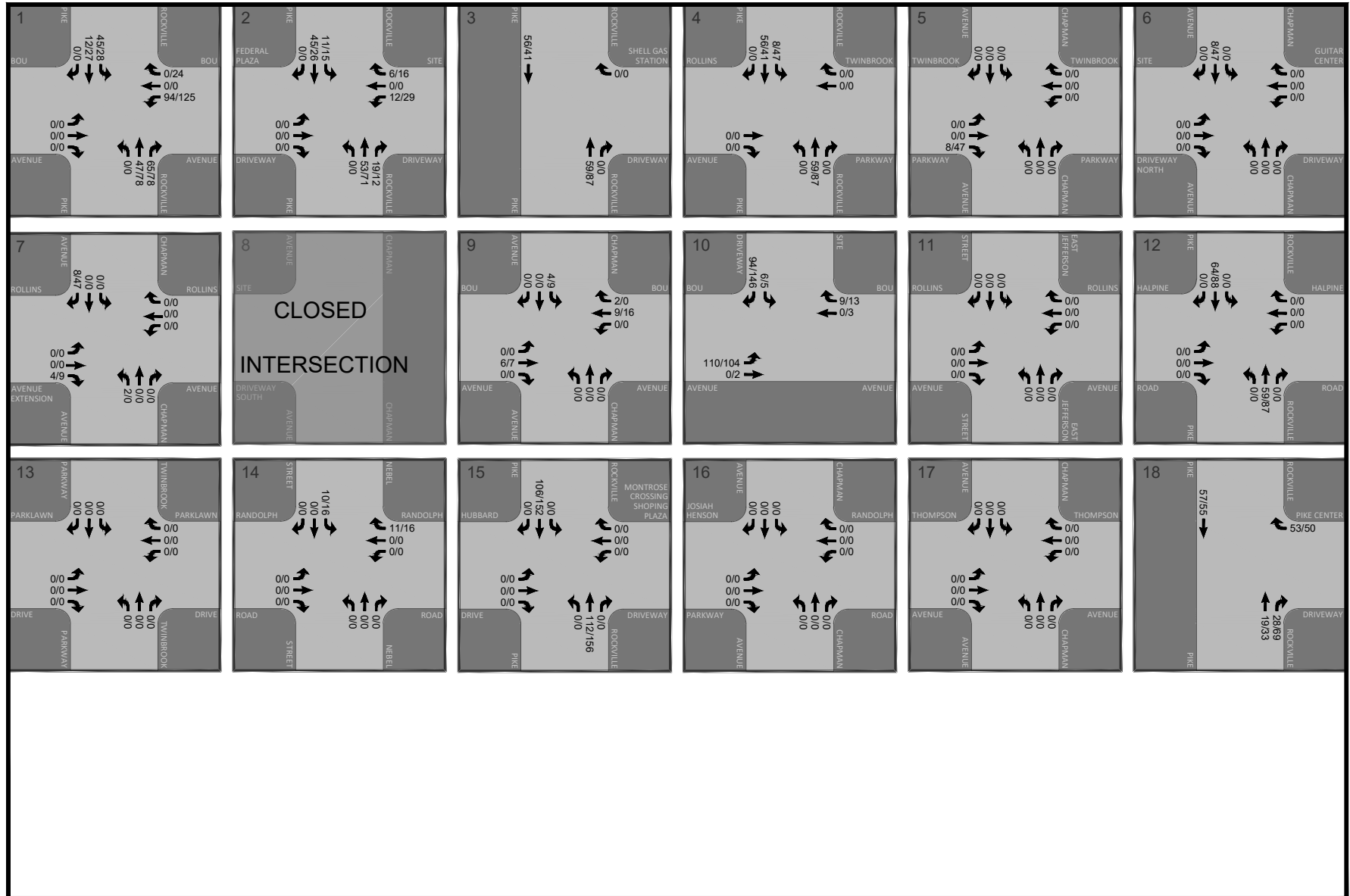


Figure 3-4
Phase 1 Site Trip Assignments

AM PEAK HOUR
PM PEAK HOUR
000 / 000



NORTH
Pike Center
Montgomery County, Maryland

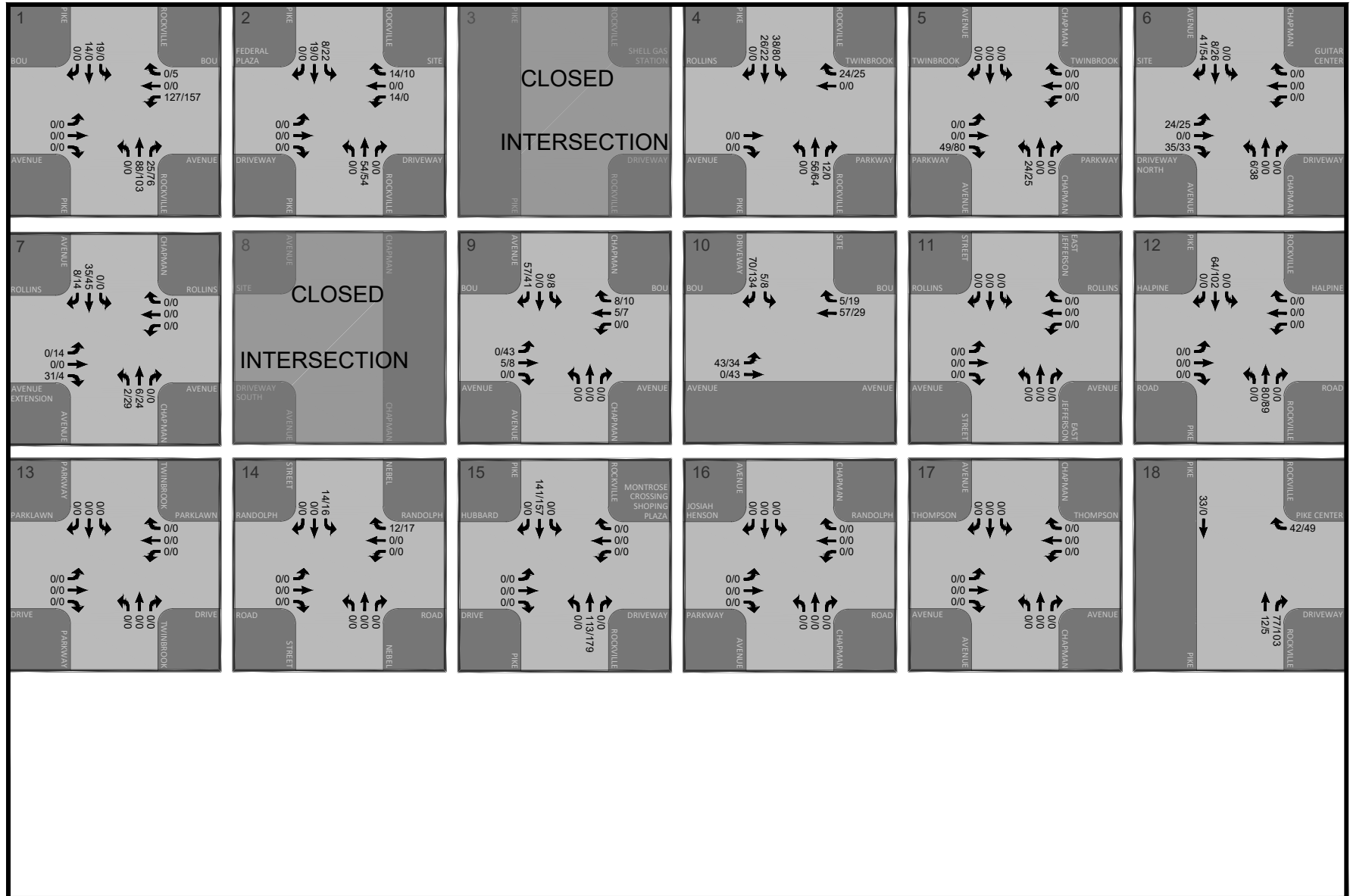


Figure 3-5
Phase 2 Site Trip Assignments

AM PEAK HOUR
PM PEAK HOUR
000 / 000



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Pike Center
Montgomery County, Maryland

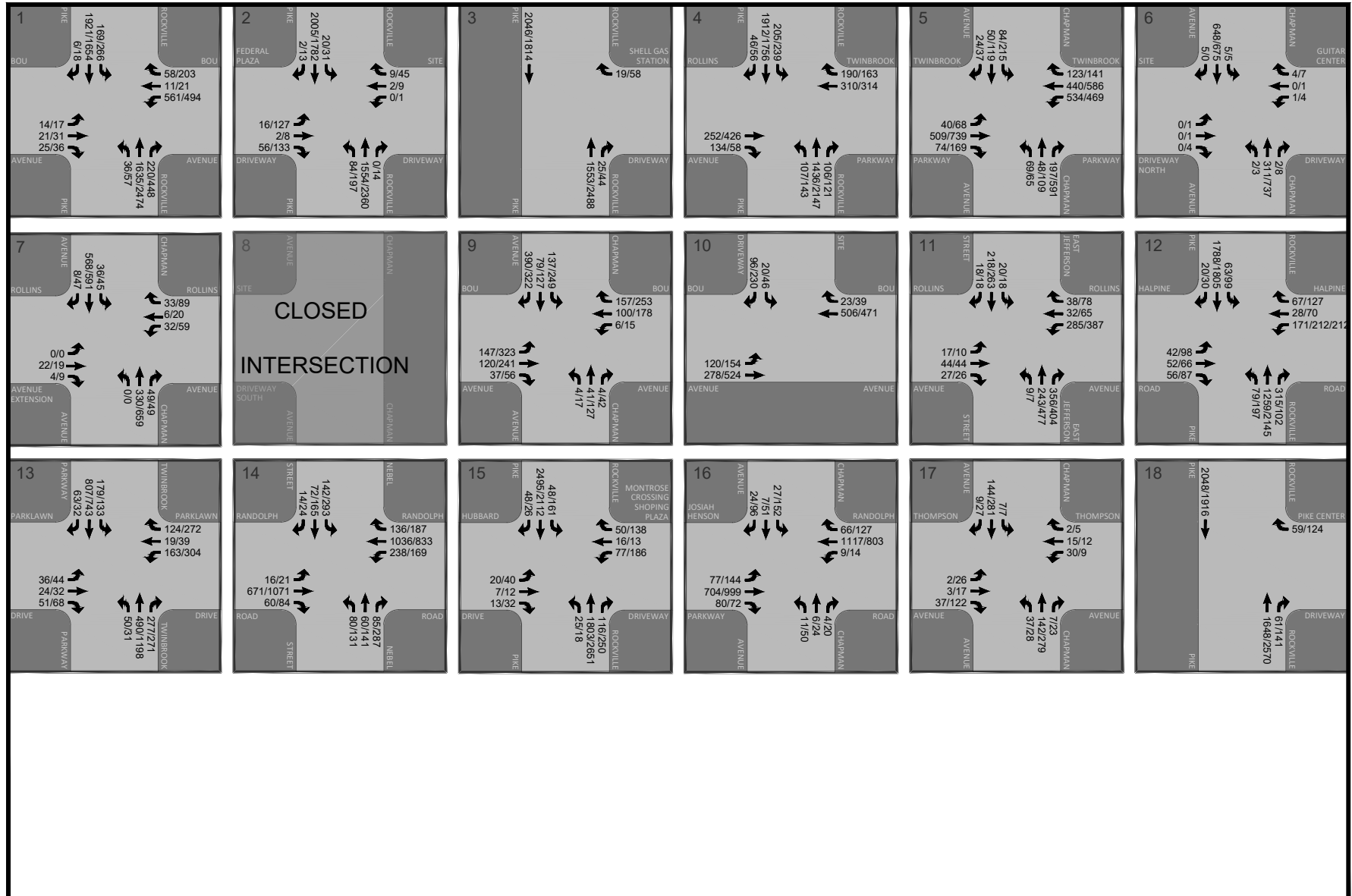


Figure 3-6
Phase 1 Total Future Traffic Forecasts

AM PEAK HOUR
PM PEAK HOUR
000 / 000



NORTH
Pike Center
Montgomery County, Maryland

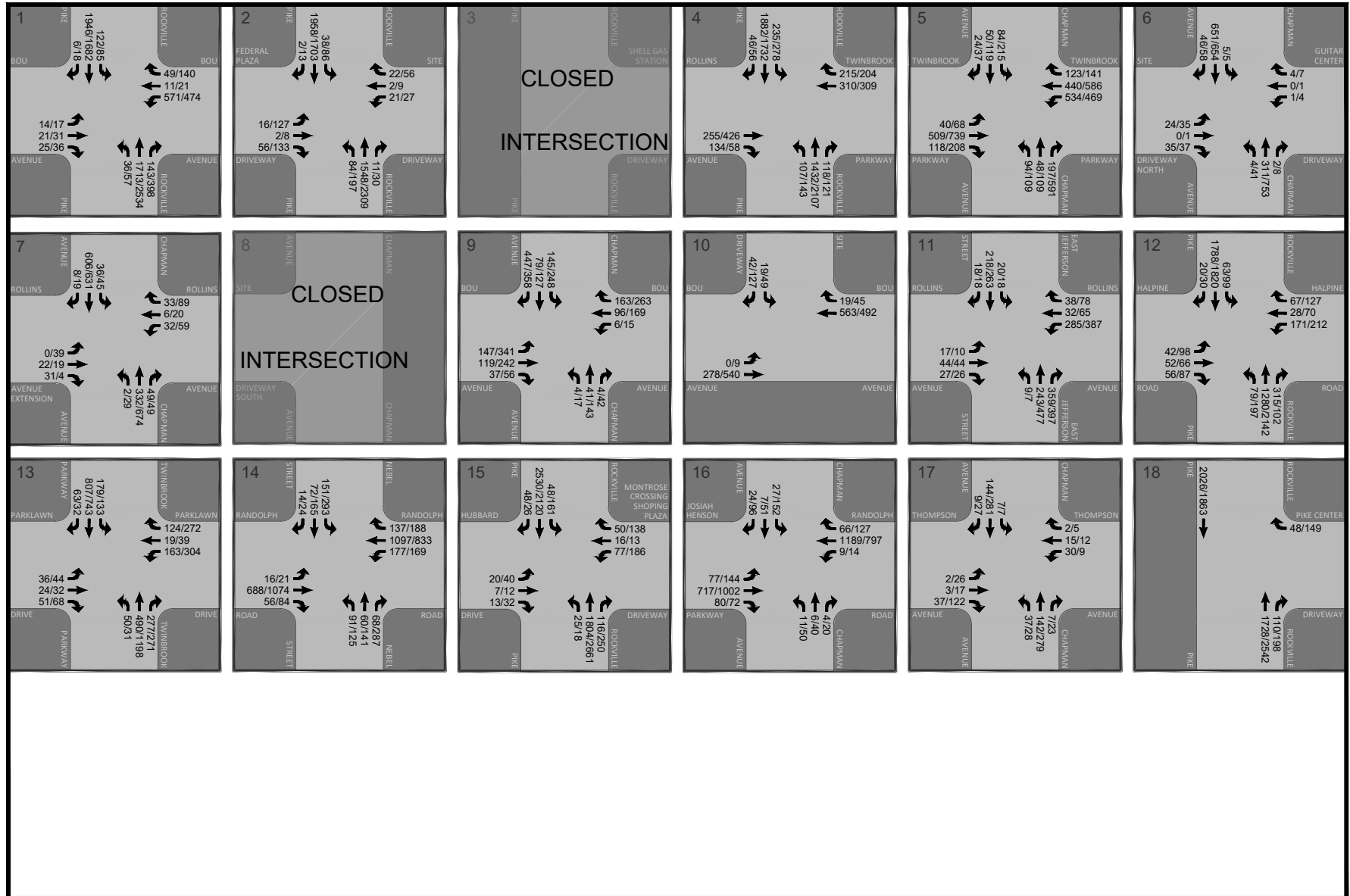


Figure 3-7
Phase 2 Total Future Traffic Forecasts

AM PEAK HOUR
PM PEAK HOUR
000 / 000



NORTH
Pike Center
Montgomery County, Maryland



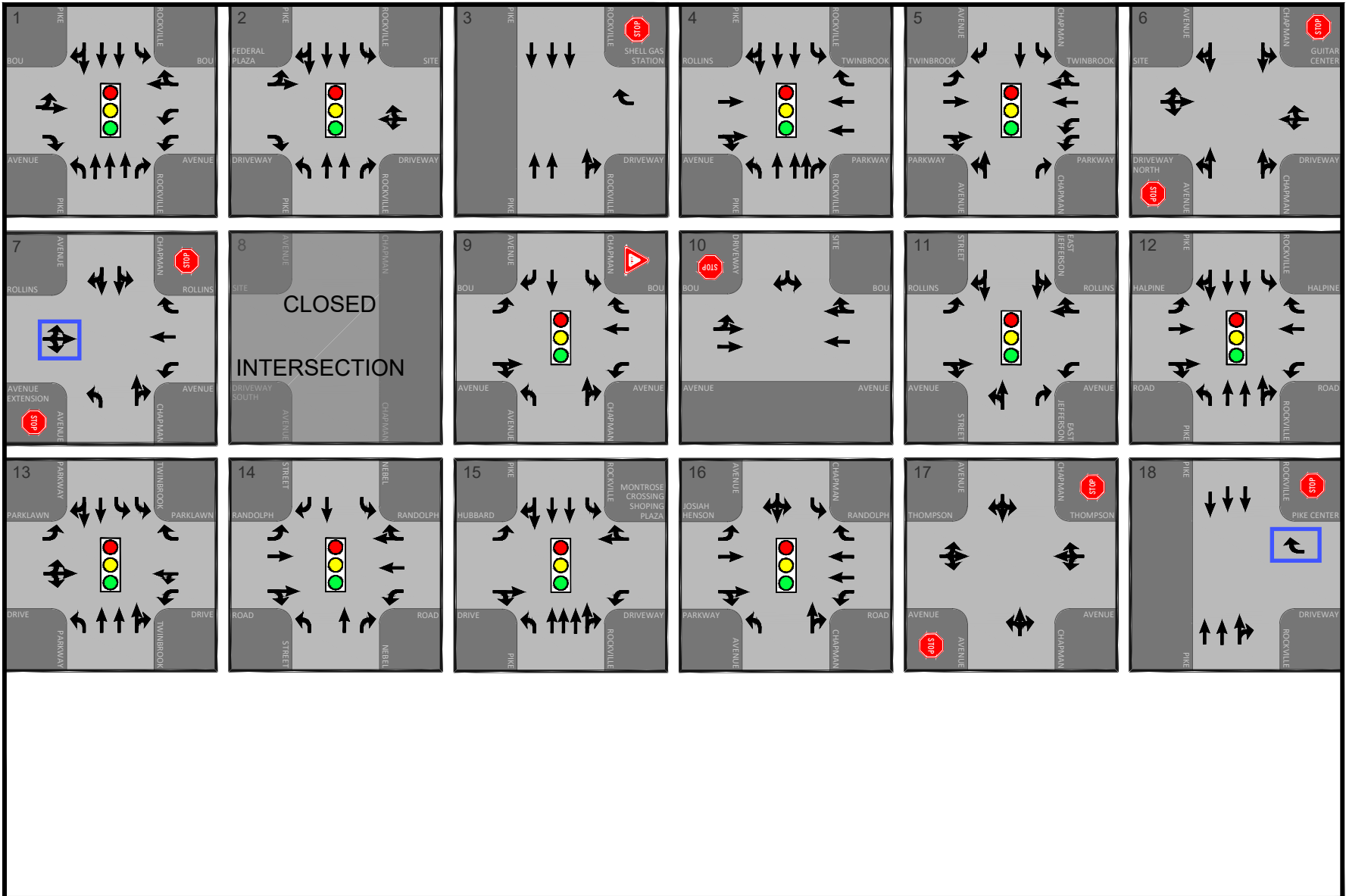



Figure 3-8
Phase 1 Lane Use and Traffic Control

 Proposed Improvements



NORTH
Pike Center

Montgomery County, Maryland

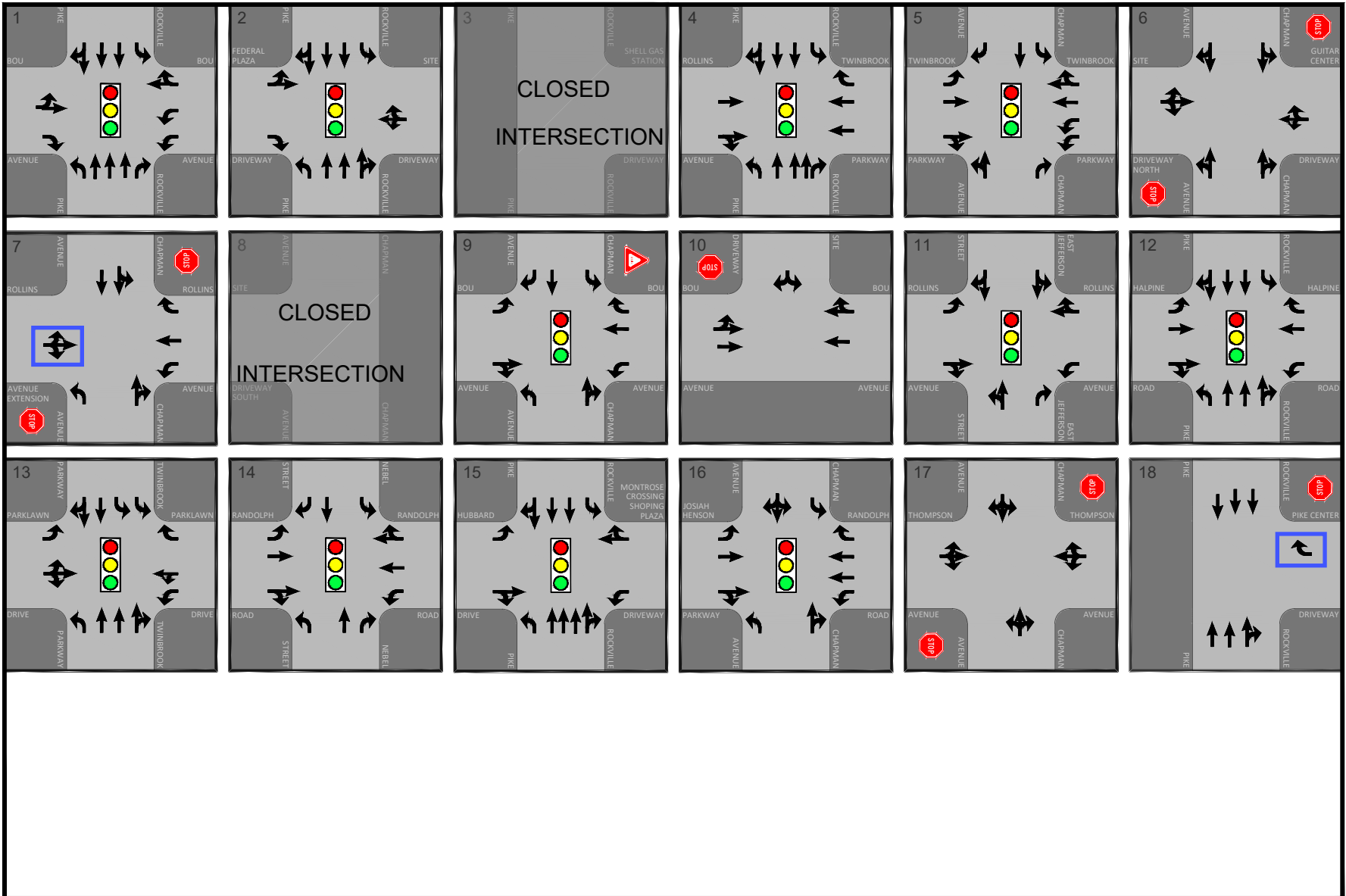



Figure 3-9
Phase 2 Lane Use and Traffic Control

 Proposed Improvements



NORTH
Pike Center
Montgomery County, Maryland

Table 6-1
Pike Center
Total Future Level of Service Summary^{1,2,3}

Approach/ Lane Group	Existing Conditions				2034 Future Conditions without Development				Phase 1 2034 Future Conditions with Development				Phase 2 2039 Future Conditions with Development			
	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. Rockville Pike / Bou Avenue -- Orange Policy Area																
Overall	D	35.7	D	39.3	D	39.3	D	44.8	D	43.5	E	66.0	D	44.3	E	60.3
2. Rockville Pike / Pike Center Driveway / Federal Plaza Driveway -- Orange Policy Area																
Overall	A	9.6	C	21.7	B	10.8	C	26.9	A	9.8	C	26.4	B	12.3	C	34.7
3. Rockville Pike/ Shell Gas Station Driveway - Unsignalized -- Orange Policy Area																
WBR	B	13.8	D	33.9	C	21.5	F	67.6	C	22.2	F	84.8	N/A			
NBTR	-	-	-	0.0	-	-	-	-	-	-	-	-				
SBT	-	-	-	0.0	-	-	-	-	-	-	-	-				
Overall	-	-	-	-	-	-	A*	1.3	-	-	A*	1.6				
6. Chapman Ave / Pike Center Driveway North - Unsignalized -- Orange Policy Area																
EBLTR	A	0.0	C	21.8	A	0.0	C	24.0	A	0.0	C	22.6	C	19.2	E	35.9
WBLTR	B	10.7	C	19.2	B	11.0	C	21.0	B	11.0	C	21.5	B	11.3	D	26.3
NBL	A	9.0	A	8.9	A	9.3	A	9.1	A	9.3	A	9.2	A	9.5	A	9.6
NBT	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.5
SBL	A	8.0	A	9.4	A	8.0	A	9.6	A	8.0	A	9.5	A	8.0	A	9.6
SBT	A	0.0	A	0.1	A	0.0	A	0.1	A	0.0	A	0.1	A	0.0	A	0.1
Overall	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7. Chapman Ave / Rollins Ave - Unsignalized -- Orange Policy Area																
WBL	C	15.5	D	29.2	C	16.4	D	33.3	C	20.2	F	56.7	C	21.9	F	84.1
WBR	B	10.5	C	15.0	B	10.7	C	15.9	B	11.7	C	19.9	B	11.8	C	21.6
EBL	-	-	-	-	-	-	-	-	C	21.9	D	32.4	C	17.5	F	249.9
NBL	-	-	-	-	-	-	-	-	A	0.0	A	0.0	A	8.8	A	9.1
NBTR	-	-	-	-	-	-	-	-	-	-	-	-	A	0.0	A	0.0
SBL	A	8.2	A	9.2	A	8.2	A	9.4	A	8.2	A	9.4	A	8.2	A	9.4
SBT	A	0.2	A	0.3	A	0.2	A	0.3	A	0.2	A	0.3	A	0.2	A	0.4
Average for WBL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A*	4.0
Average for EBL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A*	5.2
8. Chapman Ave / Pike Center Driveway South - Unsignalized -- Orange Policy Area																
EBLR	C	18.4	C	16.9	C	19.9	C	18.0	N/A							
NBL	B	11.2	A	0.0	B	11.7	A	0.0								
NBT	A	0.0	-	-	A	0.0	-	-								
SBT	-	-	-	-	-	-	-	-								
SBR	-	-	-	-	-	-	-	-								
Overall	-	-	-	-	-	-	-	-								
9. Chapman Ave / Bou Ave -- Orange Policy Area																
Overall	C	25.5	C	31.8	C	26.0	C	34.3	C	26.0	C	33.2	C	26.0	C	33.8
10. Bou Ave / Pike Center Driveway - Unsignalized -- Orange Policy Area																
EBL	A	8.5	A	8.5	A	8.6	A	8.5	A	9.1	A	9.1	A	0.0	A	8.6
EBT	A	0.1	A	0.1	A	0.1	A	0.1	A	0.4	A	0.6	-	-	A	0.1
WBT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WBR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SBLR	B	13.8	C	16.3	B	14.0	C	16.6	B	14.2	C	24.5	B	12.8	C	15.5
Overall	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15. Rockville Pike / Hubbard Dr / Plaza Driveway -- Orange Policy Area																
Overall	B	11.2	C	25.3	B	12.5	C	27.8	B	12.7	C	28.2	B	12.8	C	29.2
18. Rockville Pike (MD 355) / Rollins Ave Extension - Unsignalized -- Orange Policy Area																
WBR	FUTURE								D	26.5	F	292.7	D	28	F	417.7
NBT									-	-	-	-	-	-	-	
NBR									-	-	-	-	-	-	-	
SBT									-	-	-	-	-	-	-	
Overall									-	-	-	-	-	-	A*	4.6

Notes:
1. Capacity analysis based on Highway Capacity Manual 2000 methodology for signalized and 6th for unsignalized intersections, using Synchro 11 unless otherwise noted.
2. Bold roadways indicate N/S direction.
3. Red Policy Area/City of Rockville intersection analyses located in the appendix.
*. Asterisks mark the use of the LATR HCM Average Delay Formula for a specific movement.

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

OVERVIEW

This section of the Report 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 the site location within an Orange Policy Area.

The PLOC 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 property. Field work was performed in March and May 2024, and a field verification in June 2024, 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 within the applicable 500 feet from the site boundary and Figure 4-2 shows the current PLOC within the applicable 1,000 feet from the site boundary. Tables 4-1 and 4-2 list the PLOC Value and comfort level along with conditions and characteristics for sidewalks and crosswalks that affect the PLOC.

Based on a review of the segments, a considerable number have an uncomfortable or undesirable rating, especially those along the west side of Rockville Pike (MD 355), which is off-site. Widening the buffer between the vehicle travel lane and the sidewalk would improve the rating. One segment on the north side of Hubbard Drive west of Rockville Pike (MD 355) does not currently have a sidewalk, building one would improve the PLOC.

At the time of Preliminary Plan/Site Plan, the Applicant will work with Planning Staff and MCDOT to identify what improvements are feasible for off-site improvements and within the Proportionality Guide Calculation.

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 streetlights in June 2024 verified that all streetlights within the study area are operational. The Applicant will work with Staff at the time of Preliminary Plan/Site Plan to identify improvements, if needed.

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 4-3 lists the ramp and the location. The table lists if detectable warning strips are provided, the ramp width, and landing area for each ramp.

At the time of Preliminary Plan/Site Plan the non-compliant ramps will be reviewed with staff to determine those that should be fixed to meet mitigation requirements.

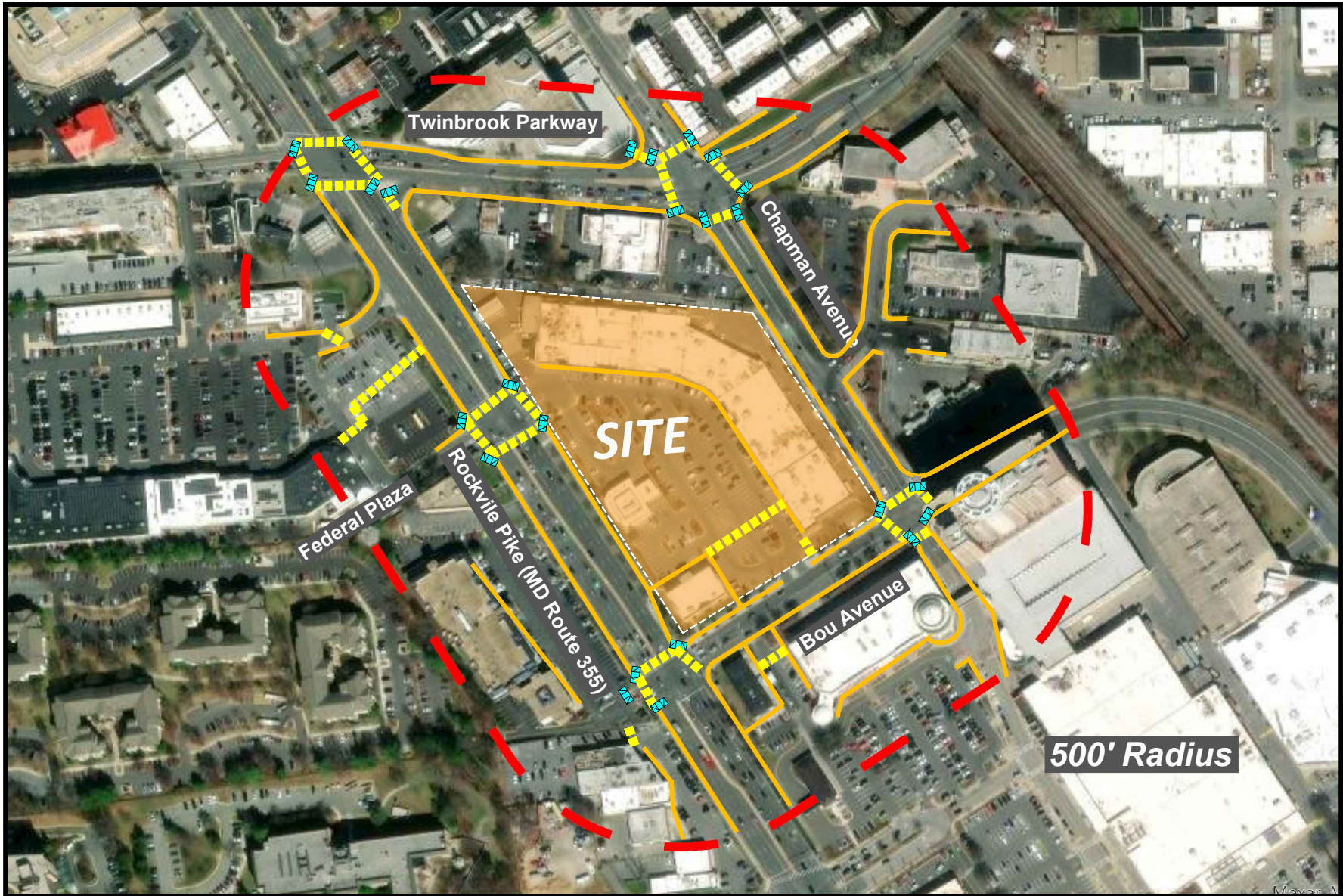


Figure 4-1
Existing Pedestrian Facilities

- ADA Ramp
- Pedestrian Crosswalk
- Sidewalk



NORTH
Pike Center
Montgomery County, Maryland

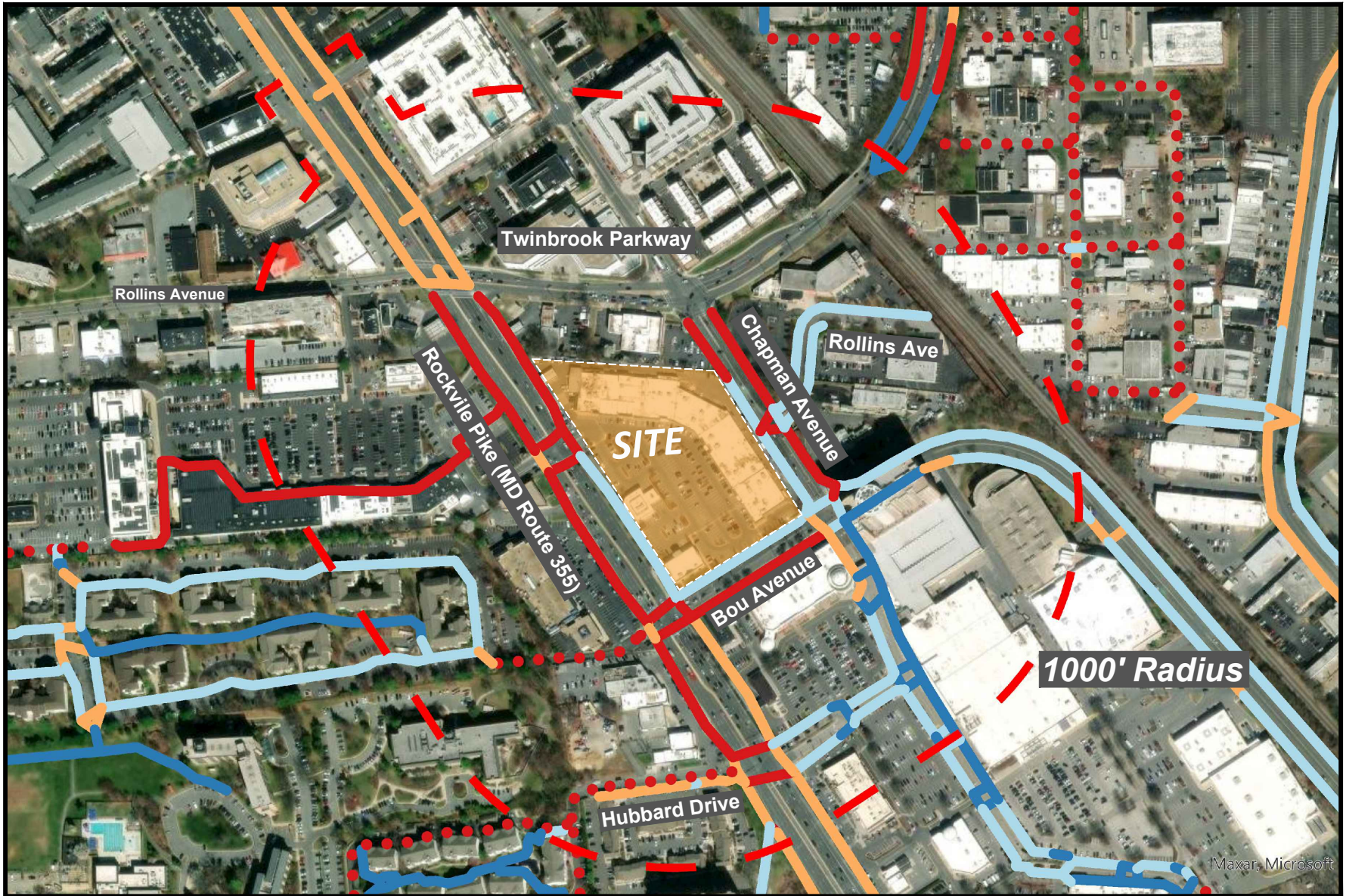


Figure 4-2
Existing Pedestrian Level of Comfort (PLOC)
Source: Montgomery County



Pike Center
Montgomery County, Maryland

Table 4-1
Pike Center
Sidewalk and Pathway Pedestrian Level of Comfort

Pathways															
	Location	ID Number	Posted Speed Limit (mph)	Linear Length (ft)	Surface Type	Pathway Width	Buffer Width	Multiple Cracks in one section	Severe Spalling	Obstructions (less than 36" opening)	Obstruction Type	Missing Section Lengths (approx.)	Comfort Levels (Target: 2 - Somewhat Comfortable)	Recommendation	Improved Comfort Level
1	Bou Avenue between Rockville + Chapman - North	201253	25	465	Concrete	> 8 ft	5-8 ft	No	No	No	N/A	N/A	Somewhat comfortable (2)	N/A	N/A
2	Bou Avenue between Montrose Shopping Center Entrances - North	201259	30	599	Asphalt	5-8 ft	5-8 ft	Around tree roots	No	No	N/A	N/A	Somewhat comfortable (2)	N/A	N/A
3	Bou Avenue between Montrose Shopping Center N Entrance and Chapman Avenue -	201261	25	303	Asphalt	> 8 ft	0-2 ft	No	No	No	N/A	N/A	Somewhat comfortable (2)	N/A	N/A
4	Bou Avenue between Montrose Shopping Center Entrances - South	242229	30	457	Concrete	5-8 ft	5-8 ft	No	No	No	N/A	N/A	Somewhat comfortable (2)	N/A	N/A
5	Bou Avenue between Montrose Shopping Center N Entrance and Chapman Avenue -	244051	25	280	Brick	> 8 ft	5-8 ft	No	No	No	N/A	N/A	Somewhat comfortable (2)	N/A	N/A
6	Bou Avenue between Rockville + Chapman - South	244060	25	456	Concrete	> 8 ft	0-2 ft	No	No	No	N/A	N/A	Somewhat comfortable (2)	N/A	N/A
7	Chapman Avenue between Rollins and Bou	201264	30	245	Concrete	> 8 ft	5-8 ft	No	No	No	N/A	N/A	Somewhat comfortable (2)	N/A	N/A
8	Chapman Avenue between Rollins and North Pike Center Entrance	201265	30	159	Concrete	> 8 ft	5-8 ft	No	No	No	N/A	N/A	Somewhat comfortable (2)	N/A	N/A
9	Hoya Street between Hubbard and Rockville	188472	25	152	Concrete	5-8 ft	0-2 ft	No	No	No	N/A	N/A	Somewhat comfortable (2)	N/A	N/A
10	Hubbard Drive to Rockville Pike - North	153281	30	405	Asphalt	No walkway	No walkway	No	No	No	N/A	N/A	Undesirable (4)	Create sidewalk + buffer	Somewhat comfortable (2)
11	Hubbard Drive between first entrance and Rockville	244063	30	128	Concrete	5-8 ft	0-2 ft	No	No	No	N/A	N/A	Undesirable (4)	Widen buffer	Somewhat comfortable (2)
12	Hubbard Drive between entrances	244065	30	171	Concrete	5-8 ft	0-2 ft	No	No	No	N/A	N/A	Undesirable (4)	Create buffer	Somewhat comfortable (2)
13	Rockville Pike between Rollins and Federal Plaza	189192	40	212	Concrete	5-8 ft	0-2 ft	No	No	No	N/A	N/A	Undesirable (4)	Widen buffer	Somewhat comfortable (2)
14	Rockville Pike between Pike Center and California Circle	189196	40	513	Concrete	5-8 ft	2-5 ft	No	No	No	N/A	N/A	Undesirable (4)	Widen buffer	Somewhat comfortable (2)
15	Rockville Pike	189223	40	102	Concrete	> 8 ft	> 8 ft	No	No	No	N/A	N/A	Very Comfortable (1)	N/A	N/A
16	Rockville Pike from Hoya St	189254	40	79	Concrete	5-8 ft	5-8 ft	No	No	No	N/A	N/A	Uncomfortable (3)	Widen buffer	Somewhat comfortable (2)
17	Rockville between Bou and Montrose Shopping Center	189494	40	423	Asphalt	5-8 ft	5-8 ft	No	Yes	No	N/A	N/A	Uncomfortable (3)	Widen buffer	Somewhat comfortable (2)
18	Rockville Pike between Pike Center entrance and Shell driveway	189556	40	221	Concrete	5-8 ft	0-2 ft	No	No	No	N/A	N/A	Undesirable (4)	Create buffer	Somewhat comfortable (2)
19	Rockville Pike from Hubbard Dr	189557	40	293	Concrete	> 8 ft	> 8 ft	No	No	No	N/A	N/A	Somewhat comfortable (2)	N/A	N/A
20	Rockville Pike between Shell and Twinbrook	189590	40	165	Concrete	5-8 ft	0-2 ft	No	No	No	N/A	N/A	Undesirable (4)	Create buffer	Somewhat comfortable (2)
21	Rockville Pike between Pike Center and Bou	189619	40	489	Concrete	5-8 ft	> 8 ft	No	No	No	N/A	N/A	Somewhat comfortable (2)	N/A	N/A
22	Rockville Pike between Hubbard and California	189646	40	396	Concrete	5-8 ft	0-2 ft	No	No	No	N/A	N/A	Undesirable (4)	Widen buffer	Somewhat comfortable (2)
23	Rockville Pike between Federal Plaza entrances	189648	40	230	Concrete	5-8 ft	0-2 ft	No	No	No	N/A	N/A	Undesirable (4)	Create buffer	Somewhat comfortable (2)
24	Rockville Pike to Bouic	191712	35	355	Concrete	5-8 ft	0-2 ft	No	No	No	N/A	N/A	Undesirable (4)	Widen buffer	Somewhat comfortable (2)
25	Rockville Pike from Twinbrook	191772	35	167	Concrete	5-8 ft	> 8 ft	No	No	No	N/A	N/A	Somewhat comfortable (2)	N/A	N/A
26	Rockville Pike between Thompson and Bouic	191863	35	369	Concrete	5-8 ft	> 8 ft	No	No	No	N/A	N/A	Somewhat comfortable (2)	N/A	N/A
27	Rockville Pike between Thompson and Twinbrook	191900	35	157	Concrete	5-8 ft	0-2 ft	No	No	No	N/A	N/A	Undesirable (4)	Create buffer	Somewhat comfortable (2)
28	Rockville Pike	194804	40	61	Concrete	< 5 ft	> 8 ft	No	No	No	N/A	N/A	Somewhat comfortable (2)	N/A	N/A
29	Rockville Pike between Hubbard and Hoya	195370	40	153	Concrete	5-8 ft	5-8 ft	No	No	No	N/A	N/A	Uncomfortable (3)	Widen buffer	Somewhat comfortable (2)
30	Montrose Shopping Center Bou Avenue Entrance	242228	25	56	Concrete	> 8 ft	0-2 ft	No	No	No	N/A	N/A	Somewhat comfortable (2)	N/A	N/A
31	Chapman Avenue between Rollins and Bou	256664	30	223	Concrete	> 8 ft	0-2 ft	No	No	No	N/A	N/A	Undesirable (4)	Create buffer	Somewhat comfortable (2)
32	Chapman Avenue between Twinbrook and Rollins	256665	30	322	Concrete	> 8 ft	0-2 ft	No	No	No	N/A	N/A	Undesirable (4)	Create buffer	Somewhat comfortable (2)
33	Chapman Avenue between Twinbrook and Pike Center entrance	256666	30	202	Concrete	5-8 ft	0-2 ft	No	No	No	N/A	N/A	Undesirable (4)	Create buffer	Somewhat comfortable (2)
34	Rollins Ave from Chapman	256667	25	631	Concrete	5-8 ft	0-2 ft	No	No	No	N/A	N/A	Uncomfortable (3)	Create buffer	Somewhat comfortable (2)
35	Rollins Ave between Chapman and driveway	256668	25	80	Concrete	< 5 ft	0-2 ft	No	No	No	N/A	N/A	Uncomfortable (3)	Create buffer	Somewhat comfortable (2)
36	Rollins Ave from driveway	256670	25	165	Concrete	< 5 ft	0-2 ft	No	No	No	N/A	N/A	Uncomfortable (3)	Create buffer	Somewhat comfortable (2)

Table 4-2
Pike Center
Crosswalk Pedestrian Level of Comfort

ID	Intersection		ID Number	Leg	Marking Type	Crosswalks								Posted Speed Limit (mph)
	Road Segment	Road Segment				Centered with Ramp (Y/N)	Pedestrian Signal (Y/N)	Push Button (Y/N)	Push Button	# of lanes	Signal Controlled/Uncontrolled	Median Type	Crosswalk Type	
1	Chapman Avenue	Bou Avenue	201262	N (East half of crosswalk)	HV	Yes	Yes	Yes	Accessible	1	Controlled	N/A	Asphalt	25
2	Chapman Avenue	Bou Avenue	201263	NE (Slip Lane)	HV	Yes	No	No	N/A	1	Uncontrolled	N/A	Asphalt	25
3	Chapman Avenue	Bou Avenue	244058	N (West half of crosswalk)	HV	Yes	Yes	Yes	Accessible	3	Controlled	N/A	Asphalt	25
4	Chapman Avenue	Bou Avenue	201266	W (North half of crosswalk)	Marked	Yes	Yes	Yes	Accessible	2	Controlled	N/A	Asphalt	25
5	Hubbard Drive	Rockville Pike	189194	W (South half of crosswalk)	HV	No	Yes	Yes	Accessible	2	Controlled	N/A	Asphalt	30
6	Montrose Shopping Center Entrance	Rockville Pike	189226	E (North half of crosswalk)	Marked	Yes	Yes	Yes	Accessible	2	Controlled	Raised refuge island	Asphalt	30
7	Federal Plaza South Entrance	Rockville Pike	189250	W	HV	Yes	Yes	Yes	Not Accessible	3	Controlled	N/A	Asphalt	40
8	Hubbard Drive	Rockville Pike	189252	W (North half of crosswalk)	HV	No	Yes	Yes	Accessible	1	Controlled	N/A	Asphalt	30
9	Hoya Street	Rockville Pike	189253	SB Spur	HV	Yes	No	No	N/A	1	Uncontrolled	N/A	Asphalt	25
10	Pike Center Entrance	Rockville Pike	189499	E	HV	No	Yes	No	N/A	2	Controlled	Raised median	Asphalt	30
11	Montrose Shopping Center Entrance	Rockville Pike	189618	E (South half of crosswalk)	Marked	Yes	Yes	Yes	Accessible	2	Controlled	Raised refuge island	Asphalt	30
12	EVEN Hotel Driveway	Rockville Pike	191799	W	Unmarked	Yes	No	No	N/A	2	Uncontrolled	N/A	Concrete	35
13	Rollins Avenue	Rockville Pike	191931	W	Marked	No	Yes	Yes	Accessible	4	Controlled	N/A	Asphalt	30
14	Bou Avenue	Rockville Pike	193032	E (North half of crosswalk)	Marked	Yes	No	No	N/A	3	Controlled	N/A	Asphalt	25
15	California Circle	Rockville Pike	195612	W (North half of crosswalk)	Marked	Yes	Yes	No	N/A	1	Controlled	N/A	Asphalt	25
16	California Circle	Rockville Pike	256561	W (South half of crosswalk)	Marked	Yes	Yes	No	N/A	1	Controlled	N/A	Asphalt	25
17	Twinbrook Parkway	Rockville Pike	196842	E	HV	No	Yes	Yes	Accessible	5	Controlled	N/A	Asphalt	30
18	Federal Plaza North Entrance	Rockville Pike	204541	RIRO	Unmarked	Yes	No	No	N/A	2	Uncontrolled	Raised refuge island	Concrete	40
19	Bou Avenue	Rockville Pike	244059	E (South half of crosswalk)	Marked	Yes	No	No	N/A	1	Controlled	N/A	Asphalt	25
20	Federal Plaza North Entrance	Rockville Pike	189284	S (West half of crosswalk)	HV	Yes	Yes	Yes	Not Accessible	3	Controlled	N/A	Asphalt	40
21	Federal Plaza North Entrance	Rockville Pike	189285	N (West half of crosswalk)	HV	No	Yes	Yes	Not Accessible	4	Controlled	N/A	Asphalt	40
22	Pike Center Entrance	Rockville Pike	189526	N (East half of crosswalk)	HV	No	Yes	Yes	Not Accessible	3	Controlled	N/A	Asphalt	40
23	Pike Center Entrance	Rockville Pike	196541	S (East half of crosswalk)	HV	No	Yes	Yes	Not Accessible	4	Controlled	N/A	Asphalt	40
24	Bou Avenue	Montrose Shopping Center East entrance	242230	W	HV	Yes	No	No	N/A	2	Uncontrolled	N/A	Asphalt	30
25	Chapman Avenue	Bou Avenue	244052	E	HV	Yes	Yes	Yes	Accessible	3	Controlled	N/A	Asphalt	25
26	Chapman Avenue	Bou Avenue	244053	S	HV	Yes	Yes	Yes	Accessible	3	Controlled	N/A	Asphalt	25
27	Chapman Avenue	Bou Avenue	244054	W (South half of crosswalk)	Marked	Yes	Yes	Yes	Accessible	2	Controlled	N/A	Asphalt	25
28	Hubbard Drive	Rockville Pike	244061	N	HV	Yes	Yes	Yes	Accessible	8	Controlled	N/A	Asphalt	40
29	Hubbard Drive	Rockville Pike	244062	S	Unmarked	N/A	No	No	N/A	8	Controlled	N/A	Asphalt	40
30	Hubbard Drive	Monterey Apartments	244064	S	Unmarked	N/A	No	No	N/A	2	Uncontrolled	N/A	Asphalt	30
31	Chapman Avenue	Rollins Avenue	249406	E	Unmarked	N/A	No	No	N/A	3	Uncontrolled	N/A	Asphalt	25
32	Chapman Avenue	Rollins Avenue	249408	N	Unmarked	N/A	No	No	N/A	4	Uncontrolled	N/A	Asphalt	25
33	Chapman Avenue	Rollins Avenue	249409	S	Unmarked	N/A	No	No	N/A	4	Uncontrolled	N/A	Asphalt	25
34	California Circle	Rockville Pike	256562	S	Unmarked	N/A	No	No	N/A	8	Controlled	N/A	Asphalt	40
35	California Circle	Rockville Pike	256563	N	HV	Yes	Yes	Yes	Not Accessible	7	Controlled	N/A	Asphalt	40
36	Driveway	Rollins Avenue	256669	E	Unmarked	N/A	No	No	N/A	2	Uncontrolled	N/A	Asphalt	25



Figure 4-3
Streetlight Inventory
Source: Montgomery County

- Streetlight outage issues not reported
- Streetlight outage issues reported



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Table 4-3
Pike Center
ADA Ramp Evaluation

	Ramps							
	In between		DWS (Y/N)	DWS Type	DWS Color	DWS Size	Ramp Width	Ramp Landing Area (5' x 5') / Parallel (P)
	Road Segment	Road Segment						
1	Twinbrook Parkway	Rockville Pike (NW, EB)	Y	Nailed in Place	Yellow	5x2	5	P
2	Twinbrook Parkway	Rockville Pike (NW, SB)	Y	Nailed in Place	Yellow	5x2	5	P
3	Twinbrook Parkway	Rockville Pike (NE)	Y	Cast in Place	Yellow	25x2	25	P
4	Twinbrook Parkway	Rockville Pike (SW, NB)	Y	Cast in Place	Yellow	5x2	5	5x5
5	Twinbrook Parkway	Rockville Pike (SE, WB)	Y	Cast in Place	Yellow	5.5x2	5.5	5x5
6	Twinbrook Parkway	Rockville Pike (SE, SB)	Y	Cast in Place	Yellow	6.5x2	6.5	5x5
7	Twinbrook Parkway	Rockville Pike (SE, NB, from island)	Y	Cast in Place	Yellow	6.5x2	6.5	5x5
8	Twinbrook Parkway	Rockville Pike (SE, NB, from sidewalk)	Y	Nailed in Place	Yellow	5x2	5	P
9	Twinbrook Parkway	Rockville Pike (SW, EB)	Y	Cast in Place	Red	5x2	5	P
10	Twinbrook Parkway	Chapman Avenue (NW, SB, from sidewalk)	Y	Cast in Place	Yellow	5x2	5	P
11	Twinbrook Parkway	Chapman Avenue (NW, NB)	Y	Cast in Place	Yellow	5x2	5	5x5
12	Twinbrook Parkway	Chapman Avenue (NW, EB)	Y	Cast in Place	Yellow	5x2	5	5x5
13	Twinbrook Parkway	Chapman Avenue (NW, SB, from island)	Y	Cast in Place	Yellow	5x2	5	5x5
14	Twinbrook Parkway	Chapman Avenue (NE, WB)	Y	Cast in Place	Yellow	5x2	5	5x3.5
15	Twinbrook Parkway	Chapman Avenue (NE, SB)	Y	Cast in Place	Yellow	5x2	5	P
16	Twinbrook Parkway	Chapman Avenue (SE, NB)	Y	Cast in Place	Yellow	5x2	5	P
17	Twinbrook Parkway	Chapman Avenue (SE, WB)	Y	Cast in Place	Yellow	5x2	5	P
18	Twinbrook Parkway	Chapman Avenue (SW, NB)	Y	Cast in Place	Yellow	5x2	5	5x5
19	Twinbrook Parkway	Chapman Avenue (SW, EB)	Y	Cast in Place	Yellow	5x2	5	5x5
20	Bou Avenue	Chapman Avenue (NW, SB)	Y	Cast in Place	Yellow	3.5x2	3.5	5x5
21	Bou Avenue	Chapman Avenue NW, EB)	Y	Cast in Place	Yellow	3.5x2	3.5	5x5
22	Bou Avenue	Chapman Avenue (NE, WB)	Y	Nailed in Place	Yellow	4x2	4	5x5
23	Bou Avenue	Chapman Avenue (NE, NB)	Y	Nailed in Place	Yellow	4x2	4	5x5
24	Bou Avenue	Chapman Avenue (NE, SB, from island)	Y	Nailed in Place	Yellow	4x2	4	5x5
25	Bou Avenue	Chapman Avenue (NE, SB, from sidewalk)	Y	Cast in Place	Yellow	4x2	4	P
26	Bou Avenue	Chapman Avenue (SE, NB)	Y	Cast in Place	Gray	4x2	4	5x5
27	Bou Avenue	Chapman Avenue (SE, WB)	Y	Cast in Place	Yellow	5x2	5	5x5
28	Bou Avenue	Chapman Avenue (SW, EB)	Y	Cast in Place	Yellow	9x2	22	P
29	Bou Avenue	Chapman Avenue (SW, NB)	Y	Cast in Place	Yellow	6.5x2	22	P
30	Bou Avenue	Rockville Pike (NW)	Y	Cast in Place	Red	15x2	15	P
31	Bou Avenue	Rockville Pike (NE)	Y	Cast in Place	Yellow	15x2	15	5x5
32	Bou Avenue	Rockville Pike (SW)	Y	Cast in Place	Red	5x2	5	5x5
33	Bou Avenue	Rockville Pike (SE)	N	N/A	N/A	N/A	5	0
34	Federal Plaza	Rockville Pike (NW)	Y	Cast in Place	Red	12x2	12	5x5
35	Federal Plaza	Rockville Pike (NE)	Y	Cast in Place	Yellow	5x2	5	5x5
36	Federal Plaza	Rockville Pike (SE)	Y	Nailed in Place	Yellow	4x2	4	5x5
37	Federal Plaza	Rockville Pike (SW)	Y	Cast in Place	Red	8x2	8	P

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 the site location within an Orange Policy Area. Figure 4-4 shows existing and proposed bicycle facilities, per the Bicycle Master Plan.

Bicycle system adequacy is measured by the LTS (Level of Traffic Stress). The stress is determined based 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, Rockville Pike (MD 355), Twinbrook Parkway, the east side of Chapman Avenue, and the south side of Bou Avenue are currently rated with high & moderate stress levels.

The Applicant is proposing a shared use path to run along the site frontage of Chapman Avenue that will allow bicyclists to connect from the bike lanes north of Twinbrook Parkway along the site. This path will decrease the experienced stress along this segment of the roadway. The Applicant is also proposing more bicycle friendly infrastructure along the site frontages on Bou Avenue and Rockville Pike (MD 355) further bolstering the comfortability and adherence of the Bicycle Master Plan.

At the time of Preliminary Plan/Site Plan, the Applicant will work with Staff to determine what, if any, bicycle or side path improvements along Rockville Pike (MD 355) should be constructed to meet the Bicycle Low Level of Stress standard and Proportionality Guide Calculation cap for off-site improvements.

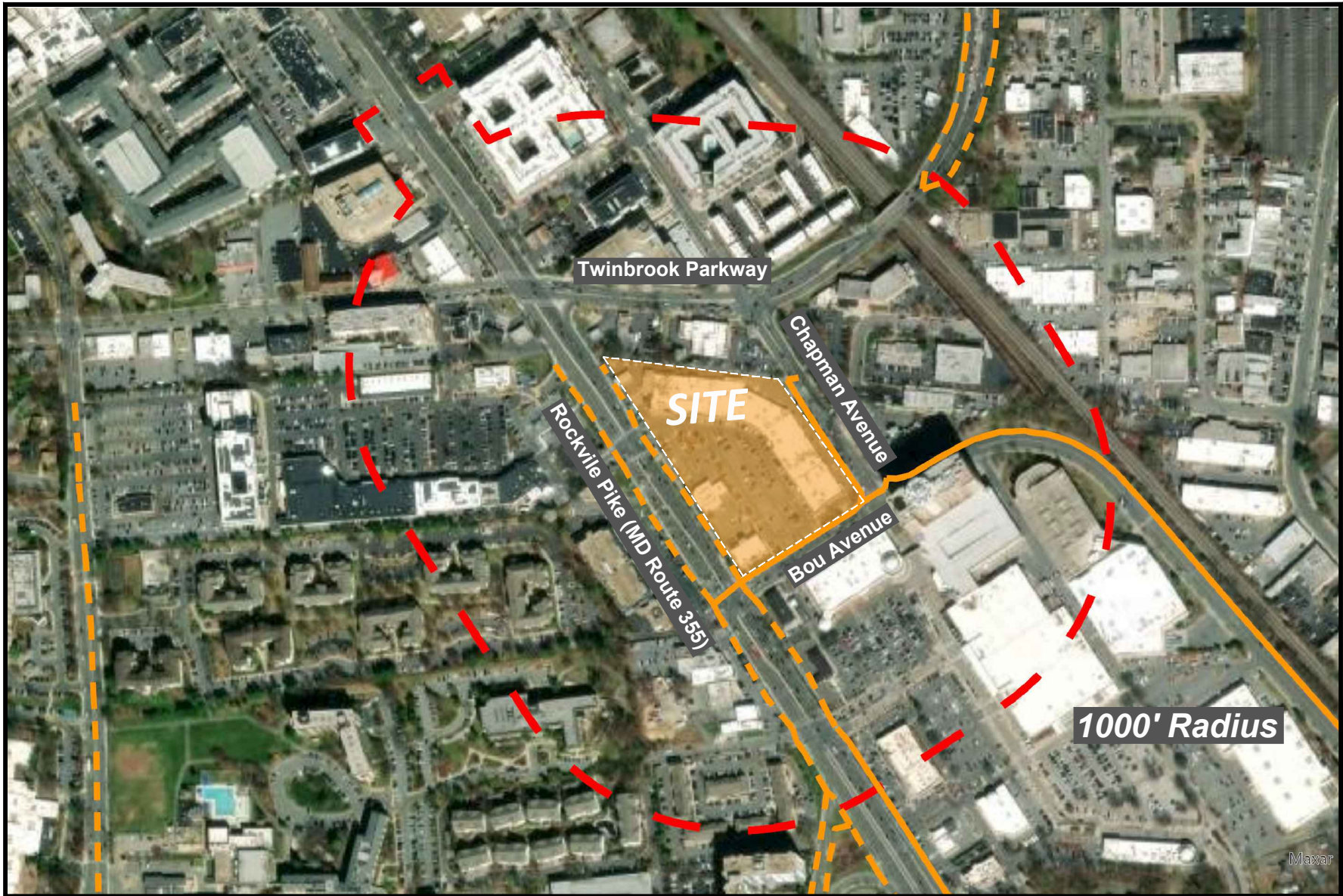


Figure 4-4
 Bicycle System Study Area
 Source: Montgomery County

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



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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 the site located within an Orange Policy Area.

There are 12 bus stops within the study area, as shown on Figure 4-5 and listed on Table 4-4. Of the 12 bus stops, eight (8) have shelters and four (4) do not have shelters. At the time of Preliminary Plan/Site Plan the Applicant will coordinate with MCDOT Staff to identify four (4) stops that may be appropriate for bus shelters to meet the mitigation requirement and if they will be prioritized to reach the Proportionality Guide Calculation cap for off-site improvements.

Table 4-4
Pike Center
Bus Stops

Bus Stops							
	Bus Number	Bus Route (RideOn)	Location	Size	Connected to Pathway	Midblock	Bus Shelter
1	20964	26	Chapman Ave & Thompson Ave (NB)		Yes	No	No
2	27736	26	Chapman Ave & Bouic Ave (NB)	10x5	Yes	No	Yes
3	27738	5, 26, 46	Chapman Ave & Bouic Ave (SB)	10x5	Yes	No	Yes
4	25602	46	Rockville Pike & Hubbard Ave (SB)		Yes	No	No
5	29738	46	Rockville Pike & Federal Plaza (NB)		Yes	No	No
6	25552	46	Rockville Pike & Bou Ave (NB)	13x5	Yes	No	Yes
7	25554	46	Rockville Pike & Bouic Ave (NB)	10x5	Yes	No	Yes
8	25600	46	Rockville Pike & Bou Rd (SB)		Yes	No	No
9	25598	46	Rockville Pike & Rollins Ave (SB)	13x5	Yes	Yes	Yes
10	25596	46	Rockville Pike & Thompson Ave (SB)	8.5x4.5	Yes	Yes	Yes
11	25604	46	Rockville Pike & Towne Rd (SB)	13x5	Yes	Yes	Yes
12	25548	46	Rockville Pike & Hubbard Dr (NB)	13x5	Yes	No	Yes

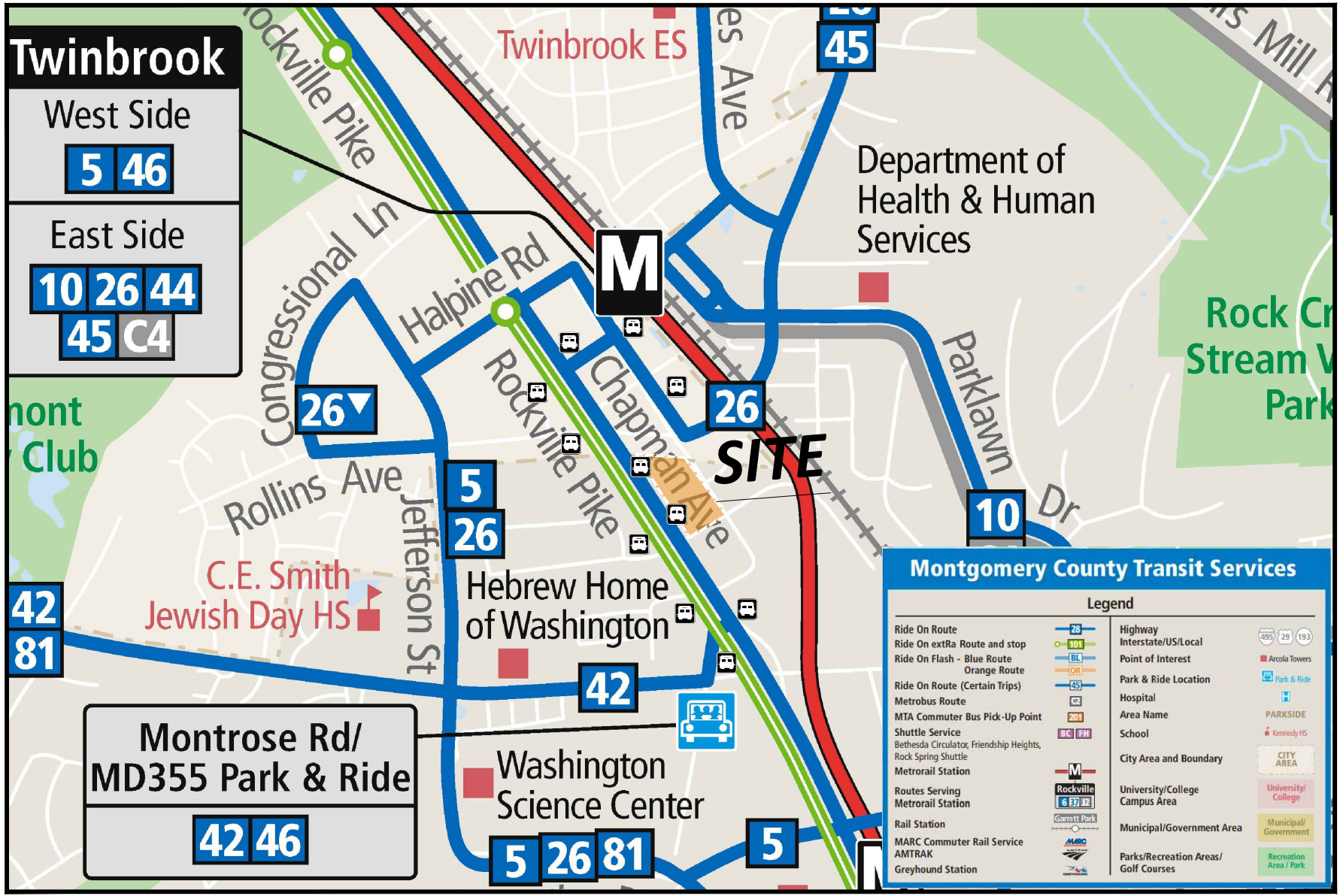


Figure 4-5
 Bus Transit Stops
 Source: Montgomery County

Bus Stop



Pike Center
 Montgomery County, Maryland



LATR PROPORTIONALITY FOR OFF-SITE IMPROVEMENTS

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

With the proposed 470 high-rise and 290 mid-rise dwelling units, along with the proposed 90,000 S.F. of retail and commercial space, at this time the Applicant would have a maximum \$5,140,798 improvement cap for off-site improvements.

Using the Proportionality Calculator, Version 1.3, the improvement cap is calculated by the number of dwelling units, multiplied by the LATR Proportionality Guide Rate, multiplied by the Adjustment Factor for the policy area. The equation is the same for the gross floor area for retail square footage with different rates and adjustment factors. For Pike Center, the cap is calculated as:

$$((290 + 470) \times \$10,976 \times 51\%) + (90,000 \times \$19.70 \times 50\%) = \$5,140,798$$

At the time of Preliminary Plan/Site Plan, the Proportionality Guide will be recalculated, and the Applicant will work with MCDOT and Planning Staff to identify which improvement options should be pursued to meet Pike Center requirements to mitigate deficiencies in the Pedestrian, Bicycle, and Bus Transit Systems.

The Proportionality Cap cost estimate above reflects a full density build-out. This may be adjusted at the time of Preliminary Plan/Site Plan based on the proposed density and the requirements contained in the applicable Growth and Infrastructure Policy (GIP).

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 site is located within a High Injury Network along Rockville Pike (MD 355) north of Randolph Road.

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 Interactive Crash Map. Table 5-1 provides a summary of the number of crashes within the study area. A map showing the location of the fatal and severe injury crashes is shown on Figure 5-1.

Within 1,000 feet of the site boundaries, a total of 314 crashes were reported from 2019 through December 2023. A total of 308 crashes were reported as minor/no injury crashes, and one (1) was classified as fatal. The majority of crashes involved vehicles only (81 percent). The remaining crashes were related to pedestrians (14 percent) and bicycles (five percent).

Review traffic speeds: Speed studies were conducted in accordance with the LATR Guidelines and added input during the scoping process. The speed studies were conducted along Rockville Pike (MD 355), Twinbrook Parkway, Chapman Avenue, and Bou Avenue. The study was conducted over multiple sessions due to technology restraints. The periods studied were May 7, 2024 to May 9, 2024; May 14, 2024 to May 16, 2024; and May 22, 2024 to May 24, 2024. The time periods all began at 12:00 AM and ran until 12:00 AM 48 hours later. The posted speed limit and results from the data collection are summarized in Table 5-2.

Speed studies conducted along Rockville Pike (MD 355) directly north and south of Bouic Avenue resulted in a northbound average speed of 25.5 mph in lane 1 and 30 mph in lanes 2 and 3. The 85th percentile speeds were 34, 37.5 and 38 mph, respectively. In the southbound direction, lane 1 had an average speed of 22 mph while lanes 2 and 3 showed 27 and 31 mph

respectively. The 85th percentile speeds were 29.5, 36, and 39 mph, respectively. The posted speed limit for Rockville Pike (MD 355) is 35 mph. None of the segments' 85th percentile speed exceeded 120 percent of the posted speed limit.

Along Twinbrook Parkway between Parklawn Drive and Chapman Avenue, the average speeds in the westbound direction were calculated to be 9 mph in lane 1 and 32 mph in lane 2 while 85th percentile speeds were calculated to be 12 mph and 38 mph respectively. In the eastbound direction, the average speeds were 30 and 28 mph while 85th percentile speeds came in at 37 and 39 mph, respectively. Twinbrook Parkway has a posted speed limit of 35 mph and none of the segments' 85th percentile speed exceeded 120 percent of the posted speed limit.

Between Twinbrook Parkway and Bou Avenue, the speed study for Chapman Avenue resulted in an average speed of 25 mph in the southbound lane 1 and 20 mph in lane 2. The 85th percentile speeds were recorded at 32 and 24 mph, respectively. Northbound Chapman Avenue had recorded average speeds of 21 and 23 mph in lanes 1 and 2 respectively and 85th percentile speeds of 28 and 31 mph. The posted speed limit is 30 mph. None of the segments' 85th percentile speed exceeded 120 percent of the posted speed limit.

Finally, Bou Avenue east of Chapman Avenue came in with average speeds of 31 and 30 mph in the westbound direction of lanes 1 and 2 respectively and 85th percentile speeds of 37 mph in both lanes. In the eastbound direction, average speeds were calculated to be 30 mph in both lanes and 85th percentiles of 35 mph in lane 1 and 36 mph in lane 2. The posted speed limit is 25 mph on Bou Avenue, Thus, the 85th percentile speed exceeded 120 percent of the posted speed limit.

As shown in Table 5-2, the 85th percentile speeds exceeded 120 percent of the posted speed limit on Bou Avenue. The Applicant is proposing to add on-street parking along the site frontage between the site driveway and Chapman Avenue that would likely reduce speeds in this area. However, it is recommended that additional speed reduction measures and enforcement be considered by the County.

- 3. Site access:** The site layout minimizes conflicts between bicycles, pedestrians, and vehicles. Access to Pike Center in Phase 1 will be provided via a right-in/right out at Rollins Avenue and Rockville Pike (MD 355) (which serves as an extension from Chapman Avenue), a signalized intersection with Rockville Pike (MD 355) and Federal Plaza, a right-in/right-out gas station entrance on Rockville Pike (MD 355), a service alley driveway along Chapman Avenue, an unsignalized intersection driveway at Chapman Avenue and Rollins Avenue, and a parking garage access driveway along Bou Avenue.

In Phase 2, access will be provided via a right-in/right-out at the intersection of Rollins Avenue and Rockville Pike (MD 355), the signalized intersection of New Street and Rockville Pike (MD 355), a parking garage entrance along Chapman Avenue, the intersection of Chapman Avenue and Rollins Avenue, and a parking garage access driveway along Bou Avenue. As previously mentioned, Rollins Avenue will be extended from Chapman Avenue to Rockville Pike (MD 355) to build a planned roadway for Montgomery County. This street will have traffic calming measures and deterrents to prevent its use as a cut through by means of bypassing Bou Avenue or Twinbrook Parkway. Sidewalks will be provided on both sides of the internal streets with landscaping and on-street parking buffering pedestrians from the vehicular travel way. The loading docks for the buildings will be located within the interior of Pike Center with no direct access to Bou Avenue and Chapman Avenue.

Table 5-1
 Pike Center
 Crash Analysis Summary ⁽¹⁾

Category	Subcategory	Applicable Radius: 1000' within Proposed Site Development
		# of Crashes
Year	2019	75
	2020	42
	2021	56
	2022	73
	2023	68
	Total	314
Severity	Minor/No Injury	308
	Injury	
	Severe Injury/Fatal	6
Mode	Vehicles Only	256
	Bicyclist Related	13
	Pedestrian Related	45

Note:

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



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



Figure 5-1

Location of Severe Injury and Fatal Crashes

Source: Montgomery County

-  Severe Injury Crash
-  Fatal Crash



NORTH

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Table 5-2
Pike Center
Speed Study Analysis

Lane/Direction	Rockville Pike (MD 355) NB			Rockville Pike (MD 355) SB		
	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3
Date Collected	5/22/2024	5/22/2024	5/22/2024	5/22/2024	5/22/2024	5/22/2024
Posted Speed Limit (mph)	35	35	35	35	35	35
120% of Posted Speed Limit (mph)	42	42	42	42	42	42
Average Speed (mph)	25.5	30	30	22	27	31
85th Percentile (mph)	34	37.5	38	29.5	36	39
85th Percentile Exceed 120% of Posted Speed Limit? (Y/N)	N	N	N	N	N	N
10-mph pace (mph)	25-35	25-35	25-35	20-30	25-35	25-35

Lane/Direction	Twinbrook Parkway WB		Twinbrook Parkway EB	
	Lane 1	Lane 2	Lane 1	Lane 2
Date Collected	5/7/2024	5/7/2024	5/7/2024	5/7/2024
Posted Speed Limit (mph)	35	35	35	35
120% of Posted Speed Limit (mph)	42	42	42	42
Average Speed (mph)	9	32	30	28
85th Percentile (mph)	12	38	37	39
85th Percentile Exceed 120% of Posted Speed Limit? (Y/N)	N	N	N	N
10-mph pace (mph)	0-10	25-35	25-35	25-35

Lane/Direction	Chapman Avenue SB		Chapman Avenue NB	
	Lane 1	Lane 2	Lane 1	Lane 2
Date Collected	5/7/2024	5/7/2024	5/14/2024	5/14/2024
Posted Speed Limit (mph)	30	30	30	30
120% of Posted Speed Limit (mph)	36	36	36	36
Average Speed (mph)	25	20	21	23
85th Percentile (mph)	32	24	28	31
85th Percentile Exceed 120% of Posted Speed Limit? (Y/N)	N	N	N	N
10-mph pace (mph)	20-30	20-30	20-30	20-30

Lane/Direction	Bou Avenue WB		Bou Avenue EB	
	Lane 1	Lane 2	Lane 1	Lane 2
Date Collected	5/14/2024	5/14/2024	5/14/2024	5/14/2024
Posted Speed Limit (mph)	25	25	25	25
120% of Posted Speed Limit (mph)	30	30	30	30
Average Speed (mph)	31	30	30	30
85th Percentile (mph)	37	37	35	36
85th Percentile Exceed 120% of Posted Speed Limit? (Y/N)	Y	Y	Y	Y
10-mph pace (mph)	25-35	25-35	25-35	25-35

Section 6 CONCLUSIONS

The following summarizes the findings and conclusions of the four adequacy tests and Vision Zero evaluations of this Local Area Transportation Review for the redevelopment of Pike Center:

1. The redevelopment of Pike Center is anticipated to replace approximately 81,000 square feet (S.F.) of retail and commercial uses with up to 290 mid-rise and 470 high-rise apartment dwelling units and up to 90,000 S.F. of retail space. The proposed development is expected to occur in two phases with phase one expected to be built approximately in 2034 and phase two approximately in 2039.
2. Pike Center is expected to generate 612 AM peak hour and 936 PM peak hour net new person trips, and 324 AM peak hour and 492 PM peak hour net new auto-driver (vehicle) trips under buildout conditions in Phase 2.
3. The redevelopment of Pike Center will construct the extension of Rollins Avenue between Chapman Avenue and Rockville Pike (MD 355). This new facility will complete part of master planned roads in the area, better manage traffic movements into and out of the site and provide a pedestrian and bicycle connection through the property.
4. The AM and PM peak hour average vehicle delays at the study intersections within the North Bethesda Orange Policy Area currently operate within the applicable congestion standard of 71 seconds per vehicle. The study intersections within the City of Rockville, Twinbrook Red Policy Area and White Flint Red Policy Area are not subject to the Motor Vehicle Test. However, for information purposes, an analysis was conducted at each of these intersections.
5. Under future conditions without the proposed Pike Center redevelopment, the study intersections within the North Bethesda Policy Area would continue to operate within the applicable congestion standard threshold during both the AM and PM peak hours.
6. Under future conditions with the proposed Pike Center redevelopment, the study intersections within the North Bethesda Policy Area would continue to operate within the applicable congestion standard threshold during the AM and PM peak hours.
7. Based on the Pedestrian System Adequacy Test, mitigation is required to improve the existing undesirable pedestrian level of comfort ratings for segments along Rockville Pike (MD 355), and to address ADA noncompliance for crosswalk ramps within the study area. At the time of Preliminary Plan/Site Plan, the Applicant will work with Staff to determine the improvements and the fair share contribution to improve the PLOC in the study area.

8. Mitigation is required to pass the Bicycle System Adequacy Test due to an elevated level of traffic stress under existing conditions along Rockville Pike (MD 355). The Applicant will, at the time of Preliminary Plan/Site Plan, coordinate with Planning Staff to determine the fair share contribution toward the mitigation. The Applicant is also proposing enhanced bicycle infrastructure along the site frontages, bolstering comfortability and adherence to the Bicycle Master Plan.
9. Four (4) bus stops within the study area do not have bus shelters. Mitigation is required to pass the Bus Transit System Adequacy Test. The Applicant will, at the time of Preliminary Plan/Site Plan, coordinate with Planning Staff to determine the fair share contribution toward the mitigation.
10. A review of crash history within the 1,000 feet study area radius found that 314 crashes occurred between 2019 and 2024. Of the 314 reported crashes, 308 crashes were reported as minor/no injury crashes, and one (1) was classified as fatal. The majority of crashes involved vehicles only (81 percent). The remaining crashes were related to pedestrians (14 percent) and bicycles (five percent). It is noted that the site is located within a High Injury Network along Rockville Pike (MD 355) north of Randolph Road.
11. The results of the speed study indicate that the Rockville Pike (MD 355), Chapman Avenue, and Twinbrook Parkway road segments experience 85th percentile speeds that are within the acceptable 120 percent of the posted speed limit. Data for Bou Avenue shows that the 85th percentile speed exceeds the 120 percent posted speed standard. The Applicant proposes to provide curb parking along the Bou Avenue frontage between the site driveway and Chapman Avenue that may reduce speeds in this area. However, additional speed reduction measures and enforcement should be considered to further reduce speeds in this segment.
12. The location and design of the proposed site access roads minimizes turning movement conflicts on Chapman Avenue, Bou Avenue, and Rockville Pike (MD 355). Sidewalks and crosswalks will be provided within and along the property frontage to ensure safe pedestrian access to and from the site. The shared use paths along the site frontage provide a low level of traffic stress for bicyclists travelling to or from the site.

APPENDIX A

Scoping Materials



Local Area Transportation Review

TRANSPORTATION IMPACT STUDY SCOPE OF WORK AGREEMENT

December 2023

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) (See Growth & Infrastructure Policy Area map T1 ¹)		Master Plan(s) / Sector Plan Area(s)	

¹ <https://montgomeryplanning.org/wp-content/uploads/2020/11/20210101-Text-of-the-2020-2024-Growth-and-Infrastructure-Policy-with-Maps.pdf>

Application Type(s)	<input type="checkbox"/> Preliminary Plan	<input type="checkbox"/> Site Plan	<input type="checkbox"/> Sketch/Concept/Pre-Preliminary (Optional)	<input type="checkbox"/> Amendment
	<input type="checkbox"/> Conditional Use (formerly special exception)	<input type="checkbox"/> Local Map Amendment	<input type="checkbox"/> APF at Building Permit	<input type="checkbox"/> Other:
Project Description & Previous Approvals (proposed land uses, zoning, no. of units, square footage, construction phasing, prior approvals and proposals, existing uses, site operations, year built, status of Adequate Public Facilities [APF], other relevant info)				
1. Site Access (proposed access location(s), existing/adjacent/opposite curb cuts, interparcel connections, access configurations and restrictions, internal circulation, private roads, parking/loading areas, other relevant info)				
2. Transportation Analysis Requirement	<input type="checkbox"/> Transportation Impact Study Generates <u>50 or more</u> total weekday peak-hour person trips (vehicular, transit, bicycle, and/or pedestrian) with no reductions other than a credit for existing developments over 12 years old, AND is outside of the White Flint and White Oak Policy Areas. Fill out remainder of this form and include in transportation impact study appendix.		<input type="checkbox"/> Transportation Impact Study Exemption Statement Generates <u>49 or fewer</u> total weekday peak-hour person trips (vehicular, transit, bicycle, and/or pedestrian) with no reductions other than a credit for existing developments over 12 years old, OR within White Flint and White Oak Policy Areas.	
	3. Project-based Transportation Demand Management Plan Required? (see Chapter 42, Articles I and II)	<input type="checkbox"/> No	<input type="checkbox"/> Yes (In Transportation Management District [TMD])	<input type="checkbox"/> Amend Existing Project-based TDM Plan
4. Established Transportation Management District (TMD)?	<input type="checkbox"/> No	<input type="checkbox"/> Yes TMD Name: _____		

Transportation Impact Study Assumptions		Include Tables/Graphics, As Needed	
5. Study Years / Phases	Existing Year:	Phases / Build-out Year(s):	
6. Study Periods	<input type="checkbox"/> AM <input type="checkbox"/> PM <input type="checkbox"/> Mid-day <input type="checkbox"/> Saturday <input type="checkbox"/> Sunday <input type="checkbox"/> Other: _____		
7. Study Intersections (For projects generating 50 or more weekday peak-hour 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 to 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 ITE average trip rates vs. equations, ITE land use code(s), version of ITE TripGen; include trip generation for existing site, current approvals, proposed uses, and net changes. Show calculations in the cells to the right of this box.) <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. . Show all calculations for vehicle and person trips in the cells immediately to the right of this box.</i>	Vehicle Trips* (AM) (Auto Driver)		Total Person Trips* (AM)
	Vehicle Trips* (PM) (Auto Driver)		Total Person Trips* (PM)

<p>9. Multi-modal Intersection Counts</p>	<p>Are new counts being collected in support of this study?*</p> <p>Are historical counts being used in support of this study?</p> <p><i>*Refer to the LATR Guidelines for the procedures pertaining to the collection of multi-modal (i.e., motor vehicle, bicycle and pedestrian) intersection counts. Generally, counts are acceptable when they are less than one year old at the time a transportation study is submitted.</i></p>
<p>10. Trip Reductions</p> <p>(include justification and supporting documentation for internal capture, pass-by, diverted, Transportation Demand Management)</p>	
<p>11. Trip Distribution %</p> <p>(include a map of the proposed project in addition to a list or table)</p>	<p><input type="checkbox"/> A map is attached.</p>
<p>12. Pipeline Developments to be considered as background traffic</p> <p>(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)</p>	
<p>13. Pipeline Transportation Projects to be considered as background condition</p> <p>(fully funded for construction in County Capital Improvement Program, State Consolidated Transportation Program, developer projects, etc. within the next 6 years)</p>	
<p>14. Vision Zero Statement</p> <p>(Include maps depicting the scope of the various Vision Zero Statement scoping requirements.)</p>	<ul style="list-style-type: none"> • Trigger: All LATR studies for a site that generates 50 or more weekday peak-hour person trips must develop a Vision Zero Statement. • Requirements: The Vision Zero Statement consists of four components: <ol style="list-style-type: none"> 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. 2. Assess proximate safety issues: Review the crash history for all segments and crossings within a certain distance of the site frontage. 3. Review traffic speeds: Conduct speed studies within a certain distance from the site frontage.

	<p>4. Describe site access: Address the safety issues identified in steps 1 through 3 and describe how site circulation promotes safety, outlining how safe access will be provided to the site.</p> <p>The applicant should refer to the <i>LATR Guidelines</i> to determine the applicable scoping distance pertaining to steps 1 through 3 and requirements pertaining to steps 1 through 4 above.</p> <p><input type="checkbox"/> Maps are attached. <input type="checkbox"/> Vision Zero Statement is attached.</p>
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Preliminary Mitigation Analysis <i>*Refer to the LATR Guidelines for details on how to mitigate</i>	
<p>15. Vehicular Analysis</p> <p>(Include a map depicting the location of the study area intersections.)</p>	<p><input type="checkbox"/> Vehicular Analysis Anticipated (Vehicular mitigation to be determined after study)</p> <p><input type="checkbox"/> A map is attached</p> <ul style="list-style-type: none"> • TEST: The motor vehicle adequacy test will not be applied in "Red" policy areas and these areas will not be subject to LATR motor vehicle mitigation requirements. If the plan generates 50 or more net new weekday peak-hour person trips, HCM Analysis is required to be provided for all intersections analyzed in studies for: 1) "Orange" policy areas, and 2) intersections with a CLV of more than 1,350 in "Yellow" & "Green" policy areas. 3) With the exception of intersections located within "Red" policy areas, 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: The applicant must mitigate its impact on vehicle delay or down to the applicable policy area standard, whichever is less.
<p>16. Pedestrian Analysis</p> <p>(Include a map depicting the scope of the applicable walkshed distance requirement.)</p>	<p><input type="checkbox"/> Pedestrian Mitigation Anticipated</p> <p><input type="checkbox"/> A map is attached</p> <ul style="list-style-type: none"> • TEST: If the plan generates 50 or more net new weekday peak hour person trips, mitigation of surrounding pedestrian conditions is required. MITIGATION: Mitigation consists of three components: <ol style="list-style-type: none"> (1) Pedestrian Level of Comfort (PLOC). Pedestrian system adequacy is defined by providing a "Somewhat Comfortable" or "Very Comfortable PLOC score on streets and intersections for roads classified as Primary Residential or higher within a certain walkshed from the site. (2) Street Lighting. The applicant must evaluate existing street lighting based on MCDOT standards along roadways and paths from the development within a certain walkshed from the site frontage. Where standards are not met, the applicant must upgrade the street lighting to meet the applicable standard. (3) ADA Compliance. The applicant must fix ADA noncompliance issues within a certain walkshed from the site frontage equivalent to half the walkshed specified in the required scoping distance. <p style="margin-top: 20px;">The applicant should refer to the <i>LATR Guidelines</i> to determine the applicable scoping walkshed distance requirement for each component described above.</p> <p style="text-align: right;">Record walkshed distance here _____ feet</p>

<p>17. Bicycle Analysis</p> <p>(Include a map depicting the scope of the applicable bicycle scoping requirement.)</p>	<p><input type="checkbox"/> Bicycle Mitigation Anticipated</p> <p><input type="checkbox"/> A map is attached</p> <ul style="list-style-type: none"> • TEST: If the plan generates 50 or more net new peak hour weekday person trips, mitigation of surrounding bicycle conditions is required • MITIGATION: Required to ensure a low Level of Traffic Stress (LTS-2) on all existing transportation rights-of-way within a certain distance of the site frontage; Alternatively, the project may provide a master planned improvement that provides an equivalent improvement in the level of traffic stress for cyclists within a certain distance of the site frontage. <p>The applicant should refer to the <i>LATR Guidelines</i> to determine the applicable scoping distance requirement.</p> <p>Record scoping distance here <u> 1000 </u> feet</p>
<p>18. Bus Transit Analysis</p> <p>(Include a map depicting the scope of the bus transit scoping requirement.)</p>	<p><input type="checkbox"/> Transit Mitigation Anticipated</p> <p><input type="checkbox"/> A map is attached</p> <ul style="list-style-type: none"> • TEST: If the plan generates 50 or more net new peak hour person trips, mitigation of surrounding transit conditions is required. Projects located within "Green" policy areas are exempt from the bus transit adequacy test. • MITIGATION: Required to ensure that there are bus shelters outfitted with realtime traveler 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 from the site. <p>The applicant should refer to the <i>LATR Guidelines</i> to determine the applicable scoping distance requirement and the applicable number of bus shelters.</p> <p>Record scoping distance here _____ feet</p> <p>Record the applicable number of bus shelters here _____</p>
<p>19. Proportionality and Cost Estimates</p> <p>(For information purposes only. These estimates are subject to change.)</p>	<ul style="list-style-type: none"> • Version of Cost Estimation Tool _____ • Version of LATR Proportionality Guide Tool _____ • Estimated Proportionality Guide amount \$_____
<p>Additional Analysis or Software Required</p>	<p><input type="checkbox"/> Queuing Analysis <input type="checkbox"/> Crash Analysis <input type="checkbox"/> VISSIM</p> <p><input type="checkbox"/> Signal Warrant Analysis <input type="checkbox"/> Synchro <input type="checkbox"/> CORSIM</p> <p><input type="checkbox"/> Weaving/Merge Analysis <input type="checkbox"/> SIDRA <input type="checkbox"/> Other _____</p>
<p>M-NCPPC Clarifications</p> <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 	<p>Additional Assumptions & Special Circumstances for Discussion</p>

<p>Applicant will work with M-NCPPC staff to amend the scope to accurately reflect the new proposal.</p> <ul style="list-style-type: none"> • A receipt from MCDOT showing that the transportation impact study review fee has been paid will be provided to M-NCPPC IRC Division at the time the development application is submitted. • An electronic copy of the transportation impact study and appendices will be provided to Planning Department and MCDOT in electronic format.* <p>* At the time of this document's publication, the Planning Department is accepting plan applications electronically using the E-Plans platform: (https://montgomeryplanning.org/resources/eplans-applicant-user-guide/)</p>	
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- HCM capacity and queuing analysis will be included in the LATR under the following scenarios:
 - Existing Conditions
 - Background Conditions
 - Future Conditions
- The 95th percentile queues and available storage will be included for key intersections.
- All Synchro and SimTraffic outputs will be included as appendices and submission will also include the Synchro files (.syn and .sim).

Additional Intersections:

11. East Jefferson Street / Rollins Avenue
12. Rockville Pike (MD 355) / Halpine Road
13. Twinbrook Parkway / Parklawn Drive
14. Randolph Road / Nebel Street
15. Rockville Pike (MD 355) / Hubbard Drive / Driveway

Pipeline Developments to be Considered:

12710 Twinbrook Parkway; APNO: 820220010; Mixed-use; 49 unbuilt multi-family units; 4,089 unbuilt retail GFA

12500 Ardennes Avenue, APNO: 820240060, Residential, 213 unbuilt multi-family units

Twinbrook Quarter Phase 1A; APNO: STP2020-00401; Mixed-use; 460 unbuilt multi-family units; 270,000 unbuilt office GFA; 103,569 unbuilt retail GFA

Federal Plaza West; APNO: 120220140; Mixed-use; 500 unbuilt multi-family units; 108,965 unbuilt GFA

Wilgus; APNO: 120200140; Mixed-use 93 unbuilt single family units; 638 unbuilt multi-family units; 11,880 unbuilt retail GFA

2115 East Jefferson; APNO: 120230100; Residential; 86 unbuilt single family units

5500 Edson Lane/Peace Palace; APNO: 820060060; Office; 12,694 GFA unbuilt

Washington Science Center; APNO: 81973005B; Office; 12,857 GFA unbuilt

East Village at North Bethesda Gateway; APNO: 120140240; Mixed-use; 279 unbuilt multi-family units; 30,500 unbuilt retail GFA

MHP - Nebel Street; APNO: 120220090; Residential; 163 unbuilt multi-family units

Mid Pike Plaza; APNO: 12012002B; Mixed-use; 740 unbuilt multi-family units; 210,864 unbuilt retail GFA

Grand Park Development; APNO: 12019016A; Mixed-use; 790 unbuilt multi-family units; 75,451 unbuilt retail GFA

Evolution Labs North Bethesda; APNO: 12015001B; Mixed-use; 699,286 unbuilt other GFA

North Bethesda Town Center; APNO: 120040490; Mixed-use; 697 unbuilt multi-family units; 809,338 unbuilt office GFA; 152,791 unbuilt retail GFA

Saul Centers White Flint West; APNO 120160080; Mixed-use; 655 unbuilt multi-family units; 136,950 unbuilt office GFA

North Bethesda Market II; APNO: 12012006B; Mixed-use; 470 unbuilt multi-family units

Project: Pike Center

Policy Area: North Bethesda (Orange)

Person Trip Generation: 350 or more Net New Person Trips based on PM peak hour

Pedestrian System Adequacy

1. Pedestrian Level of Comfort: From Table 12 – 1,000'
2. Street Lighting: From Table 12 = 1,000'
3. ADA Compliance: ½ of Table 12 – 500'

Table 12. Pedestrian Adequacy Test Scoping

Peak-Hour Person Trips Generated	Red and Orange Policy Area Walkshed*	Yellow and Green Policy Area Walkshed*
50 – 99	400'	250'
100 – 199	750'	400'
200 – 349	900'	500'
350 or more	1,000'	600'

* The maximum required length of sidewalk and streetlighting improvements beyond the frontage is 4 times the appropriate value in this column. The maximum span required for ADA improvements beyond the frontage is equal to the appropriate value in this column.

Bicycle System Adequacy

1. LTS-2: From Table 13 – 1,000'

Table 13. Bicycle Adequacy Test Scoping

Peak-Hour Person Trips Generated	Red and Orange Policy Areas	Yellow and Green Policy Areas
50 – 99	400'	250'
100 – 199	750'	400'
200 – 349	900'	500'
350 or more	1,000'	600'

Bus Transit System Adequacy

1. Bus Shelters: From Table 14 – 4 shelters within 1,500'

Table 14. Bus Transit Adequacy Test Scoping

Peak-Hour Person Trips Generated	Red and Orange Policy Areas	Yellow Policy Areas
50 – 99	2 shelters within 500'	1 shelter within 500'
100 – 199	2 shelters within 1,000'	2 shelters within 1,000'
200 – 349	3 shelters within 1,300'	2 shelters within 1,300'
350 or more	4 shelters within 1,500'	3 shelters within 1,500'

Table 1a

Pike Center: Phase 1

Site Development Trip Generation ⁽¹⁾

Land Use	LUC	Amount	Unit	ITE Trip Generation						Montgomery County Trip Generation			
				AM Peak Hour			PM Peak Hour			AM Peak Hour		PM Peak Hour	
				In	Out	Total	In	Out	Total	Auto Driver	Person Trips	Auto Driver	Person Trips
Existing Uses													
Shopping Plaza -No Supermarket (40-150K)	821	81,007	SF	87	53	140	206	214	420	99	192	298	578
Phase 1 Development Plan													
Existing Development (To Be Demolished)													
Shopping Plaza -No Supermarket (40-150K)		40,007	SF										
Remainder		41,000	SF										
New Development (To Be Built)													
New Shopping Plaza -Yes Supermarket (40-150K)	821	<u>44,844</u>	SF										
Remainder still in operation		<u>41,000</u>	SF										
Total Phase 1 Development													
Shopping Plaza -Yes Supermarket (40-150K)	821	85,844	SF	188	115	303	373	404	777	215	417	552	1,070
Multifamily Housing (Mid-Rise)	221	290	DU	<u>27</u>	<u>89</u>	<u>116</u>	<u>69</u>	<u>44</u>	<u>113</u>	<u>96</u>	<u>178</u>	<u>94</u>	<u>175</u>
<i>Phase 1 Total Trips</i>				<u>215</u>	<u>204</u>	<u>419</u>	<u>442</u>	<u>449</u>	<u>891</u>	<u>311</u>	<u>595</u>	<u>646</u>	<u>1,245</u>
Phase 1 Net New Trips				128	151	279	236	235	471	212	403	348	667

Notes: (1) Trip Generation based on the Institute of Transportation Engineers' (ITE) Trip Generation Manual, 11th Edition.

Table 1b

Pike Center: Phase 2

Site Development Trip Generation ⁽¹⁾

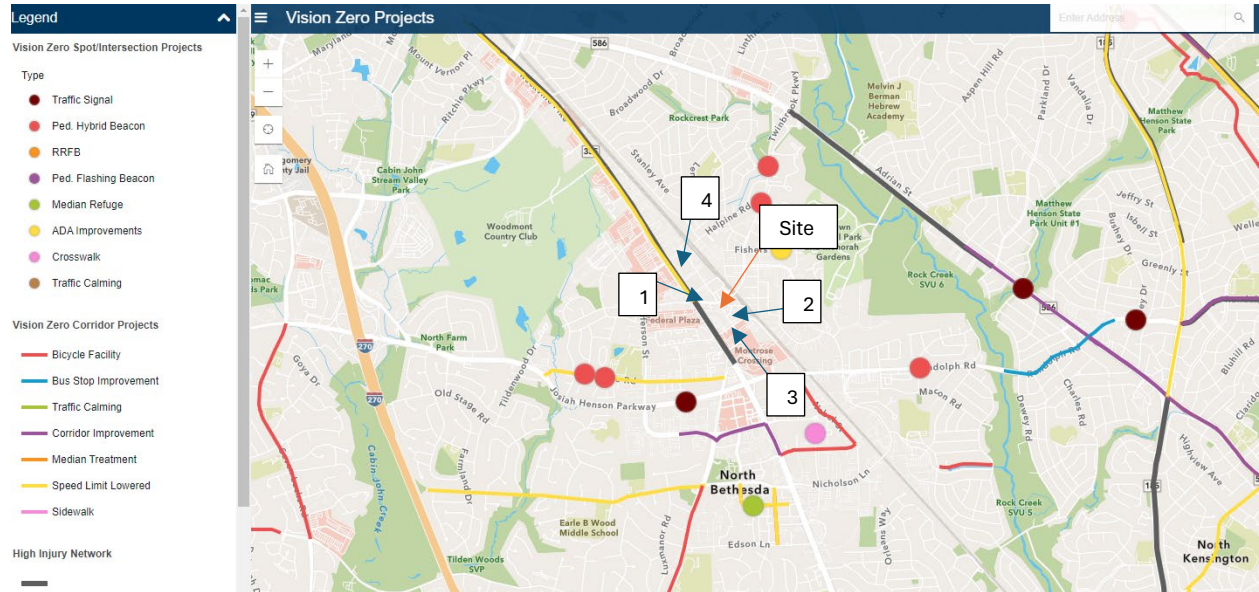
Land Use	LUC	Amount	Unit	ITE Trip Generation						Montgomery County Trip Generation			
				AM Peak Hour			PM Peak Hour			AM Peak Hour		PM Peak Hour	
				In	Out	Total	In	Out	Total	Auto Driver	Person Trips	Auto Driver	Person Trips
Existing Uses													
Shopping Plaza -No Supermarket (40-150K)	821	81,007	SF	87	53	140	206	214	420	99	192	298	578
Existing Phase 1 Development													
Total Shopping Plaza -Yes Supermarket (40-150K) - (Phase 1)	821	85,844	SF										
Remainder from Existing (To Be Demolished)		41,000	SF										
Phase 1 remainder still in operation		<u>44,844</u>	SF										
New Retail Development (To Be Built)													
New Shopping Plaza -No Supermarket (40-150K)	821	<u>44,844</u>	SF										
Total Buildout Retail													
Shopping Plaza -Yes Supermarket (40-150K)	821	89,688	SF	197	120	317	387	420	807	225	436	573	1,110
Existing Phase 1 Development													
Multifamily Housing (Mid-Rise) - (Phase 1)	221	290	DU	27	89	116	69	44	113	96	178	94	175
New Residential Development (To Be Built)													
Multifamily Housing (High-Rise)	222	470	DU	32	90	122	90	55	145	101	188	121	225
<i>Phase 2 Total Trips</i>				<u>256</u>	<u>299</u>	<u>555</u>	<u>546</u>	<u>520</u>	<u>1,066</u>	<u>422</u>	<u>802</u>	<u>788</u>	<u>1,510</u>
Phase 2 Net New Trips				169	246	415	340	306	646	323	610	490	932

Notes: (1) Trip Generation based on the Institute of Transportation Engineers' (ITE) Trip Generation Manual, 11th Edition.

Table 2
Trip Distribution/Assignment Matrix
Hypothetical Case -Rockville/North Bethesda for Residential Component

Trip Distribution by Super District	Residential Development	Montrose Road/Parkway west	MD 355 north	Randolph Road east	MD 355 south	MD 187 south	Total
01. Bethesda / Chevy Chase	7.4%	0.0%	0.0%	0.0%	3.7%	3.7%	7.4%
02. Silver Spring / Takoma Park	2.3%	0.0%	0.0%	0.0%	2.3%	0.0%	2.3%
03. Potomac / Darnestown / Travilah	5.4%	4.3%	0.0%	0.0%	0.0%	1.1%	5.4%
04. Rockville / North Bethesda	38.2%	9.6%	28.7%	0.0%	0.0%	0.0%	38.3%
05. Kensington / Wheaton	4.1%	0.0%	0.0%	3.3%	0.8%	0.0%	4.1%
06. White Oak / Fairland / Cloverly	1.6%	0.0%	0.0%	1.3%	0.3%	0.0%	1.6%
07. Gaithersburg / Shady Grove	13.4%	10.1%	3.4%	0.0%	0.0%	0.0%	13.5%
08. Aspen Hill / Olney	2.8%	0.6%	1.4%	0.8%	0.0%	0.0%	2.8%
09. Germantown / Clarksburg	1.7%	1.5%	0.2%	0.0%	0.0%	0.0%	1.7%
10. Rural West of I-270	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%
11. Rural East of I-270	0.3%	0.1%	0.1%	0.1%	0.0%	0.0%	0.3%
12. Washington, DC	11.0%	7.7%	0.0%	0.0%	0.0%	3.3%	11.0%
13. PG / AA / Cal / St. M / Chis Cos., MD	4.4%	0.0%	0.0%	0.0%	4.4%	0.0%	4.4%
14. VA / WV	6.5%	5.2%	0.0%	0.7%	0.0%	0.7%	6.6%
15. Frederick Co., MD	0.3%	0.3%	0.0%	0.0%	0.0%	0.0%	0.3%
16. Howard Co./Carroll Co., MD	0.5%	0.0%	0.1%	0.1%	0.4%	0.0%	0.6%
Total	100.0%	39.5%	33.9%	6.3%	11.9%	8.8%	100.4%
	Use ->	39%	34%	6%	12%	9%	100.0%

Vision Zero: Site is located within a High Injury Network along Rockville Pike north of Randolph Road. In addition, Rockville Pike from Twinbrook Parkway to R. Mont. Drive has undergone a speed limit reduction from 40 to 35 mph. Montrose Road also lowered the speed limit from 40 to 35 mph from Parkway to Towne Road in February 2022.



Up to 8 Speed Studies within 1,000' from site frontage. Speed study locations will be coordinated with County staff, if necessary.

Proposed Speed Study Locations:

1. Twinbrook Parkway, east of Rockville Pike (EB/WB direction)
2. Chapman Avenue, north of Bou Avenue (NB/SB direction)
3. Bou Avenue, east of Rockville Pike (EB/WB direction)
4. Rockville Pike (MD 355), north of Thompson Avenue, south of Halpine Road (NB/SB direction)

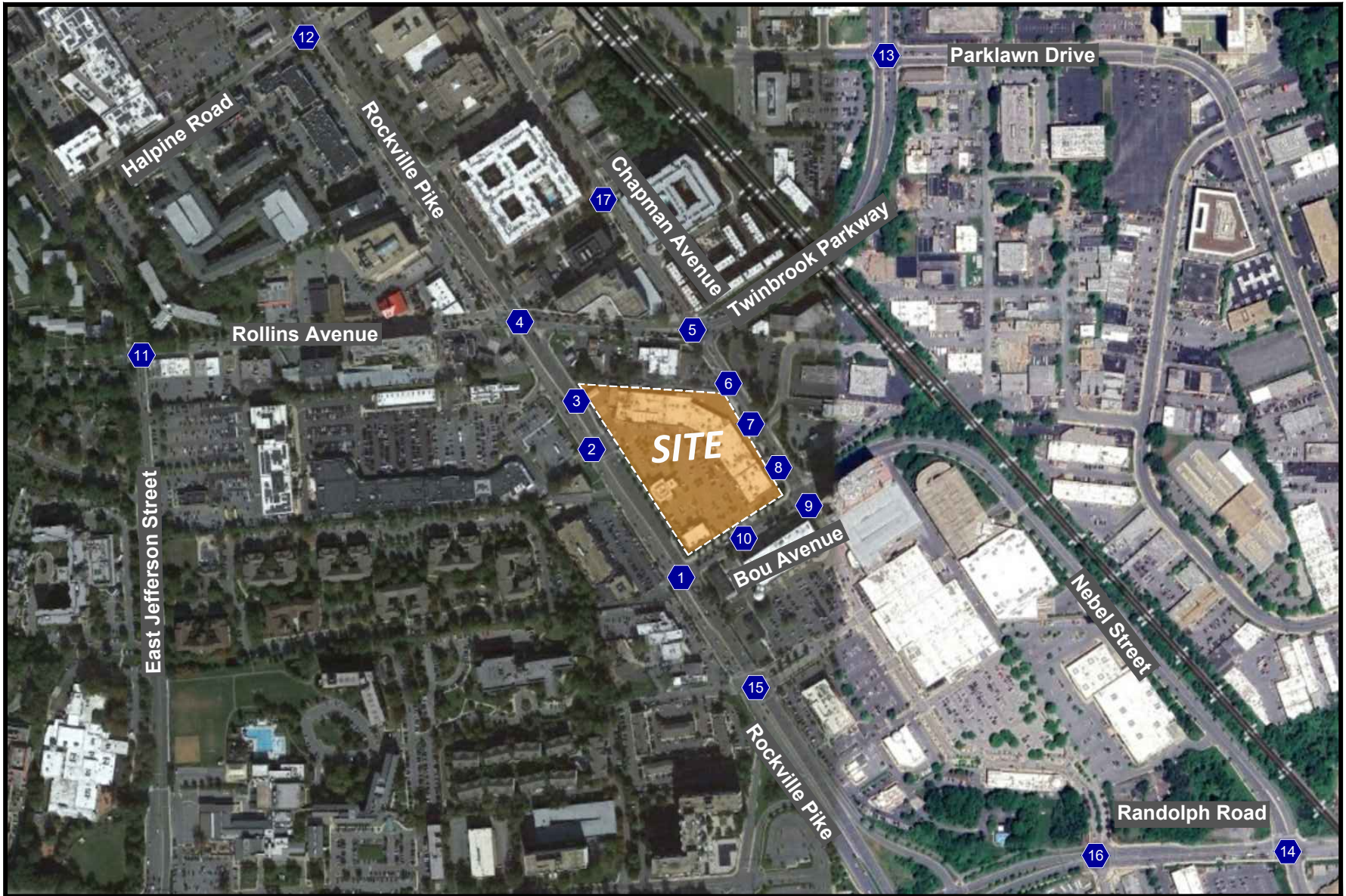



Figure 1
Study Intersections

 Study Intersection



NORTH

Pike Center
Montgomery County, Maryland

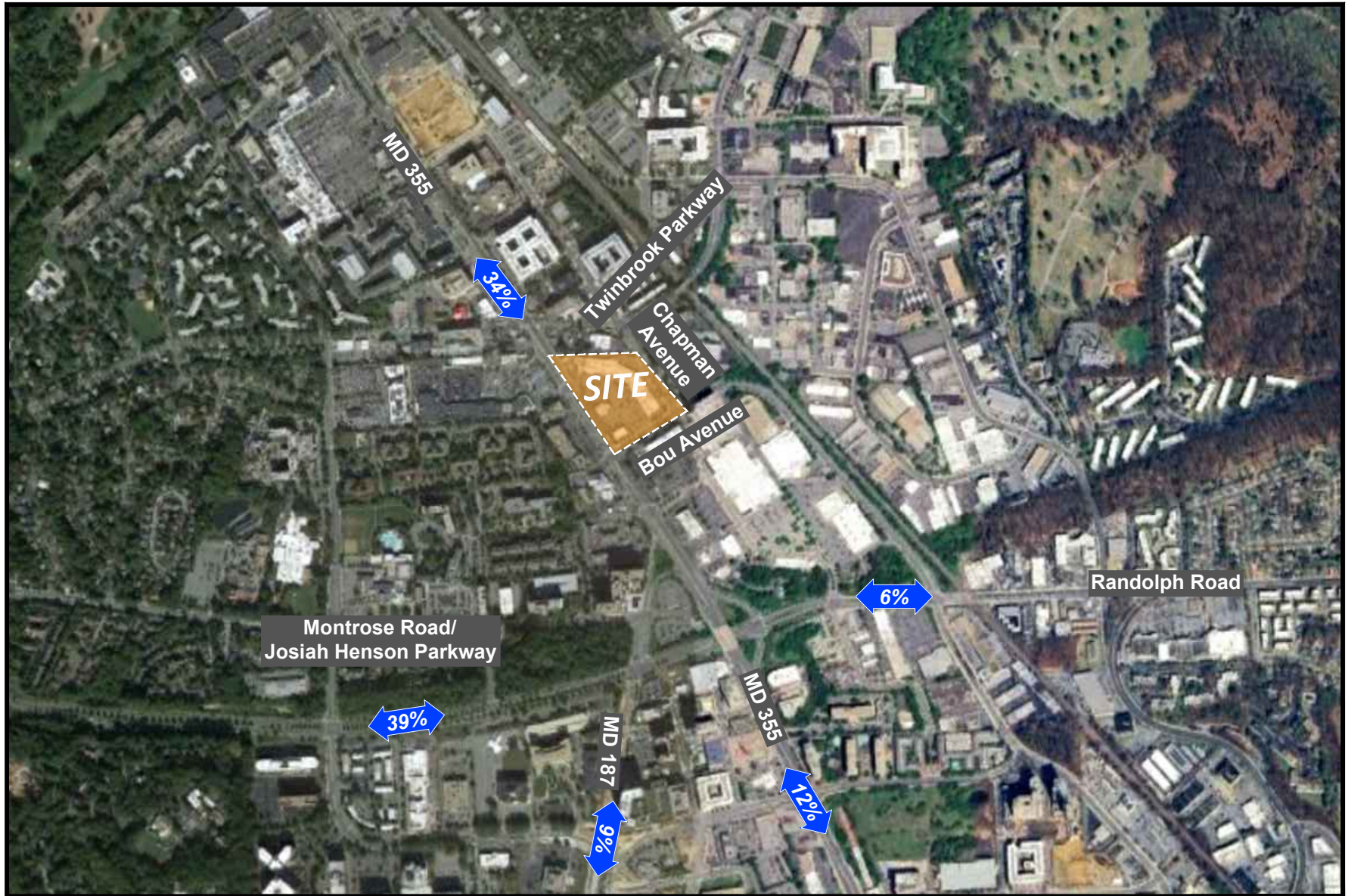



Figure 2
Site Trip Distributions

 Directional Trip Distribution




NORTH

Pike Center
Montgomery County, Maryland



Figure 3
Speed Study Locations

 Study Location



NORTH
Pike Center
Montgomery County, Maryland

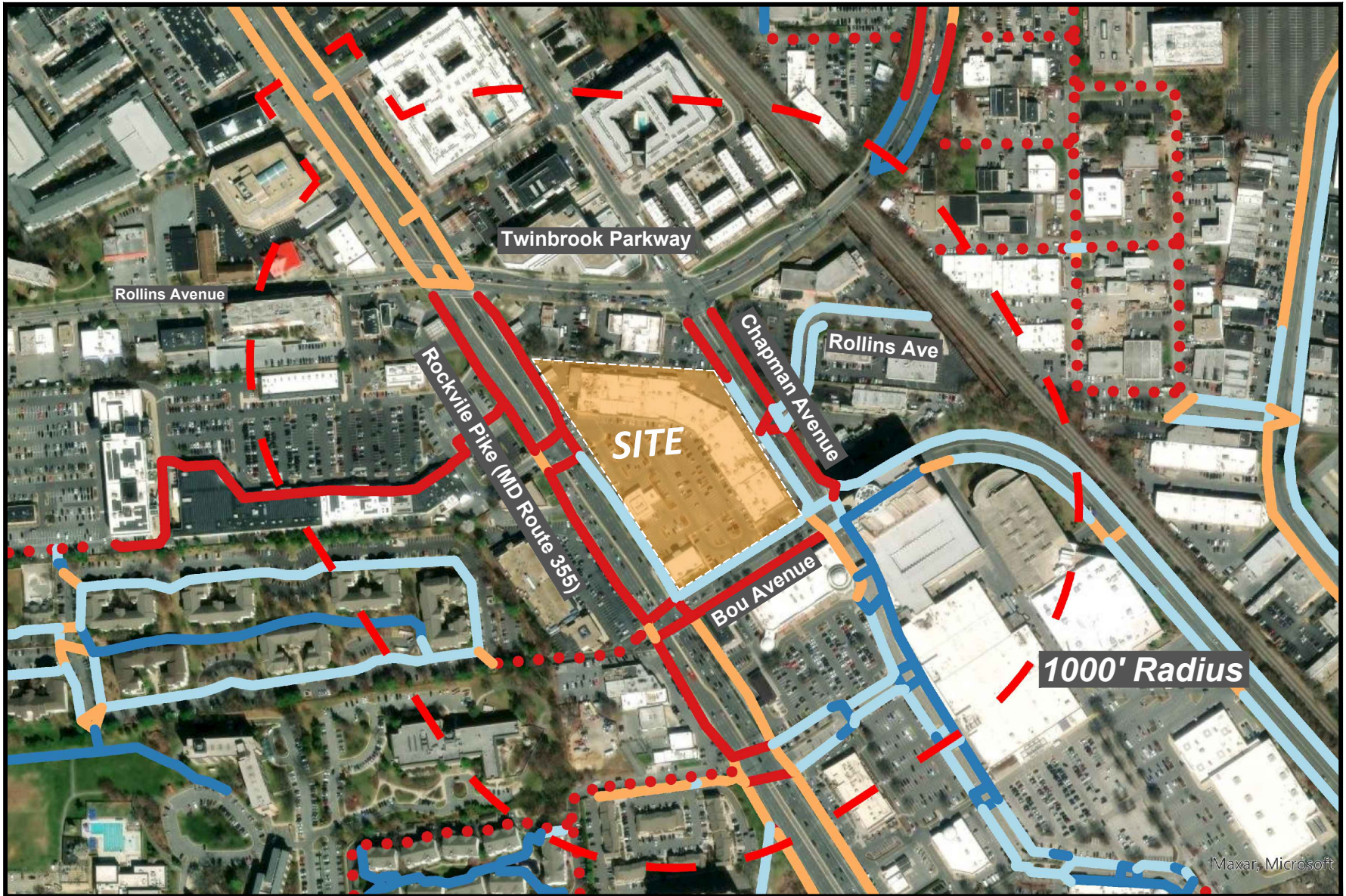


Figure 4
Pedestrian Level of Comfort (PLOC) Study Area



Pike Center
Montgomery County, Maryland

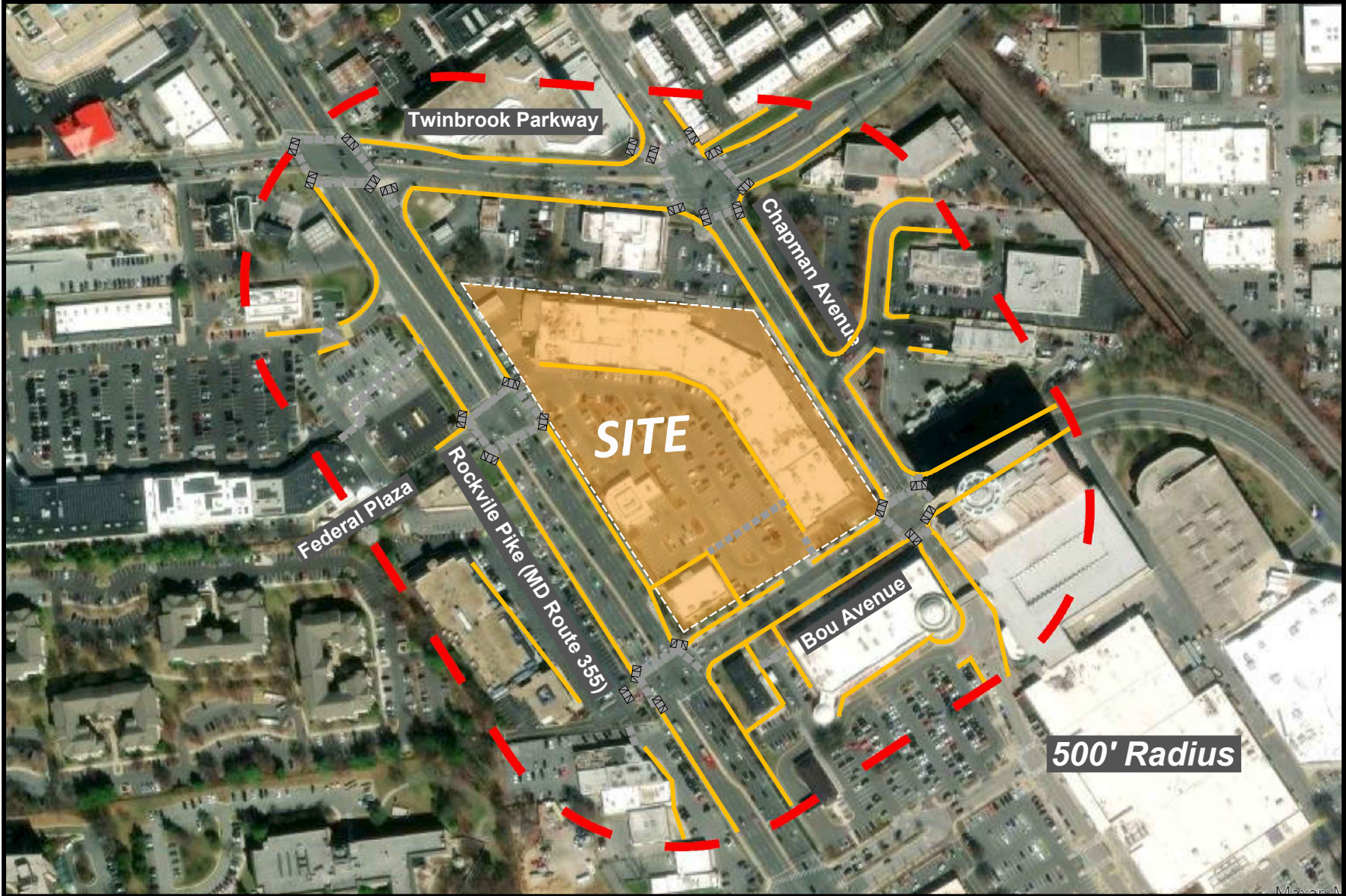





Figure 5
ADA Study Area

-  ADA Ramp
-  Pedestrian Crosswalk
-  Sidewalk



Pike Center
Montgomery County, Maryland



Figure 6
Bicycle System Study Area

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



NORTH

Pike Center
Montgomery County, Maryland

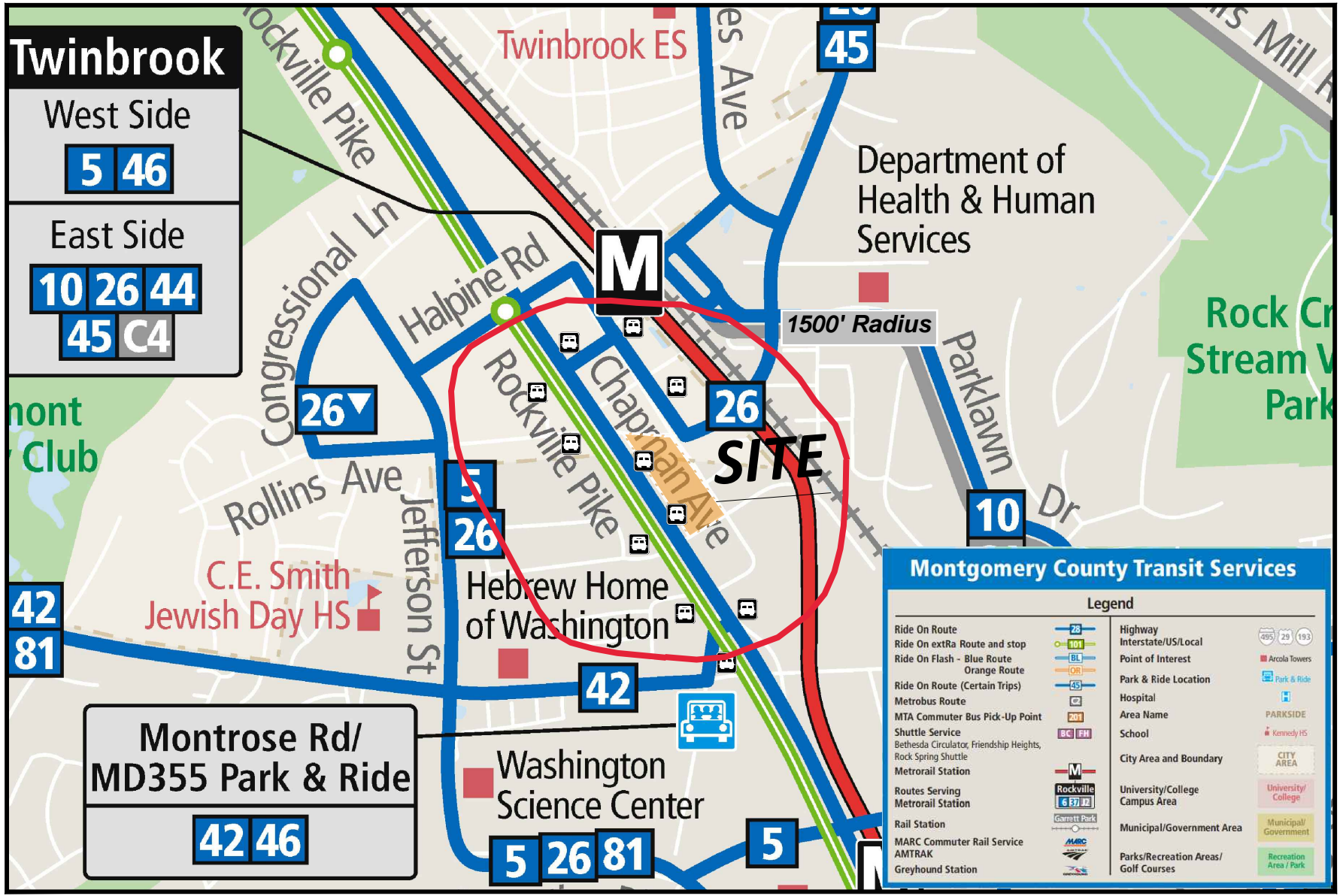


Figure 7
 Bus Transit System Adequacy

Bus Stop



Pike Center
 Montgomery County, Maryland



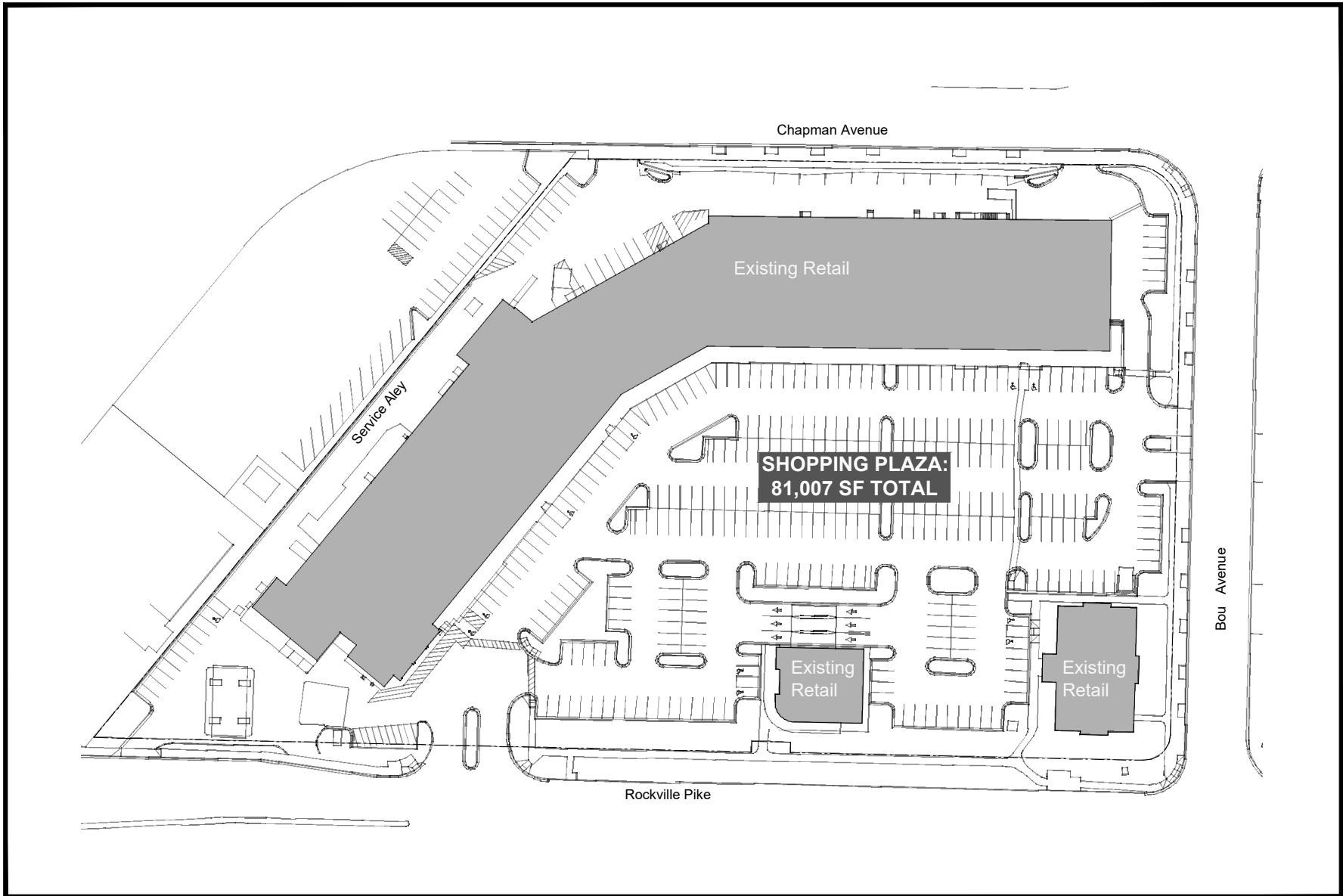


Figure 8
Existing Concept Plan



NORTH
Pike Center
Montgomery County, Maryland

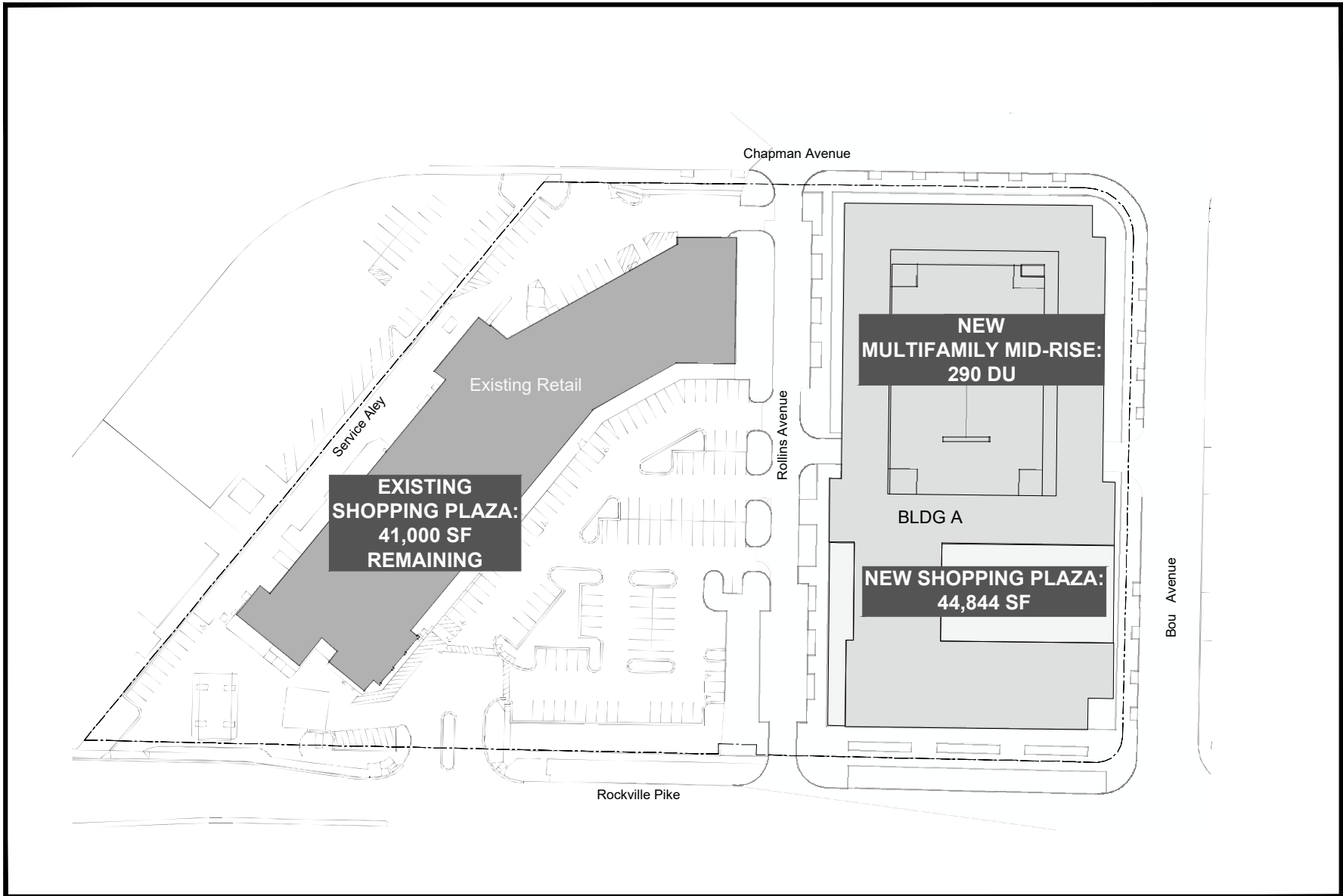


Figure 9
Concept Plan: Phase 1



NORTH
Pike Center
Montgomery County, Maryland

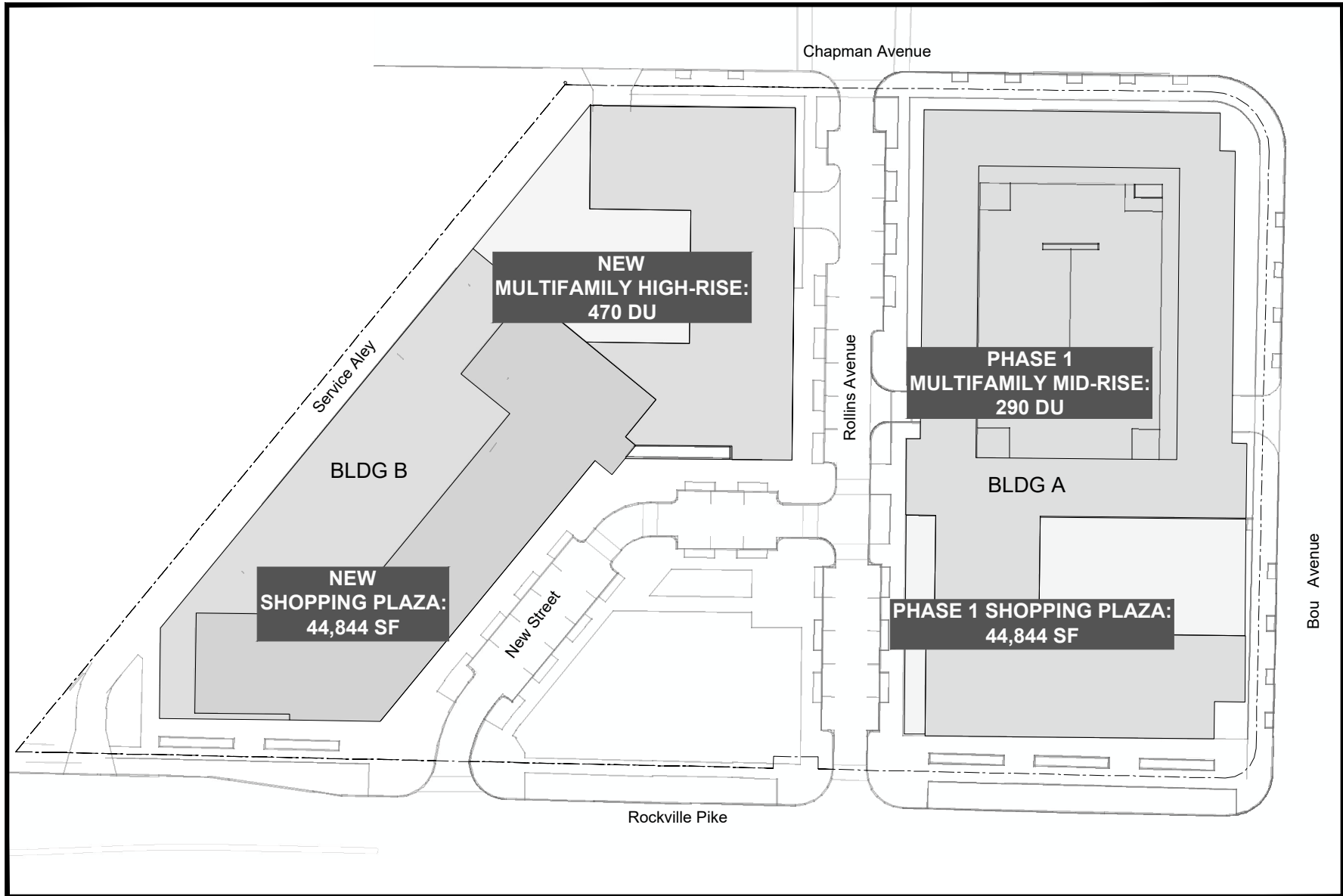


Figure 10
Concept Plan: Phase 2



Pike Center
Montgomery County, Maryland

APPENDIX B

Bus Routes

5 To Paul S. Sarbanes Transit Center (Silver Spring M)

SEE TIMEPOINT LOCATION ON ROUTE MAP

SATURDAY

	1	2	3	4	5	6	7	8
Twinbrook M	6:15	6:21	6:25	6:28	6:34	6:39	6:43	6:49
Jefferson St & Montrose Rd	7:00	7:06	7:10	7:13	7:19	7:24	7:28	7:34
North Bethesda (White Flint) M	7:45	7:51	7:56	8:00	8:06	8:11	8:16	8:22
Rockville Pike & Strathmore Ave	8:25	8:31	8:36	8:40	8:46	8:51	8:56	9:02
Connecticut & Knowles Aves	9:05	9:11	9:16	9:20	9:26	9:31	9:36	9:42
Capitol View & Leafy Aves	9:45	9:51	9:56	10:00	10:06	10:11	10:16	10:22
Second Ave & Linden Lane	10:30	10:36	10:41	10:45	10:51	10:58	11:03	11:10
Paul S. Sarbanes TC (Silver Spring) M	11:10	11:16	11:21	11:25	11:31	11:38	11:43	11:50
	11:45	11:51	11:56	12:00	12:06	12:13	12:18	12:25
	12:20	12:26	12:31	12:35	12:41	12:48	12:53	1:00
	1:05	1:11	1:16	1:20	1:26	1:33	1:38	1:45
	1:50	1:56	2:01	2:05	2:11	2:18	2:23	2:30
	2:35	2:41	2:46	2:50	2:56	3:03	3:08	3:15
	3:20	3:26	3:31	3:35	3:41	3:47	3:53	4:00
	4:05	4:11	4:17	4:23	4:29	4:35	4:41	4:47
	4:53	4:59	5:05	5:11	5:17	5:23	5:29	5:35
	5:41	5:47	5:53	5:59	6:05	6:11	6:17	6:23
	6:31	6:37	6:43	6:49	6:55	7:01	7:07	7:13
	7:23	7:29	7:35	7:41	7:47	7:53	7:59	8:05
	8:15	8:21	8:27	8:33	8:39	8:45	8:51	8:57
	9:09	9:15	9:21	9:27	9:33	9:39	9:45	9:51
	10:05	10:11	10:17	10:23	10:29	10:35	10:41	10:47
	10:53	10:59	11:05	11:11	11:17	11:23	11:29	11:35
	11:41	11:47	11:53	11:59	12:05	12:11	12:17	12:23
	12:31	12:37	12:43	12:49	12:55	1:01	1:07	1:13

NOTES: • Trip also serves Victory Forest.

5 To Twinbrook M

SEE TIMEPOINT LOCATION ON ROUTE MAP

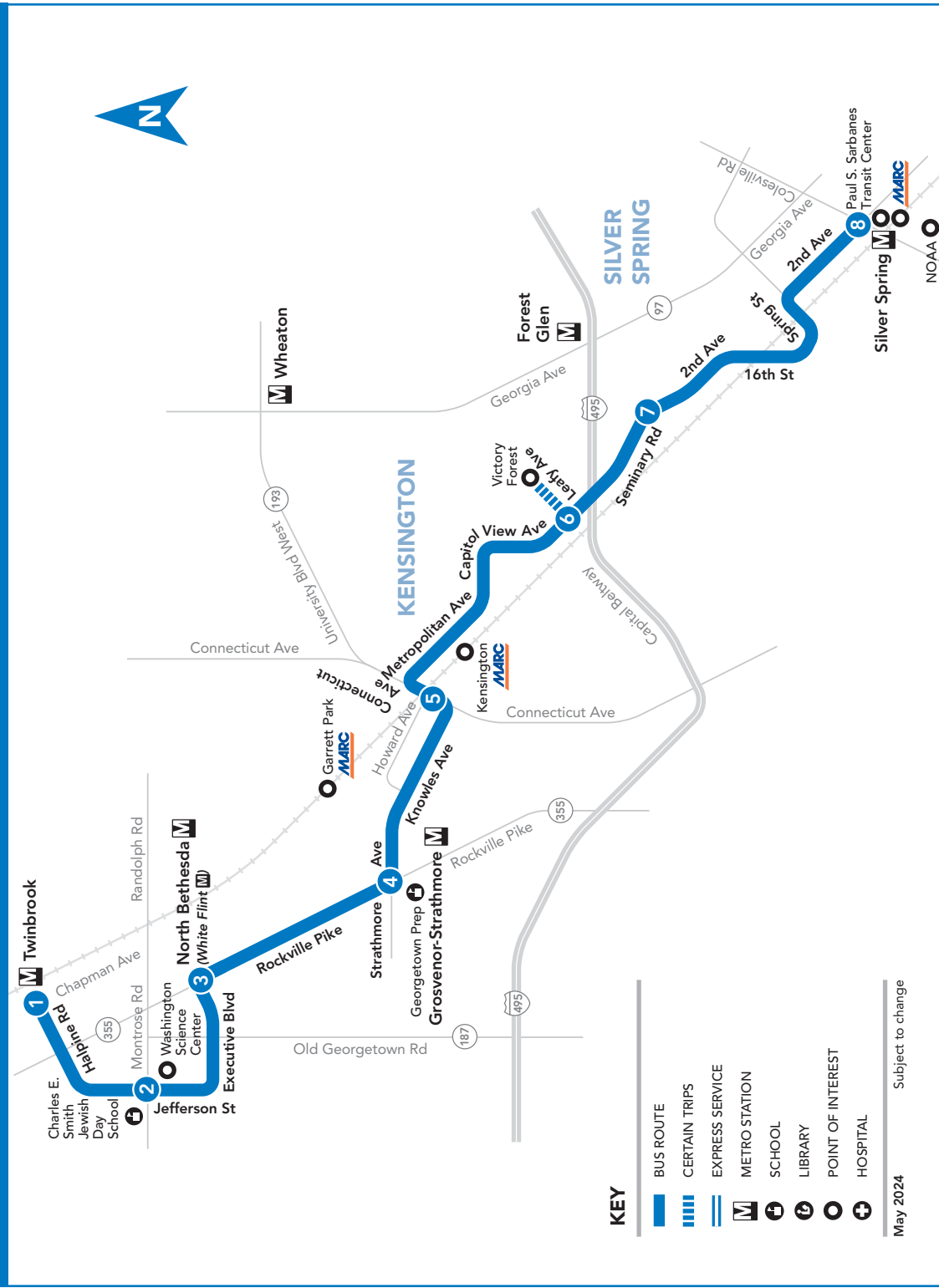
SATURDAY

	8	7	6	5	4	3	2	1
Paul S. Sarbanes TC (Silver Spring) M	5:35	5:43	5:46	5:52	5:56	5:59	6:05	6:10
Second Ave & Linden Lane	6:20	6:28	6:31	6:37	6:41	6:44	6:50	6:55
Capitol View & Leafy Aves	7:00	7:09	7:12	7:19	7:23	7:27	7:33	7:38
Connecticut & Knowles Aves	7:40	7:49	7:52	7:59	8:03	8:07	8:13	8:18
Rockville Pike & Strathmore Ave	8:20	8:29	8:32	8:39	8:43	8:47	8:53	8:58
North Bethesda (White Flint) M	9:00	9:09	9:12	9:19	9:23	9:27	9:33	9:38
Jefferson St & Montrose Rd	9:40	9:49	9:53	10:01	10:05	10:10	10:17	10:23
Twinbrook M	10:20	10:29	10:33	10:41	10:45	10:50	10:57	11:03
	10:55	11:04	11:08	11:16	11:20	11:25	11:32	11:38
	11:30	11:39	11:43	11:51	11:55	12:00	12:07	12:13
	12:05	12:14	12:18	12:26	12:30	12:35	12:42	12:48
	12:40	12:49	12:53	1:01	1:05	1:10	1:17	1:23
	1:15	1:24	1:28	1:36	1:40	1:45	1:52	1:58
	2:00	2:09	2:13	2:21	2:25	2:30	2:37	2:43
	2:45	2:54	2:58	3:06	3:10	3:15	3:22	3:28
	3:30	3:39	3:43	3:51	3:55	4:00	4:07	4:13
	4:15	4:24	4:28	4:36	4:40	4:45	4:52	4:58
	5:00	5:09	5:13	5:21	5:25	5:30	5:37	5:43
	5:45	5:54	5:58	6:06	6:10	6:15	6:22	6:28
	6:30	6:39	6:43	6:51	6:55	7:00	7:07	7:13
	7:15	7:24	7:28	7:36	7:40	7:45	7:52	7:58
	8:00	8:09	8:13	8:21	8:25	8:30	8:37	8:43
	8:45	8:54	8:58	9:06	9:10	9:15	9:22	9:28
	9:30	9:39	9:43	9:51	9:55	10:00	10:07	10:13
	10:15	10:24	10:28	10:36	10:40	10:45	10:52	10:58
	10:55	11:04	11:08	11:16	11:20	11:25	11:32	11:38
	11:30	11:39	11:43	11:51	11:55	12:00	12:07	12:13
	12:05	12:14	12:18	12:26	12:30	12:35	12:42	12:48
	12:40	12:49	12:53	1:01	1:05	1:10	1:17	1:23
	1:15	1:24	1:28	1:36	1:40	1:45	1:52	1:58
	2:00	2:09	2:13	2:21	2:25	2:30	2:37	2:43
	2:45	2:54	2:58	3:06	3:10	3:15	3:22	3:28
	3:30	3:39	3:43	3:51	3:55	4:00	4:07	4:13
	4:15	4:24	4:28	4:36	4:40	4:45	4:52	4:58
	5:00	5:09	5:13	5:21	5:25	5:30	5:37	5:43
	5:45	5:54	5:58	6:06	6:10	6:15	6:22	6:28
	6:30	6:39	6:43	6:51	6:55	7:00	7:07	7:13
	7:15	7:24	7:28	7:36	7:40	7:45	7:52	7:58
	8:00	8:09	8:13	8:21	8:25	8:30	8:37	8:43
	8:45	8:54	8:58	9:06	9:10	9:15	9:22	9:28
	9:30	9:39	9:43	9:51	9:55	10:00	10:07	10:13
	10:15	10:24	10:28	10:36	10:40	10:45	10:52	10:58
	10:55	11:04	11:08	11:16	11:20	11:25	11:32	11:38
	11:30	11:39	11:43	11:51	11:55	12:00	12:07	12:13
	12:05	12:14	12:18	12:26	12:30	12:35	12:42	12:48
	12:40	12:49	12:53	1:01	1:05	1:10	1:17	1:23
	1:15	1:24	1:28	1:36	1:40	1:45	1:52	1:58
	2:00	2:09	2:13	2:21	2:25	2:30	2:37	2:43
	2:45	2:54	2:58	3:06	3:10	3:15	3:22	3:28
	3:30	3:39	3:43	3:51	3:55	4:00	4:07	4:13
	4:15	4:24	4:28	4:36	4:40	4:45	4:52	4:58
	5:00	5:09	5:13	5:21	5:25	5:30	5:37	5:43
	5:45	5:54	5:58	6:06	6:10	6:15	6:22	6:28
	6:30	6:39	6:43	6:51	6:55	7:00	7:07	7:13
	7:15	7:24	7:28	7:36	7:40	7:45	7:52	7:58
	8:00	8:09	8:13	8:21	8:25	8:30	8:37	8:43
	8:45	8:54	8:58	9:06	9:10	9:15	9:22	9:28
	9:30	9:39	9:43	9:51	9:55	10:00	10:07	10:13
	10:15	10:24	10:28	10:36	10:40	10:45	10:52	10:58
	10:55	11:04	11:08	11:16	11:20	11:25	11:32	11:38
	11:30	11:39	11:43	11:51	11:55	12:00	12:07	12:13
	12:05	12:14	12:18	12:26	12:30	12:35	12:42	12:48
	12:40	12:49	12:53	1:01	1:05	1:10	1:17	1:23
	1:15	1:24	1:28	1:36	1:40	1:45	1:52	1:58
	2:00	2:09	2:13	2:21	2:25	2:30	2:37	2:43
	2:45	2:54	2:58	3:06	3:10	3:15	3:22	3:28
	3:30	3:39	3:43	3:51	3:55	4:00	4:07	4:13
	4:15	4:24	4:28	4:36	4:40	4:45	4:52	4:58
	5:00	5:09	5:13	5:21	5:25	5:30	5:37	5:43
	5:45	5:54	5:58	6:06	6:10	6:15	6:22	6:28
	6:30	6:39	6:43	6:51	6:55	7:00	7:07	7:13
	7:15	7:24	7:28	7:36	7:40	7:45	7:52	7:58
	8:00	8:09	8:13	8:21	8:25	8:30	8:37	8:43
	8:45	8:54	8:58	9:06	9:10	9:15	9:22	9:28
	9:30	9:39	9:43	9:51	9:55	10:00	10:07	10:13
	10:15	10:24	10:28	10:36	10:40	10:45	10:52	10:58
	10:55	11:04	11:08	11:16	11:20	11:25	11:32	11:38
	11:30	11:39	11:43	11:51	11:55	12:00	12:07	12:13
	12:05	12:14	12:18	12:26	12:30	12:35	12:42	12:48
	12:40	12:49	12:53	1:01	1:05	1:10	1:17	1:23
	1:15	1:24	1:28	1:36	1:40	1:45	1:52	1:58
	2:00	2:09	2:13	2:21	2:25	2:30	2:37	2:43
	2:45	2:54	2:58	3:06	3:10	3:15	3:22	3:28
	3:30	3:39	3:43	3:51	3:55	4:00	4:07	4:13
	4:15	4:24	4:28	4:36	4:40	4:45	4:52	4:58
	5:00	5:09	5:13	5:21	5:25	5:30	5:37	5:43
	5:45	5:54	5:58	6:06	6:10	6:15	6:22	6:28
	6:30	6:39	6:43	6:51	6:55	7:00	7:07	7:13
	7:15	7:24	7:28	7:36	7:40	7:45	7:52	7:58
	8:00	8:09	8:13	8:21	8:25	8:30	8:37	8:43
	8:45	8:54	8:58	9:06	9:10	9:15	9:22	9:28
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	10:55	11:04	11:08	11:16	11:20	11:25	11:32	11:38
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	12:40	12:49	12:53	1:01	1:05	1:10	1:17	1:23
	1:15	1:24	1:28	1:36	1:40	1:45	1:52	1:58
	2:00	2:09	2:13	2:21	2:25	2:30	2:37	2:43

5

Twinbrook M – North Bethesda M (White Flint M) – Grosvenor-Strathmore M – Paul S. Sarbanes TC (Silver Spring M)

Ride On
Montgomery County Transit



- KEY**
- BUS ROUTE
 - CERTAIN TRIPS
 - EXPRESS SERVICE
 - METRO STATION
 - SCHOOL
 - LIBRARY
 - POINT OF INTEREST
 - HOSPITAL
- May 2024 Subject to change

5 To Paul S. Sarbanes Transit Center (Silver Spring M)

MONDAY THROUGH FRIDAY
SEE TIMEPOINT LOCATION ON ROUTE MAP

	Twinbrook M	Jefferson St & Montrose Rd	North Bethesda (White Flint M)	Rockville Pike & Strathmore Ave	Connecticut & Knowles Aves	Capitol View & Leafy Aves	Linden Lane & Second Ave	Paul S. Sarbanes TC (Silver Spring M)
1	5:40	5:45	5:49	5:52	5:56	6:00	6:05	6:11
2	6:15	6:22	6:27	6:31	6:36	6:41	6:46	6:53
3	6:50	6:57	7:02	7:06	7:11	7:16	7:21	7:28
4	7:20	7:27	7:32	7:36	7:43	7:49	7:54	8:01
5	7:50	7:57	8:02	8:06	8:13	8:19	8:24	8:31
6	8:20	8:27	8:32	8:36	8:43	8:49	8:54	9:01
7	8:50	8:57	9:02	9:06	9:13	9:19	9:24	9:31
8	9:20	9:27	9:32	9:36	9:43	9:49	9:54	10:01
9	9:50	9:57	10:02	10:06	10:12	10:19	10:25	10:32
10	10:20	10:27	10:32	10:36	10:42	10:49	10:55	11:02
11	10:50	10:57	11:02	11:06	11:12	11:19	11:25	11:32
12	11:25	11:32	11:37	11:41	11:47	11:54	12:00	12:07
13	12:00	12:07	12:12	12:16	12:22	12:29	12:35	12:42
14	12:35	12:42	12:47	12:51	12:57	1:04	1:10	1:17
15	1:10	1:17	1:22	1:26	1:32	1:39	1:45	1:52
16	1:45	1:52	1:57	2:01	2:07	2:14	2:20	2:27
17	2:15	2:22	2:27	2:31	2:37	2:44	2:50	2:57
18	2:40	2:48	2:54	2:59	3:08	3:14	3:19	3:26
19	3:00	3:08	3:14	3:19	3:28	3:34	3:39	3:46
20	3:20	3:28	3:34	3:39	3:48	3:54	3:59	4:06
21	3:35	3:43	3:49	3:54	4:03	4:09	4:14	4:21
22	3:50	3:58	4:04	4:10	4:21	4:28	4:33	4:41
23	4:05	4:13	4:19	4:25	4:36	4:43	4:48	4:56
24	4:20	4:28	4:34	4:40	4:51	4:58	5:03	5:11
25	4:35	4:43	4:49	4:55	5:06	5:13	5:18	5:26
26	4:50	4:58	5:04	5:10	5:21	5:28	5:33	5:41
27	5:05	5:13	5:19	5:25	5:36	5:43	5:48	5:56
28	5:20	5:28	5:34	5:40	5:51	5:58	6:03	6:11
29	5:40	5:48	5:54	6:00	6:11	6:18	6:23	6:31
30	6:05	6:13	6:19	6:25	6:36	6:43	6:48	6:56
31	6:35	6:43	6:49	6:55	7:06	7:13	7:18	7:26
32	7:05	7:11	7:17	7:22	7:31	7:36	7:41	7:48
33	7:35	7:41	7:47	7:52	8:01	8:06	8:11	8:18
34	8:05	8:11	8:16	8:20	8:27	8:32	8:36	8:43
35	8:35	8:41	8:46	8:50	8:57	9:02	9:06	9:13
36	9:10	9:16	9:21	9:25	9:32	9:37	9:41	9:48
37	9:50	9:56	10:01	10:05	10:10	10:15	10:19	10:26
38	10:30	10:36	10:41	10:45	10:50	10:55	10:59	11:06
39	11:10	11:16	11:21	11:25	11:30	11:35	11:39	11:46
40	11:55	12:01	12:06	12:09	12:14	12:18	12:22	12:28
41	12:40	12:46	12:51	12:54	12:59	1:03	1:07	1:13
42	1:35	1:41	1:46	1:49	1:54	1:58	2:02	2:08

NOTES: • Trip also serves Victory Forest.

SEE REVERSE FOR SATURDAY SERVICE
SEE REVERSE FOR SUNDAY SERVICE

5 To Twinbrook M

MONDAY THROUGH FRIDAY
SEE TIMEPOINT LOCATION ON ROUTE MAP

	Twinbrook M	Jefferson St & Montrose Rd	North Bethesda (White Flint M)	Rockville Pike & Strathmore Ave	Connecticut & Knowles Aves	Capitol View & Leafy Aves	Linden Lane & Second Ave	Paul S. Sarbanes TC (Silver Spring M)	Wheaton M
1	5:00	5:06	5:10	5:16	5:19	5:22	5:27	5:32	5:32
2	5:30	5:36	5:40	5:46	5:49	5:52	5:57	6:02	6:02
3	5:50	5:59	6:03	6:10	6:15	6:19	6:25	6:30	6:30
4	6:10	6:19	6:23	6:30	6:35	6:39	6:45	6:50	6:50
5	6:25	6:34	6:38	6:45	6:50	6:54	7:00	7:05	7:05
6	6:40	6:49	6:53	7:00	7:05	7:09	7:15	7:20	7:20
7	6:55	7:04	7:08	7:15	7:20	7:24	7:30	7:35	7:35
8	7:10	7:19	7:23	7:30	7:35	7:39	7:45	7:50	7:50
9	7:25	7:34	7:38	7:45	7:50	7:54	8:00	8:05	8:05
10	7:40	7:49	7:53	8:00	8:05	8:09	8:15	8:20	8:20
11	7:55	8:04	8:08	8:15	8:20	8:24	8:30	8:35	8:35
12	8:15	8:24	8:28	8:35	8:40	8:44	8:50	8:55	8:55
13	8:40	8:49	8:53	9:00	9:05	9:09	9:15	9:20	9:20
14	9:05	9:14	9:18	9:25	9:30	9:34	9:40	9:45	9:45
15	9:30	9:39	9:43	9:51	9:56	10:01	10:07	10:12	10:12
16	10:00	10:09	10:13	10:21	10:26	10:31	10:36	10:41	10:41
17	10:35	10:44	10:48	10:56	11:01	11:06	11:12	11:17	11:17
18	11:10	11:19	11:23	11:31	11:36	11:41	11:46	11:51	11:51
19	11:45	11:54	11:58	12:06	12:11	12:16	12:22	12:27	12:27
20	12:20	12:29	12:33	12:41	12:46	12:51	12:56	13:01	13:01
21	12:55	1:04	1:08	1:16	1:21	1:26	1:32	1:37	1:37
22	1:30	1:39	1:43	1:51	1:56	2:01	2:06	2:11	2:11
23	2:05	2:14	2:18	2:26	2:31	2:36	2:42	2:47	2:47
24	2:35	2:44	2:48	2:56	3:01	3:06	3:11	3:16	3:16
25	3:05	3:17	3:21	3:28	3:33	3:38	3:45	3:50	3:50
26	3:30	3:42	3:46	3:53	3:58	4:03	4:10	4:15	4:15
27	3:55	4:07	4:11	4:18	4:23	4:28	4:35	4:40	4:40
28	4:20	4:32	4:36	4:43	4:48	4:53	5:00	5:05	5:05
29	4:45	4:57	5:01	5:08	5:13	5:18	5:25	5:30	5:30
30	5:10	5:22	5:26	5:33	5:38	5:43	5:50	5:55	5:55
31	5:40	5:52	5:56	6:03	6:08	6:13	6:20	6:25	6:25
32	6:10	6:22	6:26	6:33	6:38	6:43	6:50	6:55	6:55
33	6:40	6:52	6:56	7:03	7:08	7:13	7:20	7:25	7:25
34	7:15	7:24	7:27	7:34	7:40	7:44	7:50	7:55	7:55
35	7:50	7:59	8:02	8:09	8:15	8:19	8:25	8:30	8:30
36	8:25	8:34	8:37	8:44	8:50	8:54	9:00	9:05	9:05
37	9:05	9:13	9:16	9:23	9:27	9:31	9:36	9:42	9:42
38	9:45	9:53	9:56	10:03	10:07	10:11	10:16	10:22	10:22
39	10:25	10:33	10:36	10:43	10:47	10:51	10:56	11:02	11:02
40	11:10	11:18	11:21	11:28	11:32	11:36	11:41	11:47	11:47
41	12:00	12:08	12:11	12:16	12:20	12:23	12:28	12:32	12:32
42	12:55	1:03	1:06	1:11	1:15	1:18	1:23	1:27	1:27

NOTES: • Trip also serves Victory Forest.

SEE REVERSE FOR SATURDAY SERVICE
SEE REVERSE FOR SUNDAY SERVICE

WELCOME TO RIDE ON

RIDE ON is a community bus service operated by the Montgomery County Department of Transportation. RIDE ON operates over 75 routes that serve all 13 Montgomery County Metrorail stations and 7 MARC stations. For detailed information, or to have timetables mailed, call 311. Outside Montgomery County 240-777-0311

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

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

For more information, or to request this document in an alternate format or translated into another language, please call 311, or outside Montgomery County 240-777-0311.

Para más información o para pedir este documento en un formato diferente o traducido a otro idioma, por favor, llame al 311 o de fuera del Condado de Montgomery al 240-777-0311.

如需更多信息、需要以其它格式提供本文档或需要将本文档翻译成其它语言，请拨打311。如果您不在蒙哥马利郡，请拨打240-777-0311。

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፣ አባዛዎንን በ 311 ወይም ከሞንትጎመሪ ካውንቲ ውጪ 240-777-0311 ይደውሉ።

Pour plus d'informations ou pour recevoir un exemplaire de ce document sous un format différent ou traduit dans une autre langue, veuillez composer le 311 ou le 240-777-0311, à l'extérieur du comté de Montgomery.

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

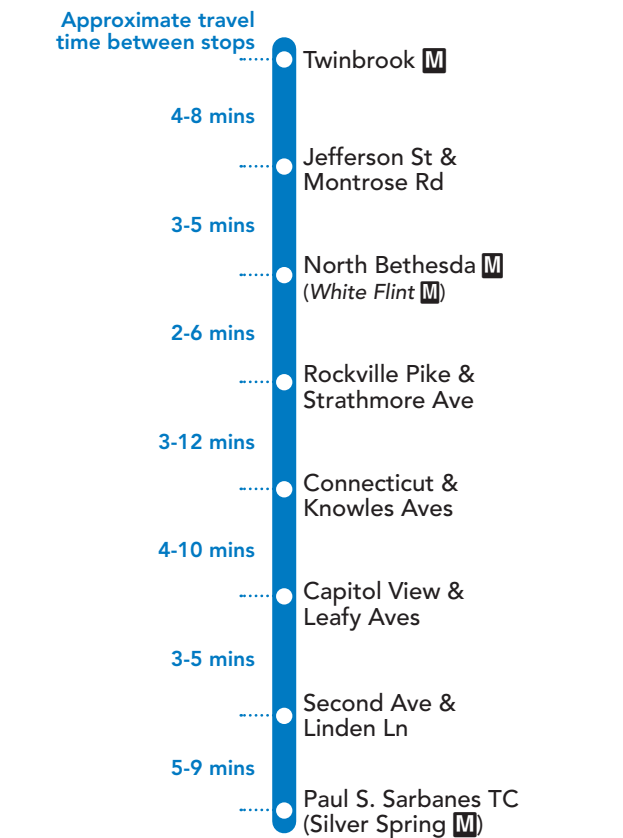
Weekday Schedule operates on Indigenous Peoples' Day
Saturday Schedule operates on Independence Day
Sunday Schedule operates on New Year's Day, Memorial Day, Labor Day, Thanksgiving Day, Christmas Day
Special Schedule operates on MLK, Jr. Day, Presidents' Day, Juneteenth, Veterans Day

- Like us on Facebook facebook.com/RideOnMCT
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- YouTube youtube.com/RideOnMCT
- Instagram instagram.com/RideOnMCT

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

EFFECTIVE: MAY 5, 2024

5



SERVICE DAYS
DAILY

Ride On
Montgomery County Transit

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

26 To Montgomery Mall Transit Center

MONDAY THROUGH FRIDAY

SEE TIMEPOINT LOCATION ON ROUTE MAP

	Glenmont Bel Pre & Layhill Rds	Homestead Rd & Longmead King Dr	Connecticut & Georgia Aves	Parkland Dr & Aspen Hill Rd	Twinbrook Pkwy & Veirs Mill Rd	Twinbrook (East)	Jefferson St & Montrose Rd	North Bethesda (White Flint)	Rockledge & Rock Spring Dr	Montgomery Mall Transit Center	
	1	2	3	4	5	6	7	8	9	10	11
4:55	5:01	5:06	5:14	5:17	5:23	5:28	5:37	5:42	5:49	5:52	
5:30	5:36	5:41	5:49	5:52	5:58	6:03	6:12	6:17	6:24	6:27	
6:00	6:08	6:13	6:21	6:24	6:30	6:35	6:47	6:53	7:03	7:06	
6:25	6:33	6:38	6:46	6:50	6:58	7:03	7:15	7:21	7:31	7:34	
6:45	6:53	6:58	7:06	7:10	7:18	7:23	7:35	7:41	7:51	7:54	
7:05	7:13	7:18	7:26	7:30	7:38	7:43	7:55	8:01	8:11	8:14	
7:25	7:33	7:38	7:46	7:50	7:58	8:03	8:15	8:21	8:31	8:34	
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10:10	10:18	10:23	10:31	10:34	10:40	10:44	10:56	11:02	11:11	11:14	
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9:45	9:51	9:56	10:03	10:06	10:12	10:16	10:24	10:29	10:38	10:41	
10:30	10:36	10:41	10:48	10:51	10:57	11:01	11:09	11:14	11:21	11:24	
11:15	11:21	11:26	11:33	11:36	11:42	11:46	11:54	11:59	12:06	12:09	
12:05	12:11	12:16	12:23	12:26	12:32	12:36	12:44	12:49	12:56	12:59	
									AM	PM	

NOTES:

26 To Glenmont

MONDAY THROUGH FRIDAY

SEE TIMEPOINT LOCATION ON ROUTE MAP

	Montgomery Mall Transit Center	Rockledge & Rock Spring Dr	North Bethesda (White Flint)	Jefferson St & Montrose Rd	Twinbrook (East)	Twinbrook Pkwy & Veirs Mill Rd	Parkland Dr & Aspen Hill Rd	Connecticut & Georgia Aves	Homestead Rd & Longmead King Dr	Bel Pre & Layhill Rds	Glenmont
	11	10	9	8	7	6	5	4	3	2	1
4:25	4:29	4:35	4:39	4:50	4:55	5:00	5:05	5:11	5:16	5:21	
5:00	5:04	5:10	5:14	5:25	5:30	5:35	5:40	5:46	5:51	5:56	
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6:25	6:29	6:37	6:44	6:58	7:03	7:09	7:14	7:21	7:27	7:32	
6:45	6:49	6:57	7:04	7:18	7:24	7:30	7:35	7:42	7:48	7:53	
7:05	7:09	7:17	7:24	7:38	7:44	7:50	7:55	8:02	8:08	8:13	
7:25	7:29	7:37	7:44	7:58	8:04	8:10	8:15	8:22	8:28	8:33	
7:45	7:49	7:57	8:04	8:18	8:24	8:30	8:35	8:42	8:48	8:53	
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8:25	8:29	8:36	8:43	8:57	9:02	9:08	9:13	9:20	9:25	9:30	
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9:05	9:09	9:16	9:23	9:37	9:42	9:48	9:53	10:00	10:05	10:10	
9:30	9:34	9:41	9:48	10:02	10:07	10:13	10:18	10:25	10:30	10:35	
9:55	9:59	10:06	10:13	10:27	10:32	10:38	10:43	10:50	10:55	11:00	
10:25	10:29	10:36	10:43	10:57	11:02	11:08	11:13	11:20	11:25	11:30	
10:55	10:59	11:06	11:13	11:27	11:32	11:38	11:43	11:50	11:55	12:00	
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12:25	12:29	12:36	12:43	12:57	1:02	1:08	1:13	1:20	1:25	1:30	
12:55	12:59	1:08	1:16	1:31	1:37	1:43	1:48	1:55	2:00	2:06	
1:25	1:29	1:38	1:46	2:01	2:07	2:13	2:18	2:25	2:30	2:36	
1:55	1:59	2:08	2:16	2:31	2:37	2:43	2:48	2:55	3:00	3:06	
2:15	2:19	2:28	2:36	2:51	2:57	3:03	3:08	3:15	3:20	3:26	
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2:55	2:59	3:08	3:16	3:31	3:37	3:43	3:48	3:55	4:00	4:06	
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3:55	4:00	4:09	4:17	4:32	4:38	4:44	4:49	4:56	5:01	5:06	
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9:35	9:39	9:47	9:54	10:07	10:12	10:18	10:23	10:29	10:34	10:39	
10:10	10:14	10:22	10:29	10:42	10:47	10:53	10:58	11:04	11:09	11:14	
10:50	10:54	11:02	11:09	11:22	11:27	11:33	11:38	11:44	11:49	11:54	
11:35	11:39	11:47	11:54	12:07	12:12	12:18	12:23	12:29	12:34	12:39	
12:25	12:29	12:35	12:40	12:51	12:56	1:00	1:05	1:11	1:15	1:19	
									AM	PM	

NOTES:

26 To Montgomery Mall Transit Center

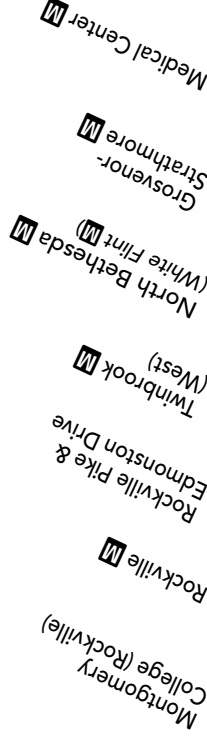
SATURDAY

SEE TIMEPOINT LOCATION ON ROUTE MAP

	Glenmont Bel Pre & Layhill Rds	Homestead Rd & Longmead King Dr	Connecticut & Georgia Aves	Parkland Dr & Aspen Hill Rd	Twinbrook Pkwy & Veirs Mill Rd	Twinbrook (East)	Jefferson St & Montrose Rd	North Bethesda (White Flint)	Rockledge & Rock Spring Dr	Montgomery Mall Transit Center	
	1	2	3	4	5	6	7	8	9	10	11
5:25	5:31	5:35	5:42	5:45	5:51	5:56	6:06	6:12	6:19	6:22	
6:10	6:16	6:20	6:27	6:30	6:36	6:41	6:51	6:57	7:04	7:07	
6:45	6:51	6:55	7:02	7:05	7:11	7:16	7:26	7:32	7:39	7:42	
7:15	7:21	7:25	7:32	7:35	7:41	7:46	7:56	8:02	8:09	8:12	

46 To Medical Center MONDAY THROUGH FRIDAY

SEE TIMEPOINT LOCATION ON ROUTE MAP



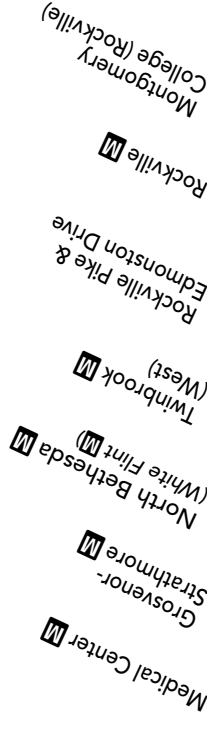
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5:40	5:50	5:55	6:00	6:07	6:12	6:20
6:20	6:30	6:35	6:40	6:47	6:52	7:00
6:50	7:01	7:07	7:13	7:21	7:28	7:40
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9:15	9:24	9:30	9:36	9:43	9:49	9:57
10:05	10:14	10:20	10:26	10:33	10:39	10:47
10:55	11:04	11:10	11:16	11:23	11:29	11:37
11:45	11:54	12:00	12:06	12:13	12:19	12:27
12:35	12:44	12:49	12:54	1:01	1:06	1:13

NOTES:

AM PM

46 To Montgomery College (Rockville) MONDAY THROUGH FRIDAY

SEE TIMEPOINT LOCATION ON ROUTE MAP



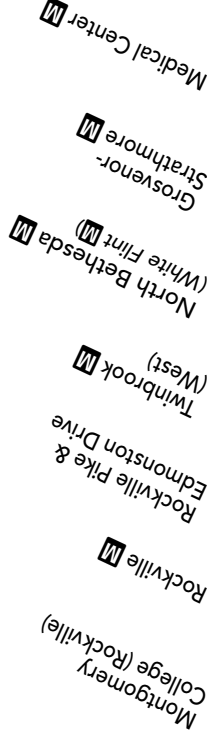
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7:15	7:24	7:28	7:34	7:40	7:45	7:57
7:50	7:59	8:03	8:09	8:15	8:20	8:32
8:15	8:24	8:28	8:34	8:40	8:45	8:57
8:35	8:43	8:48	8:55	9:02	9:08	9:21
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9:35	9:43	9:48	9:55	10:02	10:08	10:21
9:55	10:03	10:08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

NOTES:

AM PM

46 To Medical Center SATURDAY

SEE TIMEPOINT LOCATION ON ROUTE MAP



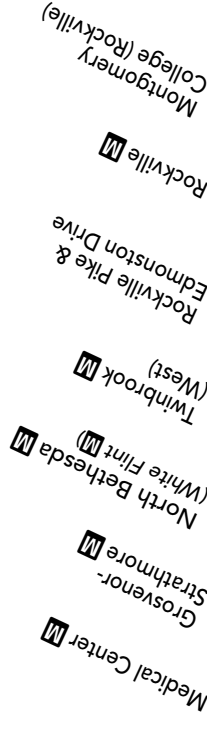
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7:15	7:26	7:31	7:37	7:44	7:50	7:57
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10:20	10:31	10:38	10:45	10:54	11:00	11:08
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11:10	11:21	11:28	11:35	11:44	11:50	11:58
11:35	11:46	11:53	12:00	12:09	12:15	12:23
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12:20	12:31	12:38	12:45	12:54	1:00	1:08
12:40	12:51	12:58	1:05	1:14	1:20	1:28
1:00	1:11	1:18	1:25	1:34	1:40	1:48
1:20	1:31	1:38	1:45	1:54	2:00	2:08
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2:20	2:31	2:38	2:45	2:54	3:00	3:08
2:40	2:51	2:58	3:05	3:14	3:20	3:28
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3:20	3:31	3:38	3:45	3:54	4:00	4:08
3:40	3:51	3:58	4:05	4:14	4:20	4:28
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9:15	9:26	9:31	9:37	9:44	9:49	9:56
10:05	10:14	10:19	10:24	10:30	10:35	10:42
10:55	11:04	11:09	11:14	11:20	11:25	11:32
11:50	11:59	12:04	12:09	12:15	12:20	12:27

NOTES:

AM PM

46 To Montgomery College (Rockville) SATURDAY


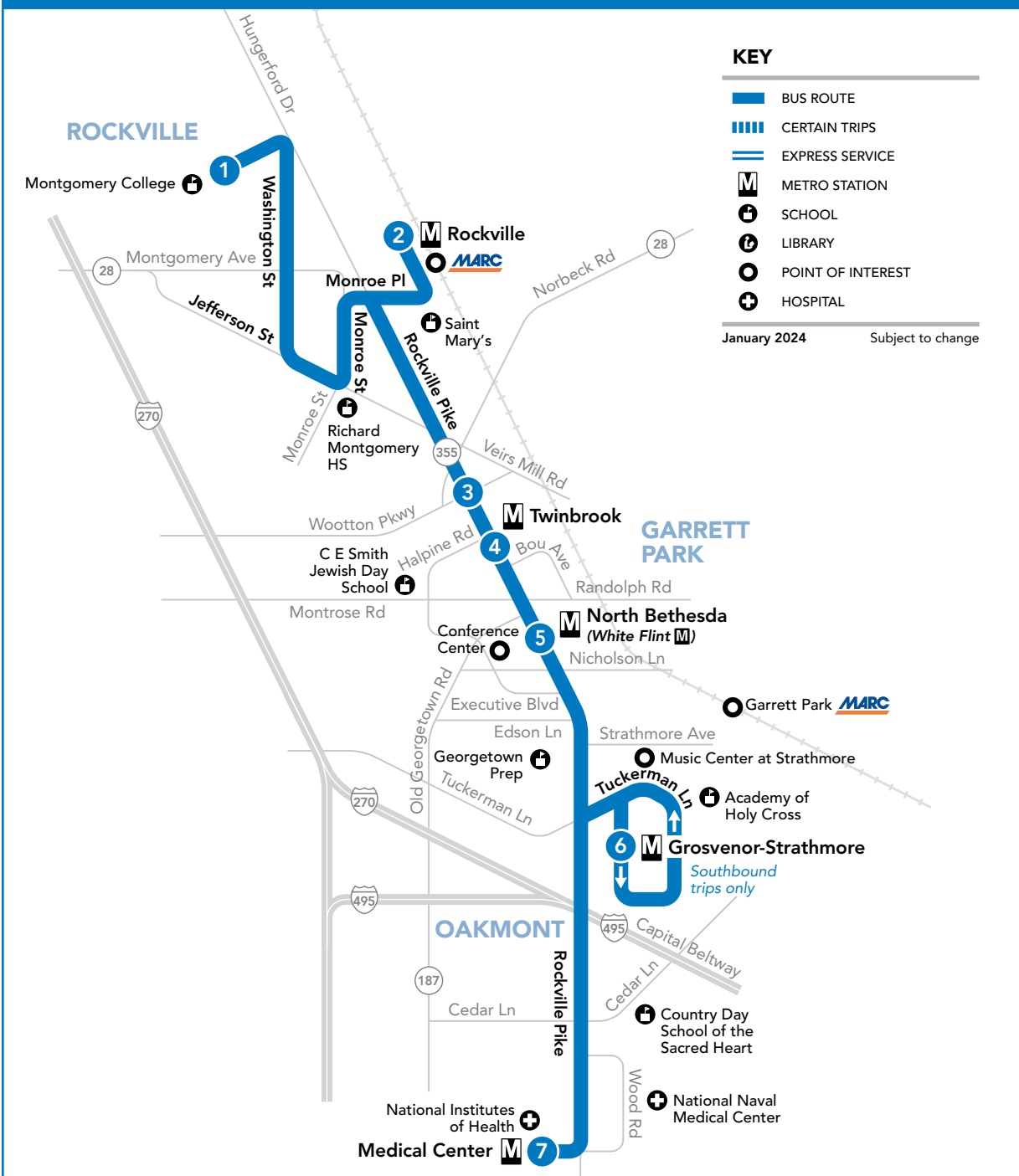
SEE TIMEPOINT LOCATION ON ROUTE MAP



7	6	5	4	3	2	1
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6:20	6:26	6:29	6:34	6:39	6:43	6:52
6:55	7:01	7:04	7:09	7:14	7:18	7:27
7:30	7:36	7:39	7:44	7:49	7:53	8:02
8:05	8:12	8:16	8:22	8:28	8:33	8:45
8:35	8:42	8:46	8:52	8:58	9:03	9:15
9:05	9:12	9:16	9:22	9:28	9:33	9:45
9:35	9:42	9:46	9:52	9:58	10:03	10:15
10:00	10:07	10:11	10:17	10:23		

46

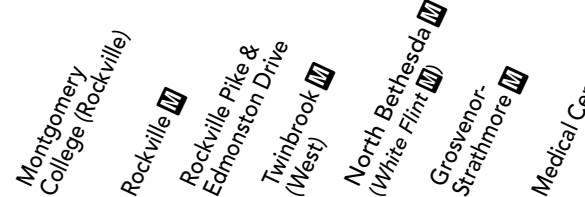
Montgomery College – Rockville **M** –
Twinbrook **M** – North Bethesda **M** (White Flint **M**) –
Grosvenor-Strathmore **M** – Medical Center **M**

46 To Medical Center **M**

SUNDAY

SEE TIMEPOINT LOCATION ON ROUTE MAP



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

NOTES: AM PM

46 To Montgomery College (Rockville)

SUNDAY

SEE TIMEPOINT LOCATION ON ROUTE MAP



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

NOTES: AM PM

FARES

Effective August 2022

Regular Fare, Token, or SmarTrip®	\$1.00
Transfer from MetroRail to Ride On buses	\$1.00
SmarTrip® Transfer from MetroRail to Metrobus	FREE
Ride On Bus-to-Bus Transfer with SmarTrip®	FREE
Ride On to Metrobus Transfer with SmarTrip®	\$1.00
Metrobus to Ride On Transfer with SmarTrip®	FREE
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	FREE
Attendant also rides free.	
MetroAccess - Certified Customer with ID	FREE
MetroAccess - Companion	
Children under age 5	FREE
Children 5 to 18 with a Youth Cruiser SmarTrip® Card or student ID Anytime	

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.

WELCOME TO RIDE ON

RIDE ON is a community bus service operated by the Montgomery County Department of Transportation. **RIDE ON** operates over 75 routes that serve all 13 Montgomery County Metrorail stations and 7 MARC stations. For detailed information, or to have timetables mailed, call **311**. Outside Montgomery County **240-777-0311**

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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Para más información o para pedir este documento en un formato diferente o traducido a otro idioma, por favor, llame al 311 o de fuera del Condado de Montgomery al 240-777-0311.

如需更多信息、需要以其它格式提供本文檔或需要將本文檔翻譯成其它語言，請撥打311。如果您不在蒙哥馬利郡，請撥打240-777-0311。

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፣ ለበኩዎን በ 311 ወይም ከሞንትጎመሪ ካውንቲ ውጭ 240-777-0311 ይደውሉ።

Pour plus d'informations ou pour recevoir un exemplaire de ce document sous un format différent ou traduit dans une autre langue, veuillez composer le 311 ou le 240-777-0311, à l'extérieur du comté de Montgomery.

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

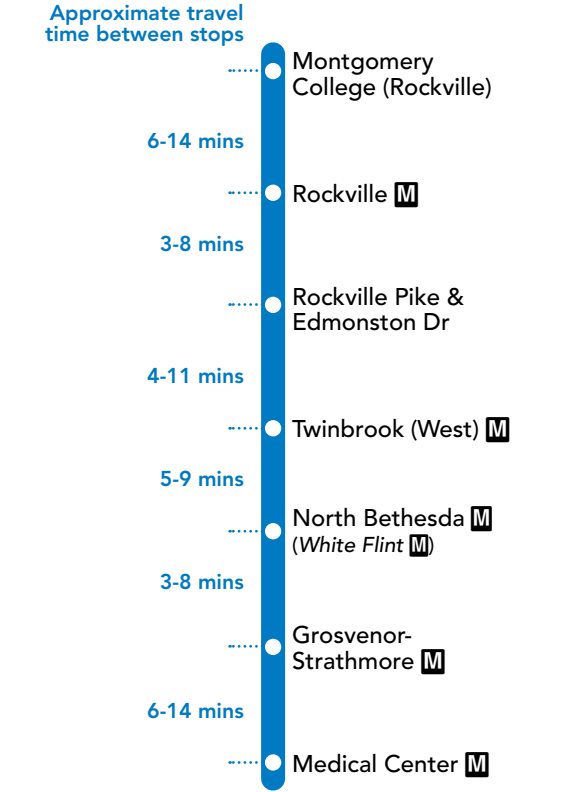
Weekday Schedule operates on Indigenous Peoples' Day
Saturday Schedule operates on Independence Day
Sunday Schedule operates on New Year's Day, Memorial Day, Labor Day, Thanksgiving Day, Christmas Day
Special Schedule operates on MLK, Jr. Day, Presidents' Day, Juneteenth, Veterans Day

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- Instagram instagram.com/RideOnMCT

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Printed on recycled paper with soy-based ink

EFFECTIVE: JANUARY 14, 2024



SERVICE DAYS

DAILY



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

APPENDIX C

Traffic Count Data

Wells & Associates, Inc

McLean, Virginia

Existing Traffic Count

PROJECT: Pike Center 2022		DATE: 3/19/2024		SOUTHBOUND ROAD: Chapman Avenue																	
W & A JOB NO.: 8923		DAY: Tuesday		NORTHBOUND ROAD: Chapman Avenue																	
INTERSECTION: Chapman Ave. & Rollins Avenue		WEATHER: clear		WESTBOUND ROAD: Rollins Avenue																	
LOCATION: Montgomery Co., MD		COUNTED BY: agan		EASTBOUND ROAD:																	
Time Period	Turning Movements																Total	PHF	Time Period		
	Southbound Chapman Avenue				Westbound Rollins Avenue				Northbound Chapman Avenue				Eastbound 0							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	70	0	70	0	0	0	0	1	29	0	30	0	0	0	0	100	0	100	6:30-6:45	
6:45-7:00	0	104	2	106	0	0	1	1	2	39	0	41	0	0	0	0	147	1	148	6:45-7:00	
7:00-7:15	0	94	2	96	0	0	2	2	1	36	0	37	0	0	0	0	133	2	135	7:00-7:15	
7:15-7:30	0	115	4	119	1	0	2	3	4	27	0	31	0	0	0	0	150	3	153	7:15-7:30	
7:30-7:45	0	130	5	135	0	0	1	1	6	49	0	55	0	0	0	0	190	1	191	7:30-7:45	
7:45-8:00	0	132	10	142	9	0	3	12	19	45	0	64	0	0	0	0	206	12	218	7:45-8:00	
8:00-8:15	0	135	14	149	3	0	6	9	17	77	0	94	0	0	0	0	243	9	252	8:00-8:15	
8:15-8:30	0	127	10	137	2	0	11	13	16	87	0	103	0	0	0	0	240	13	253	8:15-8:30	
8:30-8:45	0	137	5	142	12	0	8	20	16	71	0	87	0	0	0	0	229	20	249	8:30-8:45	
8:45-9:00	0	111	11	122	10	0	6	16	14	82	0	96	0	0	0	0	218	16	234	8:45-9:00	
9:00-9:15	0	135	10	145	12	0	10	22	25	64	0	89	0	0	0	0	234	22	256	9:00-9:15	
9:15-9:30	0	127	18	145	11	0	15	26	17	64	0	81	0	0	0	0	226	26	252	9:15-9:30	
3 Hour Totals	0	1,417	91	1,508	60	0	65	125	138	670	0	808	0	0	0	0	2,316	125	2,441		
1 Hour Totals																					
6:30-7:30	0	383	8	391	1	0	5	6	8	131	0	139	0	0	0	0	530	6	536	0.88	6:30-7:30
6:45-7:45	0	443	13	456	1	0	6	7	13	151	0	164	0	0	0	0	620	7	627	0.82	6:45-7:45
7:00-8:00	0	471	21	492	10	0	8	18	30	157	0	187	0	0	0	0	679	18	697	0.80	7:00-8:00
7:15-8:15	0	512	33	545	13	0	12	25	46	198	0	244	0	0	0	0	789	25	814	0.81	7:15-8:15
7:30-8:30	0	524	39	563	14	0	21	35	58	258	0	316	0	0	0	0	879	35	914	0.90	7:30-8:30
7:45-8:45	0	531	39	570	26	0	28	54	68	280	0	348	0	0	0	0	918	54	972	0.96	7:45-8:45
8:00-9:00	0	510	40	550	27	0	31	58	63	317	0	380	0	0	0	0	930	58	988	0.98	8:00-9:00
8:15-9:15	0	510	36	546	36	0	35	71	71	304	0	375	0	0	0	0	921	71	992	0.97	8:15-9:15
8:30-9:30	0	510	44	554	45	0	39	84	72	281	0	353	0	0	0	0	907	84	991	0.97	8:30-9:30
AM Peak 8:15-9:15	0	510	36	546	36	0	35	71	71	304	0	375	0	0	0	0	921	71	992	0.97	AM Peak 8:15-9:15
PM																					
4:00-4:15	0	135	10	145	14	0	23	37	25	143	0	168	0	0	0	0	313	37	350		4:00-4:15
4:15-4:30	0	138	11	149	17	0	26	43	20	142	0	162	0	0	0	0	311	43	354		4:15-4:30
4:30-4:45	0	141	13	154	19	0	22	41	19	131	0	150	0	0	0	0	304	41	345		4:30-4:45
4:45-5:00	0	140	11	151	35	0	21	56	15	131	0	146	0	0	0	0	297	56	353		4:45-5:00
5:00-5:15	0	139	14	153	23	0	19	42	22	154	0	176	0	0	0	0	329	42	371		5:00-5:15
5:15-5:30	0	128	9	137	25	0	18	43	16	163	0	179	0	0	0	0	316	43	359		5:15-5:30
5:30-5:45	0	145	11	156	14	0	13	27	15	163	0	178	0	0	0	0	334	27	361		5:30-5:45
5:45-6:00	0	132	12	144	8	0	18	26	13	140	0	153	0	0	0	0	297	26	323		5:45-6:00
6:00-6:15	0	113	7	120	16	0	6	22	18	141	0	159	0	0	0	0	279	22	301		6:00-6:15
6:15-6:30	0	136	10	146	16	0	14	30	14	146	0	160	0	0	0	0	306	30	336		6:15-6:30
6:30-6:45	0	138	5	143	16	0	13	29	9	128	0	137	0	0	0	0	280	29	309		6:30-6:45
6:45-7:00	0	103	1	104	6	0	9	15	10	119	0	129	0	0	0	0	233	15	248		6:45-7:00
3 Hour Totals	0	1,588	114	1,702	209	0	202	411	196	1,701	0	1,897	0	0	0	0	3,599	411	4,010		
1 Hour Totals																					
4:00-5:00	0	554	45	599	85	0	92	177	79	547	0	626	0	0	0	0	1,225	177	1,402	0.99	4:00-5:00
4:15-5:15	0	558	49	607	94	0	88	182	76	558	0	634	0	0	0	0	1,241	182	1,423	0.96	4:15-5:15
4:30-5:30	0	548	47	595	102	0	80	182	72	579	0	651	0	0	0	0	1,246	182	1,428	0.96	4:30-5:30
4:45-5:45	0	552	45	597	97	0	71	168	68	611	0	679	0	0	0	0	1,276	168	1,444	0.97	4:45-5:45
5:00-6:00	0	544	46	590	70	0	68	138	66	620	0	686	0	0	0	0	1,276	138	1,414	0.95	5:00-6:00
5:15-6:15	0	518	39	557	63	0	55	118	62	607	0	669	0	0	0	0	1,226	118	1,344	0.93	5:15-6:15
5:30-6:30	0	526	40	566	54	0	51	105	60	590	0	650	0	0	0	0	1,216	105	1,321	0.91	5:30-6:30
5:45-6:45	0	519	34	553	56	0	51	107	54	555	0	609	0	0	0	0	1,162	107	1,269	0.94	5:45-6:45
6:00-7:00	0	490	23	513	54	0	42	96	51	534	0	585	0	0	0	0	1,098	96	1,194	0.89	6:00-7:00
PM Peak 4:45-5:45	0	552	45	597	97	0	71	168	68	611	0	679	0	0	0	0	1,276	168	1,444	0.97	PM Peak 4:45-5:45

Wells & Associates, Inc

McLean, Virginia

Existing Traffic Count

Time Period		Turning Movements																Total	PHF	Time Period		
		Southbound East Jefferson Street				Westbound Rollins Avenue				Northbound East Jefferson Street				Eastbound Rollins Avenue							North & South	East & West
		1	2	3	Total	4	5	6	Total	7	8	9	Total	10	11	12	Total					
		Right	Thru	Left		Right	Thru	Left		Right	Thru	Left		Right	Thru	Left						
AM																						
6:30-6:45		0	17	4	21	3	3	50	56	29	33	0	62	2	0	0	2	83	58	141		6:30-6:45
6:45-7:00		0	21	3	24	4	3	51	58	30	24	1	55	3	8	1	12	79	70	149		6:45-7:00
7:00-7:15		1	15	1	17	4	4	44	52	21	31	0	52	7	3	2	12	69	64	133		7:00-7:15
7:15-7:30		3	42	3	48	4	3	60	67	40	21	0	61	7	5	0	12	109	79	188		7:15-7:30
7:30-7:45		1	42	8	51	5	0	78	83	45	32	0	77	5	9	1	15	128	98	226		7:30-7:45
7:45-8:00		0	41	6	47	6	1	76	83	50	29	0	79	11	11	2	24	126	107	233		7:45-8:00
8:00-8:15		1	55	4	60	6	3	97	106	77	61	1	139	9	7	1	17	199	123	322		8:00-8:15
8:15-8:30		0	65	12	77	10	4	64	78	59	43	0	102	11	14	1	26	179	104	283		8:15-8:30
8:30-8:45		1	53	3	57	9	2	65	76	65	68	1	134	4	15	3	22	191	98	289		8:30-8:45
8:45-9:00		2	52	9	63	7	4	71	82	62	53	1	116	8	12	4	24	179	106	285		8:45-9:00
9:00-9:15		11	52	5	68	15	12	78	105	59	68	4	131	6	9	7	22	199	127	326		9:00-9:15
9:15-9:30		4	61	3	68	7	14	58	79	73	54	3	130	9	8	3	20	198	99	297		9:15-9:30
3 Hour Totals		24	516	61	601	80	53	792	925	610	517	11	1,138	82	101	25	208	1,739	1,133	2,872		
1 Hour Totals																						
6:30-7:30		4	95	11	110	15	13	205	233	120	109	1	230	19	16	3	38	340	271	611	0.81	6:30-7:30
6:45-7:45		5	120	15	140	17	10	233	260	136	108	1	245	22	25	4	51	385	311	696	0.77	6:45-7:45
7:00-8:00		5	140	18	163	19	8	258	285	156	113	0	269	30	28	5	63	432	348	780	0.84	7:00-8:00
7:15-8:15		5	180	21	206	21	7	311	339	212	143	1	356	32	32	4	68	562	407	969	0.75	7:15-8:15
7:30-8:30		2	203	30	235	27	8	315	350	231	165	1	397	36	41	5	82	632	432	1,064	0.83	7:30-8:30
7:45-8:45		2	214	25	241	31	10	302	343	251	201	2	454	35	47	7	89	695	432	1,127	0.88	7:45-8:45
8:00-9:00		4	225	28	257	32	13	297	342	263	225	3	491	32	48	9	89	748	431	1,179	0.92	8:00-9:00
8:15-9:15		14	222	29	265	41	22	278	341	245	232	6	483	29	50	15	94	748	435	1,183	0.91	8:15-9:15
8:30-9:30		18	218	20	256	38	32	272	342	259	243	9	511	27	44	17	88	767	430	1,197	0.92	8:30-9:30
AM Peak 8:30-9:30		18	218	20	256	38	32	272	342	259	243	9	511	27	44	17	88	767	430	1,197	0.92	AM Peak 8:30-9:30
PM																						
4:00-4:15		8	73	7	88	22	14	89	125	98	107	3	208	4	8	9	21	296	146	442		4:00-4:15
4:15-4:30		2	68	8	78	18	9	52	79	92	103	4	199	2	7	11	20	277	99	376		4:15-4:30
4:30-4:45		4	65	2	71	5	12	95	112	97	109	0	206	5	6	3	14	277	126	403		4:30-4:45
4:45-5:00		6	74	10	90	19	18	87	124	66	121	1	188	7	10	3	20	278	144	422		4:45-5:00
5:00-5:15		3	58	4	65	25	16	77	118	100	122	3	225	4	12	0	16	290	134	424		5:00-5:15
5:15-5:30		4	71	6	81	18	17	92	127	94	115	2	211	9	11	6	26	292	153	445		5:15-5:30
5:30-5:45		4	67	4	75	16	14	87	117	90	119	0	209	3	10	2	15	284	132	416		5:30-5:45
5:45-6:00		7	67	4	78	19	18	75	112	89	121	2	212	10	11	2	23	290	135	425		5:45-6:00
6:00-6:15		3	70	7	80	18	19	65	102	91	97	3	191	2	5	1	8	271	110	381		6:00-6:15
6:15-6:30		3	75	11	89	13	15	83	111	70	82	10	162	5	14	2	21	251	132	383		6:15-6:30
6:30-6:45		1	69	8	78	14	15	62	91	61	82	4	147	7	10	3	20	225	111	336		6:30-6:45
6:45-7:00		5	52	5	62	9	11	55	75	73	89	6	168	4	5	2	11	230	86	316		6:45-7:00
3 Hour Totals		50	809	76	935	196	178	919	1,293	1,021	1,267	38	2,326	62	109	44	215	3,261	1,508	4,769		
1 Hour Totals																						
4:00-5:00		20	280	27	327	64	53	323	440	353	440	8	801	18	31	26	75	1,128	515	1,643	0.93	4:00-5:00
4:15-5:15		15	265	24	304	67	55	311	433	355	455	8	818	18	35	17	70	1,122	503	1,625	0.96	4:15-5:15
4:30-5:30		17	268	22	307	67	63	351	481	357	467	6	830	25	39	12	76	1,137	557	1,694	0.95	4:30-5:30
4:45-5:45		17	270	24	311	78	65	343	486	350	477	6	833	23	43	11	77	1,144	563	1,707	0.96	4:45-5:45
5:00-6:00		18	263	18	299	78	65	331	474	373	477	7	857	26	44	10	80	1,156	554	1,710	0.96	5:00-6:00
5:15-6:15		18	275	21	314	71	68	319	458	364	452	7	823	24	37	11	72	1,137	530	1,667	0.94	5:15-6:15
5:30-6:30		17	279	26	322	66	66	310	442	340	419	15	774	20	40	7	67	1,096	509	1,605	0.94	5:30-6:30
5:45-6:45		14	281	30	325	64	67	285	416	311	382	19	712	24	40	8	72	1,037	488	1,525	0.90	5:45-6:45
6:00-7:00		12	266	31	309	54	60	265	379	295	350	23	668	18	34	8	60	977	439	1,416	0.92	6:00-7:00
PM Peak 5:00-6:00		18	263	18	299	78	65	331	474	373	477	7	857	26	44	10	80	1,156	554	1,710	0.96	PM Peak 5:00-6:00

Wells & Associates, Inc

McLean, Virginia

Existing Traffic Count

PROJECT: Pike Center 2022		DATE: 5/2/2024		SOUTHBOUND ROAD: Nebel Street																	
W & A JOB NO.: 8923		DAY: Tuesday		NORTHBOUND ROAD: Nebel Street																	
INTERSECTION: Randolph Rd. & Nebel St.		WEATHER: clear		WESTBOUND ROAD: Randolph Road																	
LOCATION: Montgomery Co., MD		COUNTED BY: Majda & Vic		EASTBOUND ROAD: Randolph Road																	
		INPUTED BY: agan																			
Time Period	Turning Movements																Total	PHF	Time Period		
	Southbound Nebel Street				Westbound Randolph Road				Northbound Nebel Street				Eastbound Randolph 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	4	6	10	16	142	22	180	6	8	11	25	12	64	0	76	35	256	291	6:30-6:45	
6:45-7:00	0	17	7	24	22	172	33	227	8	8	12	28	16	93	0	109	52	336	388	6:45-7:00	
7:00-7:15	3	15	8	26	12	182	45	239	15	8	14	37	12	93	2	107	63	346	409	7:00-7:15	
7:15-7:30	2	15	17	34	8	218	41	267	9	5	10	24	17	103	4	124	58	391	449	7:15-7:30	
7:30-7:45	0	16	21	37	15	229	37	281	14	9	19	42	14	126	2	142	79	423	502	7:30-7:45	
7:45-8:00	0	21	31	52	28	249	32	309	18	9	20	47	11	165	3	179	99	488	587	7:45-8:00	
8:00-8:15	4	24	26	54	18	229	47	294	20	15	15	50	14	132	5	151	104	445	549	8:00-8:15	
8:15-8:30	4	6	29	39	19	250	42	311	8	17	28	53	23	129	7	159	92	470	562	8:15-8:30	
8:30-8:45	6	19	19	44	27	205	56	288	22	13	17	52	8	138	1	147	96	435	531	8:30-8:45	
8:45-9:00	5	20	30	55	24	232	28	284	16	8	11	35	12	112	7	131	90	415	505	8:45-9:00	
9:00-9:15	3	29	35	67	22	127	38	187	18	8	25	51	11	117	3	131	118	318	436	9:00-9:15	
9:15-9:30	7	45	43	95	18	146	15	179	16	12	11	39	25	123	10	158	134	337	471	9:15-9:30	
3 Hour Totals	34	231	272	537	229	2,381	436	3,046	170	120	193	483	175	1,395	44	1,614	1,020	4,660	5,680		
1 Hour Totals																					
6:30-7:30	5	51	38	94	58	714	141	913	38	29	47	114	57	353	6	416	208	1,329	1,537	0.86	6:30-7:30
6:45-7:45	5	63	53	121	57	801	156	1,014	46	30	55	131	59	415	8	482	252	1,496	1,748	0.87	6:45-7:45
7:00-8:00	5	67	77	149	63	878	155	1,096	56	31	63	150	54	487	11	552	299	1,648	1,947	0.83	7:00-8:00
7:15-8:15	6	76	95	177	69	925	157	1,151	61	38	64	163	56	526	14	596	340	1,747	2,087	0.89	7:15-8:15
7:30-8:30	8	67	107	182	80	957	158	1,195	60	50	82	192	62	552	17	631	374	1,826	2,200	0.94	7:30-8:30
7:45-8:45	14	70	105	189	92	933	177	1,202	68	54	80	202	56	564	16	636	391	1,838	2,229	0.95	7:45-8:45
8:00-9:00	19	69	104	192	88	916	173	1,177	66	53	71	190	57	511	20	588	382	1,765	2,147	0.96	8:00-9:00
8:15-9:15	18	74	113	205	92	814	164	1,070	64	46	81	191	54	496	18	568	396	1,638	2,034	0.90	8:15-9:15
8:30-9:30	21	113	127	261	91	710	137	938	72	41	64	177	56	490	21	567	438	1,505	1,943	0.91	8:30-9:30
AM Peak 7:45-8:45	14	70	105	189	92	933	177	1,202	68	54	80	202	56	564	16	636	391	1,838	2,229	0.95	AM Peak 7:45-8:45
PM																					
4:00-4:15	8	35	30	73	29	176	25	230	46	26	26	98	17	172	3	192	171	422	593	4:00-4:15	
4:15-4:30	4	26	58	88	24	183	30	237	49	34	30	113	21	214	3	238	201	475	676	4:15-4:30	
4:30-4:45	2	28	80	110	35	172	33	240	47	22	29	98	24	217	2	243	208	483	691	4:30-4:45	
4:45-5:00	8	32	63	103	38	170	31	239	62	30	19	111	12	253	6	271	214	510	724	4:45-5:00	
5:00-5:15	6	31	66	103	34	218	34	286	59	32	37	128	19	238	1	258	231	544	775	5:00-5:15	
5:15-5:30	6	31	74	111	34	195	30	259	54	21	28	103	19	235	3	257	214	516	730	5:15-5:30	
5:30-5:45	2	40	62	104	40	194	43	277	63	27	24	114	22	243	6	271	218	548	766	5:30-5:45	
5:45-6:00	3	36	54	93	37	176	37	250	74	43	26	143	15	221	6	242	236	492	728	5:45-6:00	
6:00-6:15	12	45	63	120	45	173	34	252	50	35	45	130	15	214	6	235	250	487	737	6:00-6:15	
6:15-6:30	7	39	74	120	34	193	35	262	60	33	30	123	22	265	3	290	243	552	795	6:15-6:30	
6:30-6:45	7	29	74	110	44	184	44	272	56	34	40	130	15	207	7	229	240	501	741	6:30-6:45	
6:45-7:00	3	31	65	99	38	172	36	246	57	34	24	115	19	205	8	232	214	478	692	6:45-7:00	
3 Hour Totals	68	403	763	1,234	432	2,206	412	3,050	677	371	358	1,406	220	2,684	54	2,958	2,640	6,008	8,648		
1 Hour Totals																					
4:00-5:00	22	121	231	374	126	701	119	946	204	112	104	420	74	856	14	944	794	1,890	2,684	0.93	4:00-5:00
4:15-5:15	20	117	267	404	131	743	128	1,002	217	118	115	450	76	922	12	1,010	854	2,012	2,866	0.92	4:15-5:15
4:30-5:30	22	122	283	427	141	755	128	1,024	222	105	113	440	74	943	12	1,029	867	2,053	2,920	0.94	4:30-5:30
4:45-5:45	22	134	265	421	146	777	138	1,061	238	110	108	456	72	969	16	1,057	877	2,118	2,995	0.97	4:45-5:45
5:00-6:00	17	138	256	411	145	783	144	1,072	250	123	115	488	75	937	16	1,028	899	2,100	2,999	0.97	5:00-6:00
5:15-6:15	23	152	253	428	156	738	144	1,038	241	126	123	490	71	913	21	1,005	918	2,043	2,961	0.97	5:15-6:15
5:30-6:30	24	160	253	437	156	736	149	1,041	247	138	125	510	74	943	21	1,038	947	2,079	3,026	0.95	5:30-6:30
5:45-6:45	29	149	265	443	160	726	150	1,036	240	145	141	526	67	907	22	996	969	2,032	3,001	0.94	5:45-6:45
6:00-7:00	29	144	276	449	161	722	149	1,032	223	136	139	498	71	891	24	986	947	2,018	2,965	0.93	6:00-7:00
PM Peak 5:30-6:30	24	160	253	437	156	736	149	1,041	247	138	125	510	74	943	21	1,038	947	2,079	3,026	0.95	PM Peak 5:30-6:30

Wells & Associates, Inc

McLean, Virginia

Existing Traffic Count

PROJECT: Pike Center 2022		DATE: 5/22/2024		SOUTHBOUND ROAD: Rockville Pike - 355																	
W & A JOB NO.: 8923		DAY: Wednesday		NORTHBOUND ROAD: Rockville Pike - 355																	
INTERSECTION: Rockville Pike & Bouic Ave.		WEATHER: clear		WESTBOUND ROAD: Bouic Avenue																	
LOCATION: Montgomery Co.,MD		COUNTED BY: Victor & Bianca		EASTBOUND ROAD: Driveway																	
		INPUTED BY: agan																			
Time Period	Turning Movements																Total	PHF	Time Period		
	Southbound Rockville Pike - 355				Westbound Bouic Avenue				Northbound Rockville Pike - 355				Eastbound Driveway							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	1	212	1	214	4	0	1	5	3	74	1	78	6	0	0	6	292	11	303	6:30-6:45	
6:45-7:00	0	245	3	248	3	0	2	5	9	101	5	115	5	0	0	5	363	10	373	6:45-7:00	
7:00-7:15	0	318	10	328	7	0	1	8	9	127	4	140	9	0	0	9	468	17	485	7:00-7:15	
7:15-7:30	2	356	9	367	2	0	1	3	6	119	10	135	9	0	1	10	502	13	515	7:15-7:30	
7:30-7:45	0	387	7	394	7	0	0	7	11	124	9	144	19	0	0	19	538	26	564	7:30-7:45	
7:45-8:00	0	390	11	401	9	0	0	9	7	152	6	165	13	0	0	13	566	22	588	7:45-8:00	
8:00-8:15	1	402	19	422	10	0	0	10	7	190	5	202	11	0	0	11	624	21	645	8:00-8:15	
8:15-8:30	3	440	9	452	5	0	0	5	2	187	3	192	9	0	0	9	644	14	658	8:15-8:30	
8:30-8:45	1	366	18	385	8	0	0	8	9	208	9	226	14	0	0	14	611	22	633	8:30-8:45	
8:45-9:00	3	354	13	370	4	0	0	4	8	224	8	240	20	0	0	20	610	24	634	8:45-9:00	
9:00-9:15	0	318	15	333	12	0	0	12	7	172	11	190	8	0	0	8	523	20	543	9:00-9:15	
9:15-9:30	5	265	17	287	2	0	0	2	9	204	19	232	14	0	0	14	519	16	535	9:15-9:30	
3 Hour Totals	16	4,053	132	4,201	73	0	5	78	87	1,882	90	2,059	137	0	1	138	6,260	216	6,476		
1 Hour Totals																					
6:30-7:30	3	1,131	23	1,157	16	0	5	21	27	421	20	468	29	0	1	30	1,625	51	1,676	0.81	6:30-7:30
6:45-7:45	2	1,306	29	1,337	19	0	4	23	35	471	28	534	42	0	1	43	1,871	66	1,937	0.86	6:45-7:45
7:00-8:00	2	1,451	37	1,490	25	0	2	27	33	522	29	584	50	0	1	51	2,074	78	2,152	0.91	7:00-8:00
7:15-8:15	3	1,535	46	1,584	28	0	1	29	31	585	30	646	52	0	1	53	2,230	82	2,312	0.90	7:15-8:15
7:30-8:30	4	1,619	46	1,669	31	0	0	31	27	653	23	703	52	0	0	52	2,372	83	2,455	0.93	7:30-8:30
7:45-8:45	5	1,598	57	1,660	32	0	0	32	25	737	23	785	47	0	0	47	2,445	79	2,524	0.96	7:45-8:45
8:00-9:00	8	1,562	59	1,629	27	0	0	27	26	809	25	860	54	0	0	54	2,489	81	2,570	0.98	8:00-9:00
8:15-9:15	7	1,478	55	1,540	29	0	0	29	26	791	31	848	51	0	0	51	2,388	80	2,468	0.94	8:15-9:15
8:30-9:30	9	1,303	63	1,375	26	0	0	26	33	808	47	888	56	0	0	56	2,263	82	2,345	0.92	8:30-9:30
AM Peak 8:00-9:00	8	1,562	59	1,629	27	0	0	27	26	809	25	860	54	0	0	54	2,489	81	2,570	0.98	AM Peak 8:00-9:00
PM																					
4:00-4:15	3	320	10	333	13	1	0	14	20	280	11	311	3	0	0	3	644	17	661		4:00-4:15
4:15-4:30	1	334	11	346	9	0	0	9	15	297	14	326	12	0	0	12	672	21	693		4:15-4:30
4:30-4:45	1	352	16	369	19	0	0	19	42	330	18	390	13	0	0	13	759	32	791		4:30-4:45
4:45-5:00	0	390	18	408	9	0	0	9	24	317	14	355	9	0	0	9	763	18	781		4:45-5:00
5:00-5:15	4	392	9	405	15	0	0	15	21	347	9	377	16	0	0	16	782	31	813		5:00-5:15
5:15-5:30	0	347	63	410	14	0	0	14	19	362	15	396	8	0	0	8	806	22	828		5:15-5:30
5:30-5:45	2	389	24	415	13	0	0	13	15	417	8	440	14	0	0	14	855	27	882		5:30-5:45
5:45-6:00	1	391	15	407	7	0	0	7	24	366	6	396	13	0	0	13	803	20	823		5:45-6:00
6:00-6:15	2	375	16	393	8	0	0	8	13	323	10	346	13	0	0	13	739	21	760		6:00-6:15
6:15-6:30	3	377	16	396	5	0	0	5	10	389	16	415	12	0	0	12	811	17	828		6:15-6:30
6:30-6:45	2	341	12	355	11	0	0	11	17	403	12	432	4	0	0	4	787	15	802		6:30-6:45
6:45-7:00	1	323	17	341	4	0	0	4	8	325	20	353	5	0	0	5	694	9	703		6:45-7:00
3 Hour Totals	20	4,331	227	4,578	127	1	0	128	228	4,156	153	4,537	122	0	0	122	9,115	250	9,365		
1 Hour Totals																					
4:00-5:00	5	1,396	55	1,456	50	1	0	51	101	1,224	57	1,382	37	0	0	37	2,838	88	2,926	0.92	4:00-5:00
4:15-5:15	6	1,468	54	1,528	52	0	0	52	102	1,291	55	1,448	50	0	0	50	2,976	102	3,078	0.95	4:15-5:15
4:30-5:30	5	1,481	106	1,592	57	0	0	57	106	1,356	56	1,518	46	0	0	46	3,110	103	3,213	0.97	4:30-5:30
4:45-5:45	6	1,518	114	1,638	51	0	0	51	79	1,443	46	1,568	47	0	0	47	3,206	98	3,304	0.94	4:45-5:45
5:00-6:00	7	1,519	111	1,637	49	0	0	49	79	1,492	38	1,609	51	0	0	51	3,246	100	3,346	0.95	5:00-6:00
5:15-6:15	5	1,502	118	1,625	42	0	0	42	71	1,468	39	1,578	48	0	0	48	3,203	90	3,293	0.93	5:15-6:15
5:30-6:30	8	1,532	71	1,611	33	0	0	33	62	1,495	40	1,597	52	0	0	52	3,208	85	3,293	0.93	5:30-6:30
5:45-6:45	8	1,484	59	1,551	31	0	0	31	64	1,481	44	1,589	42	0	0	42	3,140	73	3,213	0.97	5:45-6:45
6:00-7:00	8	1,416	61	1,485	28	0	0	28	48	1,440	58	1,546	34	0	0	34	3,031	62	3,093	0.93	6:00-7:00
PM Peak 5:00-6:00	7	1,519	111	1,637	49	0	0	49	79	1,492	38	1,609	51	0	0	51	3,246	100	3,346	0.95	PM Peak 5:00-6:00

Wells & Associates, Inc

McLean, Virginia

Existing Traffic Count

PROJECT: Pike Center 2022		DATE: 5/2/2024		SOUTHBOUND ROAD: Rockville Pike - 355																	
W & A JOB NO.: 8923		DAY: Tuesday		NORTHBOUND ROAD: Rockville Pike - 355																	
INTERSECTION: Rockville Pike & Hubbard Dr. & Plaza Driveway		WEATHER: clear		WESTBOUND ROAD: Plaza Driveway																	
LOCATION: Montgomery Co., MD		COUNTED BY: Agan		EASTBOUND ROAD: Hubbard Drive																	
		INPUTED BY: agan																			
Time Period	Turning Movements																Total	PHF	Time Period		
	Southbound Rockville Pike - 355				Westbound Plaza Driveway				Northbound Rockville Pike - 355				Eastbound Hubbard 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	3	243	1	247	3	1	9	13	10	119	6	135	2	0	1	3	382	16	398	6:30-6:45	
6:45-7:00	2	271	5	278	4	1	13	18	11	119	0	130	1	0	4	5	408	23	431	6:45-7:00	
7:00-7:15	0	343	6	349	11	0	6	17	8	112	4	124	1	1	0	2	473	19	492	7:00-7:15	
7:15-7:30	3	414	5	422	3	0	20	23	13	124	2	139	5	1	2	8	561	31	592	7:15-7:30	
7:30-7:45	3	469	16	488	15	2	19	36	16	163	3	182	3	0	2	5	670	41	711	7:30-7:45	
7:45-8:00	7	465	7	479	13	3	22	38	24	212	3	239	5	1	2	8	718	46	764	7:45-8:00	
8:00-8:15	5	414	5	424	3	2	19	24	19	252	6	277	3	0	1	4	701	28	729	8:00-8:15	
8:15-8:30	8	470	10	488	11	3	16	30	30	274	10	314	2	1	5	8	802	38	840	8:15-8:30	
8:30-8:45	8	445	11	464	8	5	13	26	27	255	5	287	6	1	4	11	751	37	788	8:30-8:45	
8:45-9:00	15	424	9	448	15	5	24	44	29	290	6	325	1	1	7	9	773	53	826	8:45-9:00	
9:00-9:15	17	431	18	466	16	3	24	43	30	280	4	314	4	4	4	12	780	55	835	9:00-9:15	
9:15-9:30	7	373	16	396	4	3	27	34	52	294	7	353	3	1	4	8	749	42	791	9:15-9:30	
3 Hour Totals	78	4,762	109	4,949	106	28	212	346	269	2,494	56	2,819	36	11	36	83	7,768	429	8,197		
1 Hour Totals																					
6:30-7:30	8	1,271	17	1,296	21	2	48	71	42	474	12	528	9	2	7	18	1,824	89	1,913	0.81	6:30-7:30
6:45-7:45	8	1,497	32	1,537	33	3	58	94	48	518	9	575	10	2	8	20	2,112	114	2,226	0.78	6:45-7:45
7:00-8:00	13	1,691	34	1,738	42	5	67	114	61	611	12	684	14	3	6	23	2,422	137	2,559	0.84	7:00-8:00
7:15-8:15	18	1,762	33	1,813	34	7	80	121	72	751	14	837	16	2	7	25	2,650	146	2,796	0.91	7:15-8:15
7:30-8:30	23	1,818	38	1,879	42	10	76	128	89	901	22	1,012	13	2	10	25	2,891	153	3,044	0.91	7:30-8:30
7:45-8:45	28	1,794	33	1,855	35	13	70	118	100	993	24	1,117	16	3	12	31	2,972	149	3,121	0.93	7:45-8:45
8:00-9:00	36	1,753	35	1,824	37	15	72	124	105	1,071	27	1,203	12	3	17	32	3,027	156	3,183	0.95	8:00-9:00
8:15-9:15	48	1,770	48	1,866	50	16	77	143	116	1,099	25	1,240	13	7	20	40	3,106	183	3,289	0.98	8:15-9:15
8:30-9:30	47	1,673	54	1,774	43	16	88	147	138	1,119	22	1,279	14	7	19	40	3,053	187	3,240	0.97	8:30-9:30
AM Peak 8:15-9:15																					
48	1,770	48	1,866	50	16	77	143	116	1,099	25	1,240	13	7	20	40	3,106	183	3,289	0.98	AM Peak 8:15-9:15	
PM																					
4:00-4:15	12	327	30	369	40	2	43	85	81	447	5	533	10	4	11	25	902	110	1,012		4:00-4:15
4:15-4:30	9	338	28	375	38	1	43	82	65	461	6	532	6	4	8	18	907	100	1,007		4:15-4:30
4:30-4:45	4	367	24	395	33	4	50	87	77	466	8	551	16	4	18	38	946	125	1,071		4:30-4:45
4:45-5:00	3	396	21	420	37	4	42	83	71	462	6	539	13	4	11	28	959	111	1,070		4:45-5:00
5:00-5:15	6	344	27	377	35	1	37	73	51	467	4	522	11	2	12	25	899	98	997		5:00-5:15
5:15-5:30	7	392	44	443	36	3	43	82	53	506	3	562	7	4	18	29	1,005	111	1,116		5:15-5:30
5:30-5:45	5	343	33	381	32	2	52	86	66	465	5	536	8	4	7	19	917	105	1,022		5:30-5:45
5:45-6:00	7	338	44	389	34	3	46	83	73	467	6	546	7	1	12	20	935	103	1,038		5:45-6:00
6:00-6:15	7	385	40	432	36	5	45	86	58	503	4	565	10	3	3	16	997	102	1,099		6:00-6:15
6:15-6:30	10	379	37	426	21	3	52	76	61	451	12	524	3	3	4	10	950	86	1,036		6:15-6:30
6:30-6:45	1	386	29	416	40	3	54	97	71	435	8	514	5	3	9	17	930	114	1,044		6:30-6:45
6:45-7:00	8	353	39	400	45	3	47	95	75	371	6	452	7	4	10	21	852	116	968		6:45-7:00
3 Hour Totals	79	4,348	396	4,823	427	34	554	1,015	802	5,501	73	6,376	103	40	123	266	11,199	1,281	12,480		
1 Hour Totals																					
4:00-5:00	28	1,428	103	1,559	148	11	178	337	294	1,836	25	2,155	45	16	48	109	3,714	446	4,160	0.97	4:00-5:00
4:15-5:15	22	1,445	100	1,567	143	10	172	325	264	1,856	24	2,144	46	14	49	109	3,711	434	4,145	0.97	4:15-5:15
4:30-5:30	20	1,499	116	1,635	141	12	172	325	252	1,901	21	2,174	47	14	59	120	3,809	445	4,254	0.95	4:30-5:30
4:45-5:45	21	1,475	125	1,621	140	10	174	324	241	1,900	18	2,159	39	14	48	101	3,780	425	4,205	0.94	4:45-5:45
5:00-6:00	25	1,417	148	1,590	137	9	178	324	243	1,905	18	2,166	33	11	49	93	3,756	417	4,173	0.93	5:00-6:00
5:15-6:15	26	1,458	161	1,645	138	13	186	337	250	1,941	18	2,209	32	12	40	84	3,854	421	4,275	0.96	5:15-6:15
5:30-6:30	29	1,445	154	1,628	123	13	195	331	258	1,886	27	2,171	28	11	26	65	3,799	396	4,195	0.95	5:30-6:30
5:45-6:45	25	1,488	150	1,663	131	14	197	342	263	1,856	30	2,149	25	10	28	63	3,812	405	4,217	0.96	5:45-6:45
6:00-7:00	26	1,503	145	1,674	142	14	198	354	265	1,760	30	2,055	25	13	26	64	3,729	418	4,147	0.94	6:00-7:00
PM Peak 5:15-6:15																					
26	1,458	161	1,645	138	13	186	337	250	1,941	18	2,209	32	12	40	84	3,854	421	4,275	0.96	PM Peak 5:15-6:15	

Wells & Associates, Inc

McLean, Virginia

Existing Traffic Count

Time Period		Turning Movements																Total	PHF	Time Period	
		Southbound Parklawn Drive				Westbound Parklawn Drive				Northbound Twinbrook Parkway				Eastbound Parklawn Drive							North & South	East & West
1	2	3	Total	4	5	6	Total	7	8	9	Total	10	11	12	Total						
Right	Thru	Left		Right	Thru	Left		Right	Thru	Left		Right	Thru	Left		South	West				
AM																					
6:30-6:45	6	100	23	129	16	8	17	41	28	59	5	92	7	5	4	16	221	57	278	6:30-6:45	
6:45-7:00	11	137	33	181	16	4	19	39	40	62	7	109	7	5	6	18	290	57	347	6:45-7:00	
7:00-7:15	9	163	27	199	15	5	30	50	41	70	9	120	8	2	7	17	319	67	386	7:00-7:15	
7:15-7:30	12	153	36	201	25	10	23	58	52	80	9	141	10	5	5	20	342	78	420	7:15-7:30	
7:30-7:45	13	226	33	272	39	4	29	72	43	88	6	137	11	2	4	17	409	89	498	7:30-7:45	
7:45-8:00	20	212	39	271	25	5	63	93	71	105	7	183	9	6	8	23	454	116	570	7:45-8:00	
8:00-8:15	15	185	33	233	30	8	40	78	55	144	14	213	15	5	9	29	446	107	553	8:00-8:15	
8:15-8:30	15	205	52	272	33	3	38	74	70	140	20	230	12	6	10	28	502	102	604	8:15-8:30	
8:30-8:45	13	163	55	231	36	3	22	61	81	130	9	220	15	7	9	31	451	92	543	8:30-8:45	
8:45-9:00	5	114	71	190	39	6	31	76	83	141	6	230	10	5	5	20	420	96	516	8:45-9:00	
9:00-9:15	6	107	91	204	60	9	36	105	92	140	9	241	6	7	7	20	445	125	570	9:00-9:15	
9:15-9:30	6	101	82	189	45	4	38	87	70	152	3	225	11	7	6	24	414	111	525	9:15-9:30	
3 Hour Totals	131	1,866	575	2,572	379	69	386	834	726	1,311	104	2,141	121	62	80	263	4,713	1,097	5,810		
1 Hour Totals																					
6:30-7:30	38	553	119	710	72	27	89	188	161	271	30	462	32	17	22	71	1,172	259	1,431	0.85	6:30-7:30
6:45-7:45	45	679	129	853	95	23	101	219	176	300	31	507	36	14	22	72	1,360	291	1,651	0.83	6:45-7:45
7:00-8:00	54	754	135	943	104	24	145	273	207	343	31	581	38	15	24	77	1,524	350	1,874	0.82	7:00-8:00
7:15-8:15	60	776	141	977	119	27	155	301	221	417	36	674	45	18	26	89	1,651	390	2,041	0.90	7:15-8:15
7:30-8:30	63	828	157	1,048	127	20	170	317	239	477	47	763	47	19	31	97	1,811	414	2,225	0.92	7:30-8:30
7:45-8:45	63	765	179	1,007	124	19	163	306	277	519	50	846	51	24	36	111	1,853	417	2,270	0.94	7:45-8:45
8:00-9:00	48	667	211	926	138	20	131	289	289	555	49	893	52	23	33	108	1,819	397	2,216	0.92	8:00-9:00
8:15-9:15	39	589	269	897	168	21	127	316	286	551	44	921	43	25	31	99	1,818	415	2,233	0.92	8:15-9:15
8:30-9:30	30	485	299	814	180	22	127	329	326	563	27	916	42	26	27	95	1,730	424	2,154	0.94	8:30-9:30
AM Peak 7:45-8:45	63	765	179	1,007	124	19	163	306	277	519	50	846	51	24	36	111	1,853	417	2,270	0.94	AM Peak 7:45-8:45
PM																					
4:00-4:15	6	182	47	235	61	7	56	124	49	230	5	284	20	10	4	34	519	158	677		4:00-4:15
4:15-4:30	8	174	48	230	53	6	60	119	60	258	5	323	15	8	8	31	553	150	703		4:15-4:30
4:30-4:45	6	194	33	233	63	3	61	127	52	247	9	308	10	4	8	22	541	149	690		4:30-4:45
4:45-5:00	7	166	32	205	53	7	69	129	75	259	5	339	35	5	9	49	544	178	722		4:45-5:00
5:00-5:15	7	182	38	227	70	14	79	163	71	280	3	354	20	11	13	44	581	207	788		5:00-5:15
5:15-5:30	11	186	33	230	76	8	87	171	62	319	6	387	23	9	12	44	617	215	832		5:15-5:30
5:30-5:45	8	200	35	243	67	6	61	134	56	288	10	354	12	5	10	27	597	161	758		5:30-5:45
5:45-6:00	6	166	27	199	59	11	77	147	82	270	12	364	13	7	9	29	563	176	739		5:45-6:00
6:00-6:15	11	163	36	210	56	5	53	114	52	260	6	318	22	4	9	35	528	149	677		6:00-6:15
6:15-6:30	6	153	25	184	61	2	43	106	41	220	4	265	5	7	4	16	449	122	571		6:15-6:30
6:30-6:45	8	168	24	200	51	0	44	95	42	257	4	303	11	4	6	21	503	116	619		6:30-6:45
6:45-7:00	5	150	22	177	38	7	32	77	53	213	12	278	6	6	5	17	455	94	549		6:45-7:00
3 Hour Totals	89	2,084	400	2,573	708	76	722	1,506	695	3,101	81	3,877	192	80	97	369	6,450	1,875	8,325		
1 Hour Totals																					
4:00-5:00	27	716	160	903	230	23	246	499	236	994	24	1,254	80	27	29	136	2,157	635	2,792	0.97	4:00-5:00
4:15-5:15	28	716	151	895	239	30	269	538	258	1,044	22	1,324	80	28	38	146	2,219	684	2,903	0.92	4:15-5:15
4:30-5:30	31	728	136	895	262	32	296	590	260	1,105	23	1,388	88	29	42	159	2,283	749	3,032	0.91	4:30-5:30
4:45-5:45	33	734	138	905	266	35	296	597	264	1,146	24	1,434	90	30	44	164	2,339	761	3,100	0.93	4:45-5:45
5:00-6:00	32	734	133	899	272	39	304	615	271	1,157	31	1,459	68	32	44	144	2,358	759	3,117	0.94	5:00-6:00
5:15-6:15	36	715	131	882	258	30	278	566	252	1,137	34	1,423	70	25	40	135	2,305	701	3,006	0.90	5:15-6:15
5:30-6:30	31	682	123	836	243	24	234	501	231	1,038	32	1,301	52	23	32	107	2,137	608	2,745	0.91	5:30-6:30
5:45-6:45	31	650	112	793	227	18	217	462	217	1,007	26	1,250	51	22	28	101	2,043	563	2,606	0.88	5:45-6:45
6:00-7:00	30	634	107	771	206	14	172	392	188	950	26	1,164	44	21	24	89	1,935	481	2,416	0.89	6:00-7:00
PM Peak 5:00-6:00	32	734	133	899	272	39	304	615	271	1,157	31	1,459	68	32	44	144	2,358	759	3,117	0.94	PM Peak 5:00-6:00

Wells & Associates, Inc

McLean, Virginia

Existing Traffic Count

PROJECT: Pike Center 2022		DATE: 5/22/2024		SOUTHBOUND ROAD: Chapman Road																	
W & A JOB NO.: 8923		DAY: Wednesday		NORTHBOUND ROAD: Chapman Road																	
INTERSECTION: Thompson Ave. & Chapman Rd.		WEATHER: clear		WESTBOUND ROAD: Thompson Avenue																	
LOCATION: Montgomery Co., MD		COUNTED BY: Majda		EASTBOUND ROAD: Thompson Avenue																	
		INPUTED BY: agan																			
Time Period	Turning Movements																		Total	PHF	Time Period
	Southbound Chapman Road				Westbound Thompson Avenue				Northbound Chapman Road				Eastbound Thompson Avenue				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	2	10	0	12	0	5	4	9	0	16	4	20	0	1	2	3	32	12	44	6:30-6:45	
6:45-7:00	6	16	0	22	0	5	3	8	2	11	9	22	5	0	0	5	44	13	57	6:45-7:00	
7:00-7:15	2	18	3	23	1	4	6	11	2	19	12	33	8	1	1	10	56	21	77	7:00-7:15	
7:15-7:30	6	26	4	36	0	3	7	10	2	26	7	35	10	2	0	12	71	22	93	7:15-7:30	
7:30-7:45	3	19	2	24	1	6	9	16	3	23	13	39	16	1	1	18	63	34	97	7:30-7:45	
7:45-8:00	2	26	1	29	3	2	7	12	2	28	9	39	15	3	1	19	68	31	99	7:45-8:00	
8:00-8:15	8	34	4	46	1	2	7	10	5	29	9	43	6	0	1	7	89	17	106	8:00-8:15	
8:15-8:30	4	21	2	27	0	1	7	8	1	23	6	30	8	0	3	11	57	19	76	8:15-8:30	
8:30-8:45	2	36	1	39	0	3	8	11	2	43	7	52	4	1	0	5	91	16	107	8:30-8:45	
8:45-9:00	2	30	3	35	1	1	6	8	1	33	9	43	11	1	1	13	78	21	99	8:45-9:00	
9:00-9:15	2	45	0	47	0	4	10	14	2	38	13	53	10	1	0	11	100	25	125	9:00-9:15	
9:15-9:30	3	33	3	39	1	7	6	14	2	28	8	38	12	0	1	13	77	27	104	9:15-9:30	
3 Hour Totals	42	314	23	379	8	43	80	131	24	317	106	447	105	11	11	127	826	258	1,084		
1 Hour Totals																					
6:30-7:30	16	70	7	93	1	17	20	38	6	72	32	110	23	4	3	30	203	68	271	0.73 6:30-7:30	
6:45-7:45	17	79	9	105	2	18	25	45	9	79	41	129	39	4	2	45	234	90	324	0.84 6:45-7:45	
7:00-8:00	13	89	10	112	5	15	29	49	9	96	41	146	49	7	3	59	258	108	366	0.92 7:00-8:00	
7:15-8:15	19	105	11	135	5	13	30	48	12	106	38	156	47	6	3	56	291	104	395	0.93 7:15-8:15	
7:30-8:30	17	100	9	126	5	11	30	46	11	103	37	151	45	4	6	55	277	101	378	0.89 7:30-8:30	
7:45-8:45	16	117	8	141	4	8	29	41	10	123	31	164	33	4	5	42	305	83	388	0.91 7:45-8:45	
8:00-9:00	16	121	10	147	2	7	28	37	9	128	31	168	29	2	5	36	315	73	388	0.91 8:00-9:00	
8:15-9:15	10	132	6	148	1	9	31	41	6	137	35	178	33	3	4	40	326	81	407	0.81 8:15-9:15	
8:30-9:30	9	144	7	160	2	15	30	47	7	142	37	186	37	3	2	42	346	89	435	0.87 8:30-9:30	
AM Peak 8:30-9:30																					
PM																					
4:00-4:15	4	48	6	58	1	5	1	7	4	46	16	66	22	1	5	28	124	35	159	4:00-4:15	
4:15-4:30	1	49	1	51	3	1	7	11	4	48	5	57	33	2	2	38	108	49	157	4:15-4:30	
4:30-4:45	8	76	4	88	2	2	4	8	4	64	6	74	34	2	6	42	162	50	212	4:30-4:45	
4:45-5:00	4	78	1	83	1	3	1	5	5	69	8	82	20	2	8	30	165	35	200	4:45-5:00	
5:00-5:15	5	61	0	66	0	1	3	4	10	79	5	94	46	7	6	59	160	63	223	5:00-5:15	
5:15-5:30	10	66	2	78	2	6	1	9	4	67	9	80	22	6	6	34	158	43	201	5:15-5:30	
5:30-5:45	10	74	4	88	1	4	9	14	3	70	11	84	12	3	6	21	172	35	207	5:30-5:45	
5:45-6:00	7	60	2	69	1	6	1	8	5	43	11	59	20	4	6	30	128	38	166	5:45-6:00	
6:00-6:15	5	62	1	68	0	2	3	5	5	78	5	88	15	1	8	24	156	29	185	6:00-6:15	
6:15-6:30	2	61	4	67	0	1	3	4	5	59	8	72	12	2	2	16	139	20	159	6:15-6:30	
6:30-6:45	2	60	6	68	1	2	2	5	5	67	9	81	14	2	4	20	149	25	174	6:30-6:45	
6:45-7:00	7	43	2	52	1	1	4	6	4	46	6	56	15	3	9	27	108	33	141	6:45-7:00	
3 Hour Totals	65	738	33	836	13	34	39	86	58	736	99	893	265	36	68	369	1,729	455	2,184		
1 Hour Totals																					
4:00-5:00	17	251	12	280	7	11	13	31	17	227	35	279	109	8	21	138	559	169	728	0.86 4:00-5:00	
4:15-5:15	18	264	6	288	6	7	15	28	23	260	24	307	133	14	22	169	595	197	792	0.89 4:15-5:15	
4:30-5:30	27	281	7	315	5	12	9	26	23	279	28	330	122	17	26	165	645	191	836	0.94 4:30-5:30	
4:45-5:45	29	279	7	315	4	14	14	32	22	285	33	340	100	18	26	144	655	176	831	0.93 4:45-5:45	
5:00-6:00	32	261	8	301	4	17	14	35	22	259	36	317	100	20	24	144	618	179	797	0.89 5:00-6:00	
5:15-6:15	32	262	9	303	4	18	14	36	17	258	36	311	69	14	26	109	614	145	759	0.92 5:15-6:15	
5:30-6:30	24	257	11	292	2	13	16	31	18	250	35	303	59	10	22	91	595	122	717	0.87 5:30-6:30	
5:45-6:45	16	243	13	272	2	11	9	22	20	247	33	300	61	9	20	90	572	112	684	0.92 5:45-6:45	
6:00-7:00	16	226	13	255	2	6	12	20	19	250	28	297	56	8	23	87	552	107	659	0.89 6:00-7:00	
PM Peak 4:30-5:30																					

Wells & Associates, Inc

McLean, Virginia

Existing Traffic Count

Time Period	Turning Movements																Total	PHF	Time Period		
	Southbound Rockville Pike - 355				Westbound Bou Avenue				Northbound Rockville Pike - 355				Eastbound Bou Avenue							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	188	7	195	8	3	69	80	5	77	2	84	5	0	1	6	279	86	365	6:30-6:45	
6:45-7:00	0	218	9	227	10	2	80	92	13	109	2	124	3	2	2	7	351	99	450	6:45-7:00	
7:00-7:15	0	232	17	249	8	0	87	95	18	99	5	122	5	2	3	10	371	105	476	7:00-7:15	
7:15-7:30	5	331	11	347	2	4	105	111	10	119	1	130	6	1	1	8	477	119	596	7:15-7:30	
7:30-7:45	1	361	21	383	7	1	123	131	18	113	5	136	12	3	0	15	519	146	665	7:30-7:45	
7:45-8:00	2	370	32	404	10	3	107	120	36	164	4	204	8	2	0	10	608	130	738	7:45-8:00	
8:00-8:15	1	358	26	385	12	0	123	135	62	198	8	268	17	6	3	26	653	161	814	8:00-8:15	
8:15-8:30	0	336	23	359	12	1	119	132	56	216	8	280	9	4	1	14	639	146	785	8:15-8:30	
8:30-8:45	1	365	29	395	17	4	114	135	44	203	7	254	3	3	6	12	649	147	796	8:30-8:45	
8:45-9:00	1	328	31	360	12	4	92	108	50	237	7	294	6	5	5	16	654	124	778	8:45-9:00	
9:00-9:15	1	321	29	351	9	1	128	138	59	248	12	319	10	7	1	18	670	156	826	9:00-9:15	
9:15-9:30	3	301	32	336	27	2	108	137	41	269	3	313	6	6	2	14	649	151	800	9:15-9:30	
3 Hour Totals	15	3,709	267	3,991	134	25	1,255	1,414	412	2,052	64	2,528	90	41	25	156	6,519	1,570	8,089		
1 Hour Totals																					
6:30-7:30	5	969	44	1,018	28	9	341	378	46	404	10	460	19	5	7	31	1,478	409	1,887	0.79	6:30-7:30
6:45-7:45	6	1,142	58	1,206	27	7	395	429	59	440	13	512	26	8	6	40	1,718	469	2,187	0.82	6:45-7:45
7:00-8:00	8	1,294	81	1,383	27	8	422	457	82	495	15	592	31	8	4	43	1,975	500	2,475	0.84	7:00-8:00
7:15-8:15	9	1,420	90	1,519	31	8	458	497	126	594	18	738	43	12	4	59	2,257	556	2,813	0.86	7:15-8:15
7:30-8:30	4	1,425	102	1,531	41	5	472	518	172	691	25	888	46	15	4	65	2,419	583	3,002	0.92	7:30-8:30
7:45-8:45	4	1,429	110	1,543	51	8	463	522	198	781	27	1,006	37	15	10	62	2,549	584	3,133	0.96	7:45-8:45
8:00-9:00	3	1,387	109	1,499	53	9	448	510	212	854	30	1,096	35	18	15	68	2,595	578	3,173	0.97	8:00-9:00
8:15-9:15	3	1,350	112	1,465	50	10	453	513	209	904	34	1,147	28	19	13	60	2,612	573	3,185	0.96	8:15-9:15
8:30-9:30	6	1,315	121	0	65	11	442	518	194	957	29	1,180	25	21	14	60	2,622	578	3,200	0.97	8:30-9:30
AM Peak 8:30-9:30	6	1,315	121	0	65	11	442	518	194	957	29	1,180	25	21	14	60	2,622	578	3,200	0.97	AM Peak 8:30-9:30
PM																					
4:00-4:15	2	306	36	344	20	9	100	129	91	420	11	522	16	7	3	26	866	155	1,021		4:00-4:15
4:15-4:30	10	263	58	331	28	13	96	137	90	427	6	523	9	3	5	17	854	154	1,008		4:15-4:30
4:30-4:45	2	276	45	323	23	8	108	139	80	431	12	523	7	6	8	21	846	160	1,006		4:30-4:45
4:45-5:00	7	288	64	359	28	8	74	110	68	440	12	520	8	6	2	16	879	126	1,005		4:45-5:00
5:00-5:15	0	306	40	346	42	12	106	160	80	423	6	509	3	4	4	11	855	171	1,026		5:00-5:15
5:15-5:30	6	274	52	332	35	4	80	119	114	460	8	582	6	2	3	11	914	130	1,044		5:15-5:30
5:30-5:45	2	286	46	334	39	6	90	135	96	449	11	556	11	14	5	30	890	165	1,055		5:30-5:45
5:45-6:00	5	296	49	350	46	6	82	134	82	460	6	548	8	7	5	20	898	154	1,052		5:45-6:00
6:00-6:15	5	314	53	372	55	5	72	132	73	478	19	570	11	8	4	23	942	155	1,097		6:00-6:15
6:15-6:30	5	284	61	350	28	11	83	122	80	402	11	493	6	5	12	23	843	145	988		6:15-6:30
6:30-6:45	3	294	50	347	36	4	100	140	63	372	11	446	5	5	3	13	793	153	946		6:30-6:45
6:45-7:00	0	263	59	322	24	5	55	84	47	298	8	353	6	4	3	13	675	97	772		6:45-7:00
3 Hour Totals	47	3,450	613	4,110	404	91	1,046	1,541	964	5,060	121	6,145	96	71	57	224	10,255	1,765	12,020		
1 Hour Totals																					
4:00-5:00	21	1,133	203	1,357	99	38	378	515	329	1,718	41	2,088	40	22	18	80	3,445	595	4,040	0.99	4:00-5:00
4:15-5:15	19	1,133	207	1,359	121	41	384	546	318	1,721	36	2,075	27	19	19	65	3,434	611	4,045	0.99	4:15-5:15
4:30-5:30	15	1,144	201	1,360	128	32	368	528	342	1,754	38	2,134	24	18	17	59	3,494	587	4,081	0.98	4:30-5:30
4:45-5:45	15	1,154	202	1,371	144	30	350	524	358	1,772	37	2,167	28	26	14	68	3,538	592	4,130	0.98	4:45-5:45
5:00-6:00	13	1,162	187	1,362	162	28	358	548	372	1,792	31	2,195	28	27	17	72	3,557	620	4,177	0.99	5:00-6:00
5:15-6:15	18	1,170	200	1,388	175	21	324	520	365	1,847	44	2,256	36	31	17	84	3,644	604	4,248	0.97	5:15-6:15
5:30-6:30	17	1,180	209	1,406	168	28	327	523	331	1,789	47	2,167	36	34	26	96	3,573	619	4,192	0.96	5:30-6:30
5:45-6:45	18	1,188	213	1,419	165	26	337	528	298	1,712	47	2,057	30	25	24	79	3,476	607	4,083	0.93	5:45-6:45
6:00-7:00	13	1,155	223	1,391	143	25	310	478	263	1,550	49	1,862	28	22	22	72	3,253	550	3,803	0.87	6:00-7:00
PM Peak 5:15-6:15	18	1,170	200	1,388	175	21	324	520	365	1,847	44	2,256	36	31	17	84	3,644	604	4,248	0.97	PM Peak 5:15-6:15

Wells & Associates, Inc

McLean, Virginia

Existing Traffic Count

Time Period		Turning Movements																Total	PHF	Time Period	
		Southbound Rockville Pike - 355				Westbound Pike Center Driveway				Northbound Rockville Pike - 355				Eastbound Federal Plaza Driveway							North & West
1	2	3	Total	4	5	6	Total	7	8	9	Total	10	11	12	Total	North & South	East & West				
Right	Thru	Left		Right	Thru	Left		Right	Thru	Left		Right	Thru	Left							
AM																					
6:30-6:45	0	196	1	197	2	0	0	2	0	79	7	86	1	0	0	1	283	3	286	6:30-6:45	
6:45-7:00	1	222	1	224	0	0	0	0	0	116	8	124	0	0	1	1	348	1	349	6:45-7:00	
7:00-7:15	1	252	2	255	0	0	0	0	0	107	4	111	1	0	0	1	366	1	367	7:00-7:15	
7:15-7:30	0	356	2	358	0	0	0	0	2	119	1	122	3	0	1	4	480	4	484	7:15-7:30	
7:30-7:45	0	378	0	378	3	0	3	6	0	122	4	126	4	0	1	5	504	11	515	7:30-7:45	
7:45-8:00	0	407	4	411	0	0	1	1	0	159	10	169	4	0	5	9	580	10	590	7:45-8:00	
8:00-8:15	1	366	2	369	2	2	2	6	2	185	18	205	6	1	6	13	574	19	593	8:00-8:15	
8:15-8:30	1	351	4	356	1	0	1	2	3	195	22	220	13	1	3	17	576	19	595	8:15-8:30	
8:30-8:45	0	378	4	382	4	0	1	5	5	203	13	221	9	1	3	13	603	18	621	8:30-8:45	
8:45-9:00	0	338	8	346	1	0	4	5	2	207	18	227	15	0	8	23	573	28	601	8:45-9:00	
9:00-9:15	1	303	11	315	1	0	2	3	2	204	25	231	12	1	2	15	546	18	564	9:00-9:15	
9:15-9:30	1	324	7	332	2	2	0	4	2	241	28	271	18	0	3	21	603	25	628	9:15-9:30	
3 Hour Totals	6	3,871	46	3,923	16	4	14	34	18	1,937	158	2,113	86	4	33	123	6,036	157	6,193		
1 Hour Totals																					
6:30-7:30	2	1,026	6	1,034	2	0	0	2	2	421	20	443	5	0	2	7	1,477	9	1,486	0.77 6:30-7:30	
6:45-7:45	2	1,208	5	1,215	3	0	3	6	2	464	17	483	8	0	3	11	1,698	17	1,715	0.83 6:45-7:45	
7:00-8:00	1	1,393	8	1,402	3	0	4	7	2	507	19	528	12	0	7	19	1,930	26	1,956	0.83 7:00-8:00	
7:15-8:15	1	1,507	8	1,516	5	2	6	13	4	585	33	622	17	1	13	31	2,138	44	2,182	0.92 7:15-8:15	
7:30-8:30	2	1,502	10	1,514	6	2	7	15	5	661	54	720	27	2	15	44	2,234	59	2,293	0.96 7:30-8:30	
7:45-8:45	2	1,502	14	1,518	7	2	5	14	10	742	63	815	32	3	17	52	2,333	66	2,399	0.97 7:45-8:45	
8:00-9:00	2	1,433	18	1,453	8	2	8	18	12	790	71	873	43	3	20	66	2,326	84	2,410	0.97 8:00-9:00	
8:15-9:15	2	1,370	27	1,399	7	0	8	15	12	809	78	899	49	3	16	68	2,298	83	2,381	0.96 8:15-9:15	
8:30-9:30	2	1,343	30	1,375	8	2	7	17	11	855	84	950	54	2	16	72	2,325	89	2,414	0.96 8:30-9:30	
AM Peak 8:30-9:30	2	1,343	30	1,375	8	2	7	17	11	855	84	950	54	2	16	72	2,325	89	2,414	0.96 AM Peak 8:30-9:30	
PM																					
4:00-4:15	2	304	6	312	7	2	7	16	6	379	31	416	40	1	26	67	728	83	811	4:00-4:15	
4:15-4:30	1	246	10	257	5	2	5	12	3	361	34	398	39	2	17	58	655	70	725	4:15-4:30	
4:30-4:45	4	272	6	282	14	1	3	18	6	414	45	465	41	1	18	60	747	78	825	4:30-4:45	
4:45-5:00	5	302	11	318	10	1	5	16	9	392	45	446	39	4	16	59	764	75	839	4:45-5:00	
5:00-5:15	3	292	8	303	12	2	6	20	8	402	42	452	38	3	37	78	755	98	853	5:00-5:15	
5:15-5:30	2	320	7	329	6	1	1	8	5	429	57	491	23	3	36	62	820	70	890	5:15-5:30	
5:30-5:45	6	299	7	312	8	4	5	17	6	426	36	468	35	0	23	58	780	75	855	5:30-5:45	
5:45-6:00	2	310	4	316	12	2	6	20	4	443	62	509	37	2	31	70	825	90	915	5:45-6:00	
6:00-6:15	2	290	14	306	7	0	2	9	6	379	62	447	44	5	19	68	753	77	830	6:00-6:15	
6:15-6:30	6	291	9	306	10	2	5	17	12	365	53	430	41	5	21	67	736	84	820	6:15-6:30	
6:30-6:45	3	303	7	313	9	5	1	15	3	347	39	389	41	4	26	71	702	86	788	6:30-6:45	
6:45-7:00	7	270	9	286	7	1	5	13	6	297	43	346	45	1	38	84	632	97	729	6:45-7:00	
3 Hour Totals	43	3,499	98	3,640	107	23	51	181	74	4,634	549	5,257	463	31	308	802	8,897	983	9,880		
1 Hour Totals																					
4:00-5:00	12	1,124	33	1,169	36	6	20	62	24	1,546	155	1,725	159	8	77	244	2,894	306	3,200	0.95 4:00-5:00	
4:15-5:15	13	1,112	35	1,160	41	6	19	66	26	1,569	166	1,761	157	10	88	255	2,921	321	3,242	0.95 4:15-5:15	
4:30-5:30	14	1,186	32	1,232	42	5	15	62	28	1,637	189	1,854	141	11	107	259	3,086	321	3,407	0.96 4:30-5:30	
4:45-5:45	16	1,213	33	1,262	36	8	17	61	28	1,649	180	1,857	135	10	112	257	3,119	318	3,437	0.97 4:45-5:45	
5:00-6:00	13	1,221	26	1,260	38	9	18	65	23	1,700	197	1,920	133	8	127	268	3,180	333	3,513	0.96 5:00-6:00	
5:15-6:15	12	1,219	32	1,263	33	7	14	54	21	1,677	217	1,915	139	10	109	258	3,178	312	3,490	0.95 5:15-6:15	
5:30-6:30	16	1,190	34	1,240	37	8	18	63	28	1,613	213	1,854	157	12	94	263	3,094	326	3,420	0.93 5:30-6:30	
5:45-6:45	13	1,194	34	1,241	38	9	14	61	25	1,534	216	1,775	163	16	97	276	3,016	337	3,353	0.92 5:45-6:45	
6:00-7:00	18	1,154	39	1,211	33	8	13	54	27	1,388	197	1,612	171	15	104	290	2,823	344	3,167	0.95 6:00-7:00	
PM Peak 5:00-6:00	13	1,221	26	1,260	38	9	18	65	23	1,700	197	1,920	133	8	127	268	3,180	333	3,513	0.96 PM Peak 5:00-6:00	

Wells & Associates, Inc

McLean, Virginia

Existing Traffic Count

Time Period	Turning Movements																		Total	PHF	Time Period
	Southbound Rockville Pike - 355				Westbound Shell Gas Station Driveways				Northbound Rockville Pike - 355				Eastbound 0				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	1	0	0	1	1	0	0	1	0	0	0	0	1	1	2		6:30-6:45
6:45-7:00	0	0	0	0	2	0	0	2	3	0	0	3	0	0	0	0	3	2	5		6:45-7:00
7:00-7:15	0	0	0	0	6	0	0	6	6	0	0	6	0	0	0	0	6	6	12		7:00-7:15
7:15-7:30	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	3	0	3		7:15-7:30
7:30-7:45	0	0	0	0	6	0	0	6	4	0	0	4	0	0	0	0	4	6	10		7:30-7:45
7:45-8:00	0	0	0	0	5	0	0	5	7	0	0	7	0	0	0	0	7	5	12		7:45-8:00
8:00-8:15	0	0	0	0	3	0	0	3	7	0	0	7	0	0	0	0	7	3	10		8:00-8:15
8:15-8:30	0	0	0	0	5	0	0	5	3	0	0	3	0	0	0	0	3	5	8		8:15-8:30
8:30-8:45	0	0	0	0	6	0	0	6	8	0	0	8	0	0	0	0	8	6	14		8:30-8:45
8:45-9:00	0	0	0	0	3	0	0	3	3	0	0	3	0	0	0	0	3	3	6		8:45-9:00
9:00-9:15	0	0	0	0	3	0	0	3	3	0	0	3	0	0	0	0	3	3	6		9:00-9:15
9:15-9:30	0	0	0	0	4	0	0	4	8	0	0	8	0	0	0	0	8	4	12		9:15-9:30
3 Hour Totals	0	0	0	0	44	0	0	44	56	0	0	56	0	0	0	0	56	44	100		
1 Hour Totals																					
6:30-7:30	0	0	0	0	9	0	0	9	13	0	0	13	0	0	0	0	13	9	22	0.46	6:30-7:30
6:45-7:45	0	0	0	0	14	0	0	14	16	0	0	16	0	0	0	0	16	14	30	0.63	6:45-7:45
7:00-8:00	0	0	0	0	17	0	0	17	20	0	0	20	0	0	0	0	20	17	37	0.77	7:00-8:00
7:15-8:15	0	0	0	0	14	0	0	14	21	0	0	21	0	0	0	0	21	14	35	0.73	7:15-8:15
7:30-8:30	0	0	0	0	19	0	0	19	21	0	0	21	0	0	0	0	21	19	40	0.83	7:30-8:30
7:45-8:45	0	0	0	0	19	0	0	19	25	0	0	25	0	0	0	0	25	19	44	0.79	7:45-8:45
8:00-9:00	0	0	0	0	17	0	0	17	21	0	0	21	0	0	0	0	21	17	38	0.68	8:00-9:00
8:15-9:15	0	0	0	0	17	0	0	17	17	0	0	17	0	0	0	0	17	17	34	0.61	8:15-9:15
8:30-9:30	0	0	0	0	16	0	0	16	22	0	0	22	0	0	0	0	22	16	38	0.68	8:30-9:30
AM Peak 7:45-8:45	0	0	0	0	19	0	0	19	25	0	0	25	0	0	0	0	25	19	44	0.79	AM Peak 7:45-8:45
PM																					
4:00-4:15	0	0	0	0	9	0	0	9	10	0	0	10	0	0	0	0	10	9	19		4:00-4:15
4:15-4:30	0	0	0	0	7	0	0	7	11	0	0	11	0	0	0	0	11	7	18		4:15-4:30
4:30-4:45	0	0	0	0	12	0	0	12	9	0	0	9	0	0	0	0	9	12	21		4:30-4:45
4:45-5:00	0	0	0	0	15	0	0	15	12	0	0	12	0	0	0	0	12	15	27		4:45-5:00
5:00-5:15	0	0	0	0	14	0	0	14	15	0	0	15	0	0	0	0	15	14	29		5:00-5:15
5:15-5:30	0	0	0	0	17	0	0	17	8	0	0	8	0	0	0	0	8	17	25		5:15-5:30
5:30-5:45	0	0	0	0	6	0	0	6	7	0	0	7	0	0	0	0	7	6	13		5:30-5:45
5:45-6:00	0	0	0	0	9	0	0	9	9	0	0	9	0	0	0	0	9	9	18		5:45-6:00
6:00-6:15	0	0	0	0	12	0	0	12	11	0	0	11	0	0	0	0	11	12	23		6:00-6:15
6:15-6:30	0	0	0	0	11	0	0	11	9	0	0	9	0	0	0	0	9	11	20		6:15-6:30
6:30-6:45	0	0	0	0	11	0	0	11	14	0	0	14	0	0	0	0	14	11	25		6:30-6:45
6:45-7:00	0	0	0	0	13	0	0	13	10	0	0	10	0	0	0	0	10	13	23		6:45-7:00
3 Hour Totals	0	0	0	0	136	0	0	136	125	0	0	125	0	0	0	0	125	136	261		
1 Hour Totals																					
4:00-5:00	0	0	0	0	43	0	0	43	42	0	0	42	0	0	0	0	42	43	85	0.79	4:00-5:00
4:15-5:15	0	0	0	0	48	0	0	48	47	0	0	47	0	0	0	0	47	48	95	0.82	4:15-5:15
4:30-5:30	0	0	0	0	58	0	0	58	44	0	0	44	0	0	0	0	44	58	102	0.88	4:30-5:30
4:45-5:45	0	0	0	0	52	0	0	52	42	0	0	42	0	0	0	0	42	52	94	0.81	4:45-5:45
5:00-6:00	0	0	0	0	46	0	0	46	39	0	0	39	0	0	0	0	39	46	85	0.73	5:00-6:00
5:15-6:15	0	0	0	0	44	0	0	44	35	0	0	35	0	0	0	0	35	44	79	0.79	5:15-6:15
5:30-6:30	0	0	0	0	38	0	0	38	36	0	0	36	0	0	0	0	36	38	74	0.80	5:30-6:30
5:45-6:45	0	0	0	0	43	0	0	43	43	0	0	43	0	0	0	0	43	43	86	0.86	5:45-6:45
6:00-7:00	0	0	0	0	47	0	0	47	44	0	0	44	0	0	0	0	44	47	91	0.91	6:00-7:00
PM Peak 4:30-5:30	0	0	0	0	58	0	0	58	44	0	0	44	0	0	0	0	44	58	102	0.88	PM Peak 4:30-5:30

Wells & Associates, Inc

McLean, Virginia

Existing Traffic Count

Time Period	Turning Movements																	Total	PHF	Time Period
	Southbound Rockville Pike - 355				Westbound Twinbrook Parkway				Northbound Rockville Pike - 355				Eastbound Rollins Avenue				North & East			
	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	South				West
AM																				
6:30-6:45	6	199	24	229	11	33	0	44	10	73	1	84	4	20	0	24	313	68	381	6:30-6:45
6:45-7:00	6	235	27	268	13	52	0	65	16	105	3	124	7	40	0	47	392	112	504	6:45-7:00
7:00-7:15	3	248	31	282	18	44	1	63	14	111	5	130	7	21	0	28	412	91	503	7:00-7:15
7:15-7:30	8	362	39	409	24	55	0	79	13	120	1	134	8	28	0	36	543	115	658	7:15-7:30
7:30-7:45	6	388	39	433	21	73	0	94	12	104	5	121	3	41	0	44	554	138	692	7:30-7:45
7:45-8:00	3	411	49	463	19	91	0	110	20	137	7	164	12	47	0	59	627	169	796	7:45-8:00
8:00-8:15	6	371	30	407	21	87	0	108	23	153	7	183	12	77	1	90	590	198	788	8:00-8:15
8:15-8:30	1	351	39	391	22	68	0	90	26	167	2	195	4	64	0	68	586	158	744	8:15-8:30
8:30-8:45	11	361	54	426	34	67	0	101	22	163	9	194	13	63	0	76	620	177	797	8:30-8:45
8:45-9:00	10	339	44	393	41	97	0	138	21	197	10	228	15	49	0	64	621	202	823	8:45-9:00
9:00-9:15	8	305	55	368	21	81	0	102	32	192	16	240	21	74	0	95	608	197	805	9:00-9:15
9:15-9:30	14	323	31	368	38	66	0	104	31	196	13	240	17	59	0	76	608	180	788	9:15-9:30
3 Hour Totals	82	3,893	462	4,437	283	814	1	1,098	240	1,718	79	2,037	123	583	1	707	6,474	1,805	8,279	
1 Hour Totals																				
6:30-7:30	23	1,044	121	1,188	66	184	1	251	53	409	10	472	26	109	0	135	1,660	386	2,046	0.78 6:30-7:30
6:45-7:45	23	1,233	136	1,392	76	224	1	301	55	440	14	509	25	130	0	155	1,901	456	2,357	0.85 6:45-7:45
7:00-8:00	20	1,409	158	1,587	82	263	1	346	59	472	18	549	30	137	0	167	2,136	513	2,649	0.83 7:00-8:00
7:15-8:15	23	1,532	157	1,712	85	306	0	391	68	514	20	602	35	193	1	229	2,314	620	2,934	0.92 7:15-8:15
7:30-8:30	16	1,521	157	1,694	83	319	0	402	81	561	21	663	31	229	1	261	2,357	663	3,020	0.95 7:30-8:30
7:45-8:45	21	1,494	172	1,687	96	313	0	409	91	620	25	736	41	251	1	293	2,423	702	3,125	0.98 7:45-8:45
8:00-9:00	28	1,422	167	1,617	118	319	0	437	92	680	28	800	44	253	1	298	2,417	735	3,152	0.96 8:00-9:00
8:15-9:15	30	1,356	192	1,578	118	313	0	431	101	719	37	857	53	250	0	303	2,435	734	3,169	0.96 8:15-9:15
8:30-9:30	43	1,328	184	0	134	311	0	445	106	748	48	902	66	245	0	311	2,457	756	3,213	0.98 8:30-9:30
AM Peak 8:30-9:30	43	1,328	184	0	134	311	0	445	106	748	48	902	66	245	0	311	2,457	756	3,213	0.98
PM																				
4:00-4:15	18	308	44	370	52	102	0	154	30	356	13	399	6	126	0	132	769	286	1,055	4:00-4:15
4:15-4:30	15	251	36	302	36	76	0	112	30	363	24	417	11	98	0	109	719	221	940	4:15-4:30
4:30-4:45	9	281	52	342	39	81	0	120	40	341	34	415	15	98	0	113	757	233	990	4:30-4:45
4:45-5:00	11	307	29	347	40	83	0	123	42	364	15	421	5	109	0	114	768	237	1,005	4:45-5:00
5:00-5:15	10	294	34	338	38	84	0	122	27	379	18	424	11	99	1	111	762	233	995	5:00-5:15
5:15-5:30	11	312	30	353	40	83	0	123	41	369	24	434	11	104	1	116	787	239	1,026	5:15-5:30
5:30-5:45	12	301	49	362	39	85	0	124	19	391	19	429	2	105	0	107	791	231	1,022	5:30-5:45
5:45-6:00	16	298	37	351	34	71	0	105	29	406	27	462	7	98	1	106	813	211	1,024	5:45-6:00
6:00-6:15	5	300	38	343	35	69	0	104	32	357	24	413	17	116	1	134	756	238	994	6:00-6:15
6:15-6:30	9	297	33	339	34	60	0	94	35	351	21	407	15	82	1	98	746	192	938	6:15-6:30
6:30-6:45	16	305	28	349	26	68	0	94	45	320	21	386	17	65	2	84	735	178	913	6:30-6:45
6:45-7:00	7	279	22	308	31	56	0	87	31	269	17	317	8	82	3	93	625	180	805	6:45-7:00
3 Hour Totals	139	3,533	432	4,104	444	918	0	1,362	401	4,266	257	4,924	125	1,182	10	1,317	9,028	2,679	11,707	
1 Hour Totals																				
4:00-5:00	53	1,147	161	1,361	167	342	0	509	142	1,424	86	1,652	37	431	0	468	3,013	977	3,990	0.95 4:00-5:00
4:15-5:15	45	1,133	151	1,329	153	324	0	477	139	1,447	91	1,677	42	404	1	447	3,006	924	3,930	0.98 4:15-5:15
4:30-5:30	41	1,194	145	1,380	157	331	0	488	150	1,453	91	1,694	42	410	2	454	3,074	942	4,016	0.98 4:30-5:30
4:45-5:45	44	1,214	142	1,400	157	335	0	492	129	1,503	76	1,708	29	417	2	448	3,108	940	4,048	0.99 4:45-5:45
5:00-6:00	49	1,205	150	1,404	151	323	0	474	116	1,545	88	1,749	31	406	3	440	3,153	914	4,067	0.99 5:00-6:00
5:15-6:15	44	1,211	154	1,409	148	308	0	456	121	1,523	94	1,738	37	423	3	463	3,147	919	4,066	0.99 5:15-6:15
5:30-6:30	42	1,196	157	1,395	142	285	0	427	115	1,505	91	1,711	41	401	3	445	3,106	872	3,978	0.97 5:30-6:30
5:45-6:45	46	1,200	136	1,382	129	268	0	397	141	1,434	93	1,668	56	361	5	422	3,050	819	3,869	0.94 5:45-6:45
6:00-7:00	37	1,181	121	1,339	126	253	0	379	143	1,297	83	1,523	57	345	7	409	2,862	788	3,650	0.92 6:00-7:00
PM Peak 5:00-6:00	49	1,205	150	1,404	151	323	0	474	116	1,545	88	1,749	31	406	3	440	3,153	914	4,067	0.99

Wells & Associates, Inc

McLean, Virginia

Existing Traffic Count

PROJECT: Pike Center 2022		DATE: 3/19/2024		SOUTHBOUND ROAD: Chapman Avenue																	
W & A JOB NO.: 8923		DAY: Tuesday		NORTHBOUND ROAD: Chapman Avenue																	
INTERSECTION: Chapman Ave. & Twinbrook Pkwy.		WEATHER: clear		WESTBOUND ROAD: Twinbrook Parkway																	
LOCATION: Montgomery Co., MD		COUNTED BY: Tia		EASTBOUND ROAD: Twinbrook Parkway																	
		INPUTED BY: agan																			
Time Period	Turning Movements																Total	PHF	Time Period		
	Southbound Chapman Avenue				Westbound Twinbrook Parkway				Northbound Chapman Avenue				Eastbound Twinbrook Parkway							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	4	6	8	18	14	45	59	118	18	8	2	28	4	51	2	57	46	175	221	6:30-6:45	
6:45-7:00	8	9	9	26	17	57	97	171	27	2	2	31	3	72	4	79	57	250	307	6:45-7:00	
7:00-7:15	3	18	10	31	14	65	81	160	29	4	0	33	6	64	1	71	64	231	295	7:00-7:15	
7:15-7:30	7	12	13	32	22	57	93	172	25	3	0	28	5	74	1	80	60	252	312	7:15-7:30	
7:30-7:45	3	15	7	25	24	97	127	248	37	7	3	47	5	92	8	105	72	353	425	7:30-7:45	
7:45-8:00	10	21	12	43	19	96	131	246	43	6	3	52	8	114	13	135	95	381	476	7:45-8:00	
8:00-8:15	2	14	18	34	22	111	121	254	55	8	2	65	13	129	14	156	99	410	509	8:00-8:15	
8:15-8:30	6	14	27	47	21	93	122	236	50	19	7	76	8	140	7	155	123	391	514	8:15-8:30	
8:30-8:45	8	11	19	38	35	95	139	269	50	14	11	75	5	140	16	161	113	430	543	8:30-8:45	
8:45-9:00	8	11	20	39	45	127	124	296	61	7	8	76	10	110	3	123	115	419	534	8:45-9:00	
9:00-9:15	7	15	25	47	26	92	119	237	53	12	9	74	14	117	13	144	121	381	502	9:00-9:15	
9:15-9:30	5	10	26	41	34	107	127	268	48	13	11	72	13	108	9	130	113	398	511	9:15-9:30	
3 Hour Totals	71	156	194	421	293	1,042	1,340	2,675	496	103	58	657	94	1,211	91	1,396	1,078	4,071	5,149		
1 Hour Totals																					
6:30-7:30	22	45	40	107	67	224	330	621	99	17	4	120	18	261	8	287	227	908	1,135	0.91	6:30-7:30
6:45-7:45	21	54	39	114	77	276	398	751	118	16	5	139	19	302	14	335	253	1,086	1,339	0.79	6:45-7:45
7:00-8:00	23	66	42	131	79	315	432	826	134	20	6	160	24	344	23	391	291	1,217	1,508	0.79	7:00-8:00
7:15-8:15	22	62	50	134	87	361	472	920	160	24	8	192	31	409	36	476	326	1,396	1,722	0.85	7:15-8:15
7:30-8:30	21	64	64	149	86	397	501	984	185	40	15	240	34	475	42	551	389	1,535	1,924	0.94	7:30-8:30
7:45-8:45	26	60	76	162	97	395	513	1,005	198	47	23	268	34	523	50	607	430	1,612	2,042	0.94	7:45-8:45
8:00-9:00	24	50	84	158	123	426	506	1,055	216	48	28	292	36	519	40	595	450	1,650	2,100	0.97	8:00-9:00
8:15-9:15	29	51	91	171	127	407	504	1,038	214	52	35	301	37	507	39	583	472	1,621	2,093	0.96	8:15-9:15
8:30-9:30	28	47	90	165	140	421	509	1,070	212	46	39	297	42	475	41	558	462	1,628	2,090	0.96	8:30-9:30
AM Peak 8:00-9:00	24	50	84	158	123	426	506	1,055	216	48	28	292	36	519	40	595	450	1,650	2,100	0.97	AM Peak 8:00-9:00
PM																					
4:00-4:15	12	14	48	74	31	117	106	254	131	14	11	156	25	179	10	214	230	468	698	4:00-4:15	
4:15-4:30	7	23	42	72	44	126	114	284	101	21	17	139	18	175	8	201	211	485	696	4:15-4:30	
4:30-4:45	6	29	41	76	37	130	121	288	108	32	13	153	27	167	19	213	229	501	730	4:30-4:45	
4:45-5:00	6	29	56	91	37	167	117	321	149	24	10	183	21	166	13	200	274	521	795	4:45-5:00	
5:00-5:15	13	25	48	86	32	155	114	301	115	37	15	167	22	174	16	212	253	513	766	5:00-5:15	
5:15-5:30	13	30	57	100	35	121	104	260	156	21	16	193	25	197	22	244	293	504	797	5:15-5:30	
5:30-5:45	5	35	54	94	37	140	128	305	144	27	14	185	27	188	17	232	279	537	816	5:30-5:45	
5:45-6:00	13	42	59	114	28	128	116	272	138	27	8	173	19	200	17	236	287	508	795	5:45-6:00	
6:00-6:15	4	18	45	67	34	109	93	236	97	28	18	143	26	171	13	210	210	446	656	6:00-6:15	
6:15-6:30	13	27	42	82	23	97	91	211	123	20	18	161	20	136	15	171	243	382	625	6:15-6:30	
6:30-6:45	8	33	38	79	21	87	93	201	104	23	19	146	21	144	12	177	225	378	603	6:30-6:45	
6:45-7:00	6	19	38	63	20	96	84	200	104	22	16	142	15	136	10	161	205	361	566	6:45-7:00	
3 Hour Totals	106	324	568	998	379	1,473	1,281	3,133	1,470	296	175	1,941	266	2,033	172	2,471	2,939	5,604	8,543		
1 Hour Totals																					
4:00-5:00	31	95	187	313	149	540	458	1,147	489	91	51	631	91	687	50	828	944	1,975	2,919	0.92	4:00-5:00
4:15-5:15	32	106	187	325	150	578	466	1,194	473	114	55	642	88	682	56	826	967	2,020	2,987	0.94	4:15-5:15
4:30-5:30	38	113	202	353	141	573	456	1,170	528	114	54	696	95	704	70	869	1,049	2,039	3,088	0.97	4:30-5:30
4:45-5:45	37	119	215	371	141	583	463	1,187	564	109	55	728	95	725	68	888	1,099	2,075	3,174	0.97	4:45-5:45
5:00-6:00	44	132	218	394	132	544	462	1,138	553	112	53	718	93	759	72	924	1,112	2,062	3,174	0.97	5:00-6:00
5:15-6:15	35	125	215	375	134	498	441	1,073	535	103	56	694	97	756	69	922	1,069	1,995	3,064	0.94	5:15-6:15
5:30-6:30	35	122	200	357	122	474	428	1,024	502	102	58	662	92	695	62	849	1,019	1,873	2,892	0.89	5:30-6:30
5:45-6:45	38	120	184	342	106	421	393	920	462	98	63	623	86	651	57	794	965	1,714	2,679	0.89	5:45-6:45
6:00-7:00	31	97	163	291	98	389	361	848	428	93	71	592	82	587	50	719	883	1,567	2,450	0.93	6:00-7:00
PM Peak 4:45-5:45	37	119	215	371	141	583	463	1,187	564	109	55	728	95	725	68	888	1,099	2,075	3,174	0.97	PM Peak 4:45-5:45

APPENDIX D

Signal Timings

SIG#0101 Hub-DD

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	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	18	0	23	0	18	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	5.0	0.0	0.0	5.0	5.0	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	60	0	30	10	60	0	30	0	0	0	0	0	0	0	0
MAX2	50	60	0	60	15	60	0	60	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	2.0	1.0	0.0	3.0	2.0	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	2.0	5.0	5.0	5.0	2.0	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																

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	98	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	44	PHASE RESERVICE	

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	18	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

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	150	SEQUENCE	1
OFFSET VAL	100	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								

COORDINATOR PATTERN 5

USE SPLIT PATTERN	5	PHASE RESERVICE	
CYCLE	120	MAX SELECT	NONE
OFFSET VAL	98	STD (COS)	151
ACTUATED COORD		DWELL/ADD TIME	0
ACT WALK REST		TIMING PLAN	1

COORDINATOR PATTERN 5

SEQUENCE	1	VEH PERM 2	0
ACTION PLAN	0	VEH PERM 2 - DISP	0
FORCE OFF	NONE	XART PTRN.	0
VEH PERM 1	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	30	78	0	42	30	78	0	42
COORD		X				X		
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

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	33	75	0	42	33	75	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	PHASE	9	10	11	12	13	14	15	16
SPLIT	0	0	0	0	0	0	0	0	COORD								

NextEdit

SIG#0101 Hub-DD

Split 2								
PHASE	9	10	11	12	13	14	15	16
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

Split 3								
PHASE	1	2	3	4	5	6	7	8
SPLIT	30	78	0	42	23	85	0	42
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	33	75	0	42	33	75	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

Split 5								
PHASE	1	2	3	4	5	6	7	8
SPLIT	29	49	0	42	29	49	0	42
COORD		X				X		
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

Split 5								
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	DIMMING ENABLE		PED DET DIAG PLN	0
TIMING PLAN	1	SYS OVERRIDE		PRIORITY RETURN	
VEH DET PLAN	0	SEQUENCE	1	PED PR RETURN	
FLASH		DET LOG	0	QUEUE DELAY	
VEH DET DIAG PLN	0	RED REST		PMT COND DELAY	

NextEdit

SIG#0101 Hub-DD

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

SIG#0101 Hub-DD

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 5

PATTERN	5	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

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	24	25
ACTION PLAN	5	1	2	3	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	6	9	15	19	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	0	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 1

EVENT	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
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
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

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	24	25
ACTION PLAN	5	1	2	3	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	6	9	15	19	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	0	30	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	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
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
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

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	24	25
ACTION PLAN	5	1	2	3	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	6	9	15	19	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	0	30	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	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
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
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

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	24	25
ACTION PLAN	5	1	2	3	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	6	9	15	19	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	0	30	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	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
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
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

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	24	25
ACTION PLAN	5	1	2	3	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	6	9	15	19	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	0	30	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	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
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
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

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	24	25
ACTION PLAN	5	2	5	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	10	22	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

Day Plan 6

EVENT	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
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
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

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	24	25
ACTION PLAN	5	2	5	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	11	22	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

Day Plan 7

EVENT	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
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

SIG#0101 Hub-DD

Day Plan 7

EVENT	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

TWINBROOK PKWY
 RUNS IN A
 NORTH-SOUTH
 DIRECTION

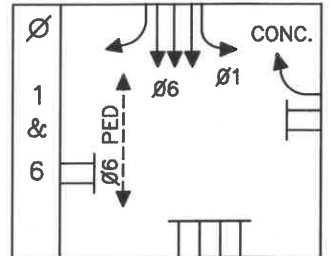
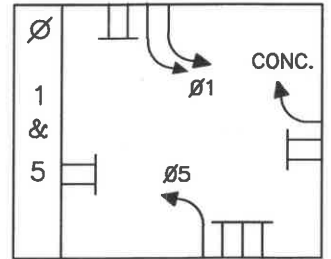
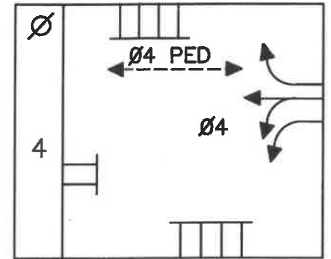
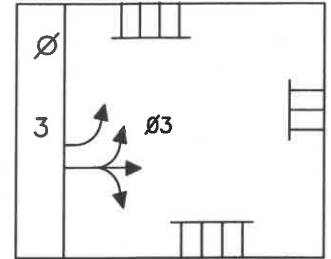
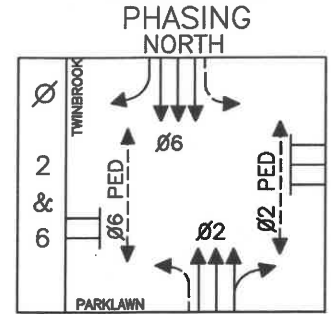
SEQUENCE OF OPERATION SHEET

TRAFFIC OPERATIONS SECTION
 DIVISION OF TRAFFIC ENGINEERING
 MONTGOMERY COUNTY, MARYLAND

NO. 46 - H
 SHT. 1 OF 2

INTERSECTION: TWINBROOK PARKWAY & PARKLAWN DRIVE

SIGNAL NO.	SIGNAL HEAD INDICATIONS					
	2,2A,4,4A	8		6,7	1,1A,1B, 3,3A	9-14
TOTAL:	4	1		2	5	6
LEGEND	(R)	(R)	(R)	(R)	(R)	 12" 16"
OPTICALLY LIMITED	(Y)	(Y) (Y→)	(Y←) (Y)	(Y)	(Y←)	
R RED	(G)	(G) (G→)	(G←) (G)	(G)	(G←)	
Y YELLOW						
G GREEN						
← ARROW						
F FLASHING						



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

NOTES: H = GEOMETRIC CHANGES. ADD 2ND LEFT TURN LANE ON SB TWINBROOK PKWY.
 CHANGES PHASE 1 & PHASE 5 TO EXCLUSIVE

SUBMITTED: TSET. 5/8/15	CHECKED: <u>KHammad 5/11/15</u>	APPROVED: <u>KHammad 5/11/15</u>
IN SERVICE BY: <u>787/778/761</u>	DATE: <u>5/13/15</u>	TIME: <u>1:00pm</u>

TWINBROOK PKWY
 RUNS IN A
 NORTH-SOUTH
 DIRECTION

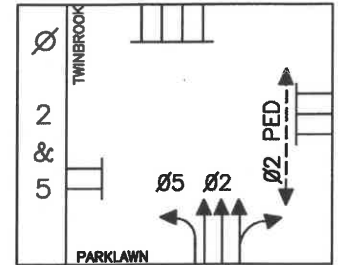
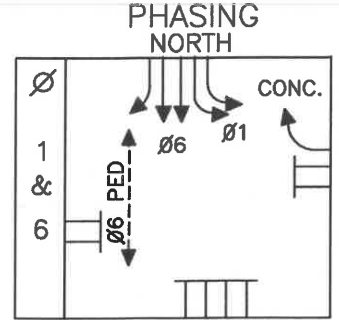
SEQUENCE OF OPERATION SHEET

TRAFFIC OPERATIONS SECTION
 DIVISION OF TRAFFIC ENGINEERING
 MONTGOMERY COUNTY, MARYLAND

NO. 46 - H
 SHT. 2 OF 2

INTERSECTION: TWINBROOK PARKWAY & PARKLAWN DRIVE

SIGNAL NO.	SIGNAL HEAD INDICATIONS					
	2,2A,4,4A	8		6,7	1,1A,1B, 3,3A	9-14
TOTAL:	4	1		2	5	6
LEGEND	(R)	(R)	(R)	(R)	(R)	
OPTICALLY LIMITED	(Y)	(Y) (Y→)	(Y) (←Y)	(Y)	(Y) (←Y)	
R RED	(G)	(G) (G→)	(G) (←G)	(G)	(G) (←G)	
Y YELLOW	(G)	(G) (G→)	(G) (←G)	(G)	(G) (←G)	
G GREEN	←	←	←	←	←	←
ARROW	F	F	F	F	F	F
FLASHING	12"	12"	12"	12"	12" 16"	12" 16"



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

NOTES: H = GEOMETRIC CHANGES. ADDS 2ND LEFT TURN LANE ON SB TWINBROOK PKWY.
 CHANGES PHASE 1 & PHASE 5 TO EXCLUSIVE

SUBMITTED: <u>TSET. 5/8/15</u>	CHECKED: <u>K Hamud 5/11/15</u>	APPROVED: <u>K Hamud 5/11/15</u>
IN SERVICE BY: <u>787/778/761</u>	DATE: <u>5/13/15</u>	TIME: <u>1:00 PM</u>

SIG#0046 Hub-DD

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	3	10	3	3	3	10	0	0	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	0	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	24	0	15	0	0	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	3.0	3.0	3.0	0.0	0.0	0.0	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	30	20	20	20	30	0	0	0	0	0	0	0	0	0	0
MAX2	60	60	30	40	30	60	0	0	0	0	0	0	0	0	0	0
MAX3	0	0	0	60	15	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	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
RED CLR	4.0	2.0	2.5	3.0	4.0	2.0	0.0	0.0	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																

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	99	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	120	ACT WALK REST	
OFFSET VAL	60	PHASE RESERVICE	

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	45	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

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	58	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	39	49	24	38	18	70	0	0
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	22	38	22	38	22	38	0	0
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	19	66	27	38	19	66	0	0
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	19	34	29	38	19	34	0	0
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

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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 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																

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

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	24	25
ACTION PLAN	99	1	2	3	4	99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	6	9	15	19	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	0	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 1

EVENT	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
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
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

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	24	25
ACTION PLAN	99	1	2	3	4	99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	6	9	15	19	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	0	30	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	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
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
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

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	24	25
ACTION PLAN	99	1	2	3	4	99	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	24	25
START TIME - HH	0	6	9	15	19	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	0	30	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	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
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
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

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	24	25
ACTION PLAN	99	1	2	3	4	99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	6	9	15	19	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	0	30	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	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
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
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

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	24	25
ACTION PLAN	99	1	2	3	4	99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	6	9	15	19	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	0	30	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	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
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
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

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	24	25
ACTION PLAN	99	2	99	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	9	22	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

Day Plan 6

EVENT	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
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
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

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	24	25
ACTION PLAN	99	2	99	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	10	22	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

Day Plan 7

EVENT	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
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
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

RANDOLPH ROAD
 RUNS IN A
 EAST-WEST
 DIRECTION

SEQUENCE OF OPERATION SHEET

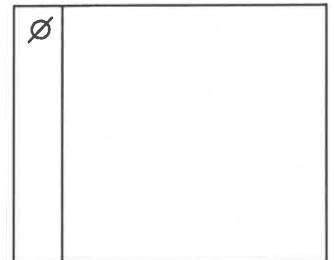
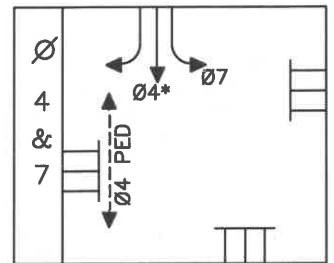
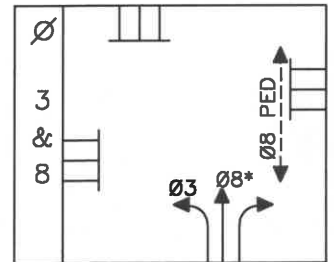
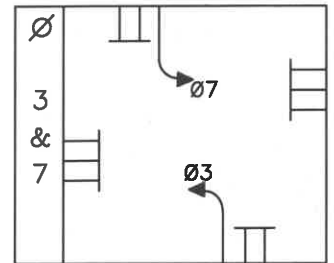
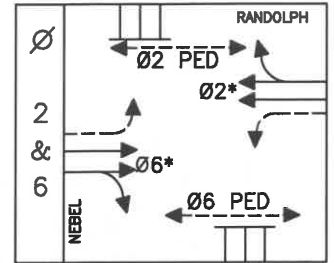
TRAFFIC OPERATIONS SECTION
 DIVISION OF TRAFFIC ENGINEERING
 MONTGOMERY COUNTY, MARYLAND

NO. 261
 SHT. 1 OF 3

PHASING
 NORTH

INTERSECTION: RANDOLPH ROAD & NEBEL STREET

SIGNAL NO.	SIGNAL HEAD INDICATIONS				
	3,6,9,10 13,14	1,2,4,5	7,8,11,12		15-22
TOTAL:	6	4	4		8
LEGEND	(R)	(R)	(←R)		
OPTICALLY LIMITED	(Y)	(←Y) (Y)	(←Y)		
R RED	(G)	(←G) (G)	(←G)		12" 16"
Y YELLOW					
G GREEN					
← ARROW					
F FLASHING					



*5 SEC LPI DELAY

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

NOTES: 1 - ADD LPI FOR ALL PED PHASES

SUBMITTED: <u>VP 03/23/2022</u>	CHECKED: <u>KHamud 3/23/2022</u>	APPROVED: <u>KHamud 3/23/2022</u>
IN SERVICE BY: <u>764</u>	DATE: <u>3/25/22</u>	TIME: <u>1102</u>

RANDOLPH ROAD
 RUNS IN A
 EAST-WEST
 DIRECTION

SEQUENCE OF OPERATION SHEET

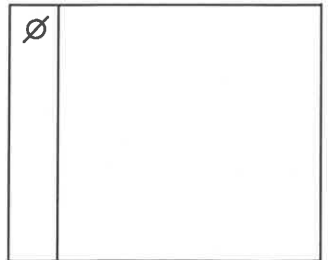
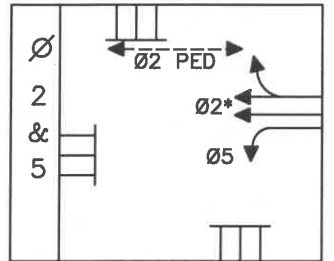
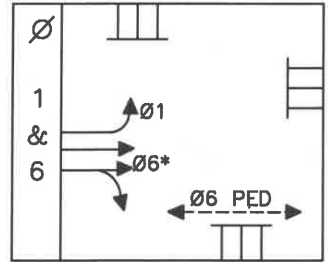
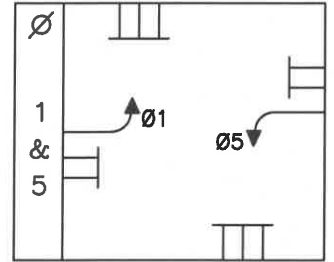
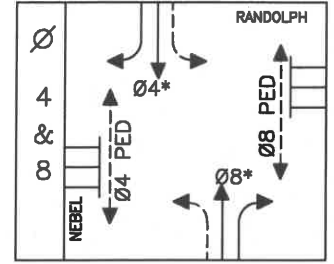
TRAFFIC OPERATIONS SECTION
 DIVISION OF TRAFFIC ENGINEERING
 MONTGOMERY COUNTY, MARYLAND

NO. 26 1
 SHT. 2 OF 3

INTERSECTION: RANDOLPH ROAD & NEBEL STREET

PHASING
 NORTH

SIGNAL NO.	SIGNAL HEAD INDICATIONS				
	3,6,9,10 13,14	1,2,4,5	7,8,11,12		15-22
TOTAL:	6	4	4		8
LEGEND	(R) 12"	(R) 12"	(←R) 12"		 12" 16"
OPTICALLY LIMITED R RED Y YELLOW G GREEN ← ARROW F FLASHING	 	 	 		



*5 SEC LPI DELAY

SIGNAL NO.	SEQUENCE OF OPERATION																FLASH			
	INTERVAL																			
	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33			
1	R	R	R	R	R	R	G	R	Y	R	R	G	Y	G	G	R	R	R	R	R
2	R	R	R	R	R	R	G	R	Y	R	R	G	Y	G	G	R	R	R	R	R
3	R	R	R	R	R	R	R	R	R	R	R	G	G	G	R	R	R	R	R	R
4	R	R	R	R	R	R	G	R	Y	R	R	R	R	R	R	G	Y	G	G	G
5	R	R	R	R	R	R	G	R	Y	R	R	R	R	R	R	G	Y	G	G	G
6	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	G	G	G	G	G
7	←R	←FL/R	←FL/R	←FL/R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R
8	←R	←FL/R	←FL/R	←FL/R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R
9	R	G	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
10	R	G	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
11	←R	←FL/R	←FL/R	←FL/R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R
12	←R	←FL/R	←FL/R	←FL/R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R
13	R	G	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
14	R	G	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
15	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	W	W	W	W	W	DARK
16	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	W	W	W	DW	DW	DW	DW	DW	DW	DARK
17	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	W	W	W	DW	DW	DW	DW	DW	DW	DARK
18	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	W	W	W	W	W	DARK
19	W	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW
20	W	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW
21	W	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW
22	W	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW
PHASE	4 & 8 LPI	4 & 8				ALL RED	1 & 5	ALL RED	1 & 6 LPI	1 & 6	ALL RED	2 & 5 LPI	2 & 5	ALL RED						

NOTES: 1 - ADD LPI FOR ALL PED PHASES

SUBMITTED: <u>VP 03/23/2022</u>	CHECKED: <u>KHamud 3/23/2022</u>	APPROVED: <u>KHamud 3/23/2022</u>
IN SERVICE BY: <u>766</u>	DATE: <u>3/25/22</u>	TIME: <u>1102</u>

RANDOLPH ROAD
 RUNS IN A
 EAST-WEST
 DIRECTION

SEQUENCE OF OPERATION SHEET

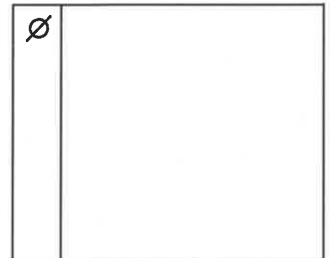
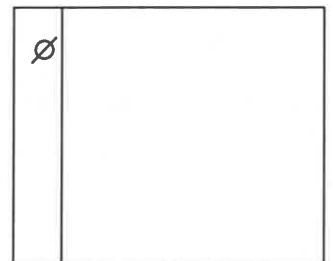
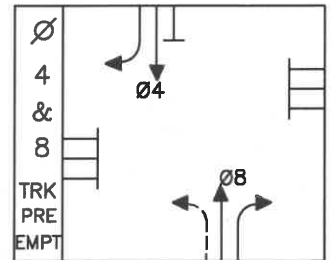
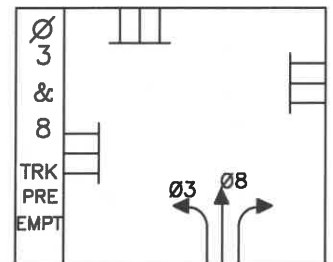
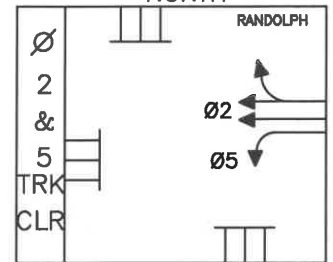
TRAFFIC OPERATIONS SECTION
 DIVISION OF TRAFFIC ENGINEERING
 MONTGOMERY COUNTY, MARYLAND

NO. 261
 SHT. 3 OF 3

INTERSECTION: RANDOLPH ROAD & NEBEL STREET

PHASING
 NORTH

SIGNAL NO.	SIGNAL HEAD INDICATIONS				
	3,6,9,10 13,14	1,2,4,5	7,8,11,12		15-22
TOTAL:	6	4	4		8
LEGEND	(R) (Y) (G) 12"	(R) (Y) (G) 12"	(←R) (←Y) (←G) 12"		 12" 16"
<ul style="list-style-type: none"> OPTICALLY LIMITED R RED Y YELLOW G GREEN ← ARROW F FLASHING 					



SIGNAL NO.	SEQUENCE OF OPERATION										FLASH	
	INTERVAL											
	34	35	36	37	38	39	40	41	42			
1	R	R	R	R	R	R	R	R	R			R
2	R	R	R	R	R	R	R	R	R			R
3	R	R	R	R	R	R	R	R	R			R
4	←G	←Y	R	R	R	R	R	R	R			R
5	←G	←Y	R	R	R	R	R	R	R			R
6	G	Y	R	R	R	R	R	R	R			R
7	←R	←R	←R	←G	←Y	←R	←L/R	←R	←R			←R
8	←R	←R	←R	←G	←Y	←R	←L/R	←R	←R			←R
9	R	R	R	G	G	G	G	Y	R			R
10	R	R	R	G	G	G	G	Y	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	G	Y	R			R
14	R	R	R	R	R	R	G	Y	R			R
15	DW	DW	DW	DW	DW	DW	DW	DW	DW			DARK
16	DW	DW	DW	DW	DW	DW	DW	DW	DW			DARK
17	DW	DW	DW	DW	DW	DW	DW	DW	DW			DARK
18	DW	DW	DW	DW	DW	DW	DW	DW	DW			DARK
19	DW	DW	DW	DW	DW	DW	DW	DW	DW			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	DW	DW	DW	DW	DW	DW			DARK
PHASE	2 & 5		ALL RED		3 & 8 ALL RED		4 & 8 ALL RED		PREFEMPTION			

NOTES: 1 - ADD LPI FOR ALL PED PHASES

SUBMITTED: VP 03/23/2022 CHECKED: KHamud 3/23/2022 APPROVED: KHamud 3/23/2022
 IN SERVICE BY: 764 DATE: 3/25/22 TIME: 1102

SIG#0026 Hub-DD

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	3	10	5	4	3	10	5	4	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	5	0	5	0	5	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	17	0	17	0	17	0	17	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	5.0	4.0	4.0	3.0	5.0	4.0	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	25	50	25	25	25	50	25	25	0	0	0	0	0	0	0	0
MAX2	25	60	40	50	50	60	40	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	80	0	0	0	80	40	0	0	0	0	0	0	0	0	0
DYM STP	0.0	15.0	0.0	0.0	0.0	15.0	15.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
YELLOW	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
RED CLR	2.5	2.5	3.0	2.5	2.5	2.5	3.0	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	2.5	5.0	5.0	5.0	2.5	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		X	X			X										
PD RCALL		X				X										
MX RCALL																
SF RCALL																
NO REST																
AI CALC																

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	69	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	120	ACT WALK REST	
OFFSET VAL	64	PHASE RESERVICE	

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	46	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

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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	25	64	30	31	25	64	30	31
COORD		X				X		
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

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	22	45	22	31	22	45	22	31
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	22	64	30	34	22	64	30	34
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

PREEMPT PLAN 1																OPTIONS		
VEH/PED (OVERLAP)	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	ENABLE	S1
TRKCLR V	.	X	.	.	X	.	.	.	.	.	.	.	.	.	.	.	DET LOCK	X
TRKCLR O	OVERIDE FL	X
ENA TRL																	TERM OLP	X
DWEL VEH	.	.	.	X	.	.	.	X	.	.	.	.	.	.	.	.	PED DARK	
DWEL PED																	X TMG PLN	0
DWEL OLP	PMT OVRIDE	X
CYC VEH	DELAY	0
CYC PED																DURATION	0	
CYC OLP	PC>YEL	
EXIT PH		X			X												TC RESERV	
EXIT CAL				X													X FLCOLR	GRN
SP FUNC																	RE-SERV	0

OPTIONS						FREE DUR PMT						
INTERLOCK		TERM PH		FLT TYPE	HARD	PMT ACT DWELL		Ring	1	2	3	4
INHIBIT	0	DWELL FL	OFF	PMT ACTIVE OUT	ON	NON-PRI PMT	OFF	FREE DUR PMT				
CLR>GRN		EXIT OPT	OFF	OTHER - PRI PMT	OFF	INH EXT TIME	0.0					

Times					
ENTRANCE TM - WALK	5	TRACK CLEAR - MIN GR	10	DWL/CYC-EXIT - MIN DL	5
ENTRANCE TM - PED CL	5	TRACK CLEAR - EXT GR	0	DWL/CYC-EXIT - PMT EXT	0.0
ENTRANCE TM - MN GR	5	TRACK CLEAR - MX GR	15	DWL/CYC-EXIT - MX TM	0
ENTRANCE TM - YEL	4.0	TRACK CLEAR - YEL	4.0	DWL/CYC-EXIT - YEL	4.0
ENTRANCE TM - RED	2.5	TRACK CLEAR - RED	2.5	DWL/CYC-EXIT - RED	2.5

PREEMPT PLAN 2																OPTIONS		
VEH/PED (OVERLAP)	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	ENABLE	S1
TRKCLR V	DET LOCK	X
TRKCLR O	OVERIDE FL	X
ENA TRL																	TERM OLP	
DWEL VEH	.	X	.	.	X	.	.	.	.	.	.	.	.	.	.	.	PED DARK	
DWEL PED																	LINK PMT	0
DWEL OLP	X TMG PLN	0
CYC VEH	PMT OVRIDE	X
CYC PED																DELAY	0	
CYC OLP	DURATION	0
EXIT PH		X			X												PC>YEL	
EXIT CAL																	TC RESERV	
SP FUNC																	X FLCOLR	GRN

OPTIONS						FREE DUR PMT						
RE-SERV	0	TERM PH		PMT ACTIVE OUT	ON	INH EXT TIME	0.0	Ring	1	2	3	4
INTERLOCK		DWELL FL	OFF	OTHER - PRI PMT	OFF			FREE DUR PMT				
INHIBIT	0	EXIT OPT	OFF	PMT ACT DWELL								
CLR>GRN		FLT TYPE	HARD	NON-PRI PMT	OFF							

NextEdit

Times

ENTRANCE TM - WALK	5	TRACK CLEAR - MIN GR	0	DWL/CYC-EXIT - MIN DL	0
ENTRANCE TM - PED CL	5	TRACK CLEAR - EXT GR	0	DWL/CYC-EXIT - PMT EXT	0.0
ENTRANCE TM - MN GR	5	TRACK CLEAR - MX GR	0	DWL/CYC-EXIT - MX TM	0
ENTRANCE TM - YEL	4.0	TRACK CLEAR - YEL	0.0	DWL/CYC-EXIT - YEL	0.0
ENTRANCE TM - RED	2.5	TRACK CLEAR - RED	0.0	DWL/CYC-EXIT - RED	0.0

PREEMPT PLAN 3

VEH/PED (OVERLAP)	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
TRKCLR V
TRKCLR O
ENA TRL																
DWEL VEH	.	X	.	.	X	.	.	.	.	.	.	.	.	.	.	.
DWEL PED																
DWEL OLP
CYC VEH
CYC PED																
CYC OLP
EXIT PH		X			X											
EXIT CAL																
SP FUNC																

OPTIONS

ENABLE	S1
DET LOCK	X
OVERIDE FL	X
TERM OLP	
PED DARK	
LINK PMT	0
X TMG PLN	0
PMT OVRIDE	X
DELAY	0
DURATION	0
PC>YEL	
TC RESERV	
X FLCOLR	GRN

OPTIONS

RE-SERV	0	TERM PH		PMT ACTIVE OUT	ON	INH EXT TIME	0.0
INTERLOCK		DWELL FL	OFF	OTHER - PRI PMT	OFF		
INHIBIT	0	EXIT OPT	OFF	PMT ACT DWELL			
CLR>GRN		FLT TYPE	HARD	NON-PRI PMT	OFF		

FREE DUR PMT

Ring	1	2	3	4
FREE DUR PMT				

Times

ENTRANCE TM - WALK	5	TRACK CLEAR - MIN GR	10	DWL/CYC-EXIT - MIN DL	0
ENTRANCE TM - PED CL	5	TRACK CLEAR - EXT GR	0	DWL/CYC-EXIT - PMT EXT	0.0
ENTRANCE TM - MN GR	5	TRACK CLEAR - MX GR	0	DWL/CYC-EXIT - MX TM	0
ENTRANCE TM - YEL	4.0	TRACK CLEAR - YEL	4.0	DWL/CYC-EXIT - YEL	0.0
ENTRANCE TM - RED	2.5	TRACK CLEAR - RED	2.5	DWL/CYC-EXIT - RED	0.0

ACTION PLAN 1

PATTERN	1	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																

NextEdit

PHASE TABLE

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

LP Statement	1	2	3	4	5	6	7	8	9	10	11	12	13	14	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 99

PATTERN	FREE	DIMMING ENABLE		PED DET DIAG PLN	0
TIMING PLAN	1	SYS OVERRIDE		PRIORITY RETURN	
VEH DET PLAN	0	SEQUENCE	1	PED PR RETURN	
FLASH		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	24	25
ACTION PLAN	99	1	2	3	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	6	10	15	19	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

Day Plan 1

EVENT	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
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
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

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	24	25
ACTION PLAN	99	1	2	3	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	6	10	15	19	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

Day Plan 2

EVENT	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
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
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

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	24	25
ACTION PLAN	99	1	2	3	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	6	10	15	19	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

Day Plan 3

EVENT	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
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
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

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	24	25
ACTION PLAN	99	1	2	3	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	6	10	15	19	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

Day Plan 4

EVENT	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
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
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

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	24	25
ACTION PLAN	99	1	2	3	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	6	10	15	19	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

Day Plan 5

EVENT	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
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
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

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	24	25
ACTION PLAN	99	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
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

Day Plan 6

EVENT	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
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

Day Plan 6

EVENT	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

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	24	25
ACTION PLAN	99	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
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

Day Plan 7

EVENT	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
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
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

MD 355
 RUNS IN A
 NORTH-SOUTH
 DIRECTION

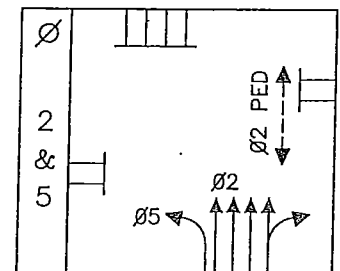
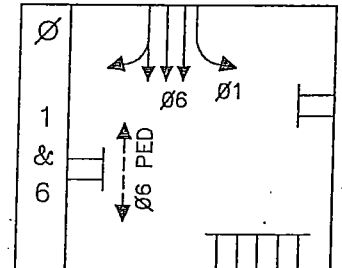
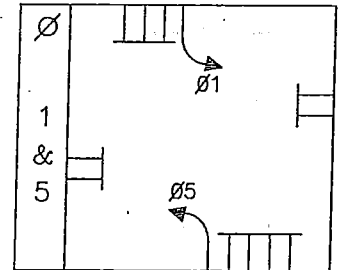
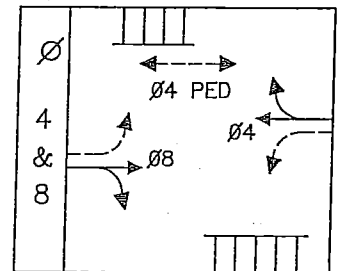
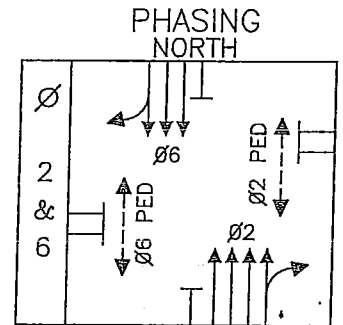
SEQUENCE OF OPERATION SHEET

TRAFFIC OPERATIONS SECTION
 DIVISION OF TRAFFIC ENGINEERING
 MONTGOMERY COUNTY, MARYLAND

NO. 105-E.0
 SHT. 1 OF 1

INTERSECTION: HUBBARD DRIVE & ROCKVILLE PIKE (MD 355)

SIGNAL NO.	SIGNAL HEAD INDICATIONS				
	1,2,5,6	3,4,7,8,9,10, 11,12,13,14			15-20
TOTAL:	4	10			6
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	←G	←Y	←R	←G	←Y	←R	←R	←R	←R	←R
2	←R	←R	←R	←R	←R	←R	←R	←R	←R	←G	←Y	←R	←G	←Y	←R	←R	←R	←R	←R
3	G	G	Y	R	R	R	R	R	R	R	R	R	G	G	G	R	R	R	Y
4	G	G	Y	R	R	R	R	R	R	R	R	R	G	G	G	R	R	R	Y
5	←R	←R	←R	←R	←R	←R	←R	←R	←R	←G	←Y	←R	←G	←Y	←R	←R	←R	←R	←R
6	←R	←R	←R	←R	←R	←R	←R	←R	←R	←G	←Y	←R	←G	←Y	←R	←R	←R	←R	←R
7	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	G	G	G	Y
8	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	G	G	G	Y
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	R	R	R	R	G	G	G	Y	R	R	R	R	R	R	R	R	R	R	R
15	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	W	W	DARK	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	W	W	W	DW	DW	DW	DARK
18	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	W	W	DARK	DARK
19	DW	DW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DARK
20	DW	DW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DARK
21																			
22																			
23																			
PHASE	2 & 6	ALL RED	4 & 8	ALL RED	1 & 5	ALL RED	1 & 6	ALL RED	2 & 5	ALL RED									

NOTES: E.0 = FINAL STAGE OF CONSTRUCTION.

SUBMITTED: MCG 6/3/10 CHECKED: APPROVED: *Ray Lopez 6/12/10*
 IN SERVICE BY: *781* DATE: *JUNE 17, 2010* TIME: *1145AM*

SIG#0105 Hub-DD

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	5	0	7	0	0	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	19	0	25	0	19	0	0	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	0.0	5.0	5.0	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	10	75	0	25	10	75	0	25	0	0	0	0	0	0	0	0
MAX2	25	75	0	40	25	75	0	40	0	0	0	0	0	0	0	0
MAX3	60	75	0	60	60	75	0	60	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	2.5	1.0	0.0	3.5	2.5	1.0	0.0	3.5	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	X			X								
VE RCALL																
PD RCALL		X				X										
MX RCALL		X				X										
SF RCALL																
NO REST																
AI CALC																

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	108	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	101	PHASE RESERVICE	

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	119	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

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	150	SEQUENCE	1
OFFSET VAL	7	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								

COORDINATOR PATTERN 5

USE SPLIT PATTERN	5	PHASE RESERVICE	
CYCLE	120	MAX SELECT	NONE
OFFSET VAL	11	STD (COS)	151
ACTUATED COORD		DWELL/ADD TIME	0
ACT WALK REST		TIMING PLAN	1

COORDINATOR PATTERN 5

SEQUENCE	1	VEH PERM 2	0
ACTION PLAN	0	VEH PERM 2 - DISP	0
FORCE OFF	NONE	XART PTRN.	0
VEH PERM 1	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	17	94	0	39	17	94	0	39
COORD		X				X		
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

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	24	87	0	39	24	87	0	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	PHASE	9	10	11	12	13	14	15	16
SPLIT	0	0	0	0	0	0	0	0	COORD								

NextEdit

SIG#0105 Hub-DD

Split 2								
PHASE	9	10	11	12	13	14	15	16
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

Split 3								
PHASE	1	2	3	4	5	6	7	8
SPLIT	23	88	0	39	23	88	0	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	24	87	0	39	24	87	0	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

Split 5								
PHASE	1	2	3	4	5	6	7	8
SPLIT	17	64	0	39	17	64	0	39
COORD		X				X		
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

Split 5								
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	DIMMING ENABLE		PED DET DIAG PLN	0
TIMING PLAN	1	SYS OVERRIDE		PRIORITY RETURN	
VEH DET PLAN	0	SEQUENCE	1	PED PR RETURN	
FLASH		DET LOG	0	QUEUE DELAY	
VEH DET DIAG PLN	0	RED REST		PMT COND DELAY	

NextEdit

SIG#0105 Hub-DD

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

SIG#0105 Hub-DD

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 5

PATTERN	5	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																

SIG#0105 Hub-DD

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																
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	5	100	5	1	2	3	4	5	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	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	30	30	0	30	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	5	100	5	1	2	3	4	5	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	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	30	30	0	30	0	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	5	100	5	1	2	3	4	5	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	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	30	30	0	30	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	5	100	5	1	2	3	4	5	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	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	30	30	0	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	5	100	5	1	2	3	4	5	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	22	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
START TIME - MM	0	30	30	0	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	5	100	5	2	5	0	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	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	5	100	5	2	5	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	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


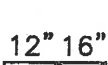
SEQUENCE OF OPERATION SHEET

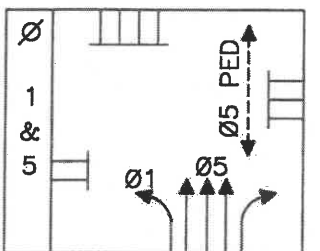
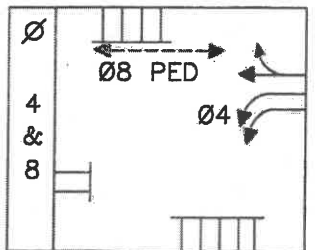
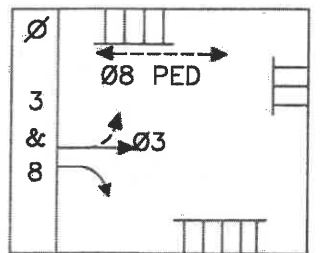
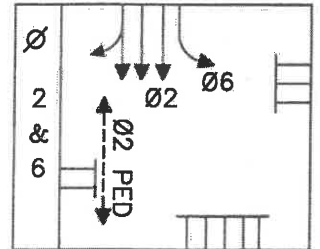
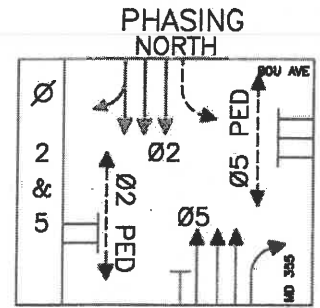
MD 355
RUNS IN A
NORTH-SOUTH
DIRECTION

TRAFFIC OPERATIONS SECTION
DIVISION OF TRAFFIC ENGINEERING
MONTGOMERY COUNTY, MARYLAND

NO. 104 - C**
1 OF 1

INTERSECTION: ROCKVILLE PIKE (MD 355) & BOU AVENUE

SIGNAL NO.	SIGNAL HEAD INDICATIONS				
	2,5,6 7,8,10	3,4	9	1	11-16
TOTAL:	6	2	1	1	6
LEGEND	(R) (Y) (G) 12"	(←R) (←Y) (←G) 12"	(R) (Y) (G) 12"	(R) (←Y) (←G) 12"	  12" 16"



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

NOTES: C** = AS EXISTING 04/19/2006
 PED OPERATION IS 3&8, 4&8
 7/25/2018 - Ø3 LANE USE CHANGED TO SHARED LEFT/THRU & RIGHT TURN ONLY. SEE PICTURE. KH.

SUBMITTED: VP 07/24/2018	CHECKED: <u>KHAMUD 7/26/18</u>	APPROVED: <u>KHAMUD 7/26/18</u>
IN SERVICE BY: <u>GW</u>	DATE: <u>7/12/18</u>	TIME: <u>0600</u>

SIG#0104 Hub-DD

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								
EXCLUSIVE PED																

PLAN 1																
PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
MIN GRN	5	10	5	5	10	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	0	7	0	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	11	0	0	13	0	0	28	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	3.0	6.0	0.0	3.0	0.0	0.0	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	15	30	60	15	0	29	0	0	0	0	0	0	0	0
MAX2	20	60	20	40	60	20	0	29	0	0	0	0	0	0	0	0
MAX3	60	60	30	50	60	35	0	29	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	4.5	4.5	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RED CLR	1.5	1.5	2.5	3.0	1.0	1.5	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	2.0	5.0	5.0	5.0	2.0	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	X												
VE RCALL																
PD RCALL		X			X											
MX RCALL		X			X											
SF RCALL																
NO REST																
AI CALC																

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	114	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	121	PHASE RESERVICE	

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	137	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

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	150	SEQUENCE	1
OFFSET VAL	27	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								

COORDINATOR PATTERN 5

USE SPLIT PATTERN	5	PHASE RESERVICE	
CYCLE	120	MAX SELECT	NONE
OFFSET VAL	30	STD (COS)	151
ACTUATED COORD		DWELL/ADD TIME	0
ACT WALK REST		TIMING PLAN	1

COORDINATOR PATTERN 5

SEQUENCE	1	VEH PERM 2	0
ACTION PLAN	0	VEH PERM 2 - DISP	0
FORCE OFF	NONE	XART PTRN.	0
VEH PERM 1	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	19	79	16	36	74	24	0	52
COORD		X			X			
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

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	21	70	20	36	70	24	0	56
COORD		X			X			
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

Split 2

PHASE	9	10	11	12	13	14	15	16	PHASE	9	10	11	12	13	14	15	16
SPLIT	0	0	0	0	0	0	0	0	COORD								

NextEdit

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Split 2								
PHASE	9	10	11	12	13	14	15	16
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

Split 3								
PHASE	1	2	3	4	5	6	7	8
SPLIT	22	76	16	36	75	23	0	52
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	21	77	16	36	74	24	0	52
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

Split 5								
PHASE	1	2	3	4	5	6	7	8
SPLIT	15	53	16	36	52	16	0	52
COORD		X			X			
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

Split 5								
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	DIMMING ENABLE		PED DET DIAG PLN	0
TIMING PLAN	1	SYS OVERRIDE		PRIORITY RETURN	
VEH DET PLAN	0	SEQUENCE	1	PED PR RETURN	
FLASH		DET LOG	0	QUEUE DELAY	
VEH DET DIAG PLN	0	RED REST		PMT COND DELAY	

NextEdit

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

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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 5

PATTERN	5	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																

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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																
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	5	100	5	1	2	3	4	5	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	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	30	30	0	30	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	5	100	5	1	2	3	4	5	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	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	30	30	0	30	0	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	5	100	5	1	2	3	4	5	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	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	30	30	0	30	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	5	100	5	1	2	3	4	5	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	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	30	30	0	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	5	100	5	1	2	3	4	5	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	22	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
START TIME - MM	0	30	30	0	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	5	100	5	2	5	0	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	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	5	100	5	2	5	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	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

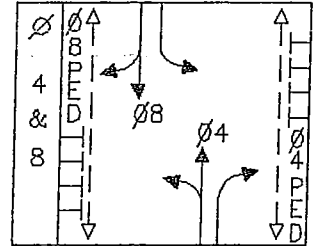
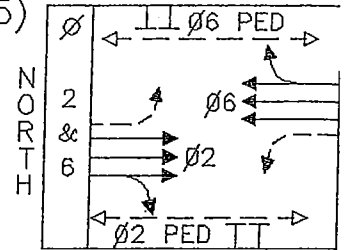
SEQUENCE OF OPERATION SHEET
 DEPT. OF PUBLIC WORKS & TRANSPORTATION
 DIVISION OF TRAFFIC & PARKING SERVICES
 MONTGOMERY COUNTY, MARYLAND

NO. 103C

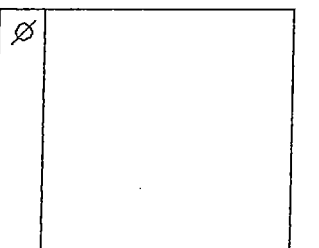
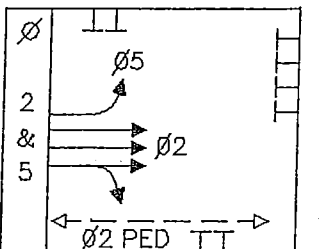
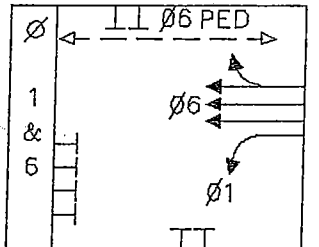
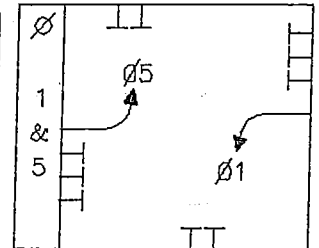
PHASING

INTERSECTION: FEDERAL PLAZA DRWY - ROCKVILLE PK (MD 355)

SIGNAL NO.	SIGNAL HEAD INDICATIONS				
	3,6-10	1,2,5	1,4		11-18
TOTAL:	6	2A	7		8
LEGEND	(R)	(R)	(R)	(R)	
OPTICALLY LIMITED	(Y)	(Y)	(Y)	(Y)	
R RED	(G)	(G)	(G)	(G)	9" or 12"
Y YELLOW	12"	12"	12"	8"	<input type="checkbox"/> X
G GREEN					
← ARROW					
F FLASHING					



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	G/R	Y/R	R	G/G	Y/G	G	R	R	R	Y			
2	G	G	Y	R	R	R	R	R	R	G/R	Y/R	R	G/G	Y/G	G	R	R	R	Y			
3	G	G	Y	R	R	R	R	R	R	R	R	R	G	G	G	R	R	R	Y			
4	G	G	Y	R	R	R	R	R	R	G/R	Y/R	R	R	R	R	G/G	Y/G	G	Y			
5	G	G	Y	R	R	R	R	R	R	G/R	Y/R	R	R	R	R	G/G	Y/G	G	Y			
6	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	G	G	G	Y			
7	R	R	R	R	G	G	G	Y	R	R	R	R	R	R	R	R	R	R	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	WK	FL/DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	WK	WK	WK	WK	-			
12	WK	FL/DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	WK	WK	WK	DW	DW	DW	DW	-			
13	WK	FL/DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	WK	WK	WK	DW	DW	DW	DW	-			
14	WK	FL/DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	WK	WK	WK	WK	-			
15	DW	DW	DW	DW	WK	FL/DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	-			
16	DW	DW	DW	DW	WK	FL/DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	-			
17	DW	DW	DW	DW	WK	FL/DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	-			
18	DW	DW	DW	DW	WK	FL/DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	-			
PHASE	2 & 6		ALL RED		4 & 8				ALL RED		1 & 5		ALL RED		1 & 6		ALL RED		2 & 5		ALL RED	



NOTES:

* UPDATED AS EXISTING (5-13-97)

2764IPH

SUBMITTED: <u>RSC</u>	CHECKED: _____	APPROVED: <u>BC 8-19-97</u>
IN SERVICE BY: <u>JDE/781</u>	DATE: <u>SEPT 17, 1997</u>	TIME: <u>1300 HR25</u>

SIG#0103 Hub-DD

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	20	0	5	5	20	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	17	0	20	0	17	0	20	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	3.0	3.0	0.0	0.0	3.0	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	65	0	25	20	65	0	25	0	0	0	0	0	0	0	0
MAX2	20	65	0	25	20	65	0	25	0	0	0	0	0	0	0	0
MAX3	50	65	0	50	50	65	0	50	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	4.0	3.5	4.5	3.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
RED CLR	1.5	1.0	0.0	2.5	1.5	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	2.0	5.0	5.0	5.0	2.0	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																

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	108	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	110	PHASE RESERVICE	

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	122	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

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	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)	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								

COORDINATOR PATTERN 5

USE SPLIT PATTERN	5	PHASE RESERVICE	
CYCLE	120	MAX SELECT	NONE
OFFSET VAL	34	STD (COS)	151
ACTUATED COORD		DWELL/ADD TIME	0
ACT WALK REST		TIMING PLAN	1

COORDINATOR PATTERN 5

SEQUENCE	1	VEH PERM 2	0
ACTION PLAN	0	VEH PERM 2 - DISP	0
FORCE OFF	NONE	XART PTRN.	0
VEH PERM 1	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	19	93	0	38	19	93	0	38
COORD		X				X		
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

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	31	81	0	38	31	81	0	38
COORD		X				X		
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

Split 2

PHASE	9	10	11	12	13	14	15	16	PHASE	9	10	11	12	13	14	15	16
SPLIT	0	0	0	0	0	0	0	0	COORD								

NextEdit

SIG#0103 Hub-DD

Split 2								
PHASE	9	10	11	12	13	14	15	16
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

Split 3								
PHASE	1	2	3	4	5	6	7	8
SPLIT	19	93	0	38	19	93	0	38
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	31	81	0	38	31	81	0	38
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

Split 5								
PHASE	1	2	3	4	5	6	7	8
SPLIT	25	57	0	38	25	57	0	38
COORD		X				X		
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

Split 5								
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	DIMMING ENABLE		PED DET DIAG PLN	0
TIMING PLAN	1	SYS OVERRIDE		PRIORITY RETURN	
VEH DET PLAN	0	SEQUENCE	1	PED PR RETURN	
FLASH		DET LOG	0	QUEUE DELAY	
VEH DET DIAG PLN	0	RED REST		PMT COND DELAY	

NextEdit

SIG#0103 Hub-DD

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

SIG#0103 Hub-DD

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 5

PATTERN	5	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																

SIG#0103 Hub-DD

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																
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	5	100	5	1	2	3	4	5	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	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	30	30	0	30	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	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 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	5	100	5	1	2	3	4	5	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	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	30	30	0	30	0	0	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	5	100	5	1	2	3	4	5	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	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	30	30	0	30	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	5	100	5	1	2	3	4	5	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	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	30	30	0	30	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	5	100	5	1	2	3	4	5	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	22	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
START TIME - MM	0	30	30	0	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	5	100	5	2	5	0	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	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	5	100	5	2	5	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	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

MD 355
 RUNS IN A
 NORTH-SOUTH
 DIRECTION

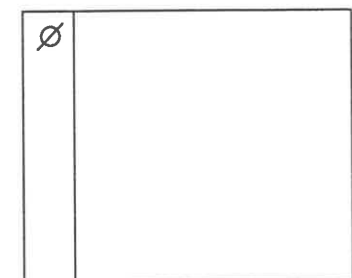
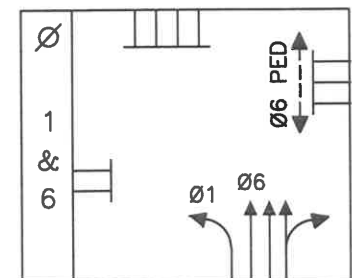
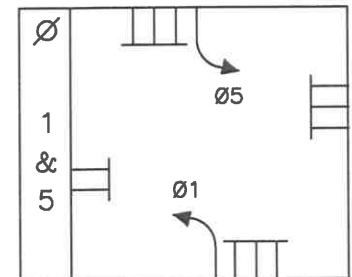
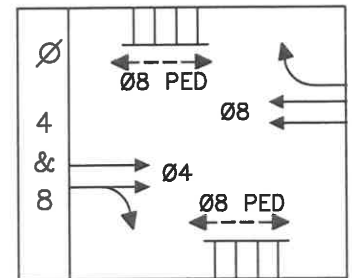
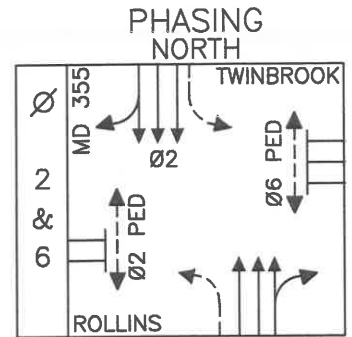
SEQUENCE OF OPERATION SHEET

TRAFFIC OPERATIONS SECTION
 DIVISION OF TRAFFIC ENGINEERING
 MONTGOMERY COUNTY, MARYLAND

NO. 102-C
 SHT. 1 OF 2

INTERSECTION: ROCKVILLE PIKE (MD 355) & TWINBROOK PKWY/ ROLLINS AVE

SIGNAL NO.	SIGNAL HEAD INDICATIONS				
	1,2,4,5	3,6-12			13-20
TOTAL:	4	8			8
LEGEND					
	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	R	R	R	R	R				Y
2	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R				Y
3	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R				Y
4	G	G	Y	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				Y
6	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R				Y
7	R	R	R	R	G	G	G	Y	R	R	R	R	R	R	R				R
8	R	R	R	R	G	G	G	Y	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
10	R	R	R	R	G	G	G	Y	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
12	R	R	R	R	G	G	G	Y	R	R	R	R	R	R	R				R
13	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW				DARK
14	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	W	W				DARK
15	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	W	W				DARK
16	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW				DARK
17	DW	DW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW				DARK
18	DW	DW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW				DARK
19	DW	DW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW				DARK
20	DW	DW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW				DARK
21																			
22																			
23																			
PHASE	2 & 6	ALL RED	4 & 8	ALL RED	1 & 5	ALL RED	1 & 6	ALL RED											

NOTES: C.O = LANE CONFIGURATION MODIFICATION ADDS: WB PHASE Ø8 RT TURN LANE

SUBMITTED: TF 9/16/19 CHECKED: K Hamud 10/22/19 APPROVED: K Hamud 10/22/19
 IN SERVICE BY: 766/769/778 DATE: 10/25/19 TIME: 1220 PM

MD 355
 RUNS IN A
 NORTH-SOUTH
 DIRECTION

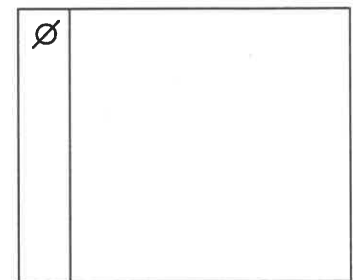
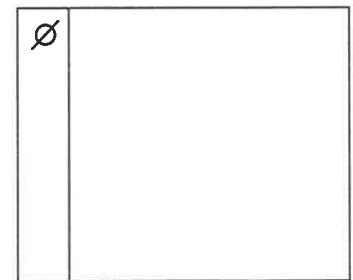
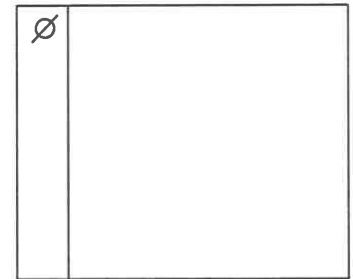
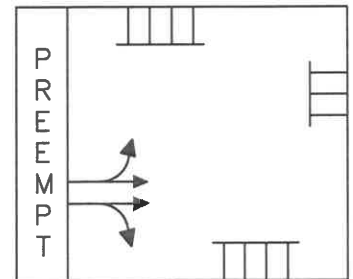
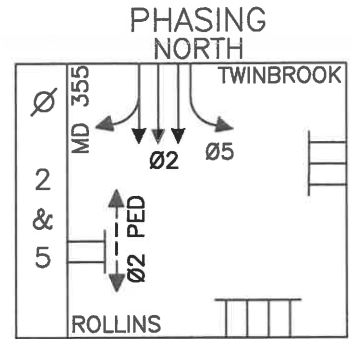
SEQUENCE OF OPERATION SHEET

TRAFFIC OPERATIONS SECTION
 DIVISION OF TRAFFIC ENGINEERING
 MONTGOMERY COUNTY, MARYLAND

NO. 102-C
 SHT. 2 OF 2

INTERSECTION: ROCKVILLE PIKE (MD 355) & TWINBROOK PKWY/ ROLLINS AVE

SIGNAL NO.	SIGNAL HEAD INDICATIONS					
	1,2,4,5	3,6-12				13-20
TOTAL:	4	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																	
	16	17	18	19	20	21												
1	R	R	R	R	R	R												Y
2	R	R	R	R	R	R												Y
3	R	R	R	R	R	R												Y
4	G	G	G	G	R	R	R											Y
5	G	G	G	G	R	R	R											Y
6	G	G	G	R	R	R												Y
7	R	R	R	G	Y	R												R
8	R	R	R	G	Y	R												R
9	R	R	R	G	Y	R												R
10	R	R	R	R	R	R												R
11	R	R	R	R	R	R												R
12	R	R	R	R	R	R												R
13	W	W	W	DW	DW	DW												DARK
14	DW	DW	DW	DW	DW	DW												DARK
15	DW	DW	DW	DW	DW	DW												DARK
16	W	W	W	DW	DW	DW												DARK
17	DW	DW	DW	DW	DW	DW												DARK
18	DW	DW	DW	DW	DW	DW												DARK
19	DW	DW	DW	DW	DW	DW												DARK
20	DW	DW	DW	DW	DW	DW												DARK
21																		
22																		
23																		
PHASE	2 & 6	ALL RED	P.E.	ALL RED														

NOTES: C.0 = LANE CONFIGURATION MODIFICATION ADDS: WB PHASE 08 RT TURN LANE

SUBMITTED: TF 9/16/19 CHECKED: KHamud 10/22/19 APPROVED: KHamud 10/22/19
 IN SERVICE BY: _____ DATE: _____ TIME: _____

SIG#0102 Hub-DD

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	16	0	29	0	16	0	29	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	4.0	0.0	0.0	4.0	4.0	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	18	80	0	50	20	80	0	50	0	0	0	0	0	0	0	0
MAX2	18	60	0	50	30	60	0	50	0	0	0	0	0	0	0	0
MAX3	40	60	0	20	40	60	0	60	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	4.0	4.5	0.0	4.0	4.0	4.5	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RED CLR	3.0	1.0	0.0	3.5	3.0	1.0	0.0	3.5	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	2.0	5.0	5.0	5.0	2.0	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																

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	110	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	104	PHASE RESERVICE	

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	128	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

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	150	SEQUENCE	1
OFFSET VAL	10	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								

COORDINATOR PATTERN 5

USE SPLIT PATTERN	5	PHASE RESERVICE	
CYCLE	120	MAX SELECT	NONE
OFFSET VAL	30	STD (COS)	151
ACTUATED COORD		DWELL/ADD TIME	0
ACT WALK REST		TIMING PLAN	1

COORDINATOR PATTERN 5

SEQUENCE	1	VEH PERM 2	0
ACTION PLAN	0	VEH PERM 2 - DISP	0
FORCE OFF	NONE	XART PTRN.	0
VEH PERM 1	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	27	79	0	44	27	79	0	44
COORD		X				X		
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

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	25	81	0	44	25	81	0	44
COORD		X				X		
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

Split 2

PHASE	9	10	11	12	13	14	15	16	PHASE	9	10	11	12	13	14	15	16
SPLIT	0	0	0	0	0	0	0	0	COORD								

NextEdit

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Split 2								
PHASE	9	10	11	12	13	14	15	16
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

Split 3								
PHASE	1	2	3	4	5	6	7	8
SPLIT	30	76	0	44	30	76	0	44
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	25	81	0	44	25	81	0	44
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

Split 5								
PHASE	1	2	3	4	5	6	7	8
SPLIT	19	57	0	44	19	57	0	44
COORD		X				X		
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

Split 5								
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

PREEMPT PLAN 1																
VEH/PED (OVERLAP)	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
TRKCLR V
TRKCLR O
ENA TRL																
DWEL VEH	.	.	.	X	.	.	.	.	.	.	.	.	.	.	.	.

PREEMPT PLAN 1

VEH/PED (OVERLAP)	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
DWEL PED																
DWEL OLP	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
CYC VEH	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
CYC PED																
CYC OLP	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
EXIT PH		X				X										
EXIT CAL	X			X	X			X								
SP FUNC																

OPTIONS

ENABLE	S1
DET LOCK	X
OVERIDE FL	X
TERM OLP	
PED DARK	
X TMG PLN	0
PMT OVRIDE	X
DELAY	45
DURATION	35

OPTIONS

PC>YEL		INTERLOCK		DWELL FL	OFF	OTHER - PRI PMT	OFF
TC RESERV		INHIBIT	0	EXIT OPT	OFF	PMT ACT DWELL	
X FLCOLR	GRN	CLR>GRN		FLT TYPE	HARD	NON-PRI PMT	OFF
RE-SERV	0	TERM PH		PMT ACTIVE OUT	ON	INH EXT TIME	0.0

FREE DUR PMT

Ring	1	2	3	4
FREE DUR PMT				

Times

ENTRANCE TM - WALK	0	ENTRANCE TM - MN GR	10
ENTRANCE TM - PED CL	18	ENTRANCE TM - YEL	3.5

Times

ENTRANCE TM - RED	4.0	TRACK CLEAR - RED	0.0	DWL/CYC-EXIT - RED	4.0
TRACK CLEAR - MIN GR	0	DWL/CYC-EXIT - MIN DL	12		
TRACK CLEAR - EXT GR	0	DWL/CYC-EXIT - PMT EXT	0.0		
TRACK CLEAR - MX GR	0	DWL/CYC-EXIT - MX TM	50		
TRACK CLEAR - YEL	0.0	DWL/CYC-EXIT - YEL	3.5		

ACTION PLAN 1

PATTERN	1	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																

NextEdit

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PHASE TABLE

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

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PHASE TABLE

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

PATTERN	5	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 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	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

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	24	25
ACTION PLAN	5	1	2	3	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	6	9	15	19	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	0	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Day Plan 1

EVENT	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
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
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

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	24	25
ACTION PLAN	5	1	2	3	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	6	9	15	19	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	0	30	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	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
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
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

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	24	25
ACTION PLAN	5	1	2	3	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	6	9	15	19	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	0	30	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	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
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
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

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	24	25
ACTION PLAN	5	1	2	3	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	6	9	15	19	22	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	24	25
START TIME - MM	0	0	30	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	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
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
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

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	24	25
ACTION PLAN	5	1	2	3	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	6	9	15	19	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - MM	0	0	30	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	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
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
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

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	24	25
ACTION PLAN	5	2	5	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	10	22	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

Day Plan 6

EVENT	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
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
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

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	24	25
ACTION PLAN	5	2	5	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	11	22	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

Day Plan 7

EVENT	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
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
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

TWINBROOK PKWY
 RUNS IN A
 EAST-WEST
 DIRECTION

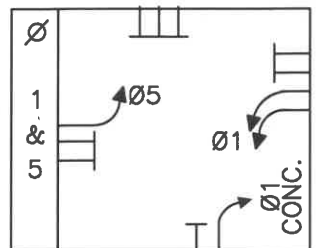
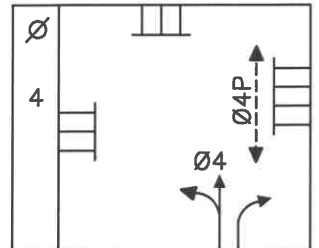
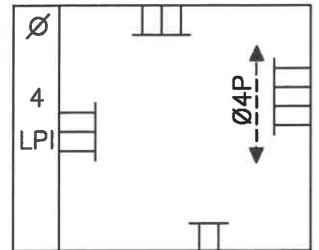
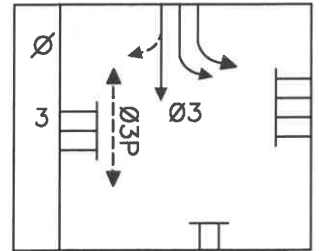
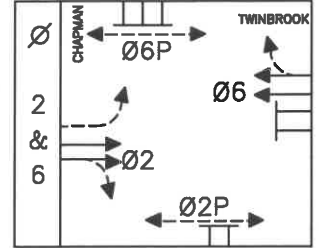
SEQUENCE OF OPERATION SHEET

TRAFFIC OPERATIONS SECTION
 DIVISION OF TRAFFIC ENGINEERING
 MONTGOMERY COUNTY, MARYLAND

NO. 47-F
 SHEET 1 OF 2
 PHASING
 NORTH

INTERSECTION: TWINBROOK PARKWAY & CHAPMAN AVENUE

SIGNAL NO.	SIGNAL HEAD INDICATIONS					
	3,4,9,10	2,5,6,11,12	1	7	8	13-20
TOTAL:	4	5	1	1	1	8
LEGEND						
OPTICALLY LIMITED						
R RED						
Y YELLOW						
G GREEN						
← ARROW						
F FLASHING						
	12"	12"	12"	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	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Y		
2	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Y		
3	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R		
4	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R	←R		
5	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Y		
6	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Y		
7	R	R	R	R	R	R	R	R	R	R	G	G	G	Y	R	R	R	R	R		
8	R	R	R	R	R	R	R	R	R	R	G	G	G	Y	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	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DARK		
14	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DARK		
15	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DARK		
16	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DARK		
17	DW	DW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DARK		
18	DW	DW	DW	DW	DW	DW	DW	DW	W	W	FDW	DW	DW	DW	DW	DW	DW	DW	DARK		
19	DW	DW	DW	DW	DW	DW	DW	DW	W	W	FDW	DW	DW	DW	DW	DW	DW	DW	DARK		
20	DW	DW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DARK		
PHASE	2 & 6		ALL RED			3				ALL RED		4 LPI		4		ALL RED		1 & 5		ALL RED	

NOTES: F = ADD 04 LPI

SUBMITTED: <u>VP 01/10/2023</u>	CHECKED: <u>KHamud 01/10/23</u>	APPROVED: <u>KHamud 01/10/2023</u>
IN SERVICE BY: <u>7661785</u>	DATE: <u>11/2/23</u>	TIME: <u>1050</u>

TWINBROOK PKWY
 RUNS IN A
 EAST-WEST
 DIRECTION

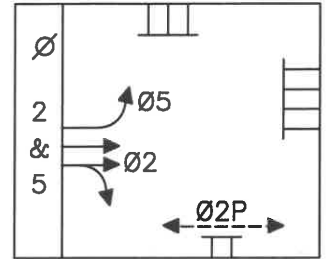
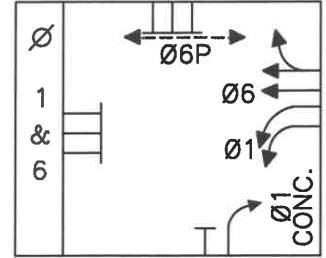
SEQUENCE OF OPERATION SHEET

TRAFFIC OPERATIONS SECTION
 DIVISION OF TRAFFIC ENGINEERING
 MONTGOMERY COUNTY, MARYLAND

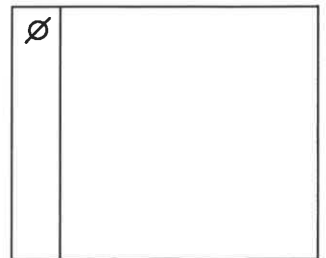
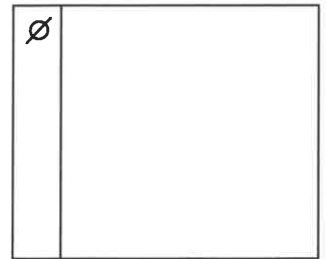
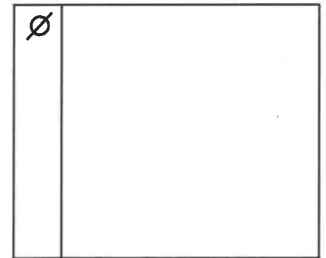
NO. 47-F
 SHEET 2 OF 2
 PHASING
 NORTH

INTERSECTION: TWINBROOK PARKWAY & CHAPMAN AVENUE

SIGNAL NO.	SIGNAL HEAD INDICATIONS					
	3,4,9,10	2,5,6,11,12	1	7	8	13-20
TOTAL:	4	5	1	1	1	8
LEGEND						
	OPTICALLY LIMITED					
R	RED					
Y	YELLOW					
G	GREEN					
	ARROW					
F	FLASHING					
	12"	12"	12"	12"	12"	12" 16"



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



NOTES:

SUBMITTED: VP 01/10/2023 CHECKED: KHamud 01/10/2023 APPROVED: KHamud 01/10/2023
 IN SERVICE BY: _____ DATE: _____ TIME: _____

SIG#0047 Hub-DD

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	8	5	5	5	8	0	0	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	0	0	0	0	0	0	0	0	0
WALK	0	7	7	7	0	7	0	0	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	20	21	0	18	0	0	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	0.0	0.0	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	30	20	20	20	30	0	0	0	0	0	0	0	0	0	0
MAX2	50	75	20	20	30	75	0	0	0	0	0	0	0	0	0	0
MAX3	60	0	40	40	60	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	4.0	4.0	3.5	4.0	0.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
RED CLR	2.0	2.0	2.5	2.5	2.0	2.0	0.0	0.0	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	2.0	5.0	5.0	5.0	2.0	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

OVERLAP B

PHASE	1	2	3	4	5	6	7	8
INCLUDED								
PROTECT								
MODIFIER								
PED PRTC								X
NOT OVLP								
FLSH GRN	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
LAG X PH								
LAG 2 PH								

NextEdit

OVERLAP B

PHASE	9	10	11	12	13	14	15	16
INCLUDED								
PROTECT								
MODIFIER								
PED PRTC								
NOT OVLP								
FLSH GRN	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
LAG X PH								
LAG 2 PH								

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																

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	60	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

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	TIMING PLAN	1
CYCLE	135	SEQUENCE	1
OFFSET VAL	40	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)	121	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								

COORDINATOR PATTERN 3

USE SPLIT PATTERN	3	TIMING PLAN	1
CYCLE	150	SEQUENCE	1
OFFSET VAL	30	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

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	135	SEQUENCE	1
OFFSET VAL	40	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

SIG#0047 Hub-DD

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	50	31	34	35	50	31	0	0
COORD		X				X		
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

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	28	38	34	35	28	38	0	0
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	32	49	34	35	32	49	0	0
COORD		X				X		
PHASE MODE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE

SIG#0047 Hub-DD

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	28	38	34	35	28	38	0	0
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	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

NextEdit

SIG#0047 Hub-DD

LP TABLE

LP Statement	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
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			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 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			

SIG#0047 Hub-DD

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			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 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

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	24	25
ACTION PLAN	99	1	2	3	4	99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	6	10	15	19	22	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

Day Plan 1

EVENT	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
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
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

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	24	25
ACTION PLAN	99	1	2	3	4	99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	6	10	15	19	22	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

Day Plan 2

EVENT	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
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
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

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	24	25
ACTION PLAN	99	1	2	3	4	99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	6	10	15	19	22	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

Day Plan 3

EVENT	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
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
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

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	24	25
ACTION PLAN	99	1	2	3	4	99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	6	10	15	19	22	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

Day Plan 4

EVENT	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
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
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

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	24	25
ACTION PLAN	99	1	2	3	4	99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	6	10	15	19	22	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	24	25
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

Day Plan 5

EVENT	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
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
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

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	24	25
ACTION PLAN	99	4	99	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	9	22	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

Day Plan 6

EVENT	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
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
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

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	24	25
ACTION PLAN	99	4	99	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	10	22	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

Day Plan 7

EVENT	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
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
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

BOU AVE
RUNS IN A
EAST-WEST
DIRECTION







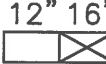
SEQUENCE OF OPERATION SHEET

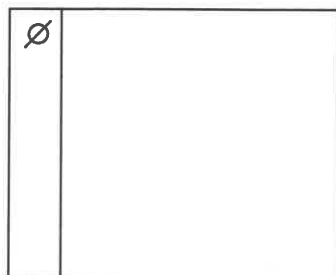
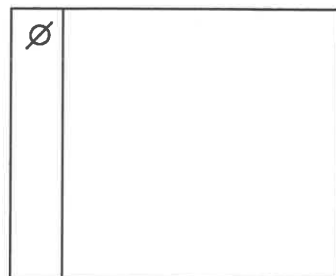
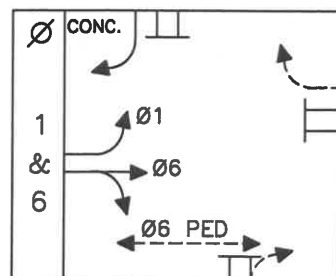
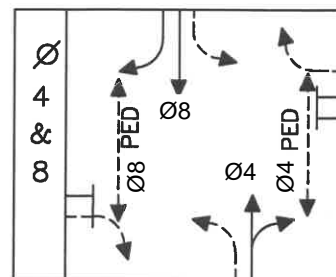
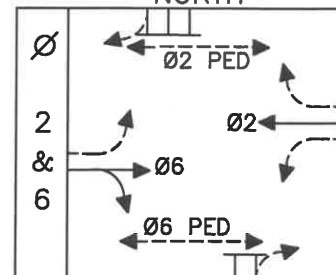
TRAFFIC OPERATIONS SECTION
DIVISION OF TRAFFIC ENGINEERING
MONTGOMERY COUNTY, MARYLAND







NO. 116-C
SHT. 1 OF 1

PHASING
NORTH

INTERSECTION: BOU AVENUE & CHAPMAN AVENUE

SIGNAL NO.	SIGNAL HEAD INDICATIONS				
	3-8	1,2	9		10-17
TOTAL:	6	2	1		8
LEGEND	(R)	(R)	(R)		 
 OPTICALLY LIMITED					
R RED	(Y)	(Y)	(Y)		
Y YELLOW	(G)	(G)	(G)		
G GREEN					
← ARROW					
F FLASHING	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	
1	G	G	Y	R	R	R	R	R	R			G						Y
2	G	G	Y	R	R	R	R	R	R			G						Y
3	G	G	Y	R	R	R	R	R	R	G	G	G						Y
4	G	G	Y	R	R	R	R	R	R	R	R	R						Y
5	G	G	Y	R	R	R	R	R	R	R	R	R						Y
6	R	R	R	R	G	G	G	Y	R	R	R	R						R
7	R	R	R	R	G	G	G	Y	R	R	R	R						R
8	R	R	R	R	G	G	G	Y	R	R	R	R						R
9	R	R	R	R	G	G	G	Y	R			R						R
10	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW						DARK
11	W	FDW	DW	DW	DW	DW	DW	DW	DW	W	W	W						DARK
12	W	FDW	DW	DW	DW	DW	DW	DW	DW	W	W	W						DARK
13	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW						DARK
14	DW	DW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DW						DARK
15	DW	DW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DW						DARK
16	DW	DW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DW						DARK
17	DW	DW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DW						DARK
PHASE	2 & 6			ALL RED	4 & 8			ALL RED	1 & 6		ALL RED							

NOTES: C - ADD APS/CPS

SUBMITTED: VP 09/30/2020 CHECKED: KHamud 9/30/2020 APPROVED: KHamud 9/30/20
 IN SERVICE BY: 760/770 DATE: 10/28/2020 TIME: 1400

SIG#0116 Hub-DD

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	6	7	0	5	0	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	14	0	12	0	14	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	6.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	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	30	0	30	0	30	0	30	0	0	0	0	0	0	0	0
MAX2	80	60	0	40	0	60	0	40	0	0	0	0	0	0	0	0
MAX3	85	60	0	70	0	60	0	70	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	3.5	3.0	4.0	3.0	3.5	3.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
RED CLR	2.0	2.0	0.0	2.0	0.0	2.0	0.0	2.0	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	3.0	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																

SIG#0116 Hub-DD

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	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																

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	99	100	99	99	99	99	99	99	99	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	5	6	9	15	19	22	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	99	100	99	99	99	99	99	99	99	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	5	6	9	15	19	22	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	99	100	99	99	99	99	99	99	99	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	5	6	9	15	19	22	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
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	99	100	99	99	99	99	99	99	0	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	22	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	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	99	99	99	99	99	0	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	22	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	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	99	99	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	9	22	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	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	99	99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
START TIME - HH	0	0	5	9	22	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

SEQUENCE OF OPERATION SHEET

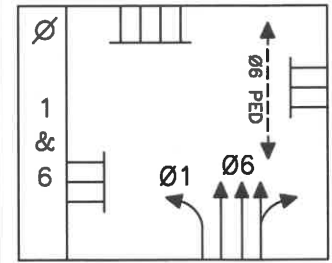
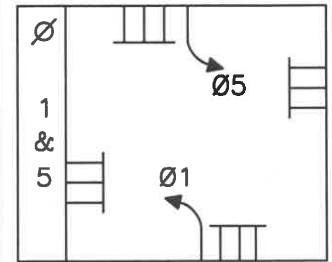
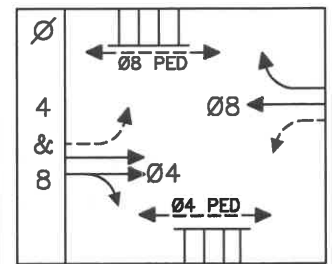
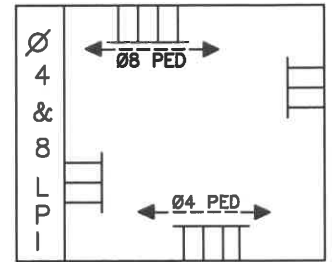
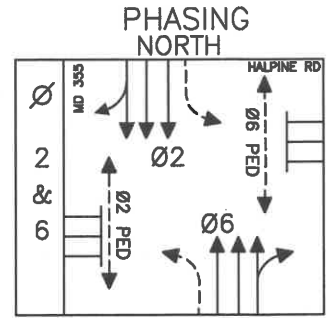
MD 355
RUNS IN A
NORTH-SOUTH
DIRECTION

TRAFFIC OPERATIONS SECTION
DIVISION OF TRAFFIC ENGINEERING
MONTGOMERY COUNTY, MARYLAND

NO. 101 - C
1 OF 2

INTERSECTION: ROCKVILLE PIKE (MD 355) & HALPINE ROAD

SIGNAL NO.	SIGNAL HEAD INDICATIONS			
	3,6-12	1,2,4,5		13-20
TOTAL:	8	4		8
LEGEND	 	 		
	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			
1	G	G	Y	R	R	R	R	R	R	R			R	R			G	G	Y
2	G	G	Y	R	R	R	R	R	R	R			R	R			G	G	Y
3	G	G	Y	R	R	R	R	R	R	R			R	R			G	G	Y
4	G	G	Y	R	R	R	R	R	R	R			R	R			G	G	Y
5	G	G	Y	R	R	R	R	R	R	R			R	R			G	G	Y
6	G	G	Y	R	R	R	R	R	R	R			R	R			G	G	Y
7	R	R	R	R	R	G	G	G	Y	R	R	R	R	R	R	R	R	R	
8	R	R	R	R	R	G	G	G	Y	R	R	R	R	R	R	R	R	R	
9	R	R	R	R	R	G	G	G	Y	R	R	R	R	R	R	R	R	R	
10	R	R	R	R	R	G	G	G	Y	R	R	R	R	R	R	R	R	R	
11	R	R	R	R	R	G	G	G	Y	R	R	R	R	R	R	R	R	R	
12	R	R	R	R	R	G	G	G	Y	R	R	R	R	R	R	R	R	R	
13	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DARK	
14	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	W	W	W	W	DARK	
15	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	W	W	W	W	DARK	
16	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DARK	
17	DW	DW	DW	DW	W	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DARK	
18	DW	DW	DW	DW	W	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DARK	
19	DW	DW	DW	DW	W	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DARK	
20	DW	DW	DW	DW	W	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DARK	
PHASE	2 & 6		ALL RED	LPI	4 & 8			ALL RED	1 & 5	ALL RED	1 & 6	ALL RED							

NOTES: C = ADDS SIDE STREET LPI

SUBMITTED: <u>VP 03/07/2019</u>	CHECKED: <u>RHamud 3/11/19</u>	APPROVED: <u>RHamud 3/11/19</u>
IN SERVICE BY: <u>766</u>	DATE: <u>3/11/2019</u>	TIME: <u>1147</u>

SEQUENCE OF OPERATION SHEET














































MD 355
RUNS IN A
NORTH-SOUTH
DIRECTION

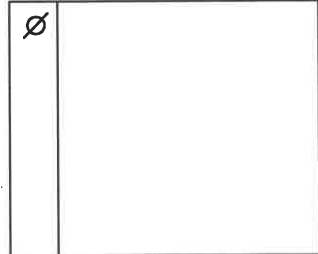
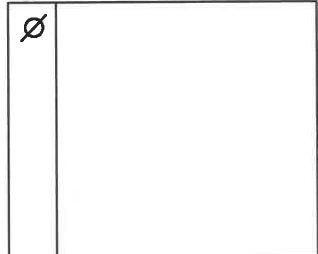
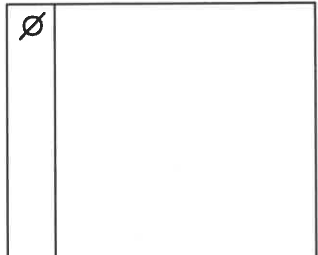
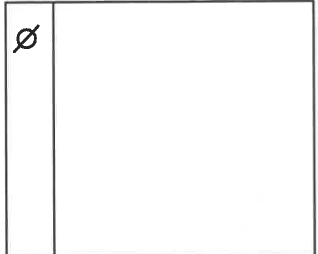
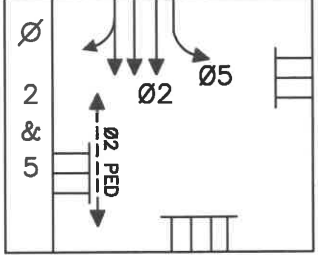
TRAFFIC OPERATIONS SECTION
DIVISION OF TRAFFIC ENGINEERING
MONTGOMERY COUNTY, MARYLAND

NO. 101 - C
2 OF 2

INTERSECTION: ROCKVILLE PIKE (MD 355) & HALPINE ROAD

PHASING
NORTH

SIGNAL NO.	SIGNAL HEAD INDICATIONS														
	3,6-12	1,2,4,5			13-20										
TOTAL:	8	4			8										
LEGEND	<table style="width: 100%; border: none;"> <tr> <td style="width: 33%; text-align: center;">    </td> <td style="width: 33%; text-align: center;"> <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;">    </td> <td style="text-align: center;">   </td> </tr> </table> </td> <td style="width: 33%; text-align: center;">  <div style="border: 1px solid black; padding: 2px; display: inline-block;">12" 16"</div> </td> </tr> <tr> <td style="font-size: small;"> <div style="border: 1px solid black; padding: 2px; display: inline-block; width: 15px; height: 15px; margin-right: 5px;"></div> OPTICALLY LIMITED R RED Y YELLOW G GREEN  ARROW F FLASHING </td> <td style="vertical-align: bottom; text-align: center;">12"</td> <td style="vertical-align: bottom; text-align: center;">12"</td> <td style="vertical-align: bottom;"></td> <td style="vertical-align: bottom;"></td> </tr> </table>					  	<table style="width: 100%; border: none;"> <tr> <td style="text-align: center;">    </td> <td style="text-align: center;">   </td> </tr> </table>	  	 	 <div style="border: 1px solid black; padding: 2px; display: inline-block;">12" 16"</div>	<div style="border: 1px solid black; padding: 2px; display: inline-block; width: 15px; height: 15px; margin-right: 5px;"></div> OPTICALLY LIMITED R RED Y YELLOW G GREEN  ARROW F FLASHING	12"	12"		
  	<table style="width: 100%; border: none;"> <tr> <td style="text-align: center;">    </td> <td style="text-align: center;">   </td> </tr> </table>	  	 	 <div style="border: 1px solid black; padding: 2px; display: inline-block;">12" 16"</div>											
  	 														
<div style="border: 1px solid black; padding: 2px; display: inline-block; width: 15px; height: 15px; margin-right: 5px;"></div> OPTICALLY LIMITED R RED Y YELLOW G GREEN  ARROW F FLASHING	12"	12"													



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

NOTES: C = ADDS SIDE STREET LPI

SUBMITTED: <u>VP 03/07/2019</u>	CHECKED: _____	APPROVED: _____
IN SERVICE BY: _____	DATE: _____	TIME: _____

SIG#0025 Hub-DD

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	10	5	5	5	10	0	0	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	7	7	0	7	0	0	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	15	13	0	15	0	0	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	4.0	0.0	4.0	4.0	4.0	0.0	0.0	0.0	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	60	15	20	15	60	0	0	0	0	0	0	0	0	0	0
MAX2	25	60	10	30	15	60	0	0	0	0	0	0	0	0	0	0
MAX3	40	60	25	50	20	60	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	3.5	3.5	4.5	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
RED CLR	1.5	1.5	2.5	2.5	1.5	1.5	0.0	0.0	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	2.0	5.0	5.0	5.0	2.0	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																

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	87	ACTION PLAN	0
ACTUATED COORD		FORCE OFF	NONE
ACT WALK REST		VEH PERM 1	1
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	120	ACT WALK REST	
OFFSET VAL	80	PHASE RESERVICE	

COORDINATOR PATTERN 2

MAX SELECT	NONE	FORCE OFF	NONE
STD (COS)	121	VEH PERM 1	1
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	67	ACTION PLAN	0
ACTUATED COORD		FORCE OFF	NONE
ACT WALK REST		VEH PERM 1	1
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

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	100	ACTION PLAN	0
ACTUATED COORD		FORCE OFF	NONE
ACT WALK REST		VEH PERM 1	1
PHASE RESERVICES		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	18	78	28	26	16	80	0	0
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	20	46	28	26	17	49	0	0
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	24	62	28	36	20	66	0	0
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	20	46	28	26	17	49	0	0
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																

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	10	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	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	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	10	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	0	0	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	10	15	19	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
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	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	10	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	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	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	10	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	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	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

Randolph Rd
 RUNS IN A
 EAST-WEST
 DIRECTION

SEQUENCE OF OPERATION SHEET

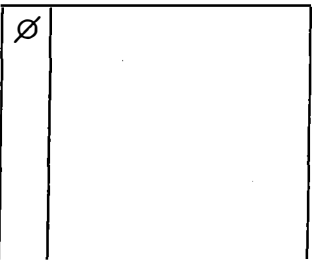
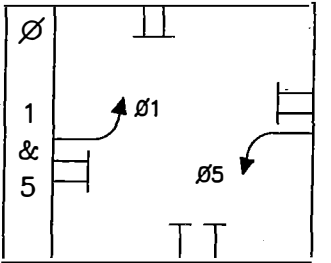
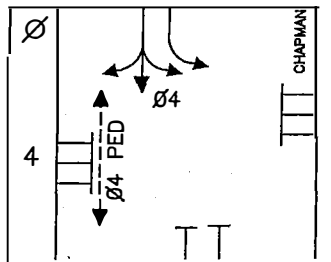
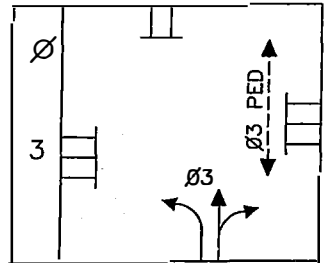
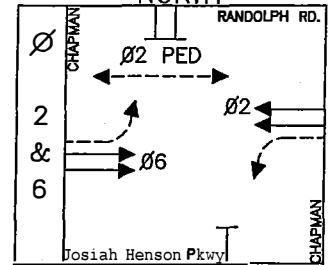
TRAFFIC OPERATIONS SECTION
 DIVISION OF TRAFFIC ENGINEERING
 MONTGOMERY COUNTY, MARYLAND

NO. 25-E
 SHT. 1 OF 2

PHASING
 NORTH

INTERSECTION: Josiah Henson PKWY/RANDOLPH RD & CHAPMAN AVENUE

SIGNAL NO.	SIGNAL HEAD INDICATIONS				
	1,2,4,5	3,6,9,12	7,8,10,11		13-20
TOTAL:	4	8	4		8
LEGEND					
OPTICALLY LIMITED R RED Y YELLOW G GREEN ARROW F FLASHING	12"	12"	12"		9" 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		
1	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	G	R	Y	R	Y
2	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	G	R	Y	R	Y
3	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Y
4	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	G	R	Y	R	Y
5	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	G	R	Y	R	Y
6	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Y
7	R	R	R	R	G	G	G	Y	R	R	R	R	R	R	R	R	R	R	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	R	R	R	R	R	G	G	G	Y	R	R	R	R	R	R
11	R	R	R	R	R	R	R	R	R	G	G	G	Y	R	R	R	R	R	R
12	R	R	R	R	R	R	R	R	R	G	G	G	Y	R	R	R	R	R	R
13	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DW	DW	DARK
14	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DW	DW	DARK
15	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DARK
16	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DARK
17	DW	DW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DARK
18	DW	DW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DARK
19	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DARK
20	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DARK
PHASE	2 & 6	ALL RED		3				ALL RED		4			ALL RED		1 & 5		ALL RED		

NOTES: E= GEOMETRIC CHANGES . CHAPMAN AVE. EXTENDED.
 "Josiah Henson Pkwy" Street Name Changed 03/03/2022

SUBMITTED: TSET 05/12/2016	CHECKED: <u>K Hamud 5/12/16</u>	APPROVED: <u>K Hamud 5/12/16</u>
IN SERVICE BY: <u>785</u>	DATE: <u>5/13/16</u>	TIME: <u>9:50 AM</u>

Randolph RD
 RUNS IN A
 EAST-WEST
 DIRECTION

SEQUENCE OF OPERATION SHEET

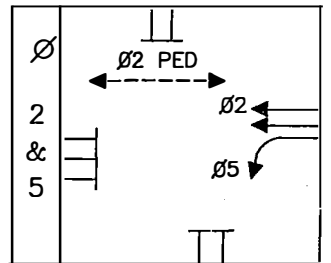
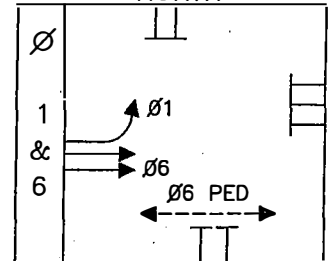
TRAFFIC OPERATIONS SECTION
 DIVISION OF TRAFFIC ENGINEERING
 MONTGOMERY COUNTY, MARYLAND

NO. 25-E
 SHT. 2 OF 2

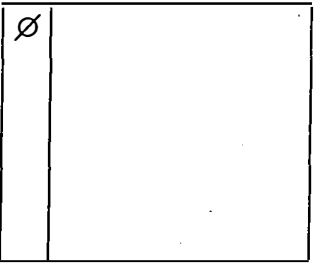
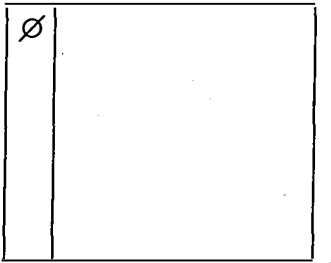
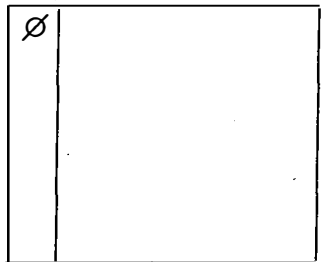
PHASING
 NORTH

INTERSECTION: Josiah Henson PKWY/RANDOLPH RD & CHAPMAN AVENUE

SIGNAL NO.	SIGNAL HEAD INDICATIONS				
	1,2,4,5	3,6,9,12	7,8,10,11		13-20
TOTAL:	4	8	4		8
LEGEND					
OPTICALLY LIMITED					
R RED					
Y YELLOW					
G GREEN					
ARROW					9" 12"
F FLASHING	12"	12"	12"		



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



NOTES: E= GEOMETRIC CHANGES. CHAPMAN AVE EXTENDED.
 "Josiah Henson Pkwy" Street Name Changed 03/03/2022

SUBMITTED: TSET 05/12/2016 CHECKED: K Hamid S/12/16 APPROVED: K Hamid 5/12/16
 IN SERVICE BY: _____ DATE: _____ TIME: _____



TRAFFIC SIGNAL TIMING CHART

SIGNAL NO: 8

INTERSECTION: E.Jefferson/Rollins Ave

PHONE #: 301-231-5888

INITIAL DATE: 11/02/05

ROAD AND DIRECTION →			NB E. Jefferson	WB Rollins	EB Rollins		SB E. Jefferson		
				+ NB RT					
				Split phase	Split phase				
INTERVAL	PHASE	1	2	3	4	5	6	7	8
RECALL/MEMORY			Ped/Max	NL	NL		Ped/Max		
MINIMUM GREEN			26	7	5		26		
WALK			12	10	7		12		
PED CLEARANCE			14	12	16		14		
VEH EXTENSION			(5.0)	1.0	2.0		(5.0)		
MAXIMUM I			35	30	20		35		
MAXIMUM II			50	30	15		50		
YELLOW			3.5	3.5	3.5		3.5		
ALL RED			1.5	1.0	1.0		1.5		
RED REVERT			8.0	8.0	8.0		8.0		
AMPLIFIER DELAY/STRETCH					Right Turn 5.0				

This information should be used for a data analysis purpose only

TRAFFIC SIGNAL TIMING CHART

SIGNAL NO: 8

INTERSECTION: E.Jefferson/ Rollins Ave

PHONE #: 301-231-5888

INITIAL DATE: 11/02/05

PHASE	1	2	3	4	5	6	7	8
INITIALIZATION		GREEN				GREEN		
CNA I		X				X		
CNA II								
LAST CAR PASSAGE								
DUAL ENTRY		X				X		
OVERLAP A								
OVERLAP B								
OVERLAP C								
OVERLAP D								

POWER-UP FLASH 8.0 seconds

PROGRAM HIGHLIGHTS/COMMENTS (including description of overlap functions)

OPTIONS/SPECIAL FEATURES	YES	NO
PED CLEARANCE PROTECTION		X
RED REST		X

NB Jefferson right turn arrow operates concurrently on Phase 3 (WB Rollins Ave)
 NB No Left Turn sign defined as Special Function
 Active 7-9 and 4-6 PM, Monday thru Friday

REVISIONS (use for minor changes only)	PHASE(S)	FROM	TO

This information should be used for a data analysis purpose only

TRAFFIC SIGNAL COORDINATION/TOD PROGRAM

LOCATION: E.Jefferson/ Rollins	SIGNAL NO.: 8	DATE: 5-19-09
---------------------------------------	----------------------	----------------------

COORDINATION PATTERNS

PATTERN	USAGE NOTE:	COORD PHASE(S)	CYCLE (seconds)	OFFSET (percent)	PHASE SPLITS (percent)							
					1	2	3	4	5	6	7	8
					1	111	2/6	80	2		39	40
2	222	2/6	90	93		50	30	20		50		
3	233	2/6	90	1		42	38	20		42		
4	144	2/6	80	0		40	39	21		40		
5												
6												
7												
8												

NIC/TOD PROGRAM STEPS

STEP	DAY PGM NO.	START TIME (24 HR)	COORD PATTERN	FLASH	MAX 2	PHASE OMIT	SPECIAL FUNCTN	OTHER//REMARKS
								e.g.: Recall On/Off, MAX 3, Red Rest, etc.
1	1	0600						
2	1	0700	1					
3	1	0900						
4	1	1130	2		X			
5	1	1330						
6	1	1530	3					
7	1	1600	3		X			
8	1	1800	3					
9	1	1930						
10	1	2300		X				
11	2	0600						
12	2	1000	4					
13	2	1100	4		X			
14	2	1700						
15	2	2300		X				
16	3	0600						
17	3	2300		X				
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								

DAY OF WEEK

DAY	DAY PGM NO.
SUN	3
MON	1
TUE	1
WED	1
THU	1
FRI	1
SAT	2
Alternate Week:	
SUN	
MON	
TUE	
WED	
THU	
FRI	
SAT	

HOLIDAYS

HOLIDAY NUMBER	TYPE:	MONTH	DAY OF:	WOM	DAY PGM NO.
	FLOAT		WEEK		
	FIXED		MONTH			0 or YR
1	FIXED	01	01		3
2	FIXED	07	04		2
3	FIXED	12	25		3
4	FIXED	11	11		2
5	FLOAT	02	02	03	25
6	FLOAT	09	02	01	3
7	FLOAT	11	05	04	3
8					
9					
10					
11					
12					
13					
14					
15					

MONTH/DAY

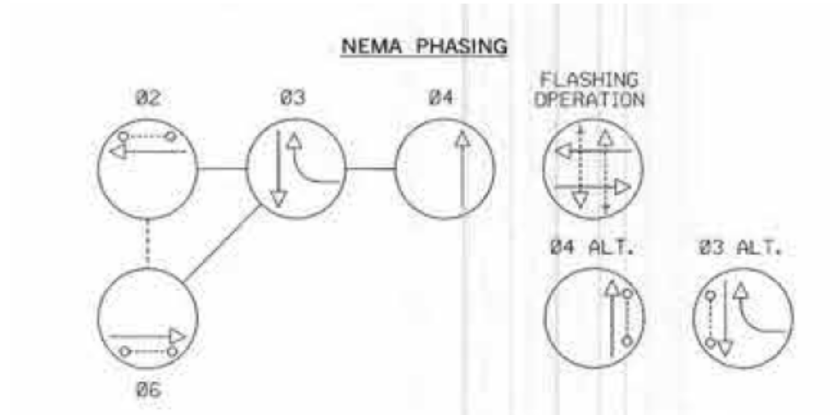
ALT WEEK ON
ALT WEEK OFF

MANUAL CONTROL

TOD STEP:
COORD PATTERN:

This information should be used for a data analysis purpose only

NEMA Phasing at E. Jefferson St/Rollins Ave
Mainline (E. Jefferson St): Phases 2 and 6



APPENDIX E
Existing Conditions
Capacity Analysis

Pike Center

Existing Conditions Levels of Service Summary¹

Approach/ Lane Group	Existing Conditions			
	AM Peak Hour		PM Peak Hour	
	LOS	Delay (s)	LOS	Delay (s)
1. Rockville Pike / Bou Avenue -- Orange Policy Area				
EBT	F	99.1	F	97.0
EBR	F	91.8	F	89.4
WBL	F	81.6	F	83.0
WBT	E	66.0	E	74.0
NBL	F	100.2	F	97.9
NBT	C	27.7	C	33.1
NBR	C	24.1	C	25.4
SBL	C	24.6	F	82.8
SBT	C	22.6	C	21.4
Overall	D	35.7	D	39.3
2. Rockville Pike / Pike Center Driveway / Federal Plaza Driveway -- Orange Policy Area				
EBT	E	76.3	E	78.9
EBR	E	73.5	E	62.5
WBT	E	77.0	E	74.3
NBL	A	4.7	B	15.0
NBT	A	6.1	B	15.5
SBL	A	4.3	B	13.1
SBT	A	7.9	B	18.1
Overall	A	9.6	C	21.7

3. Rockville Pike/ Shell Gas Station Driveway - Unsignalized -- Orange Policy Area				
WBR	B	13.8	D	33.9
NBTR	-	-	-	0.0
SBT	-	-	-	0.0
Overall	-	-	-	-
4. Rockville Pike / Twinbrook Pkwy / Rollins Ave -- Red Policy Area				
EBT	E	70.8	E	67.3
WBT	E	67.8	E	58.6
WBR	E	70.3	E	60.2
NBL	A	8.4	B	11.6
NBT	B	11.0	C	20.1
NBR	A	9.7	B	13.9
SBL	A	6.6	B	15.8
SBT	B	12.3	B	15.3
Overall	C	24.7	C	27.8
5. Chapman Ave / Twinbrook Pkwy -- Red Policy Area				
EBL	B	17.3	C	28.6
EBT	C	23.8	D	44.6
WBL	F	83.5	E	65.8
WBT	A	9.9	B	18.4
NBT	F	93.9	F	107.7
NBR	D	49.2	E	75.7
SBL	F	88.0	F	93.2
SBT	F	90.5	F	102.1
SBR	F	84.0	E	78.1
Overall	D	44.5	E	56.0

6. Chapman Ave / Pike Center Driveway North - Unsignalized -- Orange Policy Area				
EBLTR	A	0.0	C	21.8
WBLTR	B	10.7	C	19.2
NBL	A	9.0	A	8.9
NBT	A	0.0	A	0.0
SBL	A	8.0	A	9.4
SBT	A	0.0	A	0.1
Overall	-	-	-	-
7. Chapman Ave / Rollins Ave - Unsignalized -- Orange Policy Area				
WBL	C	15.5	D	29.2
WBR	B	10.5	C	15.0
EBL	-	-	-	-
NBL	-	-	-	-
NBTR	-	-	-	-
SBL	A	8.2	A	9.2
SBT	A	0.2	A	0.3
Average for WBL	-	-	-	-
Average for EBL	-	-	-	-
8. Chapman Ave / Pike Center Driveway South - Unsignalized -- Orange Policy Area				
EBLR	C	18.4	C	16.9
NBL	B	11.2	A	0.0
NBT	A	0.0	-	-
SBT	-	-	-	-
SBR	-	-	-	-
Overall	-	-	-	-

9. Chapman Ave / Bou Ave -- Orange Policy Area				
EBL	C	23.2	C	25.9
EBT	C	21.7	C	22.7
WBL	D	35.3	D	40.4
WBT	D	37.6	D	45.2
WBR	D	36.4	D	42.5
NBL	C	29.1	C	33.7
NBT	C	29.8	D	37.1
SBL	C	32.4	D	46.9
SBT	C	30.7	D	36.5
SBR	B	18.1	B	16.8
Overall	C	25.5	C	31.8
10. Bou Ave / Pike Center Driveway - Unsignalized -- Orange Policy Area				
EBL	A	8.5	A	8.5
EBT	A	0.1	A	0.1
WBT	-	-	-	-
WBR	-	-	-	-
SBLR	B	13.8	C	16.3
Overall	-	-	-	-
11. E Jefferson St / Rollins Ave -- City of Rockville				
EBL	D	48.3	D	48.1
EBT	D	50.4	D	50.5
WBL	E	56.7	E	57.6
WBT	D	35.3	C	34.5
NBT	B	10.9	B	15.3
NBR	A	2.4	A	2.6
SBT	A	9.8	B	11.1
Overall	C	23.5	C	23.2

12. Rockville Pike / Halpine Rd -- Red Policy Area				
EBL	F	90.2	F	93.8
EBT	F	83.5	E	75.3
WBL	F	82.1	E	75.2
WBT	F	83.8	E	77.8
WBR	F	81.4	E	74.0
NBL	A	3.8	B	12.2
NBT	A	5.2	B	10.4
SBL	A	3.3	B	11.2
SBT	A	6.8	B	15.8
Overall	B	13.7	C	21.0
13. Twinbrook Pkwy / Parklawn Dr -- Red Policy Area				
EBL	F	101.1	F	97.5
EBT	F	107.9	F	112.9
WBL	F	111.8	F	106.3
WBT	F	110.5	F	106.0
WBR	E	78.3	E	71.8
NBL	A	9.2	B	15.0
NBT	B	12.9	C	24.8
SBL	A	8.3	B	16.4
SBT	B	14.1	C	20.2
Overall	C	28.9	D	40.1

14. Nebel St / Randolph Rd -- Red Policy Area				
EBL	B	11.7	C	32.1
EBT	B	15.8	D	53.0
WBL	A	8.9	D	38.6
WBT	B	14.5	D	38.8
NBL	F	83.4	E	61.7
NBT	F	97.5	E	77.0
NBR	F	106.9	F	107.2
SBL	E	80.1	D	49.8
SBT	F	95.8	E	62.7
SBR	F	90.7	E	57.5
Overall	C	27.8	D	54.1
15. Rockville Pike / Hubbard Dr / Plaza Driveway -- Orange Policy Area				
EBL	E	65.9	E	55.5
EBT	E	64.4	D	52.7
WBL	E	75.5	E	74.3
WBT	E	65.3	D	53.6
NBL	A	4.7	B	12.8
NBT	A	7.0	C	23.6
SBL	A	4.1	E	56.2
SBT	A	7.0	B	13.8
Overall	B	11.2	C	25.3

**16. Chapman Ave / Randolph Rd / Josiah Henson Pkwy --
 Red Policy Area**

EBL	A	6.4	B	10.3
EBT	A	7.3	B	15.8
WBL	A	6.4	B	13.1
WBT	B	11.9	B	18.5
WBR	A	7.5	B	14.9
NBL	E	72.2	E	78.8
NBT	E	70.6	E	70.0
SBL	E	68.9	E	62.3
SBT	E	71.5	E	70.2
Overall	B	12.4	C	25.2

**17. Chapman Ave / Thompson Ave - Unsignalized -- Red
 Policy Area**

EBLTR	A	9.8	B	14.4
WBLTR	B	13.4	C	16.9
NBL	A	7.7	A	8.0
NBT	A	0.0	A	0.0
NBR	-	-	-	-
SBL	A	7.6	A	7.9
SBT	A	0.0	A	0.0
SBR	-	-	-	-
Overall	-	-	-	-

18. Rockville Pike (MD 355) / Rollins Ave Extension - Unsignalized -- Orange Policy Area	
WBR	FUTURE
NBT	
NBR	
SBT	
Overall	

Notes:

1. Capacity analysis based on Highway Capacity Manual 6th or 2000 methodology, using Synchro 11 unless otherwise noted.
 2. **Bold** roadways indicate N/S direction.
- *. Asterisks mark the use of the LATR HCM Average Delay

Table 6-2
 Pike Center
 Total Future with Development Conditions Queuing Summary

Approach/ Lane Group	Storage Length (ft)	Existing Conditions			
		AM Peak Hour		PM Peak Hour	
		50th %tile	95th %tile	50th %tile	95th %tile
1. Rockville Pike / Bou Avenue -- Orange Policy Area					
EBT	-	48	93	65	116
EBR	90	0	0	0	0
WBL	-	296	350	215	262
WBT	-	12	63	25	109
NBL	175	50	95	77	133
NBT	-	279	353	649	805
NBR	-	28	87	160	280
SBL	245	75	133	187	381
SBT	-	370	484	303	415
2. Rockville Pike / Pike Center Driveway / Federal Plaza Driveway -- Orange Policy Area					
EBT	-	19	49	142	211
EBR	150	0	8	0	64
WBT	-	9	37	30	83
NBL	245	16	33	62	119
NBT	-	104	139	361	504
SBL	175	6	15	7	22
SBT	-	192	253	249	394

3. Rockville Pike/ Shell Gas Station Driveway - Unsignalized -- Orange Policy Area					
WBR	-	-	5	-	38
NBTR	-	-	-	-	-
SBT	-	-	-	-	-
4. Rockville Pike / Twinbrook Pkwy / Rollins Ave -- Red Policy Area					
EBT	-	169	214	244	294
WBT	-	167	211	154	194
WBR	150	137	204	142	207
NBL	-	22	46	29	57
NBT	-	109	159	338	475
NBR	300	0	18	0	32
SBL	400	45	83	46	103
SBT	-	224	317	231	312
5. Chapman Ave / Twinbrook Pkwy -- Red Policy Area					
EBL	175	12	27	27	46
EBT	-	200	294	447	525
WBL	300	326	380	266	329
WBT	-	118	176	226	276
NBLT	-	96	156	211	376
NBR	-	0	63	601	861
SBL	300	55	87	140	190
SBT	-	64	116	152	232
SBR	300	0	0	0	0

6. Chapman Ave / Pike Center Driveway North - Unsignalized -- Orange Policy Area					
EBLTR	-	-	-	-	5
WBLTR	-	-	0	-	5
NBL	-	-	0	-	0
NBT	-	-	-	-	-
SBL	-	-	0	-	0
SBT	-	-	-	-	-
7. Chapman Ave / Rollins Ave - Unsignalized -- Orange Policy Area					
EBL	-	-	-	-	-
WBL	-	-	8	-	35
WBR	-	-	5	-	20
NBL	-	-	-	-	-
NBTR	-	-	-	-	-
SBL	-	-	3	-	5
SBT	-	-	-	-	-
8. Chapman Ave / Pike Center Driveway South - Unsignalized -- Orange Policy Area					
EBLR	-	-	0	-	0
NBL	-	-	0	-	0
NBT	-	-	-	-	-
SBT	-	-	-	-	-
SBR	-	-	-	-	-

9. Chapman Ave / Bou Ave -- Orange Policy Area					
EBL	275	117	169	216	291
EBT	-	85	131	190	259
WBL	-	4	17	13	36
WBT	-	72	126	152	239
WBR	250	0	49	0	69
NBL	70	3	12	13	36
NBT	-	30	62	134	216
SBL	-	74	129	194	312
SBT	-	56	102	102	170
SBR	-	0	46	0	41
10. Bou Ave / Pike Center Driveway - Unsignalized -- Orange Policy Area					
EBL	-	-	0	-	3
EBT	-	-	-	-	-
WBT	-	-	-	-	-
WBR	-	-	-	-	-
SBLR	-	-	5	-	18
11. E Jefferson St / Rollins Ave -- City of Rockville					
EBL	-	12	34	7	23
EBT	-	37	83	35	80
WBL	-	200	276	230	328
WBT	-	20	55	54	106
NBT	-	86	172	206	347
NBR	-	0	13	0	14
SBT	-	41	80	52	88

12. Rockville Pike / Halpine Rd -- Red Policy Area					
EBL	250	53	100	124	188
EBT	-	33	68	41	77
WBL	-	8	27	21	49
WBT	-	34	71	85	136
WBR	450	0	44	0	66
NBL	165	12	24	46	122
NBT	-	86	118	286	392
SBL	175	9	21	22	45
SBT	-	178	256	303	438
13. Twinbrook Pkwy / Parklawn Dr -- Red Policy Area					
EBL	-	50	96	62	110
EBT	-	73	145	114	195
WBL	200	145	218	268	357
WBT	-	144	216	271	362
WBR	-	0	67	62	259
NBL	190	18	41	15	37
NBT	-	148	217	442	612
SBL	240	32	59	32	60
SBT	-	259	380	298	432
14. Nebel St / Randolph Rd -- Red Policy Area					
EBL	140	6	17	14	36
EBT	-	197	297	675	930
WBL	125	69	120	111	177
WBT	-	344	470	500	634
NBL	100	103	154	123	166
NBT	-	79	133	182	254
NBR	-	101	163	361	468
SBL	250	138	196	268	328
SBT	-	102	162	190	257
SBR	-	20	48	26	54

15. Rockville Pike / Hubbard Dr / Plaza Driveway -- Orange Policy Area					
EBL	-	19	47	37	72
EBT	-	7	34	11	45
WBL	-	79	134	192	267
WBT	-	15	63	12	72
NBL	-	4	12	5	16
NBT	-	114	154	448	608
SBL	180	8	20	119	203
SBT	-	155	209	293	394
16. Chapman Ave / Randolph Rd / Josiah Henson Pkwy -- Red Policy Area					
EBL	350	19	37	49	92
EBT	-	107	202	219	390
WBL	165	2	8	5	15
WBT	-	283	399	205	303
WBR	215	0	0	0	33
NBL	250	12	35	49	97
NBT	-	7	28	23	67
SBL	-	27	60	136	202
SBT	-	38	76	166	240

17. Chapman Ave / Thompson Ave - Unsignalized -- Red Policy Area					
EBLTR		-	5	-	33
WBLTR		-	10	-	8
NBL		-	3	-	3
NBT		-	-	-	-
NBR		-	-	-	-
SBL		-	0	-	0
SBT		-	-	-	-
SBR		-	-	-	-
18. Rockville Pike (MD 355) / Rollins Ave Extension - Unsignalized					
WBLTR		FUTURE			
NBT					
NBR					
SBT					

Notes:

1. Capacity analysis based on Highway Capacity Manual 6th or 2000 Edition methodology, using Synchro 11, unless otherwise noted.

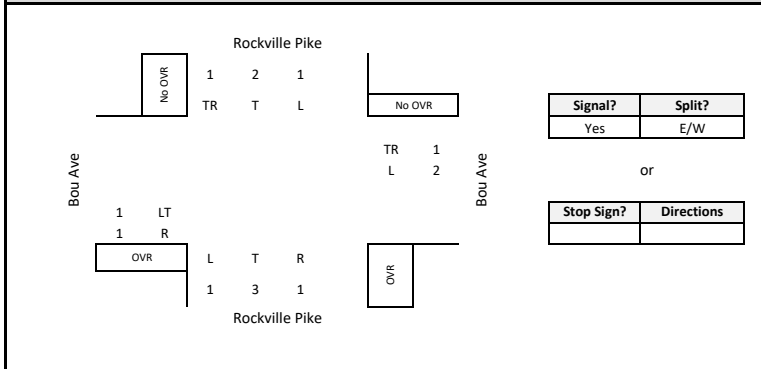
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Critical Lane Volume and Level of Service Calculations

Intersection: **01. Rockville Pike / Bou Ave**
 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	35		1.00	35				35	*
	R	25	0	1.00	25				25	*
WB	2L	442		0.60	265				265	*
	TR	76	0	1.00	76				76	*
NB	3T	957		0.37	354	124	1.10	136	490	*
	R	194	194	1.00	0				136	*
SB	2T+TR	1321		0.37	489	36	1.10	40	529	*
Note:								CLV	829	
Congestion Equiv.								v/c	0.535	
Congestion Equiv.								LOS	A	

Approach	Excl. Right	Right Vol.	Adjacent Overlap Vol.	Overlap
Eastbound	Yes	25	36	1.00
Westbound	No	n/a	n/a	n/a
Northbound	Yes	194	365	0.00
Southbound	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	LT	48		1.00	48				48	*
	R	36	0	1.00	36				36	*
WB	2L	324		0.60	194				194	*
	TR	196	0	1.00	196				196	*
NB	3T	1847		0.37	683	206	1.10	227	910	*
	R	365	365	1.00	0				227	*
SB	2T+TR	1188		0.37	440	57	1.10	63	503	*
Note:								CLV	1154	
Congestion Equiv.								v/c	0.745	
Congestion Equiv.								LOS	C	

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap Vol.			Overlap	
		AM	PM	LUF	AM	PM	LUF	AM	PM
Eastbound	Yes	25	36	1.00	36	57	0.00	0	0
Westbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Northbound	Yes	194	365	0.00	442	324	0.60	194	365
Southbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0

Montgomery County LATR

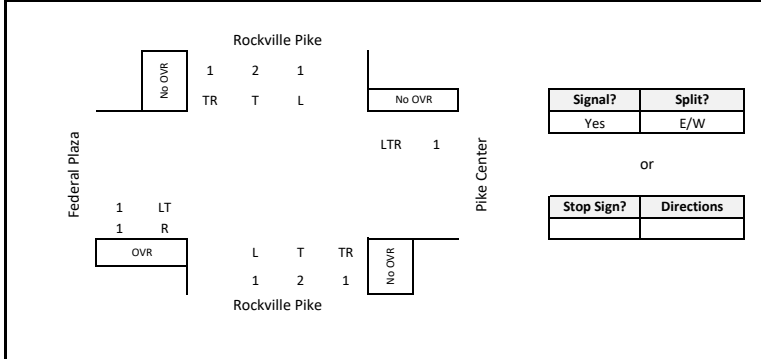
Number of Lanes	Lane Use Factors		LOS
	Left Turn LUF	Through LUF	
1	1.1	1.00	A 1000.00
2	0.6	0.53	B 1150.00
3	0.4	0.37	C 1300.00
4		0.30	D 1450.00
5		0.25	E 1600.00
			F 1800.00

Critical Lane Volume and Level of Service Calculations

Intersection: **02. Rockville Pike / Pike Center / Federal Plaza**
 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	18		1.00	18				18	*
	R	54	54	1.00	0					
WB	LTR	17		1.00	17				17	*
NB	2T+TR	866	0	0.37	320	30	1.10	33	353	
SB	2T+TR	1345	0	0.37	498	84	1.10	92	590	*
Note:									CLV	625
Congestion Equiv.									v/c	0.403
									LOS	A

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

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	135		1.00	135				135	*
	R	133	133	1.00	0					
WB	LTR	65		1.00	65				65	*
NB	2T+TR	1723	0	0.37	638	26	1.10	29	667	
SB	2T+TR	1234	0	0.37	457	197	1.10	217	674	*
Note:									CLV	874
Congestion Equiv.									v/c	0.564
									LOS	A

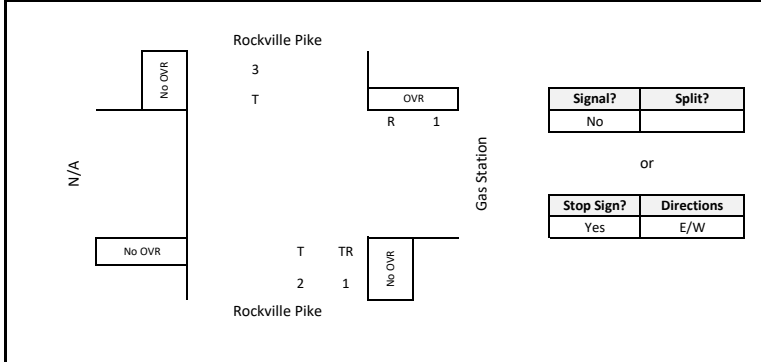
Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap Vol.			Overlap		
		AM	PM	LUF	AM	PM	LUF	AM	PM	LUF
Eastbound	Yes	54	133	1.00	84	197	1.10	54	133	
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	1.00
2	0.6	0.53
3	0.4	0.37
4		0.30
5		0.25

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										
WB	R	19	0	1.00	19				19	*
NB	2T+TR	879	0	0.37	325				325	
SB	3T	1394	0	0.37	516				516	*
Note:									CLV v/c	535 0.345
Congestion Equiv.									LOS	A
									1550	

Approach	Excl. Right	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	Yes	19	58	1.00	0	0	0.00	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

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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	Yes	19	58	1.00	0	0	0.00	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

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										
WB	R	58	0	1.00	58				58	*
NB	2T+TR	1865	0	0.37	690				690	*
SB	3T	1248	0	0.37	462				462	
Note:									CLV v/c	748 0.483
Congestion Equiv.									LOS	A
									1550	

Montgomery County LATR

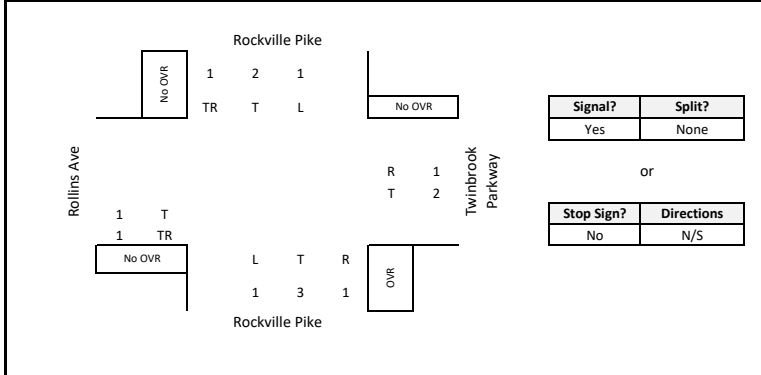
Number of Lanes	Lane Use Factors	
	Left Turn LUF	Through LUF
1	1.1	1.00
2	0.6	0.53
3	0.4	0.37
4		0.30
5		0.25

**Critical Lane Volume
and
Level of Service Calculations**

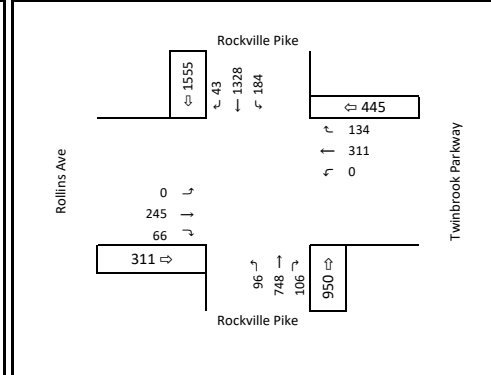
Intersection: **04. Rockville Pike / Twinbrook Park / Rollins Ave**
 Jurisdiction: **Montgomery County, MD**
 Scenario/Design Year: **Existing Conditions**
 Computed by: **W+A**



Intersection Lane Use & Traffic Control



AM Peak Hour Critical Lane Volume Analysis



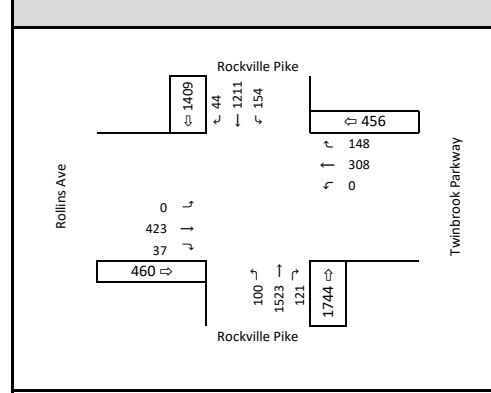
Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV	
EB	TR	311	0	0.53	165				165		
WB	2T	311		0.53	165				165	*	
	R	134	0	1.00	134				134		
NB	3T	748		0.37	277	184	1.10	202	479		
	R	106	0	1.00	106				308		
SB	2T+TR	1371		0.37	507	96	1.10	106	613	*	
Note:									CLV	778	
									v/c	0.502	
									LOS	A	
					Congestion Equiv.						
					1550						

Approach	Excl. Right	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	Yes	106	121	1.00	0	0	0.00	0	0
Southbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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	Yes	106	121	1.00	0	0	0.00	0	0
Southbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0

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	460	0	0.53	244				244	*
WB	2T	308		0.53	163				163	
	R	148	0	1.00	148				148	
NB	3T	1523		0.37	564	154	1.10	169	733	*
	R	121	0	1.00	121				290	
SB	2T+TR	1255		0.37	464	100	1.10	110	574	
Note:									CLV	977
									v/c	0.630
									LOS	A
					Congestion Equiv.					
					1550					

Montgomery County LATR

Number of Lanes	Lane Use Factors	
	Left Turn LUF	Through LUF
1	1.1	1.00
2	0.6	0.53
3	0.4	0.37
4		0.30
5		0.25

5

Critical Lane Volume and Level of Service Calculations

Intersection: **05. Twinbrook Park / Chapman Ave**

Jurisdiction: **Montgomery County, MD**

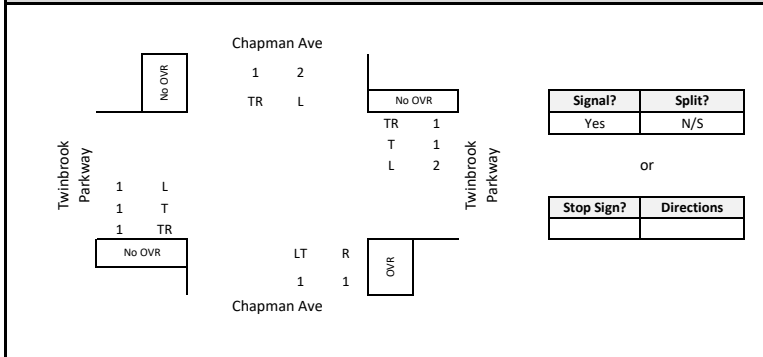
Scenario/Design Year: **Existing Conditions**

Computed by: **W+A**



WELLS + ASSOCIATES

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	T+TR	555	0	0.53	294	506	0.60	304	598	*	
WB	T+TR	549	0	0.53	291	40	1.10	44	335		
NB	LT	76		1.00	76				76	*	
SB	TR	50		1.00	50				50	*	
Note:									CLV	724	
									v/c	0.467	
									LOS	A	
					Congestion Equiv.						
					1550						

		Right Vol.		Adjacent Overlap Vol.		Overlap	
Approach	Excl. Right	AM	PM	AM	PM	AM	PM
Eastbound	No	n/a	n/a	n/a	n/a	0	0
Westbound	No	n/a	n/a	n/a	n/a	0	0
Northbound	Yes	216	564	506	463	216	278
Southbound	No	n/a	n/a	n/a	n/a	0	0

Right Turn Overlap

Approach	Excl. Right	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	Yes	216	564	1.00	506	463	0.60	216	278
Southbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0

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	T+TR	820	0	0.53	435	463	0.60	278	713	*	
WB	T+TR	724	0	0.53	384	68	1.10	75	459		
NB	LT	164		1.00	164				164	*	
SB	R	564	278	1.00	286				286	*	
Note:									CLV	1128	
									v/c	0.728	
									LOS	B	
					Congestion Equiv.						
					1550						

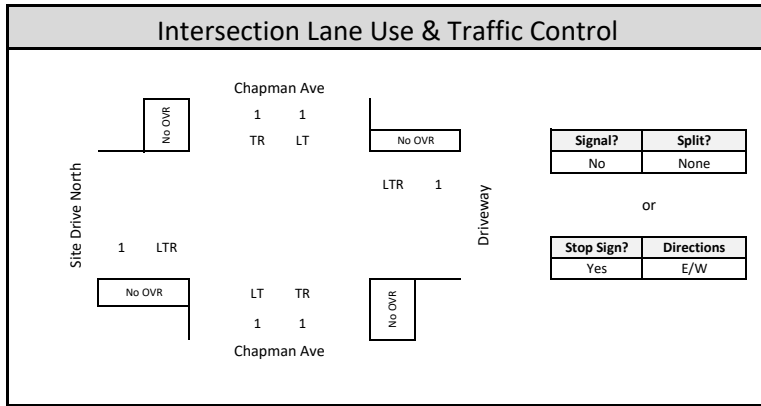
Montgomery County LATR

	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
1	1.1	1.00	
2	0.6	0.53	
3	0.4	0.37	
4		0.30	
5		0.25	

6

Critical Lane Volume and Level of Service Calculations

Intersection: 06. Chapman Ave / Site Drive North
 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	LTR	0	0	1.00	0	1	1.10	1	1	
WB	LTR	5	0	1.00	5	0	1.10	0	5	*
NB	T+TR	290	0	0.53	154	5	1.10	6	160	
SB	L	2	0	1.10	2	0	1.10	0	8	*
SB	T+TR	587	0	0.53	311	2	1.10	2	313	*
SB	L	5	0	1.10	6	2	1.10	2	8	
Note:									CLV	318
Congestion Equiv.									v/c	0.205
									LOS	A

Approach	Direction	Lane Group	Volume	RT Overlap	LUF	Opposing Lefts	LUF	Opposing Volume	CLV	Included in CLV
Eastbound	L	T+TR	290	0	0.53	5	1.10	6	160	
		L	2	0	1.10	0	1.10	0	8	*
Westbound	L	T+TR	587	0	0.53	2	1.10	2	313	*
		L	5	0	1.10	6	1.10	2	8	

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	5	0	1.00	5	4	1.10	4	9	
WB	LTR	12	0	1.00	12	6	1.10	7	19	*
NB	T+TR	705	0	0.53	374	5	1.10	6	380	*
SB	L	3	0	1.10	3	0	1.10	0	9	*
SB	T+TR	593	0	0.53	314	3	1.10	3	317	
SB	L	5	0	1.10	6	3	1.10	3	9	
Note:									CLV	399
Congestion Equiv.									v/c	0.257
									LOS	A

Right Turn Overlap

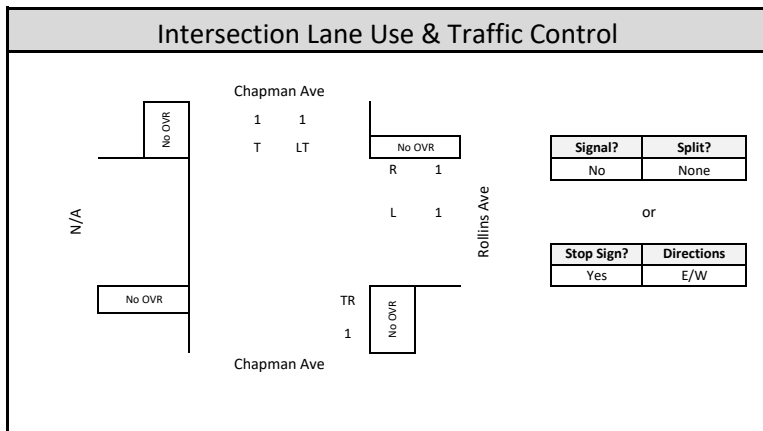
Approach	Excl. Right	Right Vol.			Adjacent Overlap Vol.			Overlap	
		AM	PM	LUF	AM	PM	LUF	AM	PM
Eastbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Westbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Northbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Southbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0

Montgomery County LATR

Number of Lanes	Lane Use Factors	
	Left Turn LUF	Through LUF
1	1.1	1.00
2	0.6	0.53
3	0.4	0.37
4		0.30
5		0.25

Critical Lane Volume and Level of Service Calculations

Intersection: 07. Chapman Ave / Rollins Ave
 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										
WB	L	35		1.10	39				39	*
	R	36	0	1.00	36				36	
NB	TR	375	0	1.00	375	36	1.10	40	415	*
SB	LT+T	546	0	0.53	289	0	1.10	0	289	
Note:									CLV	454
									v/c	0.293
									LOS	A
						Congestion Equiv.				
						1550				

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

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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

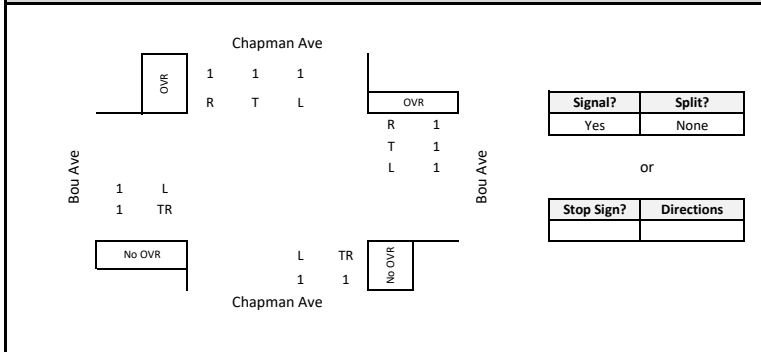
PM Peak Hour Critical Lane Volume Analysis

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	L	71		1.10	78				78	
	R	97	0	1.00	97				97	*
NB	TR	679	0	1.00	679	45	1.10	50	729	*
SB	LT+T	597	0	0.53	316	0	1.10	0	316	
Note:									CLV	826
									v/c	0.533
									LOS	A
						Congestion Equiv.				
						1550				

Montgomery County LATR

Number of Lanes	Lane Use Factors			GRADE	VALUE
	Left Turn LUF	Through LUF	LOS		
1	1.1	1.00	A	1000.00	
2	0.6	0.53	B	1150.00	
3	0.4	0.37	C	1300.00	
4		0.30	D	1450.00	
5		0.25	E	1600.00	
			F	1800.00	

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	153	0	1.00	153	6	1.10	7	160	
WB	T	91		1.00	91	186	1.10	205	296	*
WB	R	116	110	1.00	6				211	
NB	TR	45	0	1.00	45	100	1.10	110	155	
SB	T	79		1.00	79	4	1.10	4	83	*
SB	R	368	205	1.10	179				183	*
Note:									CLV	479
Congestion Equiv.									v/c	0.309
									LOS	A
										1550

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	295	0	1.00	295	15	1.10	17	312	
WB	T	167		1.00	167	317	1.10	349	516	*
WB	R	230	227	1.00	3				352	
NB	TR	169	0	1.00	169	206	1.10	227	396	*
SB	T	127		1.00	127	17	1.10	19	146	
SB	R	329	329	1.10	0				19	
Note:									CLV	912
Congestion Equiv.									v/c	0.588
									LOS	A
										1550

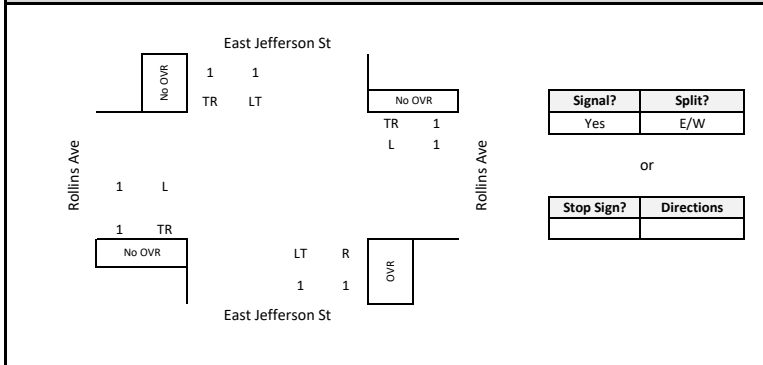
Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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	Yes	116	230	1.00	100	206	1.10	110	227
Northbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Southbound	Yes	368	329	1.00	186	317	1.10	205	329

Montgomery County LATR

	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
1		1.1	1.00
2		0.6	0.53
3		0.4	0.37
4			0.30
5			0.25

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	88	0	1.00	88				88	*
WB	LTR	342	0	1.00	342				342	*
NB	LT	252		1.10	277	20	1.10	22	299	*
SB	R	259	0	1.00	259				281	
SB	LTR	256	0	0.53	136	9	1.10	10	146	
Note:									CLV	729
Congestion Equiv.									v/c	0.470
									LOS	A

PM Peak Hour Critical Lane Volume Analysis

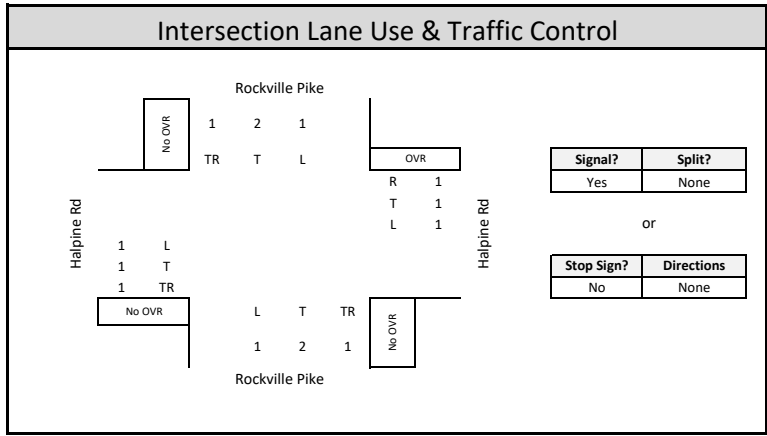
Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	LTR	80	0	1.00	80				80	*
WB	LTR	474	0	1.00	474				474	*
NB	LT	484		1.10	532	18	1.10	20	552	*
SB	R	373	0	1.00	373				393	
SB	LTR	299	0	0.53	158	7	1.10	8	166	
Note:									CLV	1106
Congestion Equiv.									v/c	0.714
									LOS	B

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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	Yes	259	373	1.00	272	331	0.00	0	0
Southbound	No	n/a	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	1.00
	2	0.6	0.53
	3	0.4	0.37
	4		0.30
	5		0.25



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	T+TR	108	0	0.53	57	7	1.10	8	65	*	
WB	LTR	102	67	0.37	13	42	1.10	46	46		
NB	2T+TR	811	0	0.37	300	63	1.10	69	369		
SB	2T+TR	1364	0	0.37	505	79	1.10	87	592	*	
Note:									CLV	657	
									v/c	0.424	
									LOS	A	
					Congestion Equiv.						
					1550						

Right Turn Overlap										
Approach	Excl. Right	Right Vol.			Adjacent Overlap 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	Yes	67	127	1.00	63	99	1.10	67	109	
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	

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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	Yes	67	127	1.00	63	99	1.10	67	109	
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	

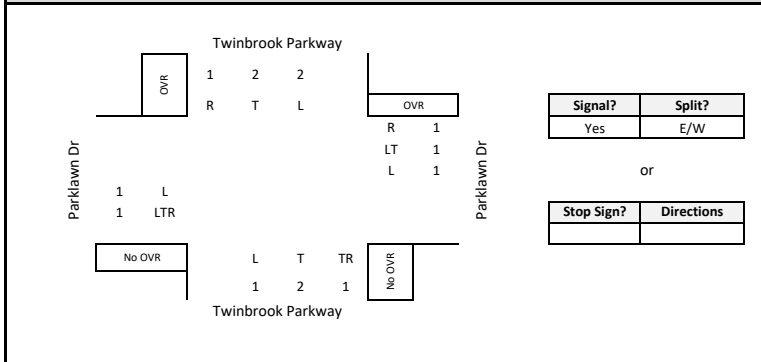
PM Peak Hour Critical Lane Volume Analysis

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	T+TR	153	0	0.53	81	18	1.10	20	101		
WB	LTR	215	109	0.37	39	98	1.10	108	147	*	
NB	2T+TR	1616	0	0.37	598	99	1.10	109	707		
SB	2T+TR	1387	0	0.37	513	197	1.10	217	730	*	
Note:									CLV	877	
									v/c	0.566	
									LOS	A	
					Congestion Equiv.						
					1550						

Montgomery County LATR

	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
1	1.1	1.00	
2	0.6	0.53	
3	0.4	0.37	
4		0.30	
5		0.25	

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	111	0	0.60	67				67	*	
WB	LT	182		0.60	109				109	#	
	R	124	107	1.00	17						
NB	2T+TR	796	0	0.37	295	179	0.60	107	402		
SB	T	765		0.53	405	50	1.10	55	460	*	
	R	63	40	1.00	23				23		
Note:									CLV	636	
									v/c	0.410	
									LOS	A	
					Congestion Equiv.						
					1550						

Right Turn Overlap												
Approach	Excl. Right	Right Vol.				Adjacent Overlap Vol.				Overlap		
		AM	PM	LUF	AM	PM	LUF	AM	PM			
Eastbound	No	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	0		
Westbound	Yes	124	272	1.00	179	133	0.60	107	80			
Northbound	No	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	0		
Southbound	Yes	63	32	1.00	36	44	1.10	40	32			

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	144	0	0.60	86				86	*	
WB	LT	343		0.60	206				206	*	
	R	272	80	1.00	192				192		
NB	2T+TR	1428	0	0.37	528	133	0.60	80	608	#	
SB	T	734	0	0.53	389	31	1.10	34	423		
	R	32	32	1.00	0				34		
Note:									CLV	900	
									v/c	0.581	
									LOS	A	
					Congestion Equiv.						
					1550						

Montgomery County LATR

	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
	1	1.1	1.00
	2	0.6	0.53
	3	0.4	0.37
	4		0.30
	5		0.25

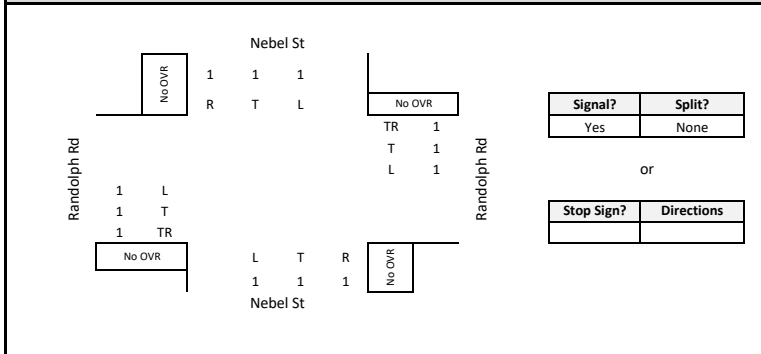
14

**Critical Lane Volume
and
Level of Service Calculations**

Intersection: **14. Nebel St / Randolph 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	T+TR	620	0	0.53	329	177	1.10	195	524	
WB	T+TR	1025	0	0.53	543	16	1.10	18	561	*
NB	T	54		1.00	54	105	1.10	116	170	*
SB	R	68		1.00	68				184	*
				1.00	70	80	1.10	88	158	
Note:									CLV	745
Congestion Equiv.									v/c	0.481
									LOS	A

Approach	Excl. Right	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

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	T+TR	1017	0	0.53	539	149	1.10	164	703	*
WB	T+TR	892	0	0.53	473	21	1.10	23	496	
NB	T	138		1.00	138	253	1.10	278	416	*
SB	R	247		1.00	247				525	*
				1.00	160	125	1.10	138	298	
				1.00	24				162	
Note:									CLV	1228
Congestion Equiv.									v/c	0.792
									LOS	C

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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

	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
1	1.1	1.00	
2	0.6	0.53	
3	0.4	0.37	
4		0.30	
5		0.25	

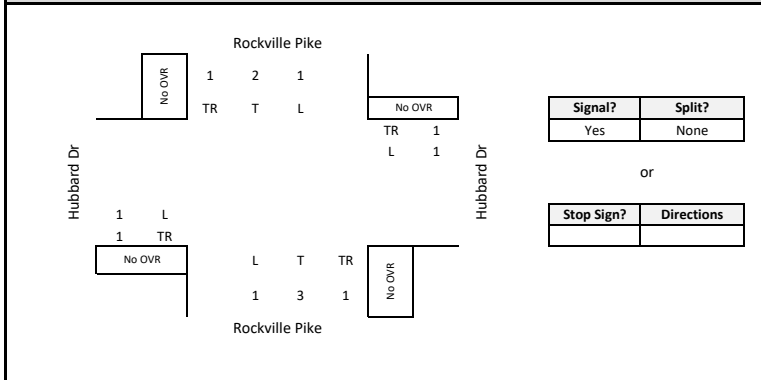
15

Critical Lane Volume and Level of Service Calculations

Intersection: 15. Rockville Pike / Hubbard 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	20	0	1.00	20	77	1.10	85	105	*
WB	TR	66	0	1.00	66	20	1.10	22	88	
NB	3T+TR	1215	0	0.30	365	48	1.10	53	418	
SB	2T+TR	1218	0	0.37	451	25	1.10	28	479	*
Note:								CLV	584	
								v/c	0.377	
								LOS	A	
								Congestion Equiv.		1550

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	44	0	1.00	44	186	1.10	205	249	
	L	40		1.10	44				249	
WB	TR	151	0	1.00	151	40	1.10	44	195	*
	L	186		1.10	205				249	
NB	3T+TR	2191	0	0.30	657	161	1.10	177	834	*
	L	18		1.10	20				197	
SB	2T+TR	1484	0	0.37	549	18	1.10	20	569	
				1.10	0				20	
Note:								CLV	1083	
								v/c	0.699	
								LOS	B	
								Congestion Equiv.		1550

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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

	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
1	1.1	1.00	
2	0.6	0.53	
3	0.4	0.37	
4		0.30	
5		0.25	

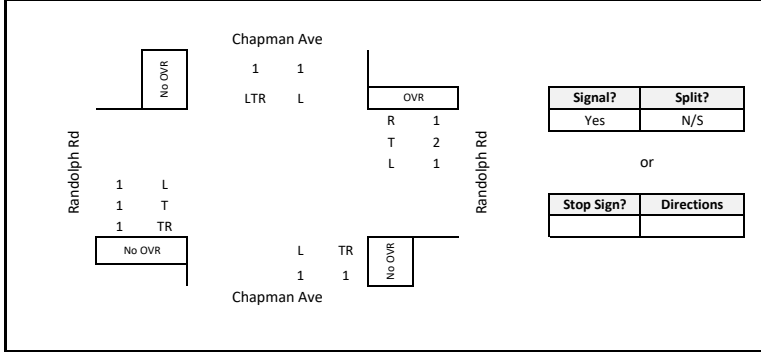
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Critical Lane Volume and Level of Service Calculations

Intersection: 16. Chapman Ave / Randolph 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	T+TR	673	0	0.53	357	9	1.10	10	367	
WB	T	1014		0.53	537	77	1.10	85	622	*
	R	66	30	1.00	36				121	
NB	LTR	21	0	1.00	21				21	*
SB	LTR	58	0	0.60	35				35	*
Note:									CLV	678
									v/c	0.437
									LOS	A
					Congestion Equiv.					
					1550					

PM Peak Hour Critical Lane Volume Analysis

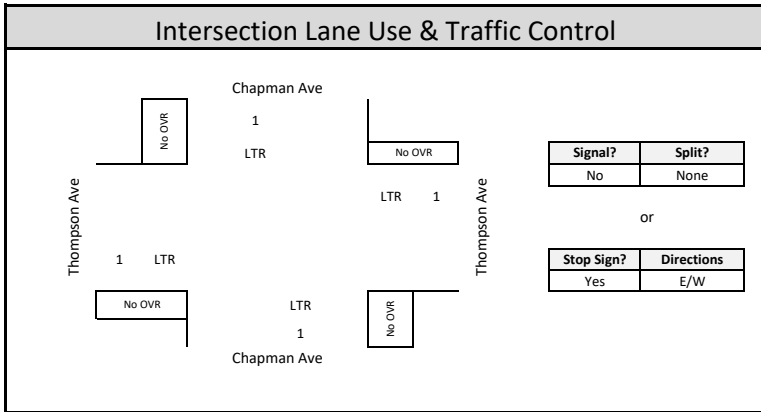
Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	T+TR	933	0	0.53	494	14	1.10	15	509	
WB	T	700		0.53	371	144	1.10	158	529	*
	R	127	127	1.00	0				158	
NB	LTR	94	0	1.00	94				94	*
SB	LTR	299	0	0.60	179				179	*
									0	
Note:									CLV	802
									v/c	0.517
									LOS	A
					Congestion Equiv.					
					1550					

Right Turn Overlap

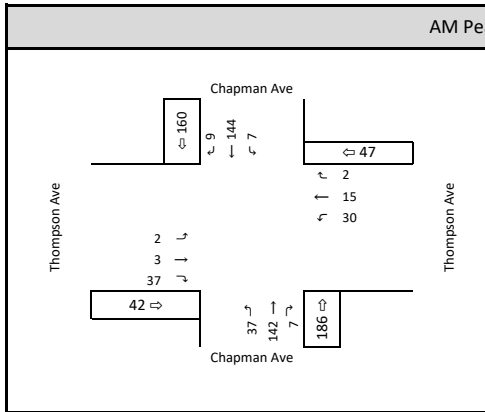
Approach	Excl. Right	Right Vol.			Adjacent Overlap Vol.			Overlap	
		AM	PM	LUF	AM	PM	LUF	AM	PM
Eastbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Westbound	Yes	66	127	1.00	27	152	1.10	30	127
Northbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Southbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0

Montgomery County LATR

	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
1	1	1.1	1.00
2	2	0.6	0.53
3	3	0.4	0.37
4	4		0.30
5	5		0.25



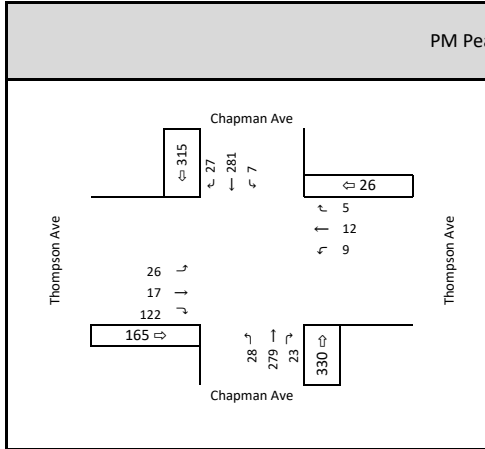
AM Peak Hour Critical Lane Volume Analysis



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	42	0	1.00	42				42	
WB	LTR	47	0	1.00	47				47	*
NB	LTR	186	0	1.00	186				186	*
SB	LTR	160	0	1.00	160				160	
Note:								CLV	233	
								v/c	0.150	
								LOS	A	
					Congestion Equiv.					
					1550					

Right Turn Overlap											
Approach	Excl. Right	Right Vol.				Adjacent Overlap 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	

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	165	0	1.00	165				165	*
WB	LTR	26	0	1.00	26				26	
NB	LTR	330	0	1.00	330				330	*
SB	LTR	315	0	1.00	315				315	
Note:								CLV	495	
								v/c	0.319	
								LOS	A	
					Congestion Equiv.					
					1550					

Montgomery County LATR

	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
1		1.1	1.00
2		0.6	0.53
3		0.4	0.37
4			0.30
5			0.25

Queues

1: Rockville Pike - 355 & Bou Ave

Existing AM




























Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	37	26	460	79	38	997	202	129	1376
v/c Ratio	0.45	0.12	0.73	0.23	0.45	0.37	0.22	0.30	0.44
Control Delay	108.2	1.2	82.4	17.4	108.4	27.9	7.4	28.8	23.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.9	0.6	0.0	0.8
Total Delay	108.2	1.2	82.4	17.4	108.4	28.8	8.1	28.8	24.7
Queue Length 50th (ft)	48	0	296	12	50	279	28	75	370
Queue Length 95th (ft)	93	0	350	63	95	353	87	133	484
Internal Link Dist (ft)	76			198		419			509
Turn Bay Length (ft)		90			175			245	
Base Capacity (vph)	170	280	671	371	171	2678	905	425	3094
Starvation Cap Reductn	0	0	0	0	0	1302	425	0	1265
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	0.22	0.09	0.69	0.21	0.22	0.72	0.42	0.30	0.75

Intersection Summary

HCM Signalized Intersection Capacity Analysis

1: Rockville Pike - 355 & Bou Ave

Existing AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				 				 			 	
Traffic Volume (vph)	14	21	25	442	11	65	36	957	194	124	1315	6
Future Volume (vph)	14	21	25	442	11	65	36	957	194	124	1315	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	11	11	11	12	12	12
Total Lost time (s)		6.0	6.0	7.0	7.0		5.0	5.5	5.5	6.0	6.0	
Lane Util. Factor		1.00	1.00	0.97	1.00		1.00	0.91	1.00	1.00	0.91	
Fr _t		1.00	0.85	1.00	0.87		1.00	1.00	0.85	1.00	1.00	
Fl _t Protected		0.98	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1704	1478	3204	1514		1711	4916	1531	1770	5082	
Fl _t Permitted		0.98	1.00	0.95	1.00		0.95	1.00	1.00	0.26	1.00	
Satd. Flow (perm)		1704	1478	3204	1514		1711	4916	1531	489	5082	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	15	22	26	460	11	68	38	997	202	129	1370	6
RTOR Reduction (vph)	0	0	25	0	55	0	0	0	73	0	0	0
Lane Group Flow (vph)	0	37	1	460	24	0	38	997	129	129	1376	0
Turn Type	Split	NA	Prot	Split	NA		Prot	NA	Prot	pm+pt	NA	
Protected Phases	3	3	3	4	4		1	5	5	6	2	
Permitted Phases										2		
Actuated Green, G (s)		8.6	8.6	39.2	39.2		8.6	106.8	106.8	119.6	119.6	
Effective Green, g (s)		8.6	8.6	39.2	39.2		8.6	106.8	106.8	119.6	119.6	
Actuated g/C Ratio		0.04	0.04	0.20	0.20		0.04	0.53	0.53	0.60	0.60	
Clearance Time (s)		6.0	6.0	7.0	7.0		5.0	5.5	5.5	6.0	6.0	
Vehicle Extension (s)		3.0	3.0	6.0	6.0		3.0	0.2	0.2	3.0	0.2	
Lane Grp Cap (vph)		73	63	627	296		73	2625	817	426	3039	
v/s Ratio Prot		c0.02	0.00	c0.14	0.02		c0.02	0.20	0.08	0.03	c0.27	
v/s Ratio Perm										0.15		
v/c Ratio		0.51	0.02	0.73	0.08		0.52	0.38	0.16	0.30	0.45	
Uniform Delay, d ₁		93.6	91.7	75.5	65.7		93.7	27.2	23.7	24.1	22.2	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d ₂		5.4	0.1	6.1	0.3		6.5	0.4	0.4	0.4	0.5	
Delay (s)		99.1	91.8	81.6	66.0		100.2	27.7	24.1	24.6	22.6	
Level of Service		F	F	F	E		F	C	C	C	C	
Approach Delay (s)		96.1			79.3			29.3			22.8	
Approach LOS		F			E			C			C	
Intersection Summary												
HCM 2000 Control Delay			35.7				HCM 2000 Level of Service				D	
HCM 2000 Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			200.0				Sum of lost time (s)				31.0	
Intersection Capacity Utilization			64.0%				ICU Level of Service				B	
Analysis Period (min)			15									
c Critical Lane Group												

Queues

2: Rockville Pike - 355 & Federal Plaza/Pike Center

Existing AM
























Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	19	56	17	88	902	31	1401
v/c Ratio	0.25	0.35	0.20	0.29	0.23	0.07	0.39
Control Delay	79.7	7.4	53.6	5.8	6.2	3.9	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Total Delay	79.7	7.4	53.6	5.8	6.2	3.9	8.2
Queue Length 50th (ft)	19	0	9	16	104	6	192
Queue Length 95th (ft)	49	8	37	33	139	15	253
Internal Link Dist (ft)	84		43		509		145
Turn Bay Length (ft)		150		245		175	
Base Capacity (vph)	262	313	312	422	3882	583	3630
Starvation Cap Reductn	0	0	0	0	0	0	1427
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.18	0.05	0.21	0.23	0.05	0.64

Intersection Summary

HCM Signalized Intersection Capacity Analysis
 2: Rockville Pike - 355 & Federal Plaza/Pike Center

Existing AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	2	54	7	2	8	84	855	11	30	1343	2
Future Volume (vph)	16	2	54	7	2	8	84	855	11	30	1343	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	16	16	16	11	11	11	10	10	10
Total Lost time (s)		6.5	6.5		6.5		5.0	5.5		5.0	5.5	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.91		1.00	0.91	
Frt		1.00	0.85		0.94		1.00	1.00		1.00	1.00	
Flt Protected		0.96	1.00		0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1664	1478		1937		1711	4907		1652	4745	
Flt Permitted		0.96	1.00		0.98		0.16	1.00		0.30	1.00	
Satd. Flow (perm)		1664	1478		1937		289	4907		523	4745	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	17	2	56	7	2	8	88	891	11	31	1399	2
RTOR Reduction (vph)	0	0	54	0	8	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	19	2	0	9	0	88	902	0	31	1401	0
Turn Type	Split	NA	Prot	Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	8	8	8	4	4		5	2		1	6	
Permitted Phases							2			6		
Actuated Green, G (s)		6.3	6.3		4.3		126.5	119.4		122.3	117.3	
Effective Green, g (s)		6.3	6.3		4.3		126.5	119.4		122.3	117.3	
Actuated g/C Ratio		0.04	0.04		0.03		0.80	0.75		0.77	0.74	
Clearance Time (s)		6.5	6.5		6.5		5.0	5.5		5.0	5.5	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	0.2		3.0	0.2	
Lane Grp Cap (vph)		66	58		52		294	3696		439	3511	
v/s Ratio Prot		c0.01	0.00		c0.00		c0.01	0.18		0.00	c0.30	
v/s Ratio Perm							0.23			0.05		
v/c Ratio		0.29	0.04		0.18		0.30	0.24		0.07	0.40	
Uniform Delay, d1		73.9	73.2		75.4		4.1	5.9		4.2	7.6	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.4	0.3		1.6		0.6	0.2		0.1	0.3	
Delay (s)		76.3	73.5		77.0		4.7	6.1		4.3	7.9	
Level of Service		E	E		E		A	A		A	A	
Approach Delay (s)		74.2			77.0			5.9			7.9	
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			0.38									
Actuated Cycle Length (s)			158.5				Sum of lost time (s)			23.5		
Intersection Capacity Utilization			52.1%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

4: Rockville Pike - 355 & Rollins Avenue /Twinbrook Parkway

Existing AM















Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	317	317	137	98	763	108	188	1399
v/c Ratio	0.70	0.64	0.61	0.35	0.24	0.11	0.37	0.42
Control Delay	73.9	70.3	76.1	9.1	11.6	1.5	7.5	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.9	70.3	76.1	9.1	11.6	1.5	7.5	13.0
Queue Length 50th (ft)	169	167	137	22	109	0	45	224
Queue Length 95th (ft)	214	211	204	46	159	18	83	317
Internal Link Dist (ft)	1347	625			260			1225
Turn Bay Length (ft)			150			300	400	
Base Capacity (vph)	999	1105	494	364	3148	1023	665	3299
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	0.32	0.29	0.28	0.27	0.24	0.11	0.28	0.42

Intersection Summary

HCM Signalized Intersection Capacity Analysis

4: Rockville Pike - 355 & Rollins Avenue /Twinbrook Parkway

Existing AM

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑			↑↑	↑	↑	↑↑↑	↑	↑	↑↑↑		
Traffic Volume (vph)	0	245	66	0	311	134	96	748	106	184	1328	43	
Future Volume (vph)	0	245	66	0	311	134	96	748	106	184	1328	43	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	10	10	10	12	12	12	10	10	10	11	11	11	
Total Lost time (s)		7.5			7.5	7.5	7.0	5.5	5.5	7.0	5.5		
Lane Util. Factor		0.95			0.95	1.00	1.00	0.91	1.00	1.00	0.91		
Frt		0.97			1.00	0.85	1.00	1.00	0.85	1.00	1.00		
Flt Protected		1.00			1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)		3199			3539	1583	1652	4746	1478	1711	4893		
Flt Permitted		1.00			1.00	1.00	0.16	1.00	1.00	0.33	1.00		
Satd. Flow (perm)		3199			3539	1583	274	4746	1478	595	4893		
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	
Adj. Flow (vph)	0	250	67	0	317	137	98	763	108	188	1355	44	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	36	0	1	0	
Lane Group Flow (vph)	0	317	0	0	317	137	98	763	72	188	1398	0	
Turn Type		NA			NA	Prot	pm+pt	NA	Prot	pm+pt	NA		
Protected Phases		4			8	8	1	6	6	5	2		
Permitted Phases							6			2			
Actuated Green, G (s)		22.6			22.6	22.6	115.6	106.1	106.1	119.2	107.9		
Effective Green, g (s)		22.6			22.6	22.6	115.6	106.1	106.1	119.2	107.9		
Actuated g/C Ratio		0.14			0.14	0.14	0.72	0.66	0.66	0.75	0.67		
Clearance Time (s)		7.5			7.5	7.5	7.0	5.5	5.5	7.0	5.5		
Vehicle Extension (s)		4.0			4.0	4.0	4.0	0.2	0.2	4.0	0.2		
Lane Grp Cap (vph)		451			499	223	279	3147	980	522	3299		
v/s Ratio Prot		c0.10			0.09	0.09	0.02	0.16	0.05	c0.03	c0.29		
v/s Ratio Perm							0.23			0.24			
v/c Ratio		0.70			0.64	0.61	0.35	0.24	0.07	0.36	0.42		
Uniform Delay, d1		65.5			64.8	64.6	7.4	10.8	9.5	6.0	11.9		
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2		5.3			3.0	5.7	1.0	0.2	0.1	0.6	0.4		
Delay (s)		70.8			67.8	70.3	8.4	11.0	9.7	6.6	12.3		
Level of Service		E			E	E	A	B	A	A	B		
Approach Delay (s)		70.8			68.5			10.6			11.6		
Approach LOS		E			E			B			B		
Intersection Summary													
HCM 2000 Control Delay			24.7									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.47										
Actuated Cycle Length (s)			160.0									Sum of lost time (s)	20.0
Intersection Capacity Utilization			57.5%									ICU Level of Service	B
Analysis Period (min)			15										
c	Critical Lane Group												

Queues

5: Chapman Ave & Twinbrook Parkway

Existing AM



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	41	572	522	566	78	223	87	52	25
v/c Ratio	0.09	0.32	0.83	0.24	0.62	0.38	0.46	0.51	0.13
Control Delay	10.6	25.4	86.0	10.1	105.4	6.3	93.4	102.7	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.6	25.4	86.0	10.1	105.4	6.3	93.4	102.7	1.3
Queue Length 50th (ft)	11	200	326	118	96	0	55	64	0
Queue Length 95th (ft)	27	294	380	176	156	63	87	116	0
Internal Link Dist (ft)		625		1310	176			558	
Turn Bay Length (ft)	175		300				300		300
Base Capacity (vph)	682	1797	875	2368	180	670	338	183	261
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	0.06	0.32	0.60	0.24	0.43	0.33	0.26	0.28	0.10

Intersection Summary

HCM Signalized Intersection Capacity Analysis

5: Chapman Ave & Twinbrook Parkway

Existing AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations														
Traffic Volume (vph)	40	519	36	506	426	123	28	48	216	84	50	24		
Future Volume (vph)	40	519	36	506	426	123	28	48	216	84	50	24		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width	10	10	10	11	11	11	10	10	10	10	10	10		
Total Lost time (s)	5.5	6.0		5.5	6.0			6.5	6.5	6.5	6.5	6.5		
Lane Util. Factor	1.00	0.95		0.97	0.95			1.00	1.00	0.97	1.00	1.00		
Frt	1.00	0.99		1.00	0.97			1.00	0.85	1.00	1.00	0.85		
Flt Protected	0.95	1.00		0.95	1.00			0.98	1.00	0.95	1.00	1.00		
Satd. Flow (prot)	1652	3271		3319	3306			1707	1478	3204	1739	1478		
Flt Permitted	0.44	1.00		0.95	1.00			0.98	1.00	0.95	1.00	1.00		
Satd. Flow (perm)	764	3271		3319	3306			1707	1478	3204	1739	1478		
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97		
Adj. Flow (vph)	41	535	37	522	439	127	29	49	223	87	52	25		
RTOR Reduction (vph)	0	2	0	0	8	0	0	0	157	0	0	24		
Lane Group Flow (vph)	41	570	0	522	558	0	0	78	66	87	52	1		
Turn Type	pm+pt	NA		Prot	NA		Split	NA	pt+ov	Split	NA	Perm		
Protected Phases	5	2		1	6		4	4	4	3	3			
Permitted Phases	2											3		
Actuated Green, G (s)	109.7	104.1		35.7	134.2			14.0	56.2	11.2	11.2	11.2		
Effective Green, g (s)	109.7	104.1		35.7	134.2			14.0	56.2	11.2	11.2	11.2		
Actuated g/C Ratio	0.58	0.55		0.19	0.71			0.07	0.30	0.06	0.06	0.06		
Clearance Time (s)	5.5	6.0		5.5	6.0			6.5		6.5	6.5	6.5		
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0		
Lane Grp Cap (vph)	468	1796		625	2341			126	438	189	102	87		
v/s Ratio Prot	0.00	c0.17		c0.16	0.17			c0.05	0.04	0.03	c0.03			
v/s Ratio Perm	0.05											0.00		
v/c Ratio	0.09	0.32		0.84	0.24			0.62	0.15	0.46	0.51	0.02		
Uniform Delay, d1	17.2	23.3		74.1	9.7			85.2	49.1	86.2	86.5	84.0		
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2	0.1	0.5		9.4	0.2			8.7	0.2	1.8	4.0	0.1		
Delay (s)	17.3	23.8		83.5	9.9			93.9	49.2	88.0	90.5	84.0		
Level of Service	B	C		F	A			F	D	F	F	F		
Approach Delay (s)		23.3			45.2			60.8			88.2			
Approach LOS		C			D			E			F			
Intersection Summary														
HCM 2000 Control Delay			44.5									HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio			0.47											
Actuated Cycle Length (s)			189.5								24.5			
Intersection Capacity Utilization			55.7%										ICU Level of Service	B
Analysis Period (min)			15											
c Critical Lane Group														

Queues

9: Chapman Ave & Bou Ave

Existing AM



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	196	161	6	96	122	4	47	105	83	387
v/c Ratio	0.31	0.18	0.01	0.16	0.20	0.01	0.07	0.20	0.12	0.38
Control Delay	23.7	20.2	37.3	38.9	6.6	31.0	30.0	33.8	31.9	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay	23.7	20.2	37.3	38.9	6.6	31.0	30.0	33.8	31.9	2.5
Queue Length 50th (ft)	117	85	4	72	0	3	30	74	56	0
Queue Length 95th (ft)	169	131	17	126	49	12	62	129	102	46
Internal Link Dist (ft)		200		800			128		31	
Turn Bay Length (ft)	275				250	70				
Base Capacity (vph)	851	1495	404	618	603	506	712	523	720	1424
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	235
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.11	0.01	0.16	0.20	0.01	0.07	0.20	0.12	0.33

Intersection Summary

HCM Signalized Intersection Capacity Analysis

9: Chapman Ave & Bou Ave

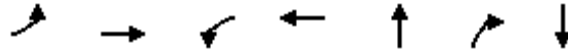
Existing AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	186	116	37	6	91	116	4	41	4	100	79	368
Future Volume (vph)	186	116	37	6	91	116	4	41	4	100	79	368
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	10	10	10	10	10	10
Total Lost time (s)	5.5	5.5		5.5	5.5	5.5	6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.96		1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1652	1675		1652	1739	1478	1652	1716		1652	1739	1478
Flt Permitted	0.63	1.00		0.66	1.00	1.00	0.70	1.00		0.73	1.00	1.00
Satd. Flow (perm)	1095	1675		1139	1739	1478	1222	1716		1263	1739	1478
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	196	122	39	6	96	122	4	43	4	105	83	387
RTOR Reduction (vph)	0	7	0	0	0	79	0	1	0	0	0	163
Lane Group Flow (vph)	196	154	0	6	96	43	4	46	0	105	83	224
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	pt+ov
Protected Phases	1	6			2			4			8	8 1
Permitted Phases	6			2		2	4			8		
Actuated Green, G (s)	87.4	87.4		60.1	60.1	60.1	70.0	70.0		70.0	70.0	97.8
Effective Green, g (s)	87.4	87.4		60.1	60.1	60.1	70.0	70.0		70.0	70.0	97.8
Actuated g/C Ratio	0.52	0.52		0.36	0.36	0.36	0.41	0.41		0.41	0.41	0.58
Clearance Time (s)	5.5	5.5		5.5	5.5	5.5	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	6.0	0.2		0.2	0.2	0.2	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	638	866		405	618	525	506	711		523	720	855
v/s Ratio Prot	c0.04	0.09			0.06			0.03			0.05	c0.15
v/s Ratio Perm	c0.12			0.01		0.03	0.00			0.08		
v/c Ratio	0.31	0.18		0.01	0.16	0.08	0.01	0.06		0.20	0.12	0.26
Uniform Delay, d1	22.4	21.7		35.2	37.1	36.1	29.1	29.8		31.6	30.4	17.6
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.8	0.0		0.1	0.5	0.3	0.0	0.0		0.9	0.3	0.5
Delay (s)	23.2	21.7		35.3	37.6	36.4	29.1	29.8		32.4	30.7	18.1
Level of Service	C	C		D	D	D	C	C		C	C	B
Approach Delay (s)		22.5			36.9			29.7			22.5	
Approach LOS		C			D			C			C	
Intersection Summary												
HCM 2000 Control Delay			25.5									HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio			0.30									
Actuated Cycle Length (s)			168.9							17.0		
Intersection Capacity Utilization			47.4%									ICU Level of Service A
Analysis Period (min)			15									
c Critical Lane Group												

Queues

11: East Jefferson Street & Rollins Avenue

Existing AM























Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	18	77	296	76	274	282	279
v/c Ratio	0.14	0.52	0.84	0.20	0.25	0.21	0.15
Control Delay	47.9	47.1	61.4	18.5	13.0	0.6	11.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.9	47.1	61.4	18.5	13.0	0.6	11.1
Queue Length 50th (ft)	12	37	200	20	86	0	41
Queue Length 95th (ft)	34	83	276	55	172	13	80
Internal Link Dist (ft)		438		1347	257		274
Turn Bay Length (ft)							
Base Capacity (vph)	235	253	470	485	1079	1416	1894
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	0.08	0.30	0.63	0.16	0.25	0.20	0.15

Intersection Summary

HCM Signalized Intersection Capacity Analysis

11: East Jefferson Street & Rollins Avenue

Existing AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	44	27	272	32	38	9	243	259	20	218	18
Future Volume (vph)	17	44	27	272	32	38	9	243	259	20	218	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Total Lost time (s)	4.5	4.5		4.5	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	
Frt	1.00	0.94		1.00	0.92			1.00	0.85		0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00		1.00	
Satd. Flow (prot)	1711	1699		1711	1655			1797	1531		3371	
Flt Permitted	0.95	1.00		0.95	1.00			0.99	1.00		0.92	
Satd. Flow (perm)	1711	1699		1711	1655			1778	1531		3111	
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)	18	48	29	296	35	41	10	264	282	22	237	20
RTOR Reduction (vph)	0	21	0	0	33	0	0	0	55	0	4	0
Lane Group Flow (vph)	18	56	0	296	43	0	0	274	227	0	275	0
Turn Type	Split	NA		Split	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases	4	4		3	3			2	3		6	
Permitted Phases							2		2	6		
Actuated Green, G (s)	7.2	7.2		22.5	22.5			65.3	87.8		65.3	
Effective Green, g (s)	7.2	7.2		22.5	22.5			65.3	87.8		65.3	
Actuated g/C Ratio	0.07	0.07		0.21	0.21			0.60	0.81		0.60	
Clearance Time (s)	4.5	4.5		4.5	4.5			5.0	4.5		5.0	
Vehicle Extension (s)	2.0	2.0		1.0	1.0			5.0	1.0		5.0	
Lane Grp Cap (vph)	113	112		353	341			1065	1233		1863	
v/s Ratio Prot	0.01	c0.03		c0.17	0.03				0.04			
v/s Ratio Perm								c0.15	0.11		0.09	
v/c Ratio	0.16	0.50		0.84	0.13			0.26	0.18		0.15	
Uniform Delay, d1	48.0	49.1		41.5	35.2			10.4	2.4		9.6	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.2	1.3		15.2	0.1			0.6	0.0		0.2	
Delay (s)	48.3	50.4		56.7	35.3			10.9	2.4		9.8	
Level of Service	D	D		E	D			B	A		A	
Approach Delay (s)		50.0			52.3			6.6			9.8	
Approach LOS		D			D			A			A	
Intersection Summary												
HCM 2000 Control Delay			23.5	HCM 2000 Level of Service				C				
HCM 2000 Volume to Capacity ratio			0.41									
Actuated Cycle Length (s)			109.0	Sum of lost time (s)				14.0				
Intersection Capacity Utilization			53.5%	ICU Level of Service				A				
Analysis Period (min)			15									
c Critical Lane Group												

Queues

12: Rockville Pike - 355/Rockville Pike- 355 & Halpine Road

Existing AM



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	44	112	7	29	70	82	845	66	1421
v/c Ratio	0.45	0.39	0.08	0.22	0.38	0.25	0.22	0.13	0.37
Control Delay	97.0	43.6	80.6	84.3	16.5	3.9	5.4	2.8	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	97.0	43.6	80.6	84.3	16.5	3.9	5.4	2.8	7.3
Queue Length 50th (ft)	53	33	8	34	0	12	86	9	178
Queue Length 95th (ft)	100	68	27	71	44	24	118	21	256
Internal Link Dist (ft)		312		302			1225		274
Turn Bay Length (ft)	250				450	165		175	
Base Capacity (vph)	440	1083	406	596	560	628	3871	584	3813
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	0.10	0.10	0.02	0.05	0.13	0.13	0.22	0.11	0.37

Intersection Summary

HCM Signalized Intersection Capacity Analysis

12: Rockville Pike - 355/Rockville Pike- 355 & Halpine Road

Existing AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗	↗	↖	↗		↖	↗	
Traffic Volume (vph)	42	52	56	7	28	67	79	794	17	63	1344	20
Future Volume (vph)	42	52	56	7	28	67	79	794	17	63	1344	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	5.5	5.5		5.5	5.5	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.91		1.00	0.91	
Frt	1.00	0.92		1.00	1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3264		1770	1863	1583	1711	4900		1711	4905	
Flt Permitted	0.74	1.00		0.68	1.00	1.00	0.16	1.00		0.32	1.00	
Satd. Flow (perm)	1375	3264		1269	1863	1583	288	4900		578	4905	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	44	54	58	7	29	70	82	827	18	66	1400	21
RTOR Reduction (vph)	0	54	0	0	0	65	0	0	0	0	0	0
Lane Group Flow (vph)	44	58	0	7	29	5	82	845	0	66	1421	0
Turn Type	Perm	NA		Perm	NA	Prot	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8	8	1	6		5	2	
Permitted Phases	4			8			6			2		
Actuated Green, G (s)	13.4	13.4		13.4	13.4	13.4	158.9	148.0		154.3	145.7	
Effective Green, g (s)	13.4	13.4		13.4	13.4	13.4	158.9	148.0		154.3	145.7	
Actuated g/C Ratio	0.07	0.07		0.07	0.07	0.07	0.85	0.79		0.82	0.78	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	5.5	5.5		5.5	5.5	
Vehicle Extension (s)	5.0	5.0		5.0	5.0	5.0	5.0	0.2		5.0	0.2	
Lane Grp Cap (vph)	98	233		90	133	113	326	3867		527	3811	
v/s Ratio Prot		0.02			0.02	0.00	c0.01	0.17		0.01	c0.29	
v/s Ratio Perm	c0.03			0.01			0.20			0.10		
v/c Ratio	0.45	0.25		0.08	0.22	0.04	0.25	0.22		0.13	0.37	
Uniform Delay, d1	83.5	82.3		81.3	82.1	81.1	3.0	5.0		3.1	6.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.7	1.2		0.8	1.7	0.3	0.9	0.1		0.2	0.3	
Delay (s)	90.2	83.5		82.1	83.8	81.4	3.8	5.2		3.3	6.8	
Level of Service	F	F		F	F	F	A	A		A	A	
Approach Delay (s)		85.4			82.1			5.0			6.7	
Approach LOS		F			F			A			A	

Intersection Summary

HCM 2000 Control Delay	13.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	187.5	Sum of lost time (s)	17.5
Intersection Capacity Utilization	54.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Queues

13: Twinbrook Parkway & Parklawn Drive

Existing AM



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	34	84	97	96	132	53	847	190	881
v/c Ratio	0.36	0.68	0.71	0.69	0.37	0.13	0.27	0.23	0.39
Control Delay	107.3	84.2	122.1	120.1	12.2	8.9	12.9	8.3	15.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	107.3	84.2	122.1	120.1	12.2	8.9	12.9	8.3	15.1
Queue Length 50th (ft)	50	73	145	144	0	18	148	32	259
Queue Length 95th (ft)	96	145	218	216	67	41	217	59	380
Internal Link Dist (ft)		332		479			1310		374
Turn Bay Length (ft)			200			190		240	
Base Capacity (vph)	231	250	298	302	688	540	3128	1375	2283
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	0.15	0.34	0.33	0.32	0.19	0.10	0.27	0.14	0.39

Intersection Summary

HCM Signalized Intersection Capacity Analysis

13: Twinbrook Parkway & Parklawn Drive

Existing AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↔		↖	↖	↖	↖	↑↑↑		↖↖	↖↖	
Traffic Volume (vph)	36	24	51	163	19	124	50	519	277	179	765	63
Future Volume (vph)	36	24	51	163	19	124	50	519	277	179	765	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	11	11	10	10	10	10	10	10
Total Lost time (s)	6.5	6.5		7.0	7.0	7.0	8.0	6.0		8.0	6.0	
Lane Util. Factor	0.95	0.95		0.95	0.95	1.00	1.00	0.91		0.97	0.95	
Frt	1.00	0.90		1.00	1.00	0.85	1.00	0.95		1.00	0.99	
Flt Protected	0.95	1.00		0.95	0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1681	1595		1625	1645	1531	1652	4498		3204	3266	
Flt Permitted	0.95	1.00		0.95	0.96	1.00	0.29	1.00		0.30	1.00	
Satd. Flow (perm)	1681	1595		1625	1645	1531	504	4498		1016	3266	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	38	26	54	173	20	132	53	552	295	190	814	67
RTOR Reduction (vph)	0	33	0	0	0	111	0	19	0	0	2	0
Lane Group Flow (vph)	34	51	0	97	96	21	53	828	0	190	879	0
Turn Type	Split	NA		Split	NA	pt+ov	pm+pt	NA		pm+pt	NA	
Protected Phases	3	3		4	4	4	1	2		1	6	
Permitted Phases							2			6		
Actuated Green, G (s)	12.3	12.3		18.5	18.5	34.4	157.7	150.3		160.7	151.8	
Effective Green, g (s)	12.3	12.3		18.5	18.5	34.4	157.7	150.3		160.7	151.8	
Actuated g/C Ratio	0.06	0.06		0.09	0.09	0.16	0.73	0.69		0.74	0.70	
Clearance Time (s)	6.5	6.5		7.0	7.0		8.0	6.0		8.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	0.2		3.0	0.2	
Lane Grp Cap (vph)	95	90		138	139	242	404	3108		840	2279	
v/s Ratio Prot	0.02	c0.03		c0.06	0.06	0.01	0.00	0.18		c0.01	c0.27	
v/s Ratio Perm							0.09			0.16		
v/c Ratio	0.36	0.57		0.70	0.69	0.09	0.13	0.27		0.23	0.39	
Uniform Delay, d1	98.8	100.0		96.8	96.7	78.1	9.1	12.7		8.1	13.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.3	7.9		15.0	13.8	0.2	0.1	0.2		0.1	0.5	
Delay (s)	101.1	107.9		111.8	110.5	78.3	9.2	12.9		8.3	14.1	
Level of Service	F	F		F	F	E	A	B		A	B	
Approach Delay (s)		106.0			97.8			12.7			13.0	
Approach LOS		F			F			B			B	

Intersection Summary

HCM 2000 Control Delay	28.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	217.5	Sum of lost time (s)	27.5
Intersection Capacity Utilization	55.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Queues

14: Nebel Street & Randolph Road

Existing AM

























Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	17	653	186	1079	84	57	72	111	74	15
v/c Ratio	0.05	0.30	0.33	0.43	0.38	0.42	0.62	0.44	0.45	0.11
Control Delay	9.4	17.1	10.0	15.0	77.0	102.6	117.5	78.8	100.6	89.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.4	17.1	10.0	15.0	77.0	102.6	117.5	78.8	100.6	89.1
Queue Length 50th (ft)	6	197	69	344	103	79	101	138	102	20
Queue Length 95th (ft)	17	297	120	470	154	133	163	196	162	48
Internal Link Dist (ft)		613		257		122			1618	
Turn Bay Length (ft)	140		125		100			250		
Base Capacity (vph)	454	2156	756	2491	342	417	355	350	432	367
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.30	0.25	0.43	0.25	0.14	0.20	0.32	0.17	0.04

Intersection Summary

HCM Signalized Intersection Capacity Analysis

14: Nebel Street & Randolph Road

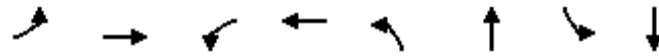
Existing AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	564	56	177	933	92	80	54	68	105	70	14
Future Volume (vph)	16	564	56	177	933	92	80	54	68	105	70	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	12	12	12	11	11	11	12	12	12
Total Lost time (s)	6.0	6.5		6.0	6.5		6.5	6.5	6.5	6.5	6.5	6.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1652	3258		1770	3491		1711	1801	1531	1770	1863	1583
Flt Permitted	0.24	1.00		0.36	1.00		0.71	1.00	1.00	0.62	1.00	1.00
Satd. Flow (perm)	414	3258		667	3491		1276	1801	1531	1159	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	17	594	59	186	982	97	84	57	72	111	74	15
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	17	653	0	186	1079	0	84	57	72	111	74	15
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Prot	pm+pt	NA	Prot
Protected Phases	1	6		5	2		3	8	8	7	4	4
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	146.5	142.6		161.1	151.2		32.3	16.6	16.6	37.5	19.2	19.2
Effective Green, g (s)	146.5	142.6		161.1	151.2		32.3	16.6	16.6	37.5	19.2	19.2
Actuated g/C Ratio	0.68	0.66		0.75	0.70		0.15	0.08	0.08	0.17	0.09	0.09
Clearance Time (s)	6.0	6.5		6.0	6.5		6.5	6.5	6.5	6.5	6.5	6.5
Vehicle Extension (s)	3.0	5.0		3.0	5.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	303	2155		562	2449		222	138	117	253	165	141
v/s Ratio Prot	0.00	0.20		c0.02	c0.31		0.03	0.03	c0.05	c0.04	c0.04	0.01
v/s Ratio Perm	0.04			0.23			0.03			0.04		
v/c Ratio	0.06	0.30		0.33	0.44		0.38	0.41	0.62	0.44	0.45	0.11
Uniform Delay, d1	11.7	15.4		8.5	13.9		81.9	94.8	96.4	78.4	93.1	90.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.4		0.3	0.6		1.5	2.7	10.5	1.7	2.6	0.5
Delay (s)	11.7	15.8		8.9	14.5		83.4	97.5	106.9	80.1	95.8	90.7
Level of Service	B	B		A	B		F	F	F	F	F	F
Approach Delay (s)		15.7			13.6			95.1			86.7	
Approach LOS		B			B			F			F	
Intersection Summary												
HCM 2000 Control Delay			27.8	HCM 2000 Level of Service				C				
HCM 2000 Volume to Capacity ratio			0.46									
Actuated Cycle Length (s)			215.5	Sum of lost time (s)				25.5				
Intersection Capacity Utilization			60.4%	ICU Level of Service				B				
Analysis Period (min)			15									
c Critical Lane Group												

Queues

15: Rockville Pike - 355 & Hubbard Drive/Plaza Driveway

Existing AM



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	20	20	79	67	26	1239	49	1243
v/c Ratio	0.15	0.11	0.56	0.31	0.07	0.27	0.14	0.33
Control Delay	65.0	34.9	81.5	25.6	4.0	7.3	4.4	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Total Delay	65.0	34.9	81.5	25.6	4.0	7.3	4.4	7.5
Queue Length 50th (ft)	19	7	79	15	4	114	8	155
Queue Length 95th (ft)	47	34	134	63	12	154	20	209
Internal Link Dist (ft)		170		149		168		419
Turn Bay Length (ft)							180	
Base Capacity (vph)	324	419	349	454	509	4553	491	3735
Starvation Cap Reductn	0	0	0	0	0	0	0	1762
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	0.06	0.05	0.23	0.15	0.05	0.27	0.10	0.63

Intersection Summary

HCM Signalized Intersection Capacity Analysis

15: Rockville Pike - 355 & Hubbard Drive/Plaza Driveway

Existing AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷		↶	↑↑↑		↶	↑↑↑	
Traffic Volume (vph)	20	7	13	77	16	50	25	1099	116	48	1170	48
Future Volume (vph)	20	7	13	77	16	50	25	1099	116	48	1170	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	12	11	11	11	11	11	11
Total Lost time (s)	7.0	7.0		7.0	7.0		6.0	5.5		6.0	5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.86		1.00	0.91	
Frt	1.00	0.90		1.00	0.89		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1711	1625		1770	1650		1711	6106		1711	4887	
Flt Permitted	0.71	1.00		0.74	1.00		0.20	1.00		0.19	1.00	
Satd. Flow (perm)	1284	1625		1386	1650		363	6106		336	4887	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	20	7	13	79	16	51	26	1121	118	49	1194	49
RTOR Reduction (vph)	0	12	0	0	46	0	0	6	0	0	1	0
Lane Group Flow (vph)	20	8	0	79	21	0	26	1233	0	49	1242	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	16.3	16.3		16.3	16.3		121.8	116.8		125.6	118.7	
Effective Green, g (s)	16.3	16.3		16.3	16.3		121.8	116.8		125.6	118.7	
Actuated g/C Ratio	0.10	0.10		0.10	0.10		0.77	0.74		0.79	0.75	
Clearance Time (s)	7.0	7.0		7.0	7.0		6.0	5.5		6.0	5.5	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	0.2		5.0	0.2	
Lane Grp Cap (vph)	132	167		142	169		321	4499		326	3659	
v/s Ratio Prot		0.01			0.01		0.00	0.20		c0.01	c0.25	
v/s Ratio Perm	0.02			c0.06			0.06			0.11		
v/c Ratio	0.15	0.05		0.56	0.13		0.08	0.27		0.15	0.34	
Uniform Delay, d1	64.8	64.1		67.7	64.6		4.4	6.9		3.7	6.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.1	0.3		7.8	0.7		0.2	0.2		0.4	0.3	
Delay (s)	65.9	64.4		75.5	65.3		4.7	7.0		4.1	7.0	
Level of Service	E	E		E	E		A	A		A	A	
Approach Delay (s)		65.1			70.8			7.0			6.8	
Approach LOS		E			E			A			A	

Intersection Summary

HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	158.5	Sum of lost time (s)	18.5
Intersection Capacity Utilization	54.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Queues

16: Chapman Ave & Josiah Henson Parkway/Randolph Road

Existing AM



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	89	774	10	1166	76	13	12	28	39
v/c Ratio	0.25	0.30	0.02	0.50	0.07	0.15	0.13	0.25	0.37
Control Delay	6.0	7.4	5.3	12.8	0.1	70.1	52.1	69.5	74.6
Queue Delay	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0
Total Delay	6.0	7.4	5.3	13.2	0.1	70.1	52.1	69.5	74.6
Queue Length 50th (ft)	19	107	2	283	0	12	7	27	38
Queue Length 95th (ft)	37	202	8	399	0	35	28	60	76
Internal Link Dist (ft)		321		613			346		212
Turn Bay Length (ft)	350		165		215	250			
Base Capacity (vph)	494	2549	608	2353	1093	115	118	340	318
Starvation Cap Reductn	0	0	0	604	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	0.18	0.30	0.02	0.67	0.07	0.11	0.10	0.08	0.12

Intersection Summary

HCM Signalized Intersection Capacity Analysis

16: Chapman Ave & Josiah Henson Parkway/Randolph Road

Existing AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	77	593	80	9	1014	66	11	6	4	27	7	24	
Future Volume (vph)	77	593	80	9	1014	66	11	6	4	27	7	24	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	10	10	10	10	10	10	11	11	11	12	12	12	
Total Lost time (s)	5.0	6.0		5.0	6.0	6.0	6.0	6.0		6.0	6.0		
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		0.95	0.95		
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.94		1.00	0.89		
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1652	3244		1652	3303	1478	1711	1688		1681	1573		
Flt Permitted	0.19	1.00		0.36	1.00	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (perm)	332	3244		623	3303	1478	1711	1688		1681	1573		
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	
Adj. Flow (vph)	89	682	92	10	1166	76	13	7	5	31	8	28	
RTOR Reduction (vph)	0	3	0	0	0	24	0	5	0	0	0	0	
Lane Group Flow (vph)	89	771	0	10	1166	52	13	7	0	28	39	0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Split	NA		Split	NA		
Protected Phases	1	6		5	2		3	3		4	4		
Permitted Phases	6			2		2							
Actuated Green, G (s)	116.2	108.4		104.7	101.9	101.9	5.1	5.1		8.7	8.7		
Effective Green, g (s)	116.2	108.4		104.7	101.9	101.9	5.1	5.1		8.7	8.7		
Actuated g/C Ratio	0.79	0.73		0.71	0.69	0.69	0.03	0.03		0.06	0.06		
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0	6.0	6.0		6.0	6.0		
Vehicle Extension (s)	4.0	0.2		4.0	0.2	0.2	4.0	4.0		4.0	4.0		
Lane Grp Cap (vph)	343	2376		460	2274	1017	58	58		98	92		
v/s Ratio Prot	c0.02	c0.24		0.00	c0.35		c0.01	0.00		0.02	c0.02		
v/s Ratio Perm	0.19			0.01		0.04							
v/c Ratio	0.26	0.32		0.02	0.51	0.05	0.22	0.12		0.29	0.42		
Uniform Delay, d1	5.8	6.9		6.4	11.1	7.4	69.5	69.3		66.7	67.2		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	0.6	0.4		0.0	0.8	0.1	2.7	1.3		2.2	4.2		
Delay (s)	6.4	7.3		6.4	11.9	7.5	72.2	70.6		68.9	71.5		
Level of Service	A	A		A	B	A	E	E		E	E		
Approach Delay (s)		7.2			11.6			71.4			70.4		
Approach LOS		A			B			E			E		
Intersection Summary													
HCM 2000 Control Delay			12.4	HCM 2000 Level of Service						B			
HCM 2000 Volume to Capacity ratio			0.48										
Actuated Cycle Length (s)			148.0	Sum of lost time (s)						23.0			
Intersection Capacity Utilization			54.8%	ICU Level of Service						A			
Analysis Period (min)			15										
c Critical Lane Group													

Queues

1: Rockville Pike - 355 & Bou Ave

Existing PM



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	50	37	334	202	59	1904	376	212	1226
v/c Ratio	0.53	0.17	0.65	0.51	0.56	0.69	0.41	0.87	0.40
Control Delay	110.1	1.6	83.9	16.8	110.6	34.5	16.6	100.9	22.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	47.8	2.0	0.0	0.7
Total Delay	110.1	1.6	83.9	16.8	110.6	82.3	18.6	100.9	23.5
Queue Length 50th (ft)	65	0	215	25	77	649	160	187	303
Queue Length 95th (ft)	116	0	262	109	133	805	280	#381	415
Internal Link Dist (ft)	76			198		419			509
Turn Bay Length (ft)		90			175			245	
Base Capacity (vph)	170	280	642	446	171	2752	924	243	3050
Starvation Cap Reductn	0	0	0	0	0	1066	393	0	1359
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	0.29	0.13	0.52	0.45	0.35	1.13	0.71	0.87	0.73























Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

1: Rockville Pike - 355 & Bou Ave

Existing PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	31	36	324	21	175	57	1847	365	206	1170	18
Future Volume (vph)	17	31	36	324	21	175	57	1847	365	206	1170	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	11	11	11	12	12	12
Total Lost time (s)		6.0	6.0	7.0	7.0		5.0	5.5	5.5	6.0	6.0	
Lane Util. Factor		1.00	1.00	0.97	1.00		1.00	0.91	1.00	1.00	0.91	
Flt		1.00	0.85	1.00	0.87		1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.98	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1708	1478	3204	1506		1711	4916	1531	1770	5073	
Flt Permitted		0.98	1.00	0.95	1.00		0.95	1.00	1.00	0.07	1.00	
Satd. Flow (perm)		1708	1478	3204	1506		1711	4916	1531	132	5073	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.92
Adj. Flow (vph)	18	32	37	334	22	180	59	1904	376	212	1206	20
RTOR Reduction (vph)	0	0	35	0	151	0	0	0	67	0	0	0
Lane Group Flow (vph)	0	50	2	334	51	0	59	1904	309	212	1226	0
Turn Type	Split	NA	Prot	Split	NA		Prot	NA	Prot	pm+pt	NA	
Protected Phases	3	3	3	4	4		1	5	5	6	2	
Permitted Phases										2		
Actuated Green, G (s)		11.2	11.2	32.3	32.3		12.3	112.0	112.0	120.2	120.2	
Effective Green, g (s)		11.2	11.2	32.3	32.3		12.3	112.0	112.0	120.2	120.2	
Actuated g/C Ratio		0.06	0.06	0.16	0.16		0.06	0.56	0.56	0.60	0.60	
Clearance Time (s)		6.0	6.0	7.0	7.0		5.0	5.5	5.5	6.0	6.0	
Vehicle Extension (s)		3.0	3.0	6.0	6.0		3.0	0.2	0.2	3.0	0.2	
Lane Grp Cap (vph)		95	82	517	243		105	2752	857	243	3048	
v/s Ratio Prot		c0.03	0.00	c0.10	0.03		0.03	c0.39	0.20	c0.09	0.24	
v/s Ratio Perm										c0.44		
v/c Ratio		0.53	0.03	0.65	0.21		0.56	0.69	0.36	0.87	0.40	
Uniform Delay, d1		91.8	89.2	78.5	72.8		91.2	31.6	24.3	55.6	21.0	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		5.2	0.1	4.5	1.2		6.7	1.5	1.2	27.2	0.4	
Delay (s)		97.0	89.4	83.0	74.0		97.9	33.1	25.4	82.8	21.4	
Level of Service		F	F	F	E		F	C	C	F	C	
Approach Delay (s)		93.8			79.6			33.5			30.4	
Approach LOS		F			E			C			C	
Intersection Summary												
HCM 2000 Control Delay			39.3				HCM 2000 Level of Service				D	
HCM 2000 Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			200.0				Sum of lost time (s)				31.0	
Intersection Capacity Utilization			78.4%				ICU Level of Service				D	
Analysis Period (min)			15									
c Critical Lane Group												

Queues

2: Rockville Pike - 355 & Federal Plaza/Pike Center

Existing PM



Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	140	139	68	205	1795	27	1286
v/c Ratio	0.71	0.47	0.50	0.63	0.55	0.16	0.45
Control Delay	86.2	13.8	47.4	17.8	16.3	11.4	19.9
Queue Delay	0.0	0.0	0.0	0.0	0.8	0.0	0.5
Total Delay	86.2	13.8	47.4	17.8	17.1	11.4	20.5
Queue Length 50th (ft)	142	0	30	62	361	7	249
Queue Length 95th (ft)	211	64	83	119	504	22	394
Internal Link Dist (ft)	84		43		509		145
Turn Bay Length (ft)		150		245		175	
Base Capacity (vph)	264	352	335	386	3279	306	2831
Starvation Cap Reductn	0	0	0	0	1034	0	996
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.39	0.20	0.53	0.80	0.09	0.70

Intersection Summary

HCM Signalized Intersection Capacity Analysis

2: Rockville Pike - 355 & Federal Plaza/Pike Center

Existing PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↔		↖	↑↑↑		↖	↑↑↑	
Traffic Volume (vph)	127	8	133	18	9	38	197	1700	23	26	1221	13
Future Volume (vph)	127	8	133	18	9	38	197	1700	23	26	1221	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	16	16	16	11	11	11	10	10	10
Total Lost time (s)		6.5	6.5		6.5		5.0	5.5		5.0	5.5	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.91		1.00	0.91	
Fr _t		1.00	0.85		0.92		1.00	1.00		1.00	1.00	
Fl _t Protected		0.95	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1660	1478		1917		1711	4906		1652	4739	
Fl _t Permitted		0.95	1.00		0.99		0.16	1.00		0.10	1.00	
Satd. Flow (perm)		1660	1478		1917		285	4906		169	4739	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	132	8	139	19	9	40	205	1771	24	27	1272	14
RTOR Reduction (vph)	0	0	123	0	37	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	140	16	0	31	0	205	1795	0	27	1286	0
Turn Type	Split	NA	Prot	Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	8	8	8	4	4		5	2		1	6	
Permitted Phases							2			6		
Actuated Green, G (s)		18.8	18.8		8.2		113.0	103.9		98.8	94.7	
Effective Green, g (s)		18.8	18.8		8.2		113.0	103.9		98.8	94.7	
Actuated g/C Ratio		0.12	0.12		0.05		0.71	0.66		0.62	0.60	
Clearance Time (s)		6.5	6.5		6.5		5.0	5.5		5.0	5.5	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	0.2		3.0	0.2	
Lane Grp Cap (vph)		196	175		99		322	3215		143	2831	
v/s Ratio Prot		c0.08	0.01		c0.02		c0.05	0.37		0.00	0.27	
v/s Ratio Perm							c0.40			0.11		
v/c Ratio		0.71	0.09		0.31		0.64	0.56		0.19	0.45	
Uniform Delay, d ₁		67.3	62.3		72.4		10.9	14.8		12.4	17.6	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d ₂		11.7	0.2		1.8		4.1	0.7		0.6	0.5	
Delay (s)		78.9	62.5		74.3		15.0	15.5		13.1	18.1	
Level of Service		E	E		E		B	B		B	B	
Approach Delay (s)		70.7			74.3			15.5			18.0	
Approach LOS		E			E			B			B	

Intersection Summary

HCM 2000 Control Delay	21.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	158.5	Sum of lost time (s)	23.5
Intersection Capacity Utilization	65.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Queues

4: Rockville Pike - 355 & Rollins Avenue /Twinbrook Parkway

Existing PM



Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	464	311	149	101	1538	122	156	1267
v/c Ratio	0.76	0.47	0.50	0.35	0.54	0.13	0.56	0.41
Control Delay	69.6	59.5	63.4	11.8	21.6	3.0	17.7	16.1
Queue Delay	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Total Delay	69.6	59.5	63.4	11.8	22.6	3.0	17.7	16.1
Queue Length 50th (ft)	244	154	142	29	338	0	46	231
Queue Length 95th (ft)	294	194	207	57	475	32	103	312
Internal Link Dist (ft)	1347	625			260			1225
Turn Bay Length (ft)			150			300	400	
Base Capacity (vph)	1020	1105	494	374	2826	931	427	3071
Starvation Cap Reductn	0	0	0	0	932	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	0.45	0.28	0.30	0.27	0.81	0.13	0.37	0.41

Intersection Summary

HCM Signalized Intersection Capacity Analysis

4: Rockville Pike - 355 & Rollins Avenue /Twinbrook Parkway

Existing PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑	↑	↑	↑↑↑	↑	↑	↑↑↑	
Traffic Volume (vph)	0	423	37	0	308	148	100	1523	121	154	1211	44
Future Volume (vph)	0	423	37	0	308	148	100	1523	121	154	1211	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	12	12	12	10	10	10	11	11	11
Total Lost time (s)		7.5			7.5	7.5	7.0	5.5	5.5	7.0	5.5	
Lane Util. Factor		0.95			0.95	1.00	1.00	0.91	1.00	1.00	0.91	
Frt		0.99			1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected		1.00			1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3264			3539	1583	1652	4746	1478	1711	4890	
Flt Permitted		1.00			1.00	1.00	0.19	1.00	1.00	0.11	1.00	
Satd. Flow (perm)		3264			3539	1583	323	4746	1478	199	4890	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	0	427	37	0	311	149	101	1538	122	156	1223	44
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	49	0	1	0
Lane Group Flow (vph)	0	464	0	0	311	149	101	1538	73	156	1266	0
Turn Type		NA			NA	Prot	pm+pt	NA	Prot	pm+pt	NA	
Protected Phases		4			8	8	1	6	6	5	2	
Permitted Phases							6			2		
Actuated Green, G (s)		30.0			30.0	30.0	104.8	95.3	95.3	115.2	100.5	
Effective Green, g (s)		30.0			30.0	30.0	104.8	95.3	95.3	115.2	100.5	
Actuated g/C Ratio		0.19			0.19	0.19	0.65	0.60	0.60	0.72	0.63	
Clearance Time (s)		7.5			7.5	7.5	7.0	5.5	5.5	7.0	5.5	
Vehicle Extension (s)		4.0			4.0	4.0	4.0	0.2	0.2	4.0	0.2	
Lane Grp Cap (vph)		612			663	296	290	2826	880	282	3071	
v/s Ratio Prot		c0.14			0.09	0.09	0.02	0.32	0.05	c0.05	c0.26	
v/s Ratio Perm							0.21			c0.35		
v/c Ratio		0.76			0.47	0.50	0.35	0.54	0.08	0.55	0.41	
Uniform Delay, d1		61.6			57.9	58.3	10.6	19.4	13.8	12.9	14.9	
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		5.7			0.7	1.8	1.0	0.8	0.2	2.9	0.4	
Delay (s)		67.3			58.6	60.2	11.6	20.1	13.9	15.8	15.3	
Level of Service		E			E	E	B	C	B	B	B	
Approach Delay (s)		67.3			59.1			19.2			15.4	
Approach LOS		E			E			B			B	

Intersection Summary

HCM 2000 Control Delay	27.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Queues

5: Chapman Ave & Twinbrook Parkway

Existing PM



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	70	845	477	746	169	581	222	123	38
v/c Ratio	0.20	0.61	0.61	0.36	0.84	0.94	0.74	0.76	0.16
Control Delay	17.0	45.5	67.3	18.0	112.8	71.4	98.7	111.4	1.4
Queue Delay	0.0	0.8	0.0	0.0	0.0	12.6	0.0	0.0	0.0
Total Delay	17.0	46.3	67.3	18.0	112.8	84.1	98.7	111.4	1.4
Queue Length 50th (ft)	27	447	266	226	211	601	140	152	0
Queue Length 95th (ft)	46	525	329	276	#376	#861	190	232	0
Internal Link Dist (ft)		625		1310	176			558	
Turn Bay Length (ft)	175		300				300		300
Base Capacity (vph)	533	1377	875	2058	200	655	338	183	261
Starvation Cap Reductn	0	243	0	0	0	69	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	0.75	0.55	0.36	0.84	0.99	0.66	0.67	0.15






















Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

5: Chapman Ave & Twinbrook Parkway

Existing PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	725	95	463	583	141	55	109	564	215	119	37
Future Volume (vph)	68	725	95	463	583	141	55	109	564	215	119	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	11	11	11	10	10	10	10	10	10
Total Lost time (s)	5.5	6.0		5.5	6.0			6.5	6.5	6.5	6.5	6.5
Lane Util. Factor	1.00	0.95		0.97	0.95			1.00	1.00	0.97	1.00	1.00
Frt	1.00	0.98		1.00	0.97			1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1652	3246		3319	3321			1710	1478	3204	1739	1478
Flt Permitted	0.37	1.00		0.95	1.00			0.98	1.00	0.95	1.00	1.00
Satd. Flow (perm)	641	3246		3319	3321			1710	1478	3204	1739	1478
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	70	747	98	477	601	145	57	112	581	222	123	38
RTOR Reduction (vph)	0	5	0	0	8	0	0	0	51	0	0	34
Lane Group Flow (vph)	70	840	0	477	738	0	0	169	530	222	123	4
Turn Type	pm+pt	NA		Prot	NA		Split	NA	pt+ov	Split	NA	Perm
Protected Phases	5	2		1	6		4	4	4 1	3	3	
Permitted Phases	2											3
Actuated Green, G (s)	88.2	80.1		44.9	116.9			22.3	73.7	17.7	17.7	17.7
Effective Green, g (s)	88.2	80.1		44.9	116.9			22.3	73.7	17.7	17.7	17.7
Actuated g/C Ratio	0.47	0.42		0.24	0.62			0.12	0.39	0.09	0.09	0.09
Clearance Time (s)	5.5	6.0		5.5	6.0			6.5		6.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	341	1372		786	2048			201	574	299	162	138
v/s Ratio Prot	0.01	c0.26		0.14	0.22			0.10	c0.36	0.07	c0.07	
v/s Ratio Perm	0.09											0.00
v/c Ratio	0.21	0.61		0.61	0.36			0.84	0.92	0.74	0.76	0.03
Uniform Delay, d1	28.3	42.6		64.4	17.9			81.9	55.2	83.7	83.8	78.1
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	2.0		1.3	0.5			25.9	20.5	9.6	18.3	0.1
Delay (s)	28.6	44.6		65.8	18.4			107.7	75.7	93.2	102.1	78.1
Level of Service	C	D		E	B			F	E	F	F	E
Approach Delay (s)		43.4			36.9			82.9			94.6	
Approach LOS		D			D			F			F	
Intersection Summary												
HCM 2000 Control Delay			56.0			HCM 2000 Level of Service				E		
HCM 2000 Volume to Capacity ratio			0.79									
Actuated Cycle Length (s)			189.5			Sum of lost time (s)			24.5			
Intersection Capacity Utilization			80.1%			ICU Level of Service				D		
Analysis Period (min)			15									
c	Critical Lane Group											

Queues

9: Chapman Ave & Bou Ave

Existing PM



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	330	307	16	174	240	18	176	215	132	343
v/c Ratio	0.53	0.33	0.05	0.30	0.37	0.04	0.27	0.53	0.19	0.33
Control Delay	26.5	22.9	43.3	46.8	6.3	36.4	37.8	49.0	38.0	2.2
Queue Delay	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay	26.8	23.0	43.3	46.8	6.3	36.4	37.8	49.0	38.0	2.3
Queue Length 50th (ft)	216	190	13	152	0	13	134	194	102	0
Queue Length 95th (ft)	291	259	36	239	69	36	216	312	170	41
Internal Link Dist (ft)		200		800			128		31	
Turn Bay Length (ft)	275				250	70				
Base Capacity (vph)	847	1424	334	583	655	440	658	403	680	1361
Starvation Cap Reductn	175	443	0	0	0	0	0	0	0	298
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.31	0.05	0.30	0.37	0.04	0.27	0.53	0.19	0.32

Intersection Summary

HCM Signalized Intersection Capacity Analysis

9: Chapman Ave & Bou Ave

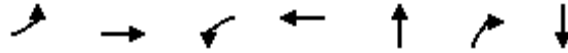
Existing PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	317	239	56	15	167	230	17	127	42	206	127	329
Future Volume (vph)	317	239	56	15	167	230	17	127	42	206	127	329
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	10	10	10	10	10	10
Total Lost time (s)	5.5	5.5		5.5	5.5	5.5	6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1652	1689		1652	1739	1478	1652	1673		1652	1739	1478
Flt Permitted	0.52	1.00		0.57	1.00	1.00	0.65	1.00		0.59	1.00	1.00
Satd. Flow (perm)	907	1689		997	1739	1478	1126	1673		1030	1739	1478
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	330	249	58	16	174	240	18	132	44	215	132	343
RTOR Reduction (vph)	0	5	0	0	0	159	0	4	0	0	0	136
Lane Group Flow (vph)	330	302	0	16	174	81	18	172	0	215	132	207
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	pt+ov
Protected Phases	1	6			2			4			8	8 1
Permitted Phases	6			2		2	4			8		
Actuated Green, G (s)	97.4	97.4		60.1	60.1	60.1	70.1	70.1		70.1	70.1	107.9
Effective Green, g (s)	97.4	97.4		60.1	60.1	60.1	70.1	70.1		70.1	70.1	107.9
Actuated g/C Ratio	0.54	0.54		0.34	0.34	0.34	0.39	0.39		0.39	0.39	0.60
Clearance Time (s)	5.5	5.5		5.5	5.5	5.5	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	6.0	0.2		0.2	0.2	0.2	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	625	919		334	583	496	440	655		403	681	890
v/s Ratio Prot	c0.09	0.18			0.10			0.10			0.08	0.14
v/s Ratio Perm	c0.19			0.02		0.05	0.02			c0.21		
v/c Ratio	0.53	0.33		0.05	0.30	0.16	0.04	0.26		0.53	0.19	0.23
Uniform Delay, d1	23.9	22.7		40.1	43.9	41.8	33.7	36.9		41.9	35.8	16.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.0	0.1		0.3	1.3	0.7	0.0	0.2		5.0	0.6	0.4
Delay (s)	25.9	22.7		40.4	45.2	42.5	33.7	37.1		46.9	36.5	16.8
Level of Service	C	C		D	D	D	C	D		D	D	B
Approach Delay (s)		24.4			43.5			36.8			29.9	
Approach LOS		C			D			D			C	
Intersection Summary												
HCM 2000 Control Delay			31.8									HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			179.0							17.0		
Intersection Capacity Utilization			66.2%									ICU Level of Service C
Analysis Period (min)			15									
c Critical Lane Group												

Queues

11: East Jefferson Street & Rollins Avenue

Existing PM























Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	10	73	345	149	504	389	312
v/c Ratio	0.08	0.51	0.87	0.35	0.48	0.28	0.17
Control Delay	46.6	46.9	61.9	23.1	17.4	0.7	12.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.6	46.9	61.9	23.1	17.4	0.7	12.3
Queue Length 50th (ft)	7	35	230	54	206	0	52
Queue Length 95th (ft)	23	80	328	106	347	14	88
Internal Link Dist (ft)		438		1347	257		274
Turn Bay Length (ft)							
Base Capacity (vph)	235	253	470	494	1046	1404	1812
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	0.04	0.29	0.73	0.30	0.48	0.28	0.17

Intersection Summary

HCM Signalized Intersection Capacity Analysis

11: East Jefferson Street & Rollins Avenue

Existing PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	44	26	331	65	78	7	477	373	18	263	18
Future Volume (vph)	10	44	26	331	65	78	7	477	373	18	263	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Total Lost time (s)	4.5	4.5		4.5	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	
Frt	1.00	0.94		1.00	0.92			1.00	0.85		0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00		1.00	
Satd. Flow (prot)	1711	1701		1711	1654			1799	1531		3380	
Flt Permitted	0.95	1.00		0.95	1.00			1.00	1.00		0.91	
Satd. Flow (perm)	1711	1701		1711	1654			1792	1531		3099	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	10	46	27	345	68	81	7	497	389	19	274	19
RTOR Reduction (vph)	0	21	0	0	41	0	0	0	75	0	3	0
Lane Group Flow (vph)	10	52	0	345	108	0	0	504	314	0	309	0
Turn Type	Split	NA		Split	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases	4	4		3	3			2	3		6	
Permitted Phases							2		2	6		
Actuated Green, G (s)	7.0	7.0		25.3	25.3			62.7	88.0		62.7	
Effective Green, g (s)	7.0	7.0		25.3	25.3			62.7	88.0		62.7	
Actuated g/C Ratio	0.06	0.06		0.23	0.23			0.58	0.81		0.58	
Clearance Time (s)	4.5	4.5		4.5	4.5			5.0	4.5		5.0	
Vehicle Extension (s)	2.0	2.0		1.0	1.0			5.0	1.0		5.0	
Lane Grp Cap (vph)	109	109		397	383			1030	1236		1782	
v/s Ratio Prot	0.01	c0.03		c0.20	0.07				0.06			
v/s Ratio Perm								c0.28	0.15		0.10	
v/c Ratio	0.09	0.48		0.87	0.28			0.49	0.25		0.17	
Uniform Delay, d1	48.0	49.2		40.3	34.4			13.7	2.5		10.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.1	1.2		17.4	0.1			1.7	0.0		0.2	
Delay (s)	48.1	50.5		57.6	34.5			15.3	2.6		11.1	
Level of Service	D	D		E	C			B	A		B	
Approach Delay (s)		50.2			50.7			9.8			11.1	
Approach LOS		D			D			A			B	
Intersection Summary												
HCM 2000 Control Delay			23.2	HCM 2000 Level of Service				C				
HCM 2000 Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			109.0	Sum of lost time (s)				14.0				
Intersection Capacity Utilization			63.6%	ICU Level of Service				B				
Analysis Period (min)			15									
c Critical Lane Group												

Queues

12: Rockville Pike - 355/Rockville Pike- 355 & Halpine Road

Existing PM



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	103	161	19	74	134	207	1701	104	1460
v/c Ratio	0.68	0.35	0.14	0.34	0.44	0.54	0.47	0.44	0.45
Control Delay	100.1	33.0	73.4	78.3	14.1	12.3	11.1	13.2	17.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	100.1	33.0	73.4	78.3	14.1	12.3	11.1	13.2	17.2
Queue Length 50th (ft)	124	41	21	85	0	46	286	22	303
Queue Length 95th (ft)	188	77	49	136	66	122	392	45	438
Internal Link Dist (ft)		312		302			1225		274
Turn Bay Length (ft)	250				450	165		175	
Base Capacity (vph)	411	1097	358	596	597	589	3614	284	3239
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	0.25	0.15	0.05	0.12	0.22	0.35	0.47	0.37	0.45

Intersection Summary

HCM Signalized Intersection Capacity Analysis

12: Rockville Pike - 355/Rockville Pike- 355 & Halpine Road

Existing PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↗↘		↗	↖	↗	↗	↗↘↙		↗	↗↘	
Traffic Volume (vph)	98	66	87	18	70	127	197	1609	7	99	1357	30
Future Volume (vph)	98	66	87	18	70	127	197	1609	7	99	1357	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	5.5	5.5		5.5	5.5	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.91		1.00	0.91	
Fr _t	1.00	0.91		1.00	1.00	0.85	1.00	1.00		1.00	1.00	
Fl _t Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3236		1770	1863	1583	1711	4913		1711	4900	
Fl _t Permitted	0.69	1.00		0.60	1.00	1.00	0.13	1.00		0.12	1.00	
Satd. Flow (perm)	1285	3236		1120	1863	1583	241	4913		223	4900	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	103	69	92	19	74	134	207	1694	7	104	1428	32
RTOR Reduction (vph)	0	81	0	0	0	118	0	0	0	0	1	0
Lane Group Flow (vph)	103	80	0	19	74	16	207	1701	0	104	1459	0
Turn Type	Perm	NA		Perm	NA	Prot	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8	8	1	6		5	2	
Permitted Phases	4			8			6			2		
Actuated Green, G (s)	22.2	22.2		22.2	22.2	22.2	153.3	138.0		133.7	123.9	
Effective Green, g (s)	22.2	22.2		22.2	22.2	22.2	153.3	138.0		133.7	123.9	
Actuated g/C Ratio	0.12	0.12		0.12	0.12	0.12	0.82	0.74		0.71	0.66	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	5.5	5.5		5.5	5.5	
Vehicle Extension (s)	5.0	5.0		5.0	5.0	5.0	5.0	0.2		5.0	0.2	
Lane Grp Cap (vph)	152	383		132	220	187	384	3615		236	3237	
v/s Ratio Prot		0.02			0.04	0.01	c0.07	0.35		0.02	0.30	
v/s Ratio Perm	c0.08			0.02			c0.37			0.29		
v/c Ratio	0.68	0.21		0.14	0.34	0.08	0.54	0.47		0.44	0.45	
Uniform Delay, d ₁	79.2	74.7		74.1	75.9	73.6	9.6	10.0		8.4	15.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d ₂	14.6	0.6		1.1	1.9	0.4	2.7	0.4		2.7	0.5	
Delay (s)	93.8	75.3		75.2	77.8	74.0	12.2	10.4		11.2	15.8	
Level of Service	F	E		E	E	E	B	B		B	B	
Approach Delay (s)		82.5			75.3			10.6			15.5	
Approach LOS		F			E			B			B	

Intersection Summary

HCM 2000 Control Delay	21.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	187.5	Sum of lost time (s)	17.5
Intersection Capacity Utilization	67.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Queues

13: Twinbrook Parkway & Parklawn Drive

Existing PM



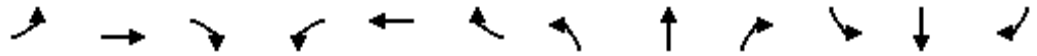
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	42	111	181	183	289	33	1519	141	815
v/c Ratio	0.34	0.74	0.79	0.79	0.55	0.09	0.53	0.36	0.39
Control Delay	101.3	94.9	112.4	111.8	17.6	14.7	26.4	15.5	21.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	101.3	94.9	112.4	111.8	17.6	14.7	26.4	15.5	21.8
Queue Length 50th (ft)	62	114	268	271	62	15	442	32	298
Queue Length 95th (ft)	110	195	357	362	159	37	612	60	432
Internal Link Dist (ft)		332		479			1310		374
Turn Bay Length (ft)			200			190		240	
Base Capacity (vph)	231	250	300	304	822	518	2840	1047	2097
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	0.18	0.44	0.60	0.60	0.35	0.06	0.53	0.13	0.39

Intersection Summary

HCM Signalized Intersection Capacity Analysis

13: Twinbrook Parkway & Parklawn Drive

Existing PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	32	68	304	39	272	31	1157	271	133	734	32
Future Volume (vph)	44	32	68	304	39	272	31	1157	271	133	734	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	11	11	10	10	10	10	10	10
Total Lost time (s)	6.5	6.5		7.0	7.0	7.0	8.0	6.0		8.0	6.0	
Lane Util. Factor	0.95	0.95		0.95	0.95	1.00	1.00	0.91		0.97	0.95	
Frt	1.00	0.90		1.00	1.00	0.85	1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1681	1594		1625	1647	1531	1652	4611		3204	3283	
Flt Permitted	0.95	1.00		0.95	0.96	1.00	0.31	1.00		0.12	1.00	
Satd. Flow (perm)	1681	1594		1625	1647	1531	531	4611		398	3283	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	47	34	72	323	41	289	33	1231	288	141	781	34
RTOR Reduction (vph)	0	32	0	0	0	184	0	10	0	0	1	0
Lane Group Flow (vph)	42	79	0	181	183	105	33	1509	0	141	814	0
Turn Type	Split	NA		Split	NA	pt+ov	pm+pt	NA		pm+pt	NA	
Protected Phases	3	3		4	4	4	1	2		1	6	
Permitted Phases							2			6		
Actuated Green, G (s)	15.9	15.9		30.8	30.8	47.6	139.4	133.5		147.2	137.4	
Effective Green, g (s)	15.9	15.9		30.8	30.8	47.6	139.4	133.5		147.2	137.4	
Actuated g/C Ratio	0.07	0.07		0.14	0.14	0.22	0.64	0.61		0.68	0.63	
Clearance Time (s)	6.5	6.5		7.0	7.0		8.0	6.0		8.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	0.2		3.0	0.2	
Lane Grp Cap (vph)	122	116		230	233	335	370	2830		395	2073	
v/s Ratio Prot	0.02	c0.05		c0.11	0.11	c0.07	0.00	c0.33		0.02	c0.25	
v/s Ratio Perm							0.05			0.23		
v/c Ratio	0.34	0.68		0.79	0.79	0.31	0.09	0.53		0.36	0.39	
Uniform Delay, d1	95.8	98.3		90.2	90.2	71.2	14.9	24.1		15.8	19.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	14.6		16.1	15.8	0.5	0.1	0.7		0.6	0.6	
Delay (s)	97.5	112.9		106.3	106.0	71.8	15.0	24.8		16.4	20.2	
Level of Service	F	F		F	F	E	B	C		B	C	
Approach Delay (s)		108.7			90.9			24.6			19.6	
Approach LOS		F			F			C			B	

Intersection Summary

HCM 2000 Control Delay	40.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	217.5	Sum of lost time (s)	27.5
Intersection Capacity Utilization	65.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Queues

14: Nebel Street & Randolph Road

Existing PM



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	22	1071	157	939	132	145	260	266	168	25
v/c Ratio	0.09	0.74	0.63	0.54	0.36	0.41	0.87	0.56	0.33	0.06
Control Delay	27.8	55.5	37.1	40.8	46.1	78.2	110.9	50.7	62.5	53.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.8	55.5	37.1	40.8	46.1	78.2	110.9	50.7	62.5	53.8
Queue Length 50th (ft)	14	675	111	500	123	182	361	268	190	26
Queue Length 95th (ft)	36	#930	177	634	166	254	468	328	257	54
Internal Link Dist (ft)		613		257		122			1618	
Turn Bay Length (ft)	140		125		100			250		
Base Capacity (vph)	364	1450	485	1730	538	417	355	500	522	444
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.74	0.32	0.54	0.25	0.35	0.73	0.53	0.32	0.06

























Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

14: Nebel Street & Randolph Road

Existing PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 							
Traffic Volume (vph)	21	943	74	149	736	156	125	138	247	253	160	24
Future Volume (vph)	21	943	74	149	736	156	125	138	247	253	160	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	12	12	12	11	11	11	12	12	12
Total Lost time (s)	6.0	6.5		6.0	6.5		6.5	6.5	6.5	6.5	6.5	6.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1652	3267		1770	3446		1711	1801	1531	1770	1863	1583
Flt Permitted	0.23	1.00		0.12	1.00		0.65	1.00	1.00	0.46	1.00	1.00
Satd. Flow (perm)	401	3267		232	3446		1172	1801	1531	851	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	22	993	78	157	775	164	132	145	260	266	168	25
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	22	1071	0	157	939	0	132	145	260	266	168	25
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Prot	pm+pt	NA	Prot
Protected Phases	1	6		5	2		3	8	8	7	4	4
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	101.4	95.6		118.8	107.0		59.9	42.1	42.1	83.7	59.4	59.4
Effective Green, g (s)	101.4	95.6		118.8	107.0		59.9	42.1	42.1	83.7	59.4	59.4
Actuated g/C Ratio	0.47	0.44		0.55	0.50		0.28	0.20	0.20	0.39	0.28	0.28
Clearance Time (s)	6.0	6.5		6.0	6.5		6.5	6.5	6.5	6.5	6.5	6.5
Vehicle Extension (s)	3.0	5.0		3.0	5.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	222	1449		250	1711		370	351	299	480	513	436
v/s Ratio Prot	0.00	c0.33		c0.05	0.27		0.03	0.08	c0.17	c0.09	0.09	0.02
v/s Ratio Perm	0.04			0.30			0.07			0.12		
v/c Ratio	0.10	0.74		0.63	0.55		0.36	0.41	0.87	0.55	0.33	0.06
Uniform Delay, d1	31.9	49.6		33.8	37.5		60.9	75.9	84.0	48.1	62.1	57.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	3.4		4.9	1.3		0.8	1.1	23.1	1.7	0.5	0.1
Delay (s)	32.1	53.0		38.6	38.8		61.7	77.0	107.2	49.8	62.7	57.5
Level of Service	C	D		D	D		E	E	F	D	E	E
Approach Delay (s)		52.6			38.8			87.8			54.9	
Approach LOS		D			D			F			D	
Intersection Summary												
HCM 2000 Control Delay			54.1				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			215.5				Sum of lost time (s)			25.5		
Intersection Capacity Utilization			79.2%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

15: Rockville Pike - 355 & Hubbard Drive/Plaza Driveway

Existing PM

























Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	42	46	194	158	19	2282	168	1546
v/c Ratio	0.23	0.14	0.75	0.37	0.08	0.65	0.69	0.47
Control Delay	54.2	20.9	77.5	11.7	9.8	25.3	55.1	14.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7
Total Delay	54.2	20.9	77.5	11.7	9.8	25.3	55.1	15.3
Queue Length 50th (ft)	37	11	192	12	5	448	119	293
Queue Length 95th (ft)	72	45	267	72	16	608	203	394
Internal Link Dist (ft)		170		149		168		419
Turn Bay Length (ft)							180	
Base Capacity (vph)	245	429	341	513	414	3520	311	3311
Starvation Cap Reductn	0	0	0	0	0	0	0	1299
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	0.11	0.57	0.31	0.05	0.65	0.54	0.77

Intersection Summary

HCM Signalized Intersection Capacity Analysis

15: Rockville Pike - 355 & Hubbard Drive/Plaza Driveway

Existing PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	12	32	186	13	138	18	1941	250	161	1458	26
Future Volume (vph)	40	12	32	186	13	138	18	1941	250	161	1458	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	12	11	11	11	11	11	11
Total Lost time (s)	7.0	7.0		7.0	7.0		6.0	5.5		6.0	5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.86		1.00	0.91	
Frt	1.00	0.89		1.00	0.86		1.00	0.98		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1711	1607		1770	1608		1711	6088		1711	4903	
Flt Permitted	0.54	1.00		0.73	1.00		0.14	1.00		0.04	1.00	
Satd. Flow (perm)	974	1607		1354	1608		260	6088		74	4903	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	42	12	33	194	14	144	19	2022	260	168	1519	27
RTOR Reduction (vph)	0	27	0	0	116	0	0	12	0	0	1	0
Lane Group Flow (vph)	42	19	0	194	42	0	19	2270	0	168	1545	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	30.3	30.3		30.3	30.3		96.4	91.4		115.7	104.7	
Effective Green, g (s)	30.3	30.3		30.3	30.3		96.4	91.4		115.7	104.7	
Actuated g/C Ratio	0.19	0.19		0.19	0.19		0.61	0.58		0.73	0.66	
Clearance Time (s)	7.0	7.0		7.0	7.0		6.0	5.5		6.0	5.5	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	0.2		5.0	0.2	
Lane Grp Cap (vph)	186	307		258	307		203	3510		243	3238	
v/s Ratio Prot		0.01			0.03		0.00	0.37		c0.08	0.32	
v/s Ratio Perm	0.04			c0.14			0.05			c0.43		
v/c Ratio	0.23	0.06		0.75	0.14		0.09	0.65		0.69	0.48	
Uniform Delay, d1	54.2	52.5		60.5	53.2		12.4	22.7		45.9	13.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.3	0.2		13.7	0.4		0.4	0.9		10.3	0.5	
Delay (s)	55.5	52.7		74.3	53.6		12.8	23.6		56.2	13.8	
Level of Service	E	D		E	D		B	C		E	B	
Approach Delay (s)		54.0			65.0			23.5			18.0	
Approach LOS		D			E			C			B	
Intersection Summary												
HCM 2000 Control Delay			25.3				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			158.5				Sum of lost time (s)				18.5	
Intersection Capacity Utilization			76.9%				ICU Level of Service				D	
Analysis Period (min)			15									
c Critical Lane Group												

Queues

16: Chapman Ave & Josiah Henson Parkway/Randolph Road

Existing PM



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	150	972	15	729	132	52	46	142	169
v/c Ratio	0.33	0.46	0.04	0.38	0.15	0.49	0.37	0.57	0.71
Control Delay	11.5	16.2	10.6	20.2	3.1	82.5	49.6	66.6	75.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.5	16.2	10.6	20.2	3.1	82.5	49.6	66.6	75.4
Queue Length 50th (ft)	49	219	5	205	0	49	23	136	166
Queue Length 95th (ft)	92	390	15	303	33	97	67	202	240
Internal Link Dist (ft)		321		613			346		212
Turn Bay Length (ft)	350		165		215	250			
Base Capacity (vph)	556	2127	436	1894	907	115	132	340	325
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	0.27	0.46	0.03	0.38	0.15	0.45	0.35	0.42	0.52

Intersection Summary

HCM Signalized Intersection Capacity Analysis

16: Chapman Ave & Josiah Henson Parkway/Randolph Road

Existing PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗	↗	↖	↗		↖	↗	
Traffic Volume (vph)	144	861	72	14	700	127	50	24	20	152	51	96
Future Volume (vph)	144	861	72	14	700	127	50	24	20	152	51	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	11	11	11	12	12	12
Total Lost time (s)	5.0	6.0		5.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		0.95	0.95	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.93		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1652	3265		1652	3303	1478	1711	1677		1681	1605	
Flt Permitted	0.31	1.00		0.27	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	531	3265		465	3303	1478	1711	1677		1681	1605	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	150	897	75	15	729	132	52	25	21	158	53	100
RTOR Reduction (vph)	0	3	0	0	0	57	0	20	0	0	0	0
Lane Group Flow (vph)	150	969	0	15	729	75	52	26	0	142	169	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Split	NA		Split	NA	
Protected Phases	1	6		5	2		3	3		4	4	
Permitted Phases	6			2		2						
Actuated Green, G (s)	100.2	92.2		86.7	83.7	83.7	7.8	7.8		22.0	22.0	
Effective Green, g (s)	100.2	92.2		86.7	83.7	83.7	7.8	7.8		22.0	22.0	
Actuated g/C Ratio	0.68	0.62		0.59	0.57	0.57	0.05	0.05		0.15	0.15	
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	4.0	0.2		4.0	0.2	0.2	4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)	446	2034		296	1867	835	90	88		249	238	
v/s Ratio Prot	c0.03	c0.30		0.00	0.22		c0.03	0.02		0.08	c0.11	
v/s Ratio Perm	0.20			0.03		0.05						
v/c Ratio	0.34	0.48		0.05	0.39	0.09	0.58	0.30		0.57	0.71	
Uniform Delay, d1	9.7	15.0		13.0	17.9	14.7	68.5	67.5		58.6	60.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.8		0.1	0.6	0.2	10.3	2.6		3.7	10.2	
Delay (s)	10.3	15.8		13.1	18.5	14.9	78.8	70.0		62.3	70.2	
Level of Service	B	B		B	B	B	E	E		E	E	
Approach Delay (s)		15.0			17.9			74.7			66.6	
Approach LOS		B			B			E			E	

Intersection Summary

HCM 2000 Control Delay	25.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th TWSC
 3: Rockville Pike - 355 & Gas Station

Existing AM

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗ ↑↑↑	↗ ↑↑↑			↗ ↑↑↑
Traffic Vol, veh/h	0	19	854	25	0	1394
Future Vol, veh/h	0	19	854	25	0	1394
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	22	1005	29	0	1640

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	517	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	7.14	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.92	-
Pot Cap-1 Maneuver	0	431	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	-	431	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.8	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	431
HCM Lane V/C Ratio	-	-	0.052
HCM Control Delay (s)	-	-	13.8
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.2

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	0	1	0	4	2	288	2	5	582	5
Future Vol, veh/h	0	0	0	1	0	4	2	288	2	5	582	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	1	0	5	2	339	2	6	685	6

Major/Minor	Minor2		Minor1			Major1		Major2				
Conflicting Flow All	874	1045	346	699	1047	171	691	0	0	341	0	0
Stage 1	700	700	-	344	344	-	-	-	-	-	-	-
Stage 2	174	345	-	355	703	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	244	227	650	327	227	843	900	-	-	1215	-	-
Stage 1	396	440	-	645	635	-	-	-	-	-	-	-
Stage 2	811	635	-	635	438	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	241	225	650	324	225	843	900	-	-	1215	-	-
Mov Cap-2 Maneuver	241	225	-	324	225	-	-	-	-	-	-	-
Stage 1	395	436	-	643	633	-	-	-	-	-	-	-
Stage 2	804	633	-	630	434	-	-	-	-	-	-	-

Approach	EB		WB			NB		SB		
HCM Control Delay, s	0		10.7			0.1		0.1		
HCM LOS	A		B							

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	900	-	-	-	638	1215	-	-
HCM Lane V/C Ratio	0.003	-	-	-	0.009	0.005	-	-
HCM Control Delay (s)	9	0	-	0	10.7	8	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0	0	-	-

HCM 6th TWSC
7: Chapman Ave & Rollins Ave

Existing AM

Intersection						
Int Delay, s/veh	1.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	35	36	304	71	36	510
Future Vol, veh/h	35	36	304	71	36	510
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	36	37	313	73	37	526

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	687	350	0	0	386
Stage 1	350	-	-	-	-
Stage 2	337	-	-	-	-
Critical Hdwy	6.63	6.23	-	-	4.13
Critical Hdwy Stg 1	5.43	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219
Pot Cap-1 Maneuver	396	693	-	-	1171
Stage 1	713	-	-	-	-
Stage 2	696	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	378	693	-	-	1171
Mov Cap-2 Maneuver	378	-	-	-	-
Stage 1	713	-	-	-	-
Stage 2	665	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13	0	0.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	378	693	1171
HCM Lane V/C Ratio	-	-	0.095	0.054	0.032
HCM Control Delay (s)	-	-	15.5	10.5	8.2
HCM Lane LOS	-	-	C	B	A
HCM 95th %tile Q(veh)	-	-	0.3	0.2	0.1

HCM 6th TWSC
8: Chapman Ave & Pike Center South

Existing AM

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T T T T		
Traffic Vol, veh/h	1	0	1	342	547	3
Future Vol, veh/h	1	0	1	342	547	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	0	1	402	644	4

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1050	324	648	0	0
Stage 1	646	-	-	-	-
Stage 2	404	-	-	-	-
Critical Hdwy	6.08	7.13	5.33	-	-
Critical Hdwy Stg 1	6.63	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-
Follow-up Hdwy	3.669	3.919	3.119	-	-
Pot Cap-1 Maneuver	271	574	578	-	-
Stage 1	408	-	-	-	-
Stage 2	651	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	270	574	578	-	-
Mov Cap-2 Maneuver	270	-	-	-	-
Stage 1	407	-	-	-	-
Stage 2	651	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.4	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	578	-	270	-	-
HCM Lane V/C Ratio	0.002	-	0.004	-	-
HCM Control Delay (s)	11.2	0	18.4	-	-
HCM Lane LOS	B	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑↑	
Traffic Vol, veh/h	10	317	484	14	16	8
Future Vol, veh/h	10	317	484	14	16	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	337	515	15	17	9

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	530	0	0	714	265
Stage 1	-	-	-	523	-
Stage 2	-	-	-	191	-
Critical Hdwy	4.14	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	3.52	3.32
Pot Cap-1 Maneuver	1033	-	-	366	733
Stage 1	-	-	-	559	-
Stage 2	-	-	-	822	-
Platoon blocked, %		-	-		
Mov Cap-1 Maneuver	1033	-	-	361	733
Mov Cap-2 Maneuver	-	-	-	361	-
Stage 1	-	-	-	552	-
Stage 2	-	-	-	822	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	13.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1033	-	-	-	435
HCM Lane V/C Ratio	0.01	-	-	-	0.059
HCM Control Delay (s)	8.5	0.1	-	-	13.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

HCM 6th TWSC
 17: Chapman Ave/Chapman Road & Thompson Ave

Existing AM

Intersection												
Int Delay, s/veh	3.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	3	37	30	15	2	37	142	7	7	144	9
Future Vol, veh/h	2	3	37	30	15	2	37	142	7	7	144	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	3	43	34	17	2	43	163	8	8	166	10

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	450	444	171	463	445	167	176	0	0	171	0	0
Stage 1	187	187	-	253	253	-	-	-	-	-	-	-
Stage 2	263	257	-	210	192	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	519	508	873	509	508	877	1400	-	-	1406	-	-
Stage 1	815	745	-	751	698	-	-	-	-	-	-	-
Stage 2	742	695	-	792	742	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	488	488	873	467	488	877	1400	-	-	1406	-	-
Mov Cap-2 Maneuver	488	488	-	467	488	-	-	-	-	-	-	-
Stage 1	787	741	-	725	674	-	-	-	-	-	-	-
Stage 2	697	671	-	745	738	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	9.8		13.4		1.5		0.3	
HCM LOS	A		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1400	-	-	798	483	1406	-	-
HCM Lane V/C Ratio	0.03	-	-	0.06	0.112	0.006	-	-
HCM Control Delay (s)	7.7	0	-	9.8	13.4	7.6	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.4	0	-	-

HCM 6th TWSC
 3: Rockville Pike - 355 & Gas Station

Existing PM

Intersection						
Int Delay, s/veh	0.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗ ↑↑↑	↑↑↑			↑↑↑
Traffic Vol, veh/h	0	58	1821	44	0	1248
Future Vol, veh/h	0	58	1821	44	0	1248
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	66	2069	50	0	1357

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	-	1060	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	189	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	-	189	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	33.9	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	189
HCM Lane V/C Ratio	-	-	0.349
HCM Control Delay (s)	-	-	33.9
HCM Lane LOS	-	-	D
HCM 95th %tile Q(veh)	-	-	1.5

HCM 6th TWSC
6: Chapman Ave & Pike Center North/Driveway

Existing PM

Intersection												
Int Delay, s/veh	0.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	1	4	4	1	7	3	697	8	5	589	4
Future Vol, veh/h	6	1	4	4	1	7	3	697	8	5	589	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	1	4	4	1	8	3	774	9	6	654	4

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1062	1457	329	1125	1455	392	658	0	0	783	0	0
Stage 1	668	668	-	785	785	-	-	-	-	-	-	-
Stage 2	394	789	-	340	670	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	178	129	667	160	129	607	926	-	-	831	-	-
Stage 1	414	455	-	352	402	-	-	-	-	-	-	-
Stage 2	602	400	-	648	454	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	172	127	667	156	127	607	926	-	-	831	-	-
Mov Cap-2 Maneuver	172	127	-	156	127	-	-	-	-	-	-	-
Stage 1	412	450	-	350	400	-	-	-	-	-	-	-
Stage 2	589	398	-	635	449	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	21.8		19.2		0		0.2	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	926	-	-	226	266	831	-	-
HCM Lane V/C Ratio	0.004	-	-	0.054	0.05	0.007	-	-
HCM Control Delay (s)	8.9	0	-	21.8	19.2	9.4	0.1	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0	-	-

HCM 6th TWSC
7: Chapman Ave & Rollins Ave

Existing PM

Intersection						
Int Delay, s/veh	2.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	71	97	611	68	45	552
Future Vol, veh/h	71	97	611	68	45	552
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	73	100	630	70	46	569

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1042	665	0	0	700
Stage 1	665	-	-	-	-
Stage 2	377	-	-	-	-
Critical Hdwy	6.63	6.23	-	-	4.13
Critical Hdwy Stg 1	5.43	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219
Pot Cap-1 Maneuver	239	459	-	-	895
Stage 1	510	-	-	-	-
Stage 2	664	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	221	459	-	-	895
Mov Cap-2 Maneuver	221	-	-	-	-
Stage 1	510	-	-	-	-
Stage 2	614	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21	0	1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	221	459	895	-
HCM Lane V/C Ratio	-	-	0.331	0.218	0.052	-
HCM Control Delay (s)	-	-	29.2	15	9.2	0.3
HCM Lane LOS	-	-	D	C	A	A
HCM 95th %tile Q(veh)	-	-	1.4	0.8	0.2	-

HCM 6th TWSC
8: Chapman Ave & Pike Center South

Existing PM

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T T T T		
Traffic Vol, veh/h	1	3	0	674	659	8
Future Vol, veh/h	1	3	0	674	659	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	4	0	793	775	9

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1573	392	784	0	-	0
Stage 1	780	-	-	-	-	-
Stage 2	793	-	-	-	-	-
Critical Hdwy	6.08	7.13	5.33	-	-	-
Critical Hdwy Stg 1	6.63	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.669	3.919	3.119	-	-	-
Pot Cap-1 Maneuver	138	519	498	-	-	-
Stage 1	338	-	-	-	-	-
Stage 2	433	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	138	519	498	-	-	-
Mov Cap-2 Maneuver	138	-	-	-	-	-
Stage 1	338	-	-	-	-	-
Stage 2	433	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.9	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	498	-	307	-	-
HCM Lane V/C Ratio	-	-	0.015	-	-
HCM Control Delay (s)	0	-	16.9	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	
Traffic Vol, veh/h	20	516	475	31	46	28
Future Vol, veh/h	20	516	475	31	46	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	21	532	490	32	47	29

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	522	0	-	0	814 261
Stage 1	-	-	-	-	506 -
Stage 2	-	-	-	-	308 -
Critical Hdwy	4.14	-	-	-	6.84 6.94
Critical Hdwy Stg 1	-	-	-	-	5.84 -
Critical Hdwy Stg 2	-	-	-	-	5.84 -
Follow-up Hdwy	2.22	-	-	-	3.52 3.32
Pot Cap-1 Maneuver	1041	-	-	-	316 738
Stage 1	-	-	-	-	571 -
Stage 2	-	-	-	-	719 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1041	-	-	-	307 738
Mov Cap-2 Maneuver	-	-	-	-	307 -
Stage 1	-	-	-	-	554 -
Stage 2	-	-	-	-	719 -

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	16.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1041	-	-	-	394
HCM Lane V/C Ratio	0.02	-	-	-	0.194
HCM Control Delay (s)	8.5	0.1	-	-	16.3
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.7

HCM 6th TWSC
 17: Chapman Ave/Chapman Road & Thompson Ave

Existing PM

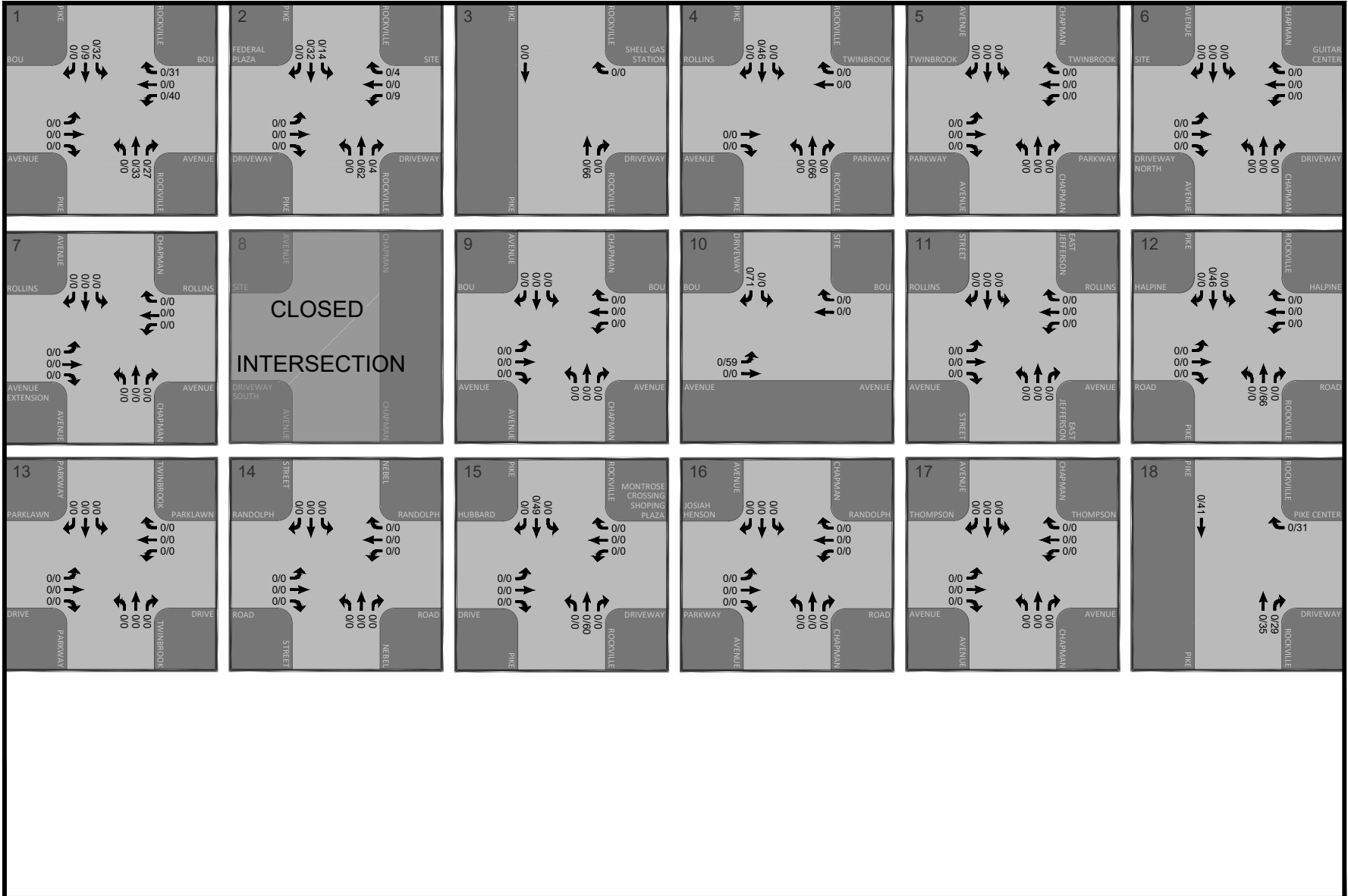
Intersection												
Int Delay, s/veh	3.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	26	17	122	9	12	5	28	279	23	7	281	27
Future Vol, veh/h	26	17	122	9	12	5	28	279	23	7	281	27
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	28	18	130	10	13	5	30	297	24	7	299	29

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	706	709	314	771	711	309	328	0	0	321	0	0
Stage 1	328	328	-	369	369	-	-	-	-	-	-	-
Stage 2	378	381	-	402	342	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	351	359	726	317	358	731	1232	-	-	1239	-	-
Stage 1	685	647	-	651	621	-	-	-	-	-	-	-
Stage 2	644	613	-	625	638	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	329	346	726	243	345	731	1232	-	-	1239	-	-
Mov Cap-2 Maneuver	329	346	-	243	345	-	-	-	-	-	-	-
Stage 1	664	642	-	631	602	-	-	-	-	-	-	-
Stage 2	607	595	-	495	634	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	14.4		16.9		0.7		0.2	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1232	-	-	557	331	1239	-	-
HCM Lane V/C Ratio	0.024	-	-	0.315	0.084	0.006	-	-
HCM Control Delay (s)	8	0	-	14.4	16.9	7.9	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	1.3	0.3	0	-	-

APPENDIX F
Pass-By Trip
Assignments



Phase 1 Pass-By Trips

AM PEAK HOUR
PM PEAK HOUR
000 / 000

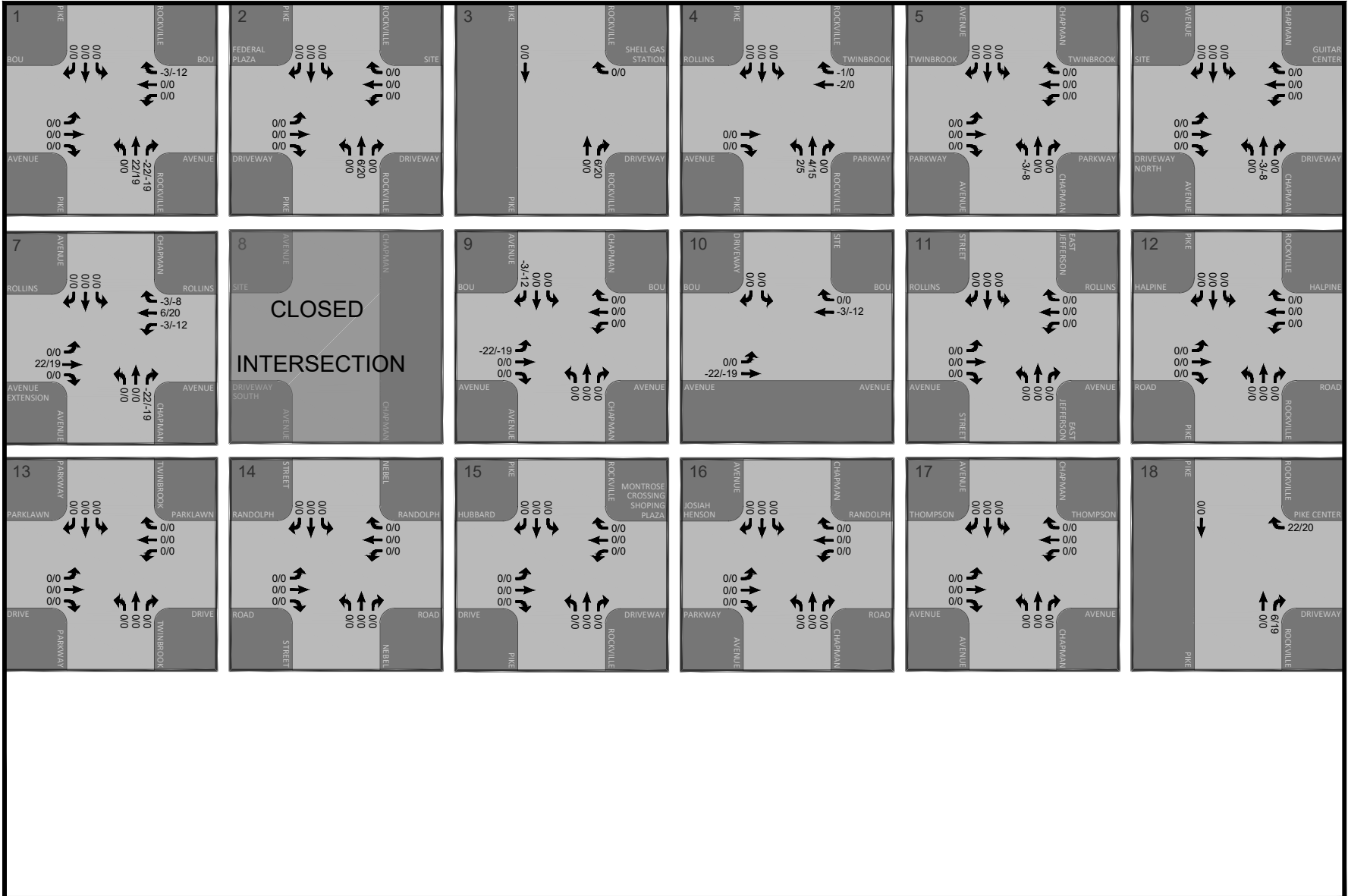


NORTH
Pike Center
Montgomery County, Maryland



APPENDIX G

Diverted Trip Assignments



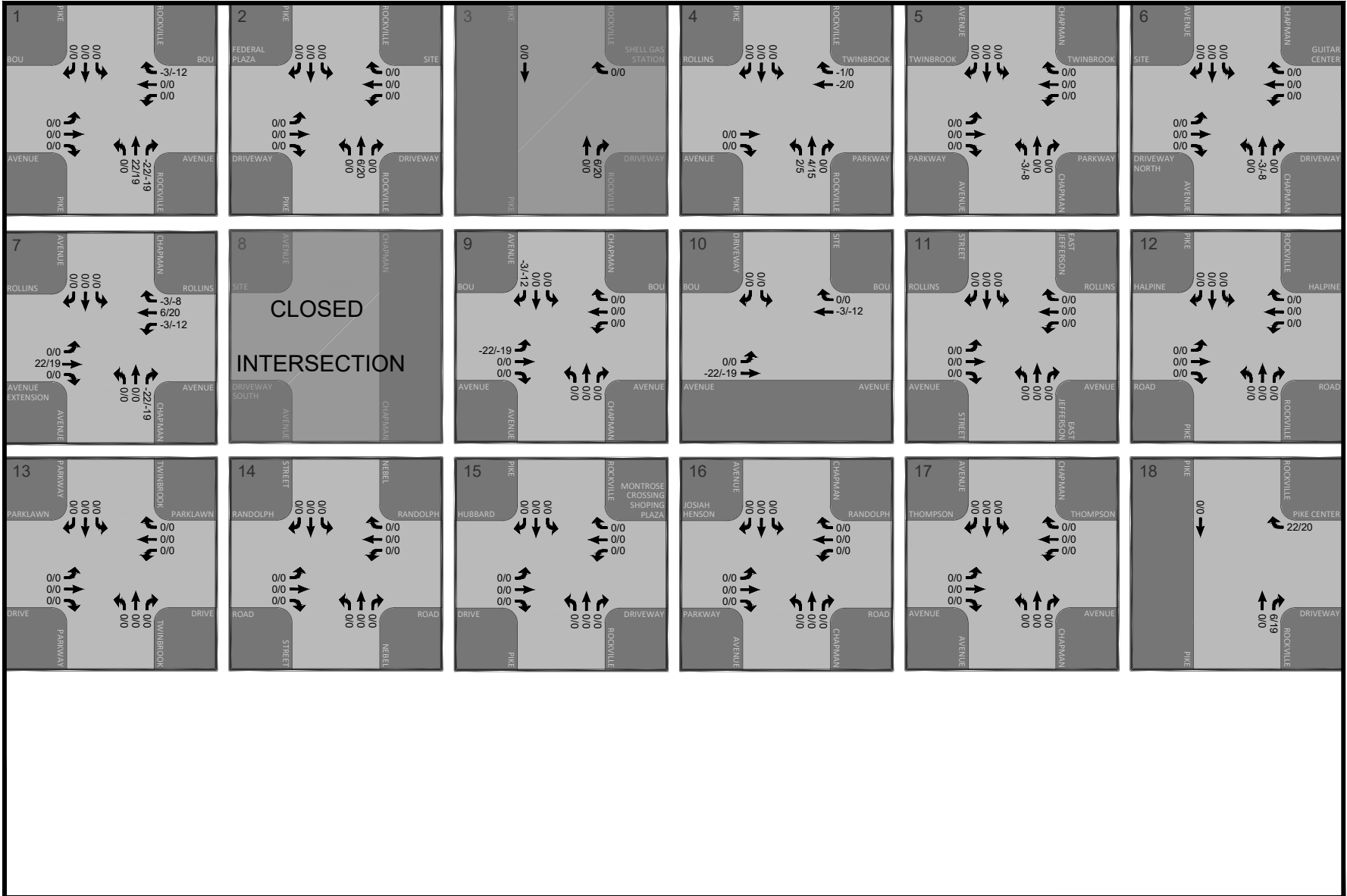
Phase 1 Diverted Trips

AM PEAK HOUR
PM PEAK HOUR
000 / 000



NORTH
Pike Center
Montgomery County, Maryland





Phase 2 Diverted Trips

AM PEAK HOUR
PM PEAK HOUR
000 / 000



NORTH
Pike Center
Montgomery County, Maryland



APPENDIX H
Future Background
Conditions Capacity
Analyses

Pike Center
 Background Conditions Levels of Service Summary¹

Approach/ Lane Group	Existing Conditions				2034 Future Conditions without Development			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)
1. Rockville Pike / Bou Avenue -- Orange Policy Area								
EBT	F	99.1	F	97.0	F	99.1	F	97.0
EBR	F	91.8	F	89.4	F	91.8	F	89.4
WBL	F	81.6	F	83.0	F	81.4	F	82.9
WBT	E	66.0	E	74.0	E	65.0	E	73.7
NBL	F	100.2	F	97.9	F	100.2	F	97.9
NBT	C	27.7	C	33.1	D	35.2	D	43.6
NBR	C	24.1	C	25.4	C	24.8	C	26.6
SBL	C	24.6	F	82.8	E	51.9	F	130.9
SBT	C	22.6	C	21.4	D	29.4	C	25.2
Overall	D	35.7	D	39.3	D	39.3	D	44.8
2. Rockville Pike / Pike Center Driveway / Federal Plaza Driveway -- Orange Policy Area								
EBT	E	76.3	E	78.9	E	76.3	E	78.9
EBR	E	73.5	E	62.5	E	73.5	E	62.5
WBT	E	77.0	E	74.3	E	77.0	E	74.3
NBL	A	4.7	B	15.0	B	11.5	D	51.3
NBT	A	6.1	B	15.5	A	7.5	B	19.4
SBL	A	4.3	B	13.1	A	5.0	B	19.2
SBT	A	7.9	B	18.1	B	10.6	C	25.4
Overall	A	9.6	C	21.7	B	10.8	C	26.9

3. Rockville Pike/ Shell Gas Station Driveway - Unsignalized -- Orange Policy Area								
WBR	B	13.8	D	33.9	C	21.5	F	67.6
NBTR	-	-	-	0.0	-	-	-	-
SBT	-	-	-	0.0	-	-	-	-
Overall	-	-	-	-	-	-	A*	1.3
4. Rockville Pike / Twinbrook Pkwy / Rollins Ave -- Red Policy Area								
EBT	E	70.8	E	67.3	E	67.6	E	66.6
WBT	E	67.8	E	58.6	E	60.9	E	57.3
WBR	E	70.3	E	60.2	E	69.5	E	60.1
NBL	A	8.4	B	11.6	C	20.0	C	21.8
NBT	B	11.0	C	20.1	B	20.0	C	29.2
NBR	A	9.7	B	13.9	B	14.3	B	16.4
SBL	A	6.6	B	15.8	B	15.7	E	67.6
SBT	B	12.3	B	15.3	C	20.1	C	23.0
Overall	C	24.7	C	27.8	C	28.5	C	34.3
5. Chapman Ave / Twinbrook Pkwy -- Red Policy Area								
EBL	B	17.3	C	28.6	B	19.9	C	30.1
EBT	C	23.8	D	44.6	C	27.4	D	48.4
WBL	F	83.5	E	65.8	F	83.1	E	63.3
WBT	A	9.9	B	18.4	B	11.7	B	18.4
NBT	F	93.9	F	107.7	F	97.8	F	131.8
NBR	D	49.2	E	75.7	D	45.0	E	78.1
SBL	F	88.0	F	93.2	F	88.0	F	93.2
SBT	F	90.5	F	102.1	F	90.5	F	102.1
SBR	F	84.0	E	78.1	F	84.0	E	78.1
Overall	D	44.5	E	56.0	D	46.5	E	58.8

9. Chapman Ave / Bou Ave -- Orange Policy Area								
EBL	C	23.2	C	25.9	C	23.0	C	26.8
EBT	C	21.7	C	22.7	C	21.9	C	22.4
WBL	D	35.3	D	40.4	C	34.8	D	42.4
WBT	D	37.6	D	45.2	D	37.1	D	47.8
WBR	D	36.4	D	42.5	D	36.4	D	45.0
NBL	C	29.1	C	33.7	C	28.6	D	35.6
NBT	C	29.8	D	37.1	C	29.3	D	39.5
SBL	C	32.4	D	46.9	C	33.2	E	56.6
SBT	C	30.7	D	36.5	C	30.2	D	38.7
SBR	B	18.1	B	16.8	B	18.4	B	16.6
Overall	C	25.5	C	31.8	C	26.0	C	34.3
10. Bou Ave / Pike Center Driveway - Unsignalized -- Orange Policy Area								
EBL	A	8.5	A	8.5	A	8.6	A	8.5
EBT	A	0.1	A	0.1	A	0.1	A	0.1
WBT	-	-	-	-	-	-	-	-
WBR	-	-	-	-	-	-	-	-
SBLR	B	13.8	C	16.3	B	14.0	C	16.6
Overall	-	-	-	-	-	-	-	-
11. E Jefferson St / Rollins Ave -- City of Rockville								
EBL	D	48.3	D	48.1	D	48.3	D	48.1
EBT	D	50.4	D	50.5	D	50.4	D	50.5
WBL	E	56.7	E	57.6	D	54.2	E	64.5
WBT	D	35.3	C	34.5	D	37.0	C	32.5
NBT	B	10.9	B	15.3	A	9.9	B	17.1
NBR	A	2.4	A	2.6	A	2.6	A	2.6
SBT	A	9.8	B	11.1	A	8.9	B	12.4
Overall	C	23.5	C	23.2	C	20.4	C	26.0

12. Rockville Pike / Halpine Rd -- Red Policy Area								
EBL	F	90.2	F	93.8	E	65.5	E	61.6
EBT	F	83.5	E	75.3	E	64.2	E	57.3
WBL	F	82.1	E	75.2	F	90.2	F	87.0
WBT	F	83.8	E	77.8	E	64.0	E	58.2
WBR	F	81.4	E	74.0	E	63.4	E	56.8
NBL	A	3.8	B	12.2	B	14.7	E	60.6
NBT	A	5.2	B	10.4	B	15.3	C	27.9
SBL	A	3.3	B	11.2	B	10.9	E	56.5
SBT	A	6.8	B	15.8	B	17.4	C	31.8
Overall	B	13.7	C	21.0	C	22.7	D	36.7
13. Twinbrook Pkwy / Parklawn Dr -- Red Policy Area								
EBL	F	101.1	F	97.5	F	101.1	F	97.5
EBT	F	107.9	F	112.9	F	107.9	F	112.9
WBL	F	111.8	F	106.3	F	111.8	F	106.3
WBT	F	110.5	F	106.0	F	110.5	F	106.0
WBR	E	78.3	E	71.8	E	78.3	E	71.8
NBL	A	9.2	B	15.0	A	9.4	B	15.0
NBT	B	12.9	C	24.8	B	12.8	C	25.2
SBL	A	8.3	B	16.4	A	8.2	B	16.9
SBT	B	14.1	C	20.2	B	14.3	C	20.3
Overall	C	28.9	D	40.1	C	28.9	D	40.1

14. Nebel St / Randolph Rd -- Red Policy Area								
EBL	B	11.7	C	32.1	B	19.7	D	39.6
EBT	B	15.8	D	53.0	C	26.6	E	78.6
WBL	A	8.9	D	38.6	B	14.1	F	101.7
WBT	B	14.5	D	38.8	C	21.1	D	46.0
NBL	F	83.4	E	61.7	E	77.4	E	58.7
NBT	F	97.5	E	77.0	F	89.7	E	73.2
NBR	F	106.9	F	107.2	F	108.7	F	112.3
SBL	E	80.1	D	49.8	E	69.0	D	46.2
SBT	F	95.8	E	62.7	F	83.9	E	57.2
SBR	F	90.7	E	57.5	F	80.6	D	52.4
Overall	C	27.8	D	54.1	C	33.6	E	68.1
15. Rockville Pike / Hubbard Dr / Plaza Driveway -- Orange Policy Area								
EBL	E	65.9	E	55.5	E	65.9	E	55.5
EBT	E	64.4	D	52.7	E	64.4	D	52.7
WBL	E	75.5	E	74.3	E	75.5	E	74.3
WBT	E	65.3	D	53.6	E	65.3	D	53.6
NBL	A	4.7	B	12.8	B	12.7	B	15.0
NBT	A	7.0	C	23.6	A	8.4	C	28.7
SBL	A	4.1	E	56.2	A	6.0	E	58.6
SBT	A	7.0	B	13.8	B	11.5	B	16.8
Overall	B	11.2	C	25.3	B	12.5	C	27.8

16. Chapman Ave / Randolph Rd / Josiah Henson Pkwy -- Red Policy Area								
EBL	A	6.4	B	10.3	A	7.6	B	10.8
EBT	A	7.3	B	15.8	A	7.5	B	16.8
WBL	A	6.4	B	13.1	A	6.6	B	13.4
WBT	B	11.9	B	18.5	B	13.2	B	19.2
WBR	A	7.5	B	14.9	A	7.8	B	14.9
NBL	E	72.2	E	78.8	E	72.2	E	78.8
NBT	E	70.6	E	70.0	E	70.6	E	70.0
SBL	E	68.9	E	62.3	E	68.9	E	62.3
SBT	E	71.5	E	70.2	E	71.5	E	70.2
Overall	B	12.4	C	25.2	B	13.0	C	25.2
17. Chapman Ave / Thompson Ave - Unsignalized -- Red Policy Area								
EBLTR	A	9.8	B	14.4	A	9.8	B	14.4
WBLTR	B	13.4	C	16.9	B	13.4	C	16.9
NBL	A	7.7	A	8.0	A	7.7	A	8.0
NBT	A	0.0	A	0.0	A	0.0	A	0.0
NBR	-	-	-	-	-	-	-	-
SBL	A	7.6	A	7.9	A	7.6	A	7.9
SBT	A	0.0	A	0.0	A	0.0	A	0.0
SBR	-	-	-	-	-	-	-	-
Overall	-	-	-	-	-	-	-	-
18. Rockville Pike (MD 355) / Rollins Ave Extension - Unsignalized -- Orange Policy Area								
WBR	FUTURE							
NBT								
NBR								
SBT								
Overall								

Notes:

1. Capacity analysis based on Highway Capacity Manual 6th methodology, using Synchro 11 unless otherwise noted.
 2. **Bold** roadways indicate N/S direction.
- *. Asterisks mark the use of the LATR HCM Average Delay

Table 6-2
 Pike Center
 Total Future with Development Conditions Queuing Summary

Approach/ Lane Group	Storage Length (ft)	Existing Conditions				2034 Future Conditions without Development			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		50th %tile	95th %tile	50th %tile	95th %tile	50th %tile	95th %tile	50th %tile	95th %tile
1. Rockville Pike / Bou Avenue -- Orange Policy Area									
EBT	-	48	93	65	116	48	93	65	116
EBR	90	0	0	0	0	0	0	0	0
WBL	-	296	350	215	262	313	371	219	264
WBT	-	12	63	25	109	12	63	25	109
NBL	175	50	95	77	133	50	95	77	133
NBT	-	279	353	649	805	578	690	1017	1289
NBR	-	28	87	160	280	40	99	206	342
SBL	245	75	133	187	381	76	142	232	447
SBT	-	370	484	303	415	694	864	501	668
2. Rockville Pike / Pike Center Driveway / Federal Plaza Driveway -- Orange Policy Area									
EBT	-	19	49	142	211	19	49	142	211
EBR	150	0	8	0	64	0	8	0	64
WBT	-	9	37	30	83	9	37	30	83
NBL	245	16	33	62	119	16	57	125	222
NBT	-	104	139	361	504	219	284	570	784
SBL	175	6	15	7	22	6	15	7	25
SBT	-	192	253	249	394	361	487	462	680

9. Chapman Ave / Bou Ave -- Orange Policy Area									
EBL	275	117	169	216	291	105	154	252	332
EBT	-	85	131	190	259	85	131	201	270
WBL	-	4	17	13	36	4	17	13	37
WBT	-	72	126	152	239	72	124	165	259
WBR	250	0	49	0	69	0	54	0	77
NBL	70	3	12	13	36	3	12	14	37
NBT	-	30	62	134	216	29	61	148	236
SBL	-	74	129	194	312	100	167	262	417
SBT	-	56	102	102	170	55	100	111	184
SBR	-	0	46	0	41	0	46	0	41
10. Bou Ave / Pike Center Driveway - Unsignalized -- Orange Policy Area									
EBL	-	-	0	-	3	-	0	-	3
EBT	-	-	-	-	-	-	-	-	-
WBT	-	-	-	-	-	-	-	-	-
WBR	-	-	-	-	-	-	-	-	-
SBLR	-	-	5	-	18	-	5	-	18
11. E Jefferson St / Rollins Ave -- City of Rockville									
EBL	-	12	34	7	23	12	34	7	23
EBT	-	37	83	35	80	37	83	35	80
WBL	-	200	276	230	328	171	240	267	436
WBT	-	20	55	54	106	20	56	51	106
NBT	-	86	172	206	347	82	167	223	347
NBR	-	0	13	0	14	0	14	0	15
SBT	-	41	80	52	88	39	77	56	88

12. Rockville Pike / Halpine Rd -- Red Policy Area									
EBL	250	53	100	124	188	47	83	107	155
EBT	-	33	68	41	77	29	56	35	64
WBL	-	8	27	21	49	212	289	263	343
WBT	-	34	71	85	136	30	60	74	113
WBR	450	0	44	0	66	0	37	0	55
NBL	165	12	24	46	122	24	51	162	266
NBT	-	86	118	286	392	313	434	689	964
SBL	175	9	21	22	45	19	43	73	153
SBT	-	178	256	303	438	410	585	583	812
13. Twinbrook Pkwy / Parklawn Dr -- Red Policy Area									
EBL	-	50	96	62	110	50	96	62	110
EBT	-	73	145	114	195	73	145	114	195
WBL	200	145	218	268	357	145	218	268	357
WBT	-	144	216	271	362	144	216	271	362
WBR	-	0	67	62	259	0	67	62	159
NBL	190	18	41	15	37	18	41	15	37
NBT	-	148	217	442	612	140	206	462	638
SBL	240	32	59	32	60	32	59	32	60
SBT	-	259	380	298	432	276	403	303	438
14. Nebel St / Randolph Rd -- Red Policy Area									
EBL	140	6	17	14	36	7	21	16	36
EBT	-	197	297	675	930	292	447	941	1195
WBL	125	69	120	111	177	115	194	234	331
WBT	-	344	470	500	634	495	676	631	725
NBL	100	103	154	123	166	97	141	112	166
NBT	-	79	133	182	254	76	127	179	259
NBR	-	101	163	361	468	168	245	417	586
SBL	250	138	196	268	328	170	225	280	370
SBT	-	102	162	190	257	99	153	182	266
SBR	-	20	48	26	54	19	45	24	54

15. Rockville Pike / Hubbard Dr / Plaza Driveway -- Orange Policy Area									
EBL	-	19	47	37	72	19	47	37	72
EBT	-	7	34	11	45	7	34	11	45
WBL	-	79	134	192	267	79	134	192	267
WBT	-	15	63	12	72	15	63	12	72
NBL	-	4	12	5	16	4	12	5	16
NBT	-	114	154	448	608	202	276	660	929
SBL	180	8	20	119	203	8	20	119	203
SBT	-	155	209	293	394	497	642	465	616
16. Chapman Ave / Randolph Rd / Josiah Henson Pkwy -- Red Policy Area									
EBL	350	19	37	49	92	19	37	49	92
EBT	-	107	202	219	390	119	223	259	457
WBL	165	2	8	5	15	2	8	5	15
WBT	-	283	399	205	303	341	474	233	343
WBR	215	0	0	0	33	0	0	0	33
NBL	250	12	35	49	97	12	35	49	97
NBT	-	7	28	23	67	7	28	23	67
SBL	-	27	60	136	202	27	60	136	202
SBT	-	38	76	166	240	38	76	166	240

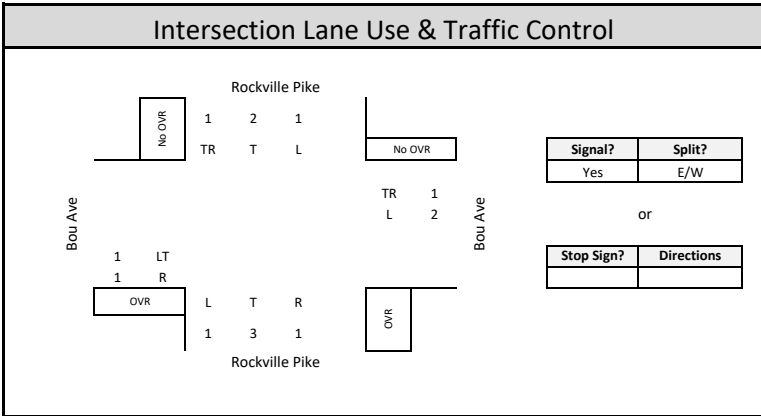
17. Chapman Ave / Thompson Ave - Unsignalized -- Red Policy Area									
EBLTR		-	5	-	33	-	5	-	33
WBLTR		-	10	-	8	-	10	-	8
NBL		-	3	-	3	-	3	-	3
NBT		-	-	-	-	-	-	-	-
NBR		-	-	-	-	-	-	-	-
SBL		-	0	-	0	-	0	-	0
SBT		-	-	-	-	-	-	-	-
SBR		-	-	-	-	-	-	-	-
18. Rockville Pike (MD 355) / Rollins Ave Extension - Unsignalized									
WBLTR		FUTURE							
NBT									
NBR									
SBT									

Notes:

- Capacity analysis based on Highway Capacity Manual 6th or 2000 Edition methodology, using Synchro 11.

1 Critical Lane Volume and Level of Service Calculations

Intersection: **01. Rockville Pike / Bou Ave**
 Jurisdiction: **Montgomery County, MD**
 Scenario/Design Year: **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	LT	35		1.00	35				35	*
	R	25	0	1.00	25				25	*
WB	2L	467		0.60	280				280	*
	TR	76	0	1.00	76				76	*
NB	3T	1609		0.37	595	124			731	*
	R	177	177	1.00	0		1.10	136	136	*
SB	2T+TR	1980		0.37	733	36			773	*
Note:									CLV	1088
									v/c	0.702
Congestion Equiv.									LOS	B
										1550

PM Peak Hour Critical Lane Volume Analysis

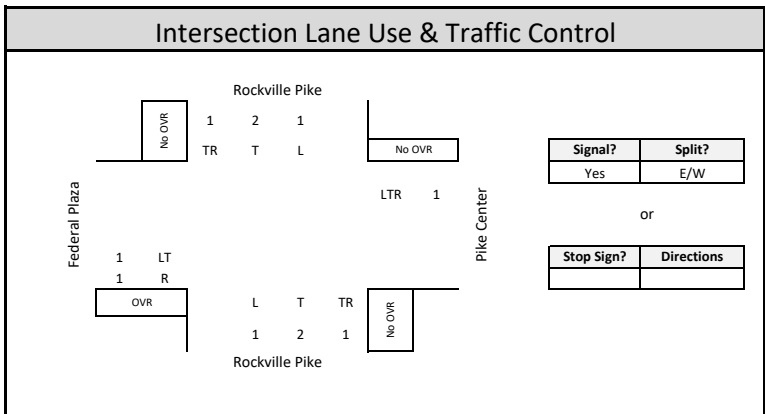
Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	LT	48		1.00	48				48	*
	R	36	0	1.00	36				36	*
WB	2L	329		0.60	197				197	*
	TR	196	0	1.00	196				196	*
NB	3T	2369		0.37	877	206			1104	*
	R	390	390	1.00	0		1.10	227	227	*
SB	2T+TR	1691		0.37	626	57			689	*
Note:									CLV	1349
									v/c	0.870
Congestion Equiv.									LOS	D
										1550

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap Vol.			Overlap		
		AM	PM	LUF	AM	PM	LUF	AM	PM	LUF
Eastbound	Yes	25	36	1.00	36	57	0.00	0	0	
Westbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0	
Northbound	Yes	177	390	0.00	467	329	0.60	177	390	
Southbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0	

Montgomery County LATR

	Lane Use Factors			LOS	
	Number of Lanes	Left Turn LUF	Through LUF	GRADE	VALUE
1	1.1	1.00		A	1000.00
2	0.6	0.53		B	1150.00
3	0.4	0.37		C	1300.00
4		0.30		D	1450.00
5		0.25		E	1600.00
				F	1800.00



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	18		1.00	18				18	*
	R	54	54	1.00	0					
WB	LTR	17	0	1.00	17				17	*
NB	2T+TR	1518	0	0.37	562	30	1.10	33	595	
	2T+TR	2004	0	0.37	741	84	1.10	92	833	*
Note:									CLV	868
									v/c	0.560
									LOS	A
Congestion Equiv.										
						1550				

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	135		1.00	135				135	*
	R	133	133	1.00	0					
WB	LTR	65	0	1.00	65				65	*
NB	2T+TR	2245	0	0.37	831	26	1.10	29	860	*
	2T+TR	1737	0	0.37	643	197	1.10	217	860	*
Note:									CLV	1060
									v/c	0.684
									LOS	B
Congestion Equiv.										
						1550				

Right Turn Overlap

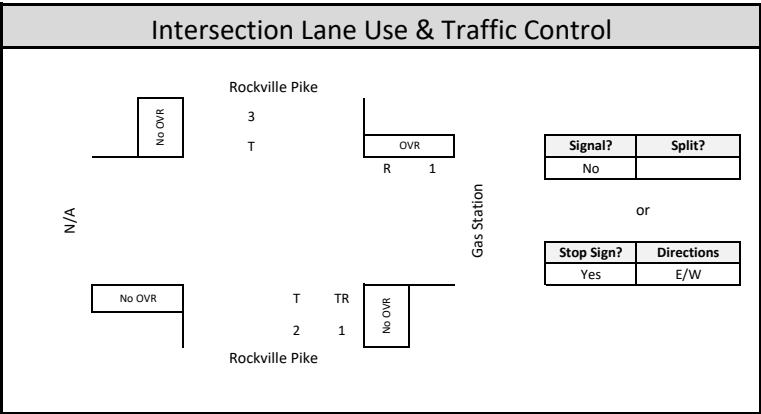
Approach	Excl. Right	Right Vol.			Adjacent Overlap Vol.			Overlap		
		AM	PM	LUF	AM	PM	LUF	AM	PM	LUF
Eastbound	Yes	54	133	1.00	84	197	1.10	54	133	
Westbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0	
Northbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0	
Southbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0	

Montgomery County LATR

	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
1	1.1	1.00	
2	0.6	0.53	
3	0.4	0.37	
4		0.30	
5		0.25	

3 Critical Lane Volume and Level of Service Calculations

Intersection: **03. Rockville Pike / Gas Station**
 Jurisdiction: **Montgomery County, MD**
 Scenario/Design Year: **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											
WB	R	19	0	1.00	19				19	*	
NB	2T+TR	1531	0	0.37	566				566		
SB	3T	2053	0	0.37	760				760	*	
Note:									CLV	779	
									v/c	0.503	
									LOS	A	
					Congestion Equiv.						
					1550						

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											
WB	R	58	0	1.00	58				58	*	
NB	2T+TR	2387	0	0.37	883				883	*	
SB	3T	1751	0	0.37	648				648		
Note:									CLV	941	
									v/c	0.607	
									LOS	A	
					Congestion Equiv.						
					1550						

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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	Yes	19	58	1.00	0	0	0.00	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

	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
1	1.1	1.00	
2	0.6	0.53	
3	0.4	0.37	
4		0.30	
5		0.25	

Critical Lane Volume and Level of Service Calculations

Intersection: 04. Rockville Pike / Twinbrook Park / Rollins Ave

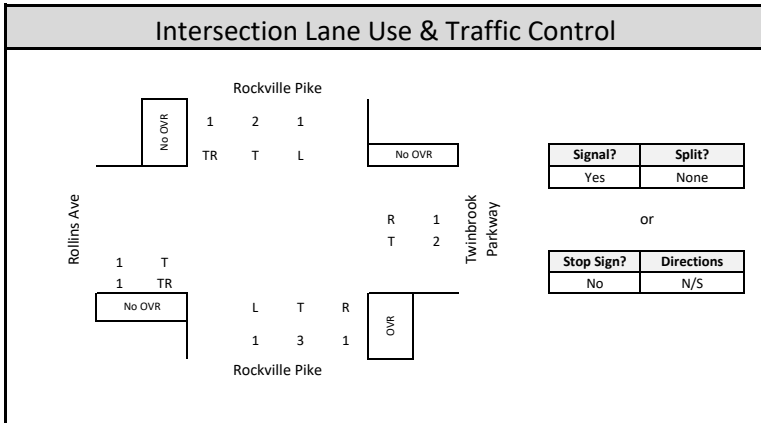
Jurisdiction: Montgomery County, MD

Scenario/Design Year: Background Conditions

Computed by: W+A



WELLS + ASSOCIATES



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	T+TR	389	0	0.53	206				206	*
WB	2T	312		0.53	165				165	
	R	186	0	1.00	186				186	
NB	3T	1391		0.37	515	197	1.10	217	732	
	R	106	0	1.00	106				323	
SB	2T+TR	1919	0	0.37	710	105	1.10	116	826	*
Note:									CLV	1032
									v/c	0.666
									LOS	B
					Congestion Equiv.					
					1550					

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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	484	0	0.53	257				257	*
WB	2T	314		0.53	166				166	
	R	166	0	1.00	166				166	
NB	3T	2007		0.37	743	198	1.10	218	961	*
	R	121	0	1.00	121				339	
SB	2T+TR	1749	0	0.37	647	138	1.10	152	799	
Note:									CLV	1218
									v/c	0.786
									LOS	C
					Congestion Equiv.					
					1550					

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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	Yes	106	121	1.00	0	0	0.00	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	1.00
2	0.6	0.53
3	0.4	0.37
4		0.30
5		0.25

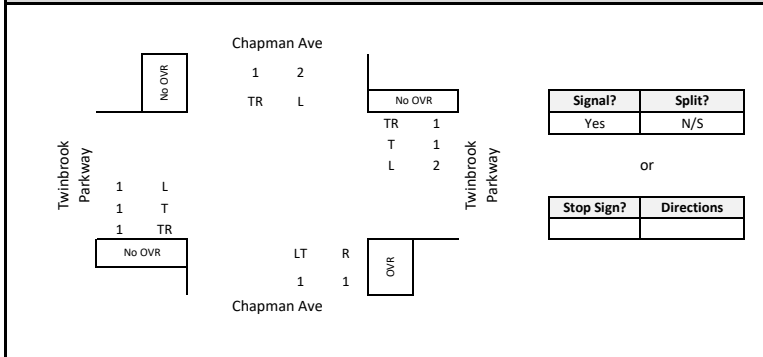
5

Critical Lane Volume and Level of Service Calculations

Intersection: **05. Twinbrook Park / Chapman Ave**
 Jurisdiction: **Montgomery County, MD**
 Scenario/Design Year: **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	T+TR	578	0	0.53	306	531	0.60	319	625	*
WB	T+TR	563	0	0.53	298	40	1.10	44	342	
NB	LT	115		1.00	115				115	*
SB	R	197	197	1.00	0					
	TR	50		1.00	50					
L		84	0	0.60	50				50	*
Note:									CLV	790
									v/c	0.510
									LOS	A
					Congestion Equiv.					
					1550					

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	T+TR	867	0	0.53	460	469	0.60	281	741	*
WB	T+TR	727	0	0.53	385	68	1.10	75	460	
NB	LT	185		1.00	185				185	*
SB	R	591	281	1.00	310				310	*
	TR	119		1.00	119					
L		215	0	0.60	129				129	*
Note:									CLV	1180
									v/c	0.761
									LOS	C
					Congestion Equiv.					
					1550					

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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	Yes	197	591	1.00	531	469	0.60	197	281
Southbound	No	n/a	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	1.00	
2	0.6	0.53	
3	0.4	0.37	
4		0.30	
5		0.25	

6

**Critical Lane Volume
and
Level of Service Calculations**

Intersection: 06. Chapman Ave / Site Drive North

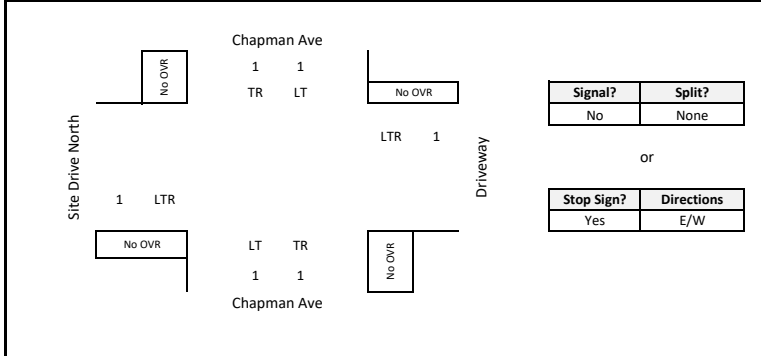
Jurisdiction: Montgomery County, MD

Scenario/Design Year: Background Conditions

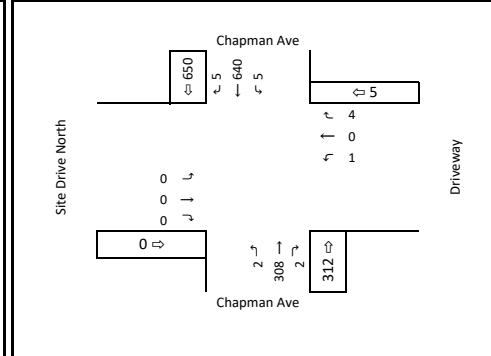
Computed by: W+A



Intersection Lane Use & Traffic Control



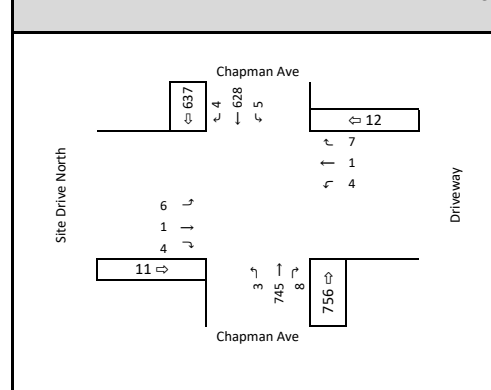
AM Peak Hour Critical Lane Volume Analysis



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	0	0	1.00	0	1	1.10	1	1		
WB	LTR	5	0	1.00	5	0	1.10	0	5	*	
NB	T+TR	310	0	0.53	164	5	1.10	6	170		
	L	2		1.10	2				8		
SB	T+TR	645	0	0.53	342	2	1.10	2	344	*	
	L	5		1.10	6				8		
Note:									CLV	349	
									v/c	0.225	
									LOS	A	
					Congestion Equiv.	1550					

Approach	Direction	Lane Group	Volume	LUF	Opposing	Opposing LUF	Opposing Vol	CLV	Included

PM Peak Hour Critical Lane Volume Analysis



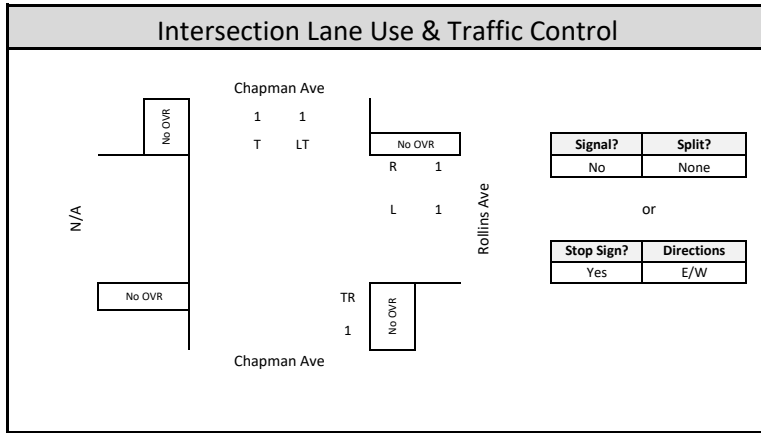
Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV	
EB	LTR	5	0	1.00	5	4	1.10	4	9		
									4		
WB	LTR	12	0	1.00	12	6	1.10	7	19	*	
									7		
NB	T+TR	753	0	0.53	399	5	1.10	6	405	*	
	L	3		1.10	3				9		
SB	T+TR	632	0	0.53	335	3	1.10	3	338		
	L	5		1.10	6				9		
Note:									CLV	424	
									v/c	0.274	
									LOS	A	
					Congestion Equiv.	1550					

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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	1.00
2	0.6	0.53
3	0.4	0.37
4		0.30
5		0.25



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										
WB	L	35		1.10	39				39	*
	R	36	0	1.00	36				36	
NB	TR	395	0	1.00	395	36	1.10	40	435	*
SB	LT+T	604	0	0.53	320	0	1.10	0	320	
Note:									CLV	474
									v/c	0.306
									LOS	A
					Congestion Equiv.					
					1550					

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

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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

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	L	71		1.10	78				78	*
	R	97	0	1.00	97				97	
NB	TR	727	0	1.00	727	45	1.10	50	777	*
SB	LT+T	636	0	0.53	337	0	1.10	0	337	
Note:									CLV	874
									v/c	0.564
									LOS	A
					Congestion Equiv.					
					1550					

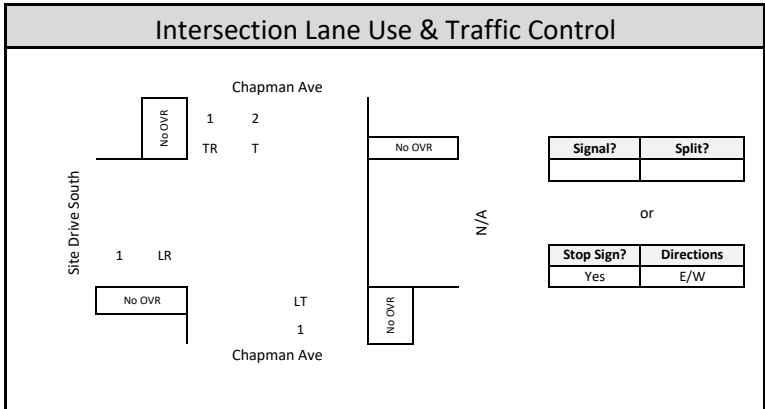
Montgomery County LATR

Number of Lanes	Lane Use Factors			LOS	
	Left Turn LUF	Through LUF		GRADE	VALUE
1	1.1	1.00		A	1000.00
2	0.6	0.53		B	1150.00
3	0.4	0.37		C	1300.00
4		0.30		D	1450.00
5		0.25		E	1600.00
				F	1800.00

8

Critical Lane Volume and Level of Service Calculations

Intersection: 08. Chapman Ave / Site Drive South
 Jurisdiction: Montgomery County, MD
 Scenario/Design Year: 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	LR	1	0	1.10	1				1	*
WB										
NB	LT	362	0	1.00	362				362	*
SB	T+TR	606		0.37	224	1	1.10	1	225	
Note:									CLV	363
Congestion Equiv.									v/c	0.234
1550									LOS	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	LR	1	0	1.10	1				1	*
WB									0	
NB	LT	722	0	1.00	722				722	*
SB	T+TR	706		0.37	261	0		0	261	
Note:									CLV	723
Congestion Equiv.									v/c	0.466
1550									LOS	A

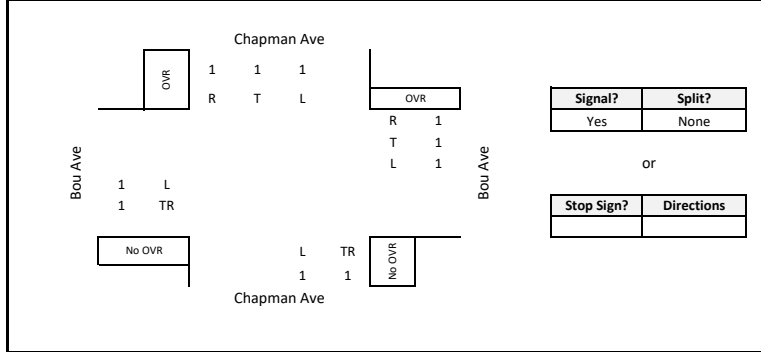
Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap Vol.			Overlap		
		AM	PM	LUF	AM	PM	LUF	AM	PM	LUF
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	1.00
2	0.6	0.53
3	0.4	0.37
4		0.30
5		0.25

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	153	0	1.00	153	6	1.10	7	160	
WB	T	91		1.00	91	169	1.10	186	277	*
WB	R	153	146	1.00	7				193	
NB	TR	45	0	1.00	45	133	1.10	146	191	
SB	T	79		1.00	79	4	1.10	4	83	*
SB	R	393	186	1.10	228				232	*
Note:									CLV	509
Congestion Equiv.									v/c	0.328
									LOS	A
										1550

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	295	0	1.00	295	15	1.10	17	312	
WB	T	167		1.00	167	342	1.10	376	543	*
WB	R	253	253	1.00	0				376	
NB	TR	169	0	1.00	169	240	1.10	264	433	*
SB	T	127		1.00	127	17	1.10	19	146	
SB	R	334	334	1.10	0				19	
Note:									CLV	976
Congestion Equiv.									v/c	0.630
									LOS	A
										1550

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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	Yes	153	253	1.00	133	240	1.10	146	253
Northbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Southbound	Yes	393	334	1.00	169	342	1.10	186	334

Montgomery County LATR

	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
1		1.1	1.00
2		0.6	0.53
3		0.4	0.37
4			0.30
5			0.25

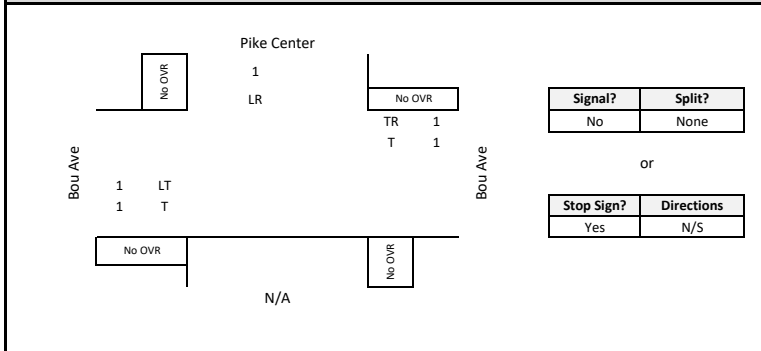
10

Critical Lane Volume and Level of Service Calculations

Intersection: **10. Bou Ave / Site Drive**
 Jurisdiction: **Montgomery County, MD**
 Scenario/Design Year: **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	2T	300	0	1.00	300	0	1.10	0	300	*
WB	T+TR	523	0	0.53	277	10	1.10	11	288	
NB										
SB	LR	24	0	1.10	26				26	*
Note:									CLV	326
									v/c	0.210
Congestion Equiv.									LOS	A
									1550	

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	2T	300	0	1.00	300	0	1.10	0	300	*
WB	T+TR	523	0	0.53	277	10	1.10	11	288	
NB										
SB	LR	24	0	1.10	26				26	*

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	2T	541	0	1.00	541	0	1.10	0	541	*
WB	T+TR	511	0	0.53	271	20	1.10	22	293	
NB										
SB	LR	74	0	1.10	81				81	*
Note:									CLV	622
									v/c	0.401
Congestion Equiv.									LOS	A
									1550	

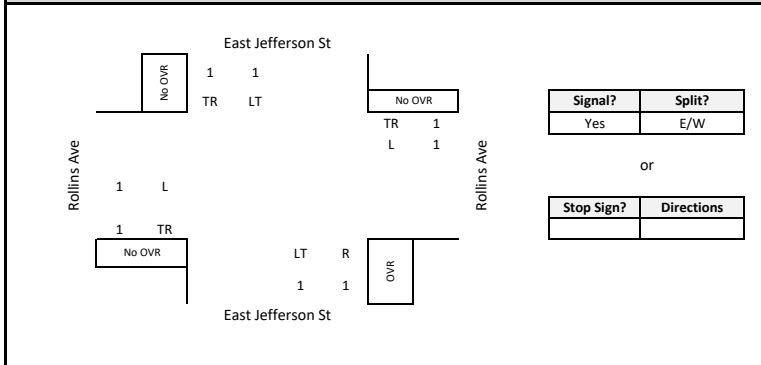
Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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	1.00
2	0.6	0.53
3	0.4	0.37
4		0.30
5		0.25

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	88	0	1.00	88				88	*
WB	LTR	304	0	1.00	304				304	*
NB	LT	252		1.10	277	20	1.10	22	299	*
SB	R	337	0	1.00	337				359	*
SB	LTR	256	0	0.53	136	9	1.10	10	146	
Note:									CLV	751
Congestion Equiv.									v/c	0.485
									LOS	A

PM Peak Hour Critical Lane Volume Analysis

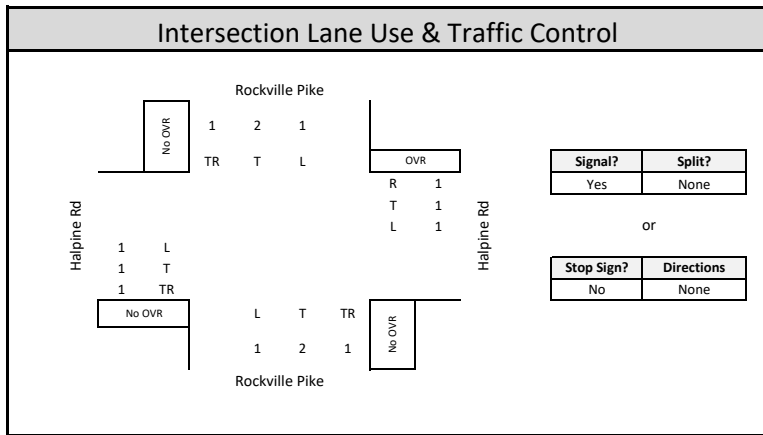
Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	LTR	80	0	1.00	80				80	*
WB	LTR	530	0	1.00	530				530	*
NB	LT	484		1.10	532	18	1.10	20	552	*
SB	R	397	0	1.00	397				417	*
SB	LTR	299	0	0.53	158	7	1.10	8	166	
Note:									CLV	1162
Congestion Equiv.									v/c	0.750
									LOS	C

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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	Yes	337	397	1.00	234	387	0.00	0	0
Southbound	No	n/a	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	1.00
	2	0.6	0.53
	3	0.4	0.37
	4		0.30
	5		0.25



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	T+TR	108	0	0.53	57	171	1.10	188	245	*
WB	LTR	266	67	0.37	74	42	1.10	46	46	
NB	2T+TR	1506	0	0.37	557	63	1.10	69	626	
SB	2T+TR	1756	0	0.37	650	79	1.10	87	737	*
Note:								CLV	982	
								v/c	0.634	
								LOS	A	
					Congestion Equiv.					
					1550					

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	T+TR	153	0	0.53	81	212	1.10	233	314	*
WB	LTR	409	109	0.37	111	98	1.10	108	219	
NB	2T+TR	2118	0	0.37	784	99	1.10	109	893	*
SB	2T+TR	1731	0	0.37	640	197	1.10	217	857	
Note:								CLV	1207	
								v/c	0.779	
								LOS	C	
					Congestion Equiv.					
					1550					

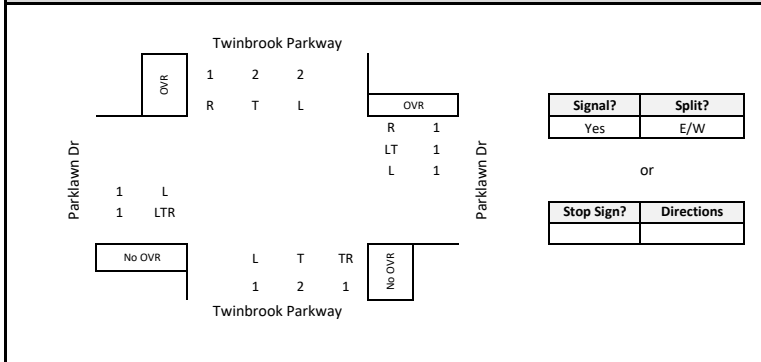
Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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	Yes	67	127	1.00	63	99	1.10	67	109
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

	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
1	1.1	1.00	
2	0.6	0.53	
3	0.4	0.37	
4		0.30	
5		0.25	

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	111	0	0.60	67				67	*
WB	LT	182		0.60	109				109	*
	R	124	107	1.00	17					
NB	2T+TR	767	0	0.37	284	179	0.60	107	391	
SB	T	804		0.53	426	50	1.10	55	481	*
	R	63	40	1.00	23				23	
Note:									CLV	657
									v/c	0.424
									LOS	A
					Congestion Equiv.					
					1550					

Approach	Excl. Right	Right Vol.	Adjacent Overlap Vol.	Overlap
Eastbound	No	n/a	n/a	0
Westbound	Yes	124	133	80
Northbound	No	n/a	n/a	0
Southbound	Yes	63	44	32

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	144	0	0.60	86				86	*
WB	LT	343		0.60	206				206	*
	R	272	80	1.00	192				192	
NB	2T+TR	1469	0	0.37	544	133	0.60	80	624	*
SB	T	743		0.53	394	31	1.10	34	428	
	R	32	32	1.00	0				34	
Note:									CLV	916
									v/c	0.591
									LOS	A
					Congestion Equiv.					
					1550					

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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	Yes	124	272	1.00	179	133	0.60	107	80
Northbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Southbound	Yes	63	32	1.00	36	44	1.10	40	32

Montgomery County LATR

Number of Lanes	Lane Use Factors	
	Left Turn LUF	Through LUF
1	1.1	1.00
2	0.6	0.53
3	0.4	0.37
4		0.30
5		0.25

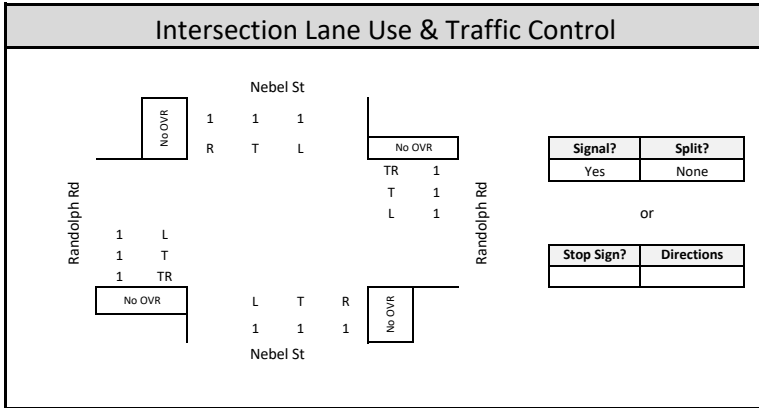
14**Critical Lane Volume
and
Level of Service Calculations**

Intersection: 14. Nebel St / Randolph Rd

Jurisdiction: Montgomery County, MD

Scenario/Design Year: 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	T+TR	677	0	0.53	359	233	1.10	256	615		
WB	T+TR	1170	0	0.53	620	16	1.10	18	638	*	
NB	T	54	0	1.00	54	136	1.10	150	204	*	
SB	R	114	0	1.00	114	80	1.10	88	160		
Note:									CLV	842	
									v/c	0.543	
									LOS	A	
					Congestion Equiv.						
					1550						

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	T+TR	1129	0	0.53	598	193	1.10	212	810	*	
WB	T+TR	985	0	0.53	522	21	1.10	23	545		
NB	T	141	0	1.00	141	282	1.10	310	451	*	
SB	R	287	0	1.00	287	125	1.10	138	597	*	
		24	0	1.00	24				303		
Note:									CLV	1407	
									v/c	0.908	
									LOS	D	
					Congestion Equiv.						
					1550						

Right Turn Overlap

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

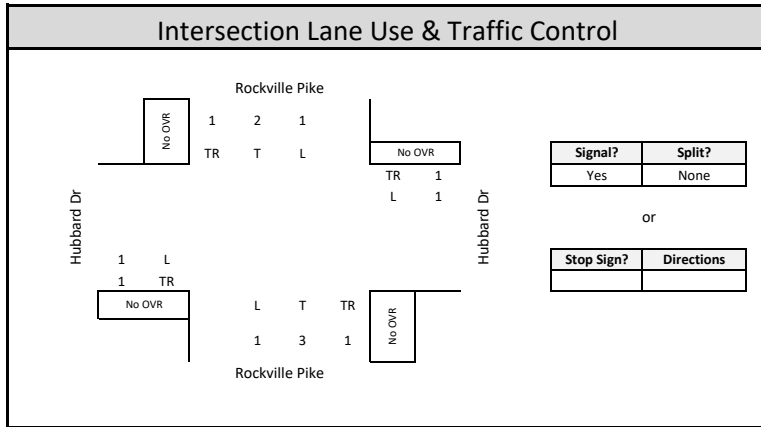
Montgomery County LATR

Number of Lanes	Lane Use Factors	
	Left Turn LUF	Through LUF
1	1.1	1.00
2	0.6	0.53
3	0.4	0.37
4		0.30
5		0.25

15

Critical Lane Volume and Level of Service Calculations

Intersection: 15. Rockville Pike / Hubbard Dr
 Jurisdiction: Montgomery County, MD
 Scenario/Design Year: 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	TR	20	0	1.00	20	77	1.10	85	105	*	
WB	TR	66	0	1.00	66	20	1.10	22	88		
NB	3T+TR	1850	0	0.30	555	48	1.10	53	608		
SB	2T+TR	2502	0	0.37	926	25	1.10	28	954	*	
Note:								CLV	1059		
								v/c	0.683		
								LOS	B		
								Congestion Equiv.		1550	

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	44	0	1.00	44	186	1.10	205	249		
	L	40		1.10	44				249		
WB	TR	151	0	1.00	151	40	1.10	44	195	*	
	L	186		1.10	205				249		
NB	3T+TR	2738	0	0.30	821	161	1.10	177	998	*	
	L	18		1.10	20				197		
SB	2T+TR	1992	0	0.37	737	18	1.10	20	757		
				1.10	0				20		
Note:								CLV	1247		
								v/c	0.805		
								LOS	C		
								Congestion Equiv.		1550	

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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

	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
1	1.1	1.00	
2	0.6	0.53	
3	0.4	0.37	
4		0.30	
5		0.25	

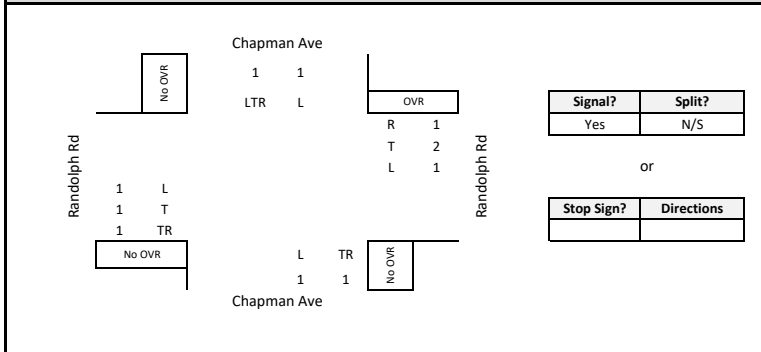
16

Critical Lane Volume and Level of Service Calculations

Intersection: 16. Chapman Ave / Randolph Rd
 Jurisdiction: Montgomery County, MD
 Scenario/Design Year: 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	T+TR	730	0	0.53	387	9	1.10	10	397	
WB	T	1122		0.53	595	77	1.10	85	680	*
	R	66	30	1.00	36				121	
NB	LTR	21	0	1.00	21				21	*
SB	LTR	58	0	0.60	35				35	*
Note:									CLV	736
									v/c	0.475
									LOS	A
					Congestion Equiv.					
					1550					

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	T+TR	1045	0	0.53	554	14	1.10	15	569	*
WB	T	773		0.53	410	144	1.10	158	568	
	R	127	127	1.00	0				158	
NB	LTR	94	0	1.00	94				94	*
SB	LTR	299	0	0.60	179				179	*
									0	
Note:									CLV	842
									v/c	0.543
									LOS	A
					Congestion Equiv.					
					1550					

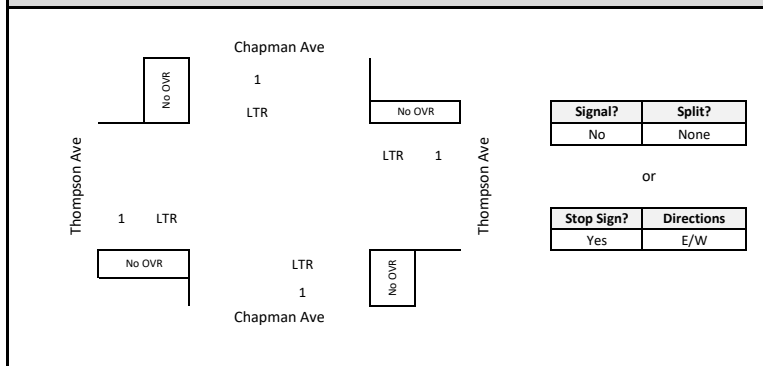
Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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	Yes	66	127	1.00	27	152	1.10	30	127
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

	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
1	1	1.1	1.00
2	2	0.6	0.53
3	3	0.4	0.37
4	4		0.30
5	5		0.25

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	42	0	1.00	42				42	
WB	LTR	47	0	1.00	47				47	*
NB	LTR	186	0	1.00	186				186	*
SB	LTR	160	0	1.00	160				160	
Note:									CLV v/c	233 0.150
Congestion Equiv.									LOS	A
									1550	

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	165	0	1.00	165				165	*
WB	LTR	26	0	1.00	26				26	
NB	LTR	330	0	1.00	330				330	*
SB	LTR	315	0	1.00	315				315	
Note:									CLV v/c	495 0.319
Congestion Equiv.									LOS	A
									1550	

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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

	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
	1	1.1	1.00
	2	0.6	0.53
	3	0.4	0.37
	4		0.30
	5		0.25

Queues

1: Rockville Pike - 355 & Bou Ave

Background Future AM
































Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	37	26	486	79	38	1676	184	129	2062
v/c Ratio	0.45	0.12	0.75	0.22	0.45	0.63	0.21	0.49	0.67
Control Delay	108.2	1.2	82.3	17.2	108.4	35.3	9.9	58.4	30.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	28.6	0.0	0.0	11.4
Total Delay	108.2	1.2	82.3	17.2	108.4	63.9	9.9	58.4	42.3
Queue Length 50th (ft)	48	0	313	12	50	578	40	76	694
Queue Length 95th (ft)	93	0	371	63	95	690	99	142	864
Internal Link Dist (ft)	76			198		419			509
Turn Bay Length (ft)		90			175			245	
Base Capacity (vph)	170	280	680	375	171	2645	880	264	3063
Starvation Cap Reductn	0	0	0	0	0	1052	0	0	1009
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	0.22	0.09	0.71	0.21	0.22	1.05	0.21	0.49	1.00

Intersection Summary

HCM Signalized Intersection Capacity Analysis

1: Rockville Pike - 355 & Bou Ave

Background Future AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				  	 			  			  	
Traffic Volume (vph)	14	21	25	467	11	65	36	1609	177	124	1974	6
Future Volume (vph)	14	21	25	467	11	65	36	1609	177	124	1974	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	11	11	11	12	12	12
Total Lost time (s)		6.0	6.0	7.0	7.0		5.0	5.5	5.5	6.0	6.0	
Lane Util. Factor		1.00	1.00	0.97	1.00		1.00	0.91	1.00	1.00	0.91	
Fr _t		1.00	0.85	1.00	0.87		1.00	1.00	0.85	1.00	1.00	
Fl _t Protected		0.98	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1704	1478	3204	1514		1711	4916	1531	1770	5083	
Fl _t Permitted		0.98	1.00	0.95	1.00		0.95	1.00	1.00	0.09	1.00	
Satd. Flow (perm)		1704	1478	3204	1514		1711	4916	1531	173	5083	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	15	22	26	486	11	68	38	1676	184	129	2056	6
RTOR Reduction (vph)	0	0	25	0	54	0	0	0	58	0	0	0
Lane Group Flow (vph)	0	37	1	486	25	0	38	1676	126	129	2062	0
Turn Type	Split	NA	Prot	Split	NA		Prot	NA	Prot	pm+pt	NA	
Protected Phases	3	3	3	4	4		1	5	5	6	2	
Permitted Phases										2		
Actuated Green, G (s)		8.6	8.6	40.5	40.5		8.6	105.4	105.4	118.3	118.3	
Effective Green, g (s)		8.6	8.6	40.5	40.5		8.6	105.4	105.4	118.3	118.3	
Actuated g/C Ratio		0.04	0.04	0.20	0.20		0.04	0.53	0.53	0.59	0.59	
Clearance Time (s)		6.0	6.0	7.0	7.0		5.0	5.5	5.5	6.0	6.0	
Vehicle Extension (s)		3.0	3.0	6.0	6.0		3.0	0.2	0.2	3.0	0.2	
Lane Grp Cap (vph)		73	63	648	306		73	2590	806	270	3006	
v/s Ratio Prot		c0.02	0.00	c0.15	0.02		0.02	c0.34	0.08	0.05	c0.41	
v/s Ratio Perm										0.23		
v/c Ratio		0.51	0.02	0.75	0.08		0.52	0.65	0.16	0.48	0.69	
Uniform Delay, d ₁		93.6	91.7	75.0	64.7		93.7	34.0	24.4	50.5	28.1	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d ₂		5.4	0.1	6.4	0.3		6.5	1.3	0.4	1.3	1.3	
Delay (s)		99.1	91.8	81.4	65.0		100.2	35.2	24.8	51.9	29.4	
Level of Service		F	F	F	E		F	D	C	D	C	
Approach Delay (s)		96.1			79.1			35.5			30.7	
Approach LOS		F			E			D			C	
Intersection Summary												
HCM 2000 Control Delay			39.3			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			200.0			Sum of lost time (s)			31.0			
Intersection Capacity Utilization			77.4%			ICU Level of Service				D		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

2: Rockville Pike - 355 & Federal Plaza/Pike Center

Background Future AM
























Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	19	56	17	88	1581	31	2087
v/c Ratio	0.25	0.35	0.20	0.51	0.41	0.13	0.58
Control Delay	79.7	7.4	53.6	17.8	7.6	4.8	10.6
Queue Delay	0.0	0.0	0.0	0.0	0.3	0.0	0.9
Total Delay	79.7	7.4	53.6	17.8	7.9	4.8	11.5
Queue Length 50th (ft)	19	0	9	16	219	6	361
Queue Length 95th (ft)	49	8	37	57	284	15	487
Internal Link Dist (ft)	84		43		509		145
Turn Bay Length (ft)		150		245		175	
Base Capacity (vph)	262	313	312	301	3883	377	3615
Starvation Cap Reductn	0	0	0	0	1427	0	1109
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.18	0.05	0.29	0.64	0.08	0.83

Intersection Summary

HCM Signalized Intersection Capacity Analysis
 2: Rockville Pike - 355 & Federal Plaza/Pike Center

Background Future AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	2	54	7	2	8	84	1507	11	30	2002	2
Future Volume (vph)	16	2	54	7	2	8	84	1507	11	30	2002	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	16	16	16	11	11	11	10	10	10
Total Lost time (s)		6.5	6.5		6.5		5.0	5.5		5.0	5.5	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.91		1.00	0.91	
Flt		1.00	0.85		0.94		1.00	1.00		1.00	1.00	
Flt Protected		0.96	1.00		0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1664	1478		1937		1711	4911		1652	4746	
Flt Permitted		0.96	1.00		0.98		0.07	1.00		0.14	1.00	
Satd. Flow (perm)		1664	1478		1937		119	4911		235	4746	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	17	2	56	7	2	8	88	1570	11	31	2085	2
RTOR Reduction (vph)	0	0	54	0	8	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	19	2	0	9	0	88	1581	0	31	2087	0
Turn Type	Split	NA	Prot	Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	8	8	8	4	4		5	2		1	6	
Permitted Phases							2			6		
Actuated Green, G (s)		6.3	6.3		4.3		126.9	119.3		121.9	116.8	
Effective Green, g (s)		6.3	6.3		4.3		126.9	119.3		121.9	116.8	
Actuated g/C Ratio		0.04	0.04		0.03		0.80	0.75		0.77	0.74	
Clearance Time (s)		6.5	6.5		6.5		5.0	5.5		5.0	5.5	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	0.2		3.0	0.2	
Lane Grp Cap (vph)		66	58		52		171	3696		226	3497	
v/s Ratio Prot		c0.01	0.00		c0.00		c0.02	0.32		0.00	c0.44	
v/s Ratio Perm							0.39			0.10		
v/c Ratio		0.29	0.04		0.18		0.51	0.43		0.14	0.60	
Uniform Delay, d1		73.9	73.2		75.4		8.9	7.1		4.7	9.8	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.4	0.3		1.6		2.6	0.4		0.3	0.8	
Delay (s)		76.3	73.5		77.0		11.5	7.5		5.0	10.6	
Level of Service		E	E		E		B	A		A	B	
Approach Delay (s)		74.2			77.0			7.7			10.5	
Approach LOS		E			E			A			B	
Intersection Summary												
HCM 2000 Control Delay			10.8				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			158.5				Sum of lost time (s)			23.5		
Intersection Capacity Utilization			64.8%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

4: Rockville Pike - 355 & Rollins Avenue /Twinbrook Parkway

Background Future AM















Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	397	318	190	107	1419	108	201	1958
v/c Ratio	0.73	0.52	0.69	0.54	0.51	0.12	0.60	0.64
Control Delay	70.0	62.1	74.3	31.5	21.8	2.4	18.1	21.7
Queue Delay	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0
Total Delay	70.0	62.1	74.3	31.5	22.5	2.4	18.1	21.7
Queue Length 50th (ft)	210	161	190	31	306	0	57	447
Queue Length 95th (ft)	253	199	263	109	449	24	137	629
Internal Link Dist (ft)	1347	625			260			1225
Turn Bay Length (ft)			150			300	400	
Base Capacity (vph)	978	1105	494	254	2794	922	448	3055
Starvation Cap Reductn	0	0	0	0	927	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	0.41	0.29	0.38	0.42	0.76	0.12	0.45	0.64

Intersection Summary

HCM Signalized Intersection Capacity Analysis

4: Rockville Pike - 355 & Rollins Avenue /Twinbrook Parkway

Background Future AM

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑			↑↑	↑	↑	↑↑↑	↑	↑	↑↑↑		
Traffic Volume (vph)	0	255	134	0	312	186	105	1391	106	197	1919	0	
Future Volume (vph)	0	255	134	0	312	186	105	1391	106	197	1919	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	10	10	10	12	12	12	10	10	10	11	11	11	
Total Lost time (s)		7.5			7.5	7.5	7.0	5.5	5.5	7.0	5.5		
Lane Util. Factor		0.95			0.95	1.00	1.00	0.91	1.00	1.00	0.91		
Frt		0.95			1.00	0.85	1.00	1.00	0.85	1.00	1.00		
Flt Protected		1.00			1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)		3132			3539	1583	1652	4746	1478	1711	4916		
Flt Permitted		1.00			1.00	1.00	0.07	1.00	1.00	0.13	1.00		
Satd. Flow (perm)		3132			3539	1583	119	4746	1478	233	4916		
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	
Adj. Flow (vph)	0	260	137	0	318	190	107	1419	108	201	1958	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	44	0	0	0	
Lane Group Flow (vph)	0	397	0	0	318	190	107	1419	64	201	1958	0	
Turn Type		NA			NA	Prot	pm+pt	NA	Prot	pm+pt	NA		
Protected Phases		4			8	8	1	6	6	5	2		
Permitted Phases							6			2			
Actuated Green, G (s)		27.9			27.9	27.9	106.8	94.2	94.2	117.4	99.5		
Effective Green, g (s)		27.9			27.9	27.9	106.8	94.2	94.2	117.4	99.5		
Actuated g/C Ratio		0.17			0.17	0.17	0.67	0.59	0.59	0.73	0.62		
Clearance Time (s)		7.5			7.5	7.5	7.0	5.5	5.5	7.0	5.5		
Vehicle Extension (s)		4.0			4.0	4.0	4.0	0.2	0.2	4.0	0.2		
Lane Grp Cap (vph)		546			617	276	200	2794	870	336	3057		
v/s Ratio Prot		c0.13			0.09	0.12	0.04	0.30	0.04	c0.07	c0.40		
v/s Ratio Perm							0.32			0.37			
v/c Ratio		0.73			0.52	0.69	0.54	0.51	0.07	0.60	0.64		
Uniform Delay, d1		62.5			59.9	62.0	16.5	19.3	14.1	12.4	19.0		
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2		5.1			1.0	7.5	3.5	0.7	0.2	3.3	1.0		
Delay (s)		67.6			60.9	69.5	20.0	20.0	14.3	15.7	20.1		
Level of Service		E			E	E	C	B	B	B	C		
Approach Delay (s)		67.6			64.1			19.6			19.7		
Approach LOS		E			E			B			B		
Intersection Summary													
HCM 2000 Control Delay			28.5									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.67										
Actuated Cycle Length (s)			160.0									Sum of lost time (s)	20.0
Intersection Capacity Utilization			70.9%									ICU Level of Service	C
Analysis Period (min)			15										
c	Critical Lane Group												

Queues

5: Chapman Ave & Twinbrook Parkway

Background Future AM



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	41	596	547	581	118	203	87	52	25
v/c Ratio	0.09	0.35	0.84	0.25	0.72	0.33	0.46	0.51	0.13
Control Delay	12.3	29.1	85.4	11.9	106.2	5.7	93.4	102.7	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.3	29.1	85.4	11.9	106.2	5.7	93.4	102.7	1.3
Queue Length 50th (ft)	12	224	342	133	145	0	55	64	0
Queue Length 95th (ft)	30	328	396	199	217	57	87	116	0
Internal Link Dist (ft)		625		1310	176			558	
Turn Bay Length (ft)	175		300				300		300
Base Capacity (vph)	653	1685	875	2291	189	690	338	183	261
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	0.06	0.35	0.63	0.25	0.62	0.29	0.26	0.28	0.10

Intersection Summary

HCM Signalized Intersection Capacity Analysis

5: Chapman Ave & Twinbrook Parkway

Background Future AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	509	69	531	440	123	67	48	197	84	50	24
Future Volume (vph)	40	509	69	531	440	123	67	48	197	84	50	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	11	11	11	10	10	10	10	10	10
Total Lost time (s)	5.5	6.0		5.5	6.0			6.5	6.5	6.5	6.5	6.5
Lane Util. Factor	1.00	0.95		0.97	0.95			1.00	1.00	0.97	1.00	1.00
Frt	1.00	0.98		1.00	0.97			1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1652	3244		3319	3309			1689	1478	3204	1739	1478
Flt Permitted	0.43	1.00		0.95	1.00			0.97	1.00	0.95	1.00	1.00
Satd. Flow (perm)	753	3244		3319	3309			1689	1478	3204	1739	1478
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	41	525	71	547	454	127	69	49	203	87	52	25
RTOR Reduction (vph)	0	4	0	0	9	0	0	0	137	0	0	24
Lane Group Flow (vph)	41	592	0	547	572	0	0	118	66	87	52	1
Turn Type	pm+pt	NA		Prot	NA		Split	NA	pt+ov	Split	NA	Perm
Protected Phases	5	2		1	6		4	4	4 1	3	3	
Permitted Phases	2											3
Actuated Green, G (s)	104.0	98.3		37.1	129.7			18.4	62.0	11.2	11.2	11.2
Effective Green, g (s)	104.0	98.3		37.1	129.7			18.4	62.0	11.2	11.2	11.2
Actuated g/C Ratio	0.55	0.52		0.20	0.68			0.10	0.33	0.06	0.06	0.06
Clearance Time (s)	5.5	6.0		5.5	6.0			6.5		6.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	440	1682		649	2264			163	483	189	102	87
v/s Ratio Prot	0.00	c0.18		c0.16	0.17			c0.07	0.04	0.03	c0.03	
v/s Ratio Perm	0.05											0.00
v/c Ratio	0.09	0.35		0.84	0.25			0.72	0.14	0.46	0.51	0.02
Uniform Delay, d1	19.8	26.8		73.4	11.4			83.1	44.9	86.2	86.5	84.0
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.6		9.7	0.3			14.7	0.1	1.8	4.0	0.1
Delay (s)	19.9	27.4		83.1	11.7			97.8	45.0	88.0	90.5	84.0
Level of Service	B	C		F	B			F	D	F	F	F
Approach Delay (s)		26.9			46.3			64.4			88.2	
Approach LOS		C			D			E			F	
Intersection Summary												
HCM 2000 Control Delay			46.5		HCM 2000 Level of Service					D		
HCM 2000 Volume to Capacity ratio			0.51									
Actuated Cycle Length (s)			189.5		Sum of lost time (s)				24.5			
Intersection Capacity Utilization			59.3%		ICU Level of Service				B			
Analysis Period (min)			15									
c Critical Lane Group												

Queues

9: Chapman Ave & Bou Ave

Background Future AM



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	178	161	6	96	161	4	47	140	83	414
v/c Ratio	0.28	0.19	0.01	0.15	0.25	0.01	0.07	0.27	0.11	0.40
Control Delay	23.4	20.4	36.8	38.3	6.0	30.5	29.5	34.5	31.3	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay	23.4	20.4	36.8	38.3	6.0	30.5	29.5	34.5	31.3	2.6
Queue Length 50th (ft)	105	85	4	72	0	3	29	100	55	0
Queue Length 95th (ft)	154	131	17	124	54	12	61	167	100	46
Internal Link Dist (ft)		200		800			128		31	
Turn Bay Length (ft)	275				250	70				
Base Capacity (vph)	851	1505	407	622	632	510	717	526	726	1432
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	222
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.11	0.01	0.15	0.25	0.01	0.07	0.27	0.11	0.34

Intersection Summary

HCM Signalized Intersection Capacity Analysis

9: Chapman Ave & Bou Ave

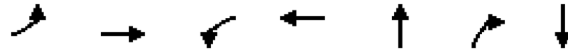
Background Future AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	169	116	37	6	91	153	4	41	4	133	79	393
Future Volume (vph)	169	116	37	6	91	153	4	41	4	133	79	393
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	10	10	10	10	10	10
Total Lost time (s)	5.5	5.5		5.5	5.5	5.5	6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.96		1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1652	1675		1652	1739	1478	1652	1716		1652	1739	1478
Flt Permitted	0.63	1.00		0.66	1.00	1.00	0.70	1.00		0.73	1.00	1.00
Satd. Flow (perm)	1096	1675		1139	1739	1478	1222	1716		1263	1739	1478
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	178	122	39	6	96	161	4	43	4	140	83	414
RTOR Reduction (vph)	0	7	0	0	0	103	0	1	0	0	0	175
Lane Group Flow (vph)	178	154	0	6	96	58	4	46	0	140	83	239
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	pt+ov
Protected Phases	1	6			2			4			8	8 1
Permitted Phases	6			2		2	4			8		
Actuated Green, G (s)	86.2	86.2		60.0	60.0	60.0	70.0	70.0		70.0	70.0	96.7
Effective Green, g (s)	86.2	86.2		60.0	60.0	60.0	70.0	70.0		70.0	70.0	96.7
Actuated g/C Ratio	0.51	0.51		0.36	0.36	0.36	0.42	0.42		0.42	0.42	0.58
Clearance Time (s)	5.5	5.5		5.5	5.5	5.5	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	6.0	0.2		0.2	0.2	0.2	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	631	860		407	622	528	510	716		527	725	852
v/s Ratio Prot	0.03	0.09			0.06			0.03			0.05	c0.16
v/s Ratio Perm	c0.11			0.01		0.04	0.00			0.11		
v/c Ratio	0.28	0.18		0.01	0.15	0.11	0.01	0.06		0.27	0.11	0.28
Uniform Delay, d1	22.3	21.8		34.8	36.6	36.0	28.6	29.2		32.0	29.9	17.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.7	0.0		0.1	0.5	0.4	0.0	0.0		1.2	0.3	0.5
Delay (s)	23.0	21.9		34.8	37.1	36.4	28.6	29.3		33.2	30.2	18.4
Level of Service	C	C		C	D	D	C	C		C	C	B
Approach Delay (s)		22.5			36.6			29.2			23.2	
Approach LOS		C			D			C			C	
Intersection Summary												
HCM 2000 Control Delay			26.0									C
HCM 2000 Volume to Capacity ratio			0.30									
Actuated Cycle Length (s)			167.7							17.0		
Intersection Capacity Utilization			48.9%									A
Analysis Period (min)			15									
c Critical Lane Group												

Queues

11: East Jefferson Street & Rollins Avenue

Background Future AM























Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	18	77	254	76	274	366	279
v/c Ratio	0.14	0.52	0.80	0.22	0.25	0.27	0.14
Control Delay	47.9	47.1	59.7	19.6	12.0	0.7	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.9	47.1	59.7	19.6	12.0	0.7	10.2
Queue Length 50th (ft)	12	37	171	20	82	0	39
Queue Length 95th (ft)	34	83	240	56	167	14	77
Internal Link Dist (ft)		438		1347	257		274
Turn Bay Length (ft)							
Base Capacity (vph)	235	253	470	485	1114	1442	1954
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	0.08	0.30	0.54	0.16	0.25	0.25	0.14

Intersection Summary

HCM Signalized Intersection Capacity Analysis

11: East Jefferson Street & Rollins Avenue

Background Future AM

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	17	44	27	234	32	38	9	243	337	20	218	18	
Future Volume (vph)	17	44	27	234	32	38	9	243	337	20	218	18	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11	
Total Lost time (s)	4.5	4.5		4.5	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		
Frt	1.00	0.94		1.00	0.92			1.00	0.85		0.99		
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00		1.00		
Satd. Flow (prot)	1711	1699		1711	1655			1797	1531		3371		
Flt Permitted	0.95	1.00		0.95	1.00			0.99	1.00		0.92		
Satd. Flow (perm)	1711	1699		1711	1655			1778	1531		3112		
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)	18	48	29	254	35	41	10	264	366	22	237	20	
RTOR Reduction (vph)	0	21	0	0	33	0	0	0	71	0	4	0	
Lane Group Flow (vph)	18	56	0	254	43	0	0	274	295	0	275	0	
Turn Type	Split	NA		Split	NA		Perm	NA	pm+ov	Perm	NA		
Protected Phases	4	4		3	3			2	3		6		
Permitted Phases							2		2	6			
Actuated Green, G (s)	7.2	7.2		20.4	20.4			67.4	87.8		67.4		
Effective Green, g (s)	7.2	7.2		20.4	20.4			67.4	87.8		67.4		
Actuated g/C Ratio	0.07	0.07		0.19	0.19			0.62	0.81		0.62		
Clearance Time (s)	4.5	4.5		4.5	4.5			5.0	4.5		5.0		
Vehicle Extension (s)	2.0	2.0		1.0	1.0			5.0	1.0		5.0		
Lane Grp Cap (vph)	113	112		320	309			1099	1233		1924		
v/s Ratio Prot	0.01	c0.03		c0.15	0.03				0.04				
v/s Ratio Perm								c0.15	0.15		0.09		
v/c Ratio	0.16	0.50		0.79	0.14			0.25	0.24		0.14		
Uniform Delay, d1	48.0	49.1		42.3	37.0			9.4	2.6		8.7		
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00		
Incremental Delay, d2	0.2	1.3		11.9	0.1			0.5	0.0		0.2		
Delay (s)	48.3	50.4		54.2	37.0			9.9	2.6		8.9		
Level of Service	D	D		D	D			A	A		A		
Approach Delay (s)		50.0			50.2			5.7			8.9		
Approach LOS		D			D			A			A		
Intersection Summary													
HCM 2000 Control Delay			20.4		HCM 2000 Level of Service					C			
HCM 2000 Volume to Capacity ratio			0.38										
Actuated Cycle Length (s)			109.0		Sum of lost time (s)					14.0			
Intersection Capacity Utilization			58.4%		ICU Level of Service					B			
Analysis Period (min)			15										
c Critical Lane Group													

Queues

12: Rockville Pike - 355/Rockville Pike- 355 & Halpine Road

Background Future AM






























Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	44	112	178	29	70	82	1569	66	1829
v/c Ratio	0.18	0.17	0.77	0.09	0.20	0.40	0.49	0.28	0.56
Control Delay	63.3	30.0	93.9	60.3	8.9	13.1	15.8	10.3	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.3	30.0	93.9	60.3	8.9	13.1	15.8	10.3	18.8
Queue Length 50th (ft)	47	29	212	30	0	24	313	19	410
Queue Length 95th (ft)	83	56	289	60	37	51	434	43	585
Internal Link Dist (ft)		312		302			1225		274
Turn Bay Length (ft)	250				450	165		175	
Base Capacity (vph)	440	1083	406	596	560	529	3229	286	3267
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	0.10	0.10	0.44	0.05	0.13	0.16	0.49	0.23	0.56

Intersection Summary

HCM Signalized Intersection Capacity Analysis

12: Rockville Pike - 355/Rockville Pike- 355 & Halpine Road

Background Future AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 						 		  	  	
Traffic Volume (vph)	42	52	56	171	28	67	79	1191	315	63	1736	20
Future Volume (vph)	42	52	56	171	28	67	79	1191	315	63	1736	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	5.5	5.5		5.5	5.5	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.91		1.00	0.91	
Frt	1.00	0.92		1.00	1.00	0.85	1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3264		1770	1863	1583	1711	4762		1711	4907	
Flt Permitted	0.74	1.00		0.68	1.00	1.00	0.08	1.00		0.12	1.00	
Satd. Flow (perm)	1375	3264		1269	1863	1583	151	4762		224	4907	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	44	54	58	178	29	70	82	1241	328	66	1808	21
RTOR Reduction (vph)	0	47	0	0	0	57	0	17	0	0	0	0
Lane Group Flow (vph)	44	65	0	178	29	13	82	1552	0	66	1829	0
Turn Type	Perm	NA		Perm	NA	Prot	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8	8	1	6		5	2	
Permitted Phases	4			8			6			2		
Actuated Green, G (s)	34.1	34.1		34.1	34.1	34.1	137.5	126.4		134.3	124.8	
Effective Green, g (s)	34.1	34.1		34.1	34.1	34.1	137.5	126.4		134.3	124.8	
Actuated g/C Ratio	0.18	0.18		0.18	0.18	0.18	0.73	0.67		0.72	0.67	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	5.5	5.5		5.5	5.5	
Vehicle Extension (s)	5.0	5.0		5.0	5.0	5.0	5.0	0.2		5.0	0.2	
Lane Grp Cap (vph)	250	593		230	338	287	203	3210		235	3266	
v/s Ratio Prot		0.02			0.02	0.01	c0.02	0.33		0.01	c0.37	
v/s Ratio Perm	0.03			c0.14			0.27			0.19		
v/c Ratio	0.18	0.11		0.77	0.09	0.04	0.40	0.48		0.28	0.56	
Uniform Delay, d1	64.8	64.0		73.0	63.7	63.3	11.9	14.8		9.5	16.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.2		17.2	0.2	0.1	2.7	0.5		1.4	0.7	
Delay (s)	65.5	64.2		90.2	64.0	63.4	14.7	15.3		10.9	17.4	
Level of Service	E	E		F	E	E	B	B		B	B	
Approach Delay (s)		64.6			80.7			15.3			17.2	
Approach LOS		E			F			B			B	
Intersection Summary												
HCM 2000 Control Delay			22.7	HCM 2000 Level of Service				C				
HCM 2000 Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			187.5	Sum of lost time (s)				17.5				
Intersection Capacity Utilization			69.1%	ICU Level of Service				C				
Analysis Period (min)			15									
c Critical Lane Group												

Queues

13: Twinbrook Parkway & Parklawn Drive

Background Future AM



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	34	84	97	96	132	53	816	190	922
v/c Ratio	0.36	0.68	0.71	0.69	0.37	0.14	0.26	0.22	0.40
Control Delay	107.3	84.2	122.1	120.1	12.2	8.9	12.7	8.3	15.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	107.3	84.2	122.1	120.1	12.2	8.9	12.7	8.3	15.4
Queue Length 50th (ft)	50	73	145	144	0	18	140	32	276
Queue Length 95th (ft)	96	145	218	216	67	41	206	59	403
Internal Link Dist (ft)		332		479			1310		374
Turn Bay Length (ft)			200			190		240	
Base Capacity (vph)	231	250	298	302	688	525	3123	1394	2283
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	0.15	0.34	0.33	0.32	0.19	0.10	0.26	0.14	0.40

Intersection Summary

HCM Signalized Intersection Capacity Analysis

13: Twinbrook Parkway & Parklawn Drive

Background Future AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	24	51	163	19	124	50	490	277	179	804	63
Future Volume (vph)	36	24	51	163	19	124	50	490	277	179	804	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	11	11	10	10	10	10	10	10
Total Lost time (s)	6.5	6.5		7.0	7.0	7.0	8.0	6.0		8.0	6.0	
Lane Util. Factor	0.95	0.95		0.95	0.95	1.00	1.00	0.91		0.97	0.95	
Frt	1.00	0.90		1.00	1.00	0.85	1.00	0.95		1.00	0.99	
Flt Protected	0.95	1.00		0.95	0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1681	1595		1625	1645	1531	1652	4489		3204	3267	
Flt Permitted	0.95	1.00		0.95	0.96	1.00	0.28	1.00		0.31	1.00	
Satd. Flow (perm)	1681	1595		1625	1645	1531	478	4489		1054	3267	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	38	26	54	173	20	132	53	521	295	190	855	67
RTOR Reduction (vph)	0	33	0	0	0	111	0	20	0	0	2	0
Lane Group Flow (vph)	34	51	0	97	96	21	53	796	0	190	920	0
Turn Type	Split	NA		Split	NA	pt+ov	pm+pt	NA		pm+pt	NA	
Protected Phases	3	3		4	4	4	1	2		1	6	
Permitted Phases							2			6		
Actuated Green, G (s)	12.3	12.3		18.5	18.5	34.4	157.7	150.3		160.7	151.8	
Effective Green, g (s)	12.3	12.3		18.5	18.5	34.4	157.7	150.3		160.7	151.8	
Actuated g/C Ratio	0.06	0.06		0.09	0.09	0.16	0.73	0.69		0.74	0.70	
Clearance Time (s)	6.5	6.5		7.0	7.0		8.0	6.0		8.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	0.2		3.0	0.2	
Lane Grp Cap (vph)	95	90		138	139	242	386	3102		866	2280	
v/s Ratio Prot	0.02	c0.03		c0.06	0.06	0.01	0.00	0.18		c0.01	c0.28	
v/s Ratio Perm							0.09			0.15		
v/c Ratio	0.36	0.57		0.70	0.69	0.09	0.14	0.26		0.22	0.40	
Uniform Delay, d1	98.8	100.0		96.8	96.7	78.1	9.2	12.6		8.1	13.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.3	7.9		15.0	13.8	0.2	0.2	0.2		0.1	0.5	
Delay (s)	101.1	107.9		111.8	110.5	78.3	9.4	12.8		8.2	14.3	
Level of Service	F	F		F	F	E	A	B		A	B	
Approach Delay (s)		106.0			97.8			12.6			13.3	
Approach LOS		F			F			B			B	
Intersection Summary												
HCM 2000 Control Delay			28.9			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.44									
Actuated Cycle Length (s)			217.5	Sum of lost time (s)			27.5					
Intersection Capacity Utilization			56.7%	ICU Level of Service			B					
Analysis Period (min)			15									
c Critical Lane Group												

Queues

14: Nebel Street & Randolph Road

Background Future AM

























Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	17	713	245	1232	84	57	120	143	76	15
v/c Ratio	0.07	0.39	0.46	0.53	0.33	0.30	0.73	0.44	0.29	0.07
Control Delay	15.1	29.5	15.4	22.1	66.7	90.7	117.0	70.0	84.0	77.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.1	29.5	15.4	22.1	66.7	90.7	117.0	70.0	84.0	77.1
Queue Length 50th (ft)	7	292	115	495	97	76	168	170	99	19
Queue Length 95th (ft)	21	447	194	676	141	127	245	225	153	45
Internal Link Dist (ft)		613		257		122			1618	
Turn Bay Length (ft)	140		125		100			250		
Base Capacity (vph)	382	1846	680	2309	391	417	355	389	432	367
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.39	0.36	0.53	0.21	0.14	0.34	0.37	0.18	0.04

Intersection Summary

HCM Signalized Intersection Capacity Analysis

14: Nebel Street & Randolph Road

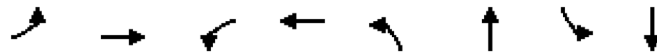
Background Future AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	621	56	233	1041	129	80	54	114	136	72	14
Future Volume (vph)	16	621	56	233	1041	129	80	54	114	136	72	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	12	12	12	11	11	11	12	12	12
Total Lost time (s)	6.0	6.5		6.0	6.5		6.5	6.5	6.5	6.5	6.5	6.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1652	3262		1770	3481		1711	1801	1531	1770	1863	1583
Flt Permitted	0.20	1.00		0.31	1.00		0.71	1.00	1.00	0.56	1.00	1.00
Satd. Flow (perm)	340	3262		575	3481		1274	1801	1531	1048	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	17	654	59	245	1096	136	84	57	120	143	76	15
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	17	713	0	245	1232	0	84	57	120	143	76	15
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Prot	pm+pt	NA	Prot
Protected Phases	1	6		5	2		3	8	8	7	4	4
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	125.9	121.9		150.6	140.6		38.5	23.3	23.3	51.9	30.2	30.2
Effective Green, g (s)	125.9	121.9		150.6	140.6		38.5	23.3	23.3	51.9	30.2	30.2
Actuated g/C Ratio	0.58	0.57		0.70	0.65		0.18	0.11	0.11	0.24	0.14	0.14
Clearance Time (s)	6.0	6.5		6.0	6.5		6.5	6.5	6.5	6.5	6.5	6.5
Vehicle Extension (s)	3.0	5.0		3.0	5.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	222	1845		527	2271		258	194	165	326	261	221
v/s Ratio Prot	0.00	0.22		c0.05	c0.35		0.02	0.03	c0.08	c0.04	0.04	0.01
v/s Ratio Perm	0.04			0.28			0.04			0.06		
v/c Ratio	0.08	0.39		0.46	0.54		0.33	0.29	0.73	0.44	0.29	0.07
Uniform Delay, d1	19.5	26.0		13.4	20.1		76.4	88.5	93.0	67.7	83.1	80.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.6		0.7	0.9		1.0	1.2	15.7	1.3	0.8	0.2
Delay (s)	19.7	26.6		14.1	21.1		77.4	89.7	108.7	69.0	83.9	80.6
Level of Service	B	C		B	C		E	F	F	E	F	F
Approach Delay (s)		26.5			19.9			94.5			74.6	
Approach LOS		C			B			F			E	
Intersection Summary												
HCM 2000 Control Delay			33.6				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			215.5			Sum of lost time (s)			25.5			
Intersection Capacity Utilization			66.3%			ICU Level of Service			C			
Analysis Period (min)			15									
c	Critical Lane Group											

Queues

15: Rockville Pike - 355 & Hubbard Drive/Plaza Driveway

Background Future AM

























Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	20	20	79	67	26	1887	49	2553
v/c Ratio	0.15	0.11	0.56	0.31	0.20	0.41	0.24	0.68
Control Delay	65.0	34.9	81.5	25.6	7.6	8.8	6.2	12.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4
Total Delay	65.0	34.9	81.5	25.6	7.6	8.8	6.2	16.4
Queue Length 50th (ft)	19	7	79	15	4	202	8	497
Queue Length 95th (ft)	47	34	134	63	12	276	20	642
Internal Link Dist (ft)		170		149		168		419
Turn Bay Length (ft)							180	
Base Capacity (vph)	324	419	349	454	312	4556	367	3746
Starvation Cap Reductn	0	0	0	0	0	0	0	1110
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	0.06	0.05	0.23	0.15	0.08	0.41	0.13	0.97

Intersection Summary

HCM Signalized Intersection Capacity Analysis

15: Rockville Pike - 355 & Hubbard Drive/Plaza Driveway

Background Future AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	7	13	77	16	50	25	1734	116	48	2454	48
Future Volume (vph)	20	7	13	77	16	50	25	1734	116	48	2454	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	12	11	11	11	11	11	11
Total Lost time (s)	7.0	7.0		7.0	7.0		6.0	5.5		6.0	5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.86		1.00	0.91	
Frt	1.00	0.90		1.00	0.89		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1711	1625		1770	1650		1711	6136		1711	4902	
Flt Permitted	0.71	1.00		0.74	1.00		0.04	1.00		0.08	1.00	
Satd. Flow (perm)	1284	1625		1386	1650		65	6136		149	4902	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	20	7	13	79	16	51	26	1769	118	49	2504	49
RTOR Reduction (vph)	0	12	0	0	46	0	0	3	0	0	1	0
Lane Group Flow (vph)	20	8	0	79	21	0	26	1884	0	49	2552	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	16.3	16.3		16.3	16.3		121.4	116.4		126.0	118.7	
Effective Green, g (s)	16.3	16.3		16.3	16.3		121.4	116.4		126.0	118.7	
Actuated g/C Ratio	0.10	0.10		0.10	0.10		0.77	0.73		0.79	0.75	
Clearance Time (s)	7.0	7.0		7.0	7.0		6.0	5.5		6.0	5.5	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	0.2		5.0	0.2	
Lane Grp Cap (vph)	132	167		142	169		101	4506		190	3671	
v/s Ratio Prot		0.01			0.01		0.01	0.31		c0.01	c0.52	
v/s Ratio Perm	0.02			c0.06			0.19			0.19		
v/c Ratio	0.15	0.05		0.56	0.13		0.26	0.42		0.26	0.70	
Uniform Delay, d1	64.8	64.1		67.7	64.6		9.8	8.1		4.5	10.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.1	0.3		7.8	0.7		2.8	0.3		1.5	1.1	
Delay (s)	65.9	64.4		75.5	65.3		12.7	8.4		6.0	11.5	
Level of Service	E	E		E	E		B	A		A	B	
Approach Delay (s)		65.1			70.8			8.4			11.4	
Approach LOS		E			E			A			B	
Intersection Summary												
HCM 2000 Control Delay			12.5				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			158.5				Sum of lost time (s)			18.5		
Intersection Capacity Utilization			69.8%				ICU Level of Service				C	
Analysis Period (min)			15									
c Critical Lane Group												

Queues

16: Chapman Ave & Josiah Henson Parkway/Randolph Road

Background Future AM



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	89	839	10	1290	76	13	12	28	39
v/c Ratio	0.28	0.33	0.02	0.55	0.07	0.15	0.13	0.25	0.37
Control Delay	6.5	7.6	5.3	14.2	0.1	70.1	52.1	69.5	74.6
Queue Delay	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0
Total Delay	6.5	7.6	5.3	14.7	0.1	70.1	52.1	69.5	74.6
Queue Length 50th (ft)	19	119	2	341	0	12	7	27	38
Queue Length 95th (ft)	37	223	8	474	0	35	28	60	76
Internal Link Dist (ft)		321		613			346		212
Turn Bay Length (ft)	350		165		215	250			
Base Capacity (vph)	457	2553	579	2337	1087	115	118	340	318
Starvation Cap Reductn	0	0	0	553	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	0.19	0.33	0.02	0.72	0.07	0.11	0.10	0.08	0.12

Intersection Summary

HCM Signalized Intersection Capacity Analysis

16: Chapman Ave & Josiah Henson Parkway/Randolph Road

Background Future AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	650	80	9	1122	66	11	6	4	27	7	24
Future Volume (vph)	77	650	80	9	1122	66	11	6	4	27	7	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	11	11	11	12	12	12
Total Lost time (s)	5.0	6.0		5.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		0.95	0.95	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.94		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1652	3249		1652	3303	1478	1711	1688		1681	1573	
Flt Permitted	0.16	1.00		0.34	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	277	3249		584	3303	1478	1711	1688		1681	1573	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	89	747	92	10	1290	76	13	7	5	31	8	28
RTOR Reduction (vph)	0	3	0	0	0	24	0	5	0	0	0	0
Lane Group Flow (vph)	89	836	0	10	1290	52	13	7	0	28	39	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Split	NA		Split	NA	
Protected Phases	1	6		5	2		3	3		4	4	
Permitted Phases	6			2		2						
Actuated Green, G (s)	116.2	108.4		104.0	101.2	101.2	5.1	5.1		8.7	8.7	
Effective Green, g (s)	116.2	108.4		104.0	101.2	101.2	5.1	5.1		8.7	8.7	
Actuated g/C Ratio	0.79	0.73		0.70	0.68	0.68	0.03	0.03		0.06	0.06	
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	4.0	0.2		4.0	0.2	0.2	4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)	310	2379		430	2258	1010	58	58		98	92	
v/s Ratio Prot	c0.02	c0.26		0.00	c0.39		c0.01	0.00		0.02	c0.02	
v/s Ratio Perm	0.21			0.02		0.04						
v/c Ratio	0.29	0.35		0.02	0.57	0.05	0.22	0.12		0.29	0.42	
Uniform Delay, d1	6.9	7.1		6.6	12.1	7.7	69.5	69.3		66.7	67.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.4		0.0	1.1	0.1	2.7	1.3		2.2	4.2	
Delay (s)	7.6	7.5		6.6	13.2	7.8	72.2	70.6		68.9	71.5	
Level of Service	A	A		A	B	A	E	E		E	E	
Approach Delay (s)		7.6			12.9			71.4			70.4	
Approach LOS		A			B			E			E	
Intersection Summary												
HCM 2000 Control Delay			13.0				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.53									
Actuated Cycle Length (s)			148.0				Sum of lost time (s)			23.0		
Intersection Capacity Utilization			57.8%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

1: Rockville Pike - 355 & Bou Ave

Background Future PM



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	50	37	339	202	59	2442	402	212	1744
v/c Ratio	0.53	0.17	0.65	0.51	0.56	0.89	0.44	0.99	0.57
Control Delay	110.1	1.6	83.8	16.6	110.6	44.3	19.8	134.4	26.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	46.4	2.7	0.0	3.2
Total Delay	110.1	1.6	83.8	16.6	110.6	90.7	22.5	134.4	30.1
Queue Length 50th (ft)	65	0	219	25	77	1017	206	232	501
Queue Length 95th (ft)	116	0	264	109	133	#1289	342	#447	668
Internal Link Dist (ft)	76			198		419			509
Turn Bay Length (ft)		90			175			245	
Base Capacity (vph)	170	280	643	446	171	2745	911	214	3043
Starvation Cap Reductn	0	0	0	0	0	864	383	0	1166
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	0.29	0.13	0.53	0.45	0.35	1.30	0.76	0.99	0.93





























Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

1: Rockville Pike - 355 & Bou Ave

Background Future PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				  	 			  			  	
Traffic Volume (vph)	17	31	36	329	21	175	57	2369	390	206	1673	18
Future Volume (vph)	17	31	36	329	21	175	57	2369	390	206	1673	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	11	11	11	12	12	12
Total Lost time (s)		6.0	6.0	7.0	7.0		5.0	5.5	5.5	6.0	6.0	
Lane Util. Factor		1.00	1.00	0.97	1.00		1.00	0.91	1.00	1.00	0.91	
Fr _t		1.00	0.85	1.00	0.87		1.00	1.00	0.85	1.00	1.00	
Fl _t Protected		0.98	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1708	1478	3204	1506		1711	4916	1531	1770	5077	
Fl _t Permitted		0.98	1.00	0.95	1.00		0.95	1.00	1.00	0.04	1.00	
Satd. Flow (perm)		1708	1478	3204	1506		1711	4916	1531	75	5077	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	18	32	37	339	22	180	59	2442	402	212	1725	19
RTOR Reduction (vph)	0	0	35	0	151	0	0	0	56	0	0	0
Lane Group Flow (vph)	0	50	2	339	51	0	59	2442	346	212	1744	0
Turn Type	Split	NA	Prot	Split	NA		Prot	NA	Prot	pm+pt	NA	
Protected Phases	3	3	3	4	4		1	5	5	6	2	
Permitted Phases										2		
Actuated Green, G (s)		11.2	11.2	32.6	32.6		12.3	111.7	111.7	119.9	119.9	
Effective Green, g (s)		11.2	11.2	32.6	32.6		12.3	111.7	111.7	119.9	119.9	
Actuated g/C Ratio		0.06	0.06	0.16	0.16		0.06	0.56	0.56	0.60	0.60	
Clearance Time (s)		6.0	6.0	7.0	7.0		5.0	5.5	5.5	6.0	6.0	
Vehicle Extension (s)		3.0	3.0	6.0	6.0		3.0	0.2	0.2	3.0	0.2	
Lane Grp Cap (vph)		95	82	522	245		105	2745	855	214	3043	
v/s Ratio Prot		c0.03	0.00	c0.11	0.03		0.03	c0.50	0.23	c0.10	0.34	
v/s Ratio Perm										c0.50		
v/c Ratio		0.53	0.03	0.65	0.21		0.56	0.89	0.40	0.99	0.57	
Uniform Delay, d ₁		91.8	89.2	78.4	72.5		91.2	38.7	25.2	72.3	24.4	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d ₂		5.2	0.1	4.5	1.2		6.7	4.8	1.4	58.7	0.8	
Delay (s)		97.0	89.4	82.9	73.7		97.9	43.6	26.6	130.9	25.2	
Level of Service		F	F	F	E		F	D	C	F	C	
Approach Delay (s)		93.8			79.5			42.3			36.7	
Approach LOS		F			E			D			D	
Intersection Summary												
HCM 2000 Control Delay			44.8			HCM 2000 Level of Service			D			
HCM 2000 Volume to Capacity ratio			0.93									
Actuated Cycle Length (s)			200.0			Sum of lost time (s)			31.0			
Intersection Capacity Utilization			88.7%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

Queues

2: Rockville Pike - 355 & Federal Plaza/Pike Center

Background Future PM


























Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	140	139	68	205	2339	27	1810
v/c Ratio	0.71	0.47	0.50	0.76	0.71	0.25	0.67
Control Delay	86.2	13.8	47.4	50.2	20.5	18.7	27.9
Queue Delay	0.0	0.0	0.0	0.0	4.0	0.0	2.6
Total Delay	86.2	13.8	47.4	50.2	24.4	18.7	30.6
Queue Length 50th (ft)	142	0	30	125	570	7	462
Queue Length 95th (ft)	211	64	83	222	784	25	680
Internal Link Dist (ft)	84		43		509		145
Turn Bay Length (ft)		150		245		175	
Base Capacity (vph)	264	352	335	305	3279	251	2691
Starvation Cap Reductn	0	0	0	0	845	0	730
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.39	0.20	0.67	0.96	0.11	0.92

Intersection Summary

HCM Signalized Intersection Capacity Analysis
 2: Rockville Pike - 355 & Federal Plaza/Pike Center

Background Future PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  			  	
Traffic Volume (vph)	127	8	133	18	9	38	197	2222	23	26	1724	13
Future Volume (vph)	127	8	133	18	9	38	197	2222	23	26	1724	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	16	16	16	11	11	11	10	10	10
Total Lost time (s)		6.5	6.5		6.5		5.0	5.5		5.0	5.5	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.91		1.00	0.91	
Flt		1.00	0.85		0.92		1.00	1.00		1.00	1.00	
Flt Protected		0.95	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1660	1478		1917		1711	4908		1652	4741	
Flt Permitted		0.95	1.00		0.99		0.07	1.00		0.04	1.00	
Satd. Flow (perm)		1660	1478		1917		122	4908		77	4741	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	132	8	139	19	9	40	205	2315	24	27	1796	14
RTOR Reduction (vph)	0	0	123	0	37	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	140	16	0	31	0	205	2339	0	27	1810	0
Turn Type	Split	NA	Prot	Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	8	8	8	4	4		5	2		1	6	
Permitted Phases							2			6		
Actuated Green, G (s)		18.8	18.8		8.2		113.0	103.9		94.0	89.9	
Effective Green, g (s)		18.8	18.8		8.2		113.0	103.9		94.0	89.9	
Actuated g/C Ratio		0.12	0.12		0.05		0.71	0.66		0.59	0.57	
Clearance Time (s)		6.5	6.5		6.5		5.0	5.5		5.0	5.5	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	0.2		3.0	0.2	
Lane Grp Cap (vph)		196	175		99		268	3217		86	2689	
v/s Ratio Prot		c0.08	0.01		c0.02		c0.09	0.48		0.01	0.38	
v/s Ratio Perm							c0.46			0.18		
v/c Ratio		0.71	0.09		0.31		0.76	0.73		0.31	0.67	
Uniform Delay, d1		67.3	62.3		72.4		39.1	18.0		17.1	24.0	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		11.7	0.2		1.8		12.2	1.5		2.1	1.4	
Delay (s)		78.9	62.5		74.3		51.3	19.4		19.2	25.4	
Level of Service		E	E		E		D	B		B	C	
Approach Delay (s)		70.7			74.3		22.0			25.3		
Approach LOS		E			E		C			C		
Intersection Summary												
HCM 2000 Control Delay			26.9				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			158.5				Sum of lost time (s)			23.5		
Intersection Capacity Utilization			75.9%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

4: Rockville Pike - 355 & Rollins Avenue /Twinbrook Parkway

Background Future PM















Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	489	317	168	139	2027	122	200	1767
v/c Ratio	0.77	0.46	0.54	0.58	0.76	0.14	0.81	0.62
Control Delay	68.7	58.1	63.5	31.5	31.3	3.6	68.6	24.6
Queue Delay	0.0	0.0	0.0	0.0	18.0	0.0	0.0	0.0
Total Delay	68.7	58.1	63.5	31.5	49.2	3.6	68.6	24.6
Queue Length 50th (ft)	258	155	160	49	579	0	154	427
Queue Length 95th (ft)	307	195	229	135	796	36	240	583
Internal Link Dist (ft)	1347	625			260			1225
Turn Bay Length (ft)			150			300	400	
Base Capacity (vph)	1013	1105	494	274	2657	882	363	2844
Starvation Cap Reductn	0	0	0	0	682	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	0.48	0.29	0.34	0.51	1.03	0.14	0.55	0.62

Intersection Summary

HCM Signalized Intersection Capacity Analysis

4: Rockville Pike - 355 & Rollins Avenue /Twinbrook Parkway

Background Future PM

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑			↑↑	↑	↑	↑↑↑	↑	↑	↑↑↑		
Traffic Volume (vph)	0	426	58	0	314	166	138	2007	121	198	1693	56	
Future Volume (vph)	0	426	58	0	314	166	138	2007	121	198	1693	56	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	10	10	10	12	12	12	10	10	10	11	11	11	
Total Lost time (s)		7.5			7.5	7.5	7.0	5.5	5.5	7.0	5.5		
Lane Util. Factor		0.95			0.95	1.00	1.00	0.91	1.00	1.00	0.91		
Frt		0.98			1.00	0.85	1.00	1.00	0.85	1.00	1.00		
Flt Protected		1.00			1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)		3243			3539	1583	1652	4746	1478	1711	4892		
Flt Permitted		1.00			1.00	1.00	0.08	1.00	1.00	0.05	1.00		
Satd. Flow (perm)		3243			3539	1583	144	4746	1478	81	4892		
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	
Adj. Flow (vph)	0	430	59	0	317	168	139	2027	122	200	1710	57	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	54	0	2	0	
Lane Group Flow (vph)	0	489	0	0	317	168	139	2027	68	200	1765	0	
Turn Type		NA			NA	Prot	pm+pt	NA	Prot	pm+pt	NA		
Protected Phases		4			8	8	1	6	6	5	2		
Permitted Phases							6			2			
Actuated Green, G (s)		31.5			31.5	31.5	105.1	89.6	89.6	111.9	93.0		
Effective Green, g (s)		31.5			31.5	31.5	105.1	89.6	89.6	111.9	93.0		
Actuated g/C Ratio		0.20			0.20	0.20	0.66	0.56	0.56	0.70	0.58		
Clearance Time (s)		7.5			7.5	7.5	7.0	5.5	5.5	7.0	5.5		
Vehicle Extension (s)		4.0			4.0	4.0	4.0	0.2	0.2	4.0	0.2		
Lane Grp Cap (vph)		638			696	311	240	2657	827	249	2843		
v/s Ratio Prot		c0.15			0.09	0.11	0.06	0.43	0.05	c0.09	0.36		
v/s Ratio Perm							0.32			c0.46			
v/c Ratio		0.77			0.46	0.54	0.58	0.76	0.08	0.80	0.62		
Uniform Delay, d1		60.8			56.7	57.7	17.8	27.0	16.2	49.9	22.0		
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2		5.8			0.6	2.4	4.0	2.1	0.2	17.7	1.0		
Delay (s)		66.6			57.3	60.1	21.8	29.2	16.4	67.6	23.0		
Level of Service		E			E	E	C	C	B	E	C		
Approach Delay (s)		66.6			58.3			28.0			27.5		
Approach LOS		E			E			C			C		
Intersection Summary													
HCM 2000 Control Delay			34.3									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.81										
Actuated Cycle Length (s)			160.0									Sum of lost time (s)	20.0
Intersection Capacity Utilization			80.0%									ICU Level of Service	D
Analysis Period (min)			15										
c Critical Lane Group													

Queues

5: Chapman Ave & Twinbrook Parkway

Background Future PM



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	70	894	484	749	190	609	222	123	38
v/c Ratio	0.21	0.67	0.58	0.36	0.95	0.96	0.74	0.76	0.16
Control Delay	17.4	48.7	65.0	18.0	131.5	74.2	98.7	111.4	1.4
Queue Delay	0.0	1.3	0.0	0.0	0.0	22.5	0.0	0.0	0.0
Total Delay	17.4	50.0	65.0	18.0	131.5	96.8	98.7	111.4	1.4
Queue Length 50th (ft)	27	483	271	227	241	661	140	152	0
Queue Length 95th (ft)	46	564	334	278	#438	#940	190	232	0
Internal Link Dist (ft)		625		1310	176			558	
Turn Bay Length (ft)	175		300				300		300
Base Capacity (vph)	523	1328	875	2058	200	653	338	183	261
Starvation Cap Reductn	0	232	0	0	0	67	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	0.82	0.55	0.36	0.95	1.04	0.66	0.67	0.15






















Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

5: Chapman Ave & Twinbrook Parkway

Background Future PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	739	128	469	586	141	76	109	591	215	119	37
Future Volume (vph)	68	739	128	469	586	141	76	109	591	215	119	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	11	11	11	10	10	10	10	10	10
Total Lost time (s)	5.5	6.0		5.5	6.0			6.5	6.5	6.5	6.5	6.5
Lane Util. Factor	1.00	0.95		0.97	0.95			1.00	1.00	0.97	1.00	1.00
Fr _t	1.00	0.98		1.00	0.97			1.00	0.85	1.00	1.00	0.85
Fl _t Protected	0.95	1.00		0.95	1.00			0.98	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1652	3230		3319	3322			1704	1478	3204	1739	1478
Fl _t Permitted	0.37	1.00		0.95	1.00			0.98	1.00	0.95	1.00	1.00
Satd. Flow (perm)	639	3230		3319	3322			1704	1478	3204	1739	1478
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	70	762	132	484	604	145	78	112	609	222	123	38
RTOR Reduction (vph)	0	7	0	0	8	0	0	0	48	0	0	34
Lane Group Flow (vph)	70	887	0	484	741	0	0	190	561	222	123	4
Turn Type	pm+pt	NA		Prot	NA		Split	NA	pt+ov	Split	NA	Perm
Protected Phases	5	2		1	6		4	4	4 1	3	3	
Permitted Phases	2											3
Actuated Green, G (s)	85.6	77.5		47.5	116.9			22.3	76.3	17.7	17.7	17.7
Effective Green, g (s)	85.6	77.5		47.5	116.9			22.3	76.3	17.7	17.7	17.7
Actuated g/C Ratio	0.45	0.41		0.25	0.62			0.12	0.40	0.09	0.09	0.09
Clearance Time (s)	5.5	6.0		5.5	6.0			6.5		6.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	331	1320		831	2049			200	595	299	162	138
v/s Ratio Prot	0.01	c0.27		0.15	0.22			0.11	c0.38	0.07	c0.07	
v/s Ratio Perm	0.09											0.00
v/c Ratio	0.21	0.67		0.58	0.36			0.95	0.94	0.74	0.76	0.03
Uniform Delay, d ₁	29.7	45.6		62.3	17.9			83.0	54.5	83.7	83.8	78.1
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	1.00
Incremental Delay, d ₂	0.3	2.7		1.0	0.5			48.8	23.6	9.6	18.3	0.1
Delay (s)	30.1	48.4		63.3	18.4			131.8	78.1	93.2	102.1	78.1
Level of Service	C	D		E	B			F	E	F	F	E
Approach Delay (s)		47.1			36.0			90.9			94.6	
Approach LOS		D			D			F			F	
Intersection Summary												
HCM 2000 Control Delay			58.8			HCM 2000 Level of Service				E		
HCM 2000 Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			189.5			Sum of lost time (s)			24.5			
Intersection Capacity Utilization			83.2%			ICU Level of Service				E		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

9: Chapman Ave & Bou Ave

Background Future PM



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	372	321	16	182	275	18	184	261	138	363
v/c Ratio	0.58	0.34	0.05	0.32	0.41	0.04	0.29	0.68	0.21	0.35
Control Delay	27.3	22.6	45.5	49.4	6.5	38.6	40.3	59.2	40.3	2.1
Queue Delay	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay	27.8	22.8	45.5	49.4	6.5	38.6	40.3	59.2	40.3	2.2
Queue Length 50th (ft)	252	201	13	165	0	14	148	262	111	0
Queue Length 95th (ft)	332	270	37	259	77	37	236	417	184	41
Internal Link Dist (ft)		200		800			128		31	
Turn Bay Length (ft)	275				250	70				
Base Capacity (vph)	846	1388	322	569	669	422	643	384	664	1340
Starvation Cap Reductn	167	460	0	0	0	0	0	0	0	312
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.35	0.05	0.32	0.41	0.04	0.29	0.68	0.21	0.35

Intersection Summary

HCM Signalized Intersection Capacity Analysis

9: Chapman Ave & Bou Ave

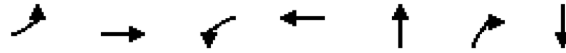
Background Future PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	342	239	56	15	167	253	17	127	42	240	127	334	
Future Volume (vph)	342	239	56	15	167	253	17	127	42	240	127	334	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	10	10	10	10	10	10	10	10	10	10	10	10	
Total Lost time (s)	5.5	5.5		5.5	5.5	5.5	6.0	6.0		6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1652	1689		1652	1739	1478	1652	1673		1652	1739	1478	
Flt Permitted	0.51	1.00		0.57	1.00	1.00	0.64	1.00		0.58	1.00	1.00	
Satd. Flow (perm)	881	1689		984	1739	1478	1106	1673		1005	1739	1478	
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)	372	260	61	16	182	275	18	138	46	261	138	363	
RTOR Reduction (vph)	0	4	0	0	0	185	0	4	0	0	0	141	
Lane Group Flow (vph)	372	317	0	16	182	90	18	180	0	261	138	222	
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	pt+ov	
Protected Phases	1	6			2			4			8	8 1	
Permitted Phases	6			2		2	4			8			
Actuated Green, G (s)	101.8	101.8		60.1	60.1	60.1	70.1	70.1		70.1	70.1	112.3	
Effective Green, g (s)	101.8	101.8		60.1	60.1	60.1	70.1	70.1		70.1	70.1	112.3	
Actuated g/C Ratio	0.56	0.56		0.33	0.33	0.33	0.38	0.38		0.38	0.38	0.61	
Clearance Time (s)	5.5	5.5		5.5	5.5	5.5	6.0	6.0		6.0	6.0		
Vehicle Extension (s)	6.0	0.2		0.2	0.2	0.2	3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)	641	937		322	569	484	422	639		384	664	905	
v/s Ratio Prot	c0.11	0.19			0.10			0.11			0.08	0.15	
v/s Ratio Perm	c0.21			0.02		0.06	0.02			c0.26			
v/c Ratio	0.58	0.34		0.05	0.32	0.19	0.04	0.28		0.68	0.21	0.25	
Uniform Delay, d1	24.2	22.3		42.1	46.3	44.1	35.6	39.2		47.3	38.0	16.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2	2.6	0.1		0.3	1.5	0.8	0.0	0.2		9.3	0.7	0.4	
Delay (s)	26.8	22.4		42.4	47.8	45.0	35.6	39.5		56.6	38.7	16.6	
Level of Service	C	C		D	D	D	D	D		E	D	B	
Approach Delay (s)		24.8			46.0			39.1			34.3		
Approach LOS		C			D			D			C		
Intersection Summary													
HCM 2000 Control Delay			34.3									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.64										
Actuated Cycle Length (s)			183.4									Sum of lost time (s)	17.0
Intersection Capacity Utilization			69.4%									ICU Level of Service	C
Analysis Period (min)			15										
c Critical Lane Group													

Queues

11: East Jefferson Street & Rollins Avenue

Background Future PM



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	10	73	403	149	504	414	312
v/c Ratio	0.08	0.51	0.92	0.32	0.50	0.30	0.18
Control Delay	46.6	46.9	67.7	22.0	18.7	0.8	13.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.6	46.9	67.7	22.0	18.7	0.8	13.2
Queue Length 50th (ft)	7	35	267	51	223	0	56
Queue Length 95th (ft)	23	80	#436	106	347	15	88
Internal Link Dist (ft)		438		1347	257		274
Turn Bay Length (ft)							
Base Capacity (vph)	235	253	470	494	1005	1390	1741
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	0.04	0.29	0.86	0.30	0.50	0.30	0.18





















Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

11: East Jefferson Street & Rollins Avenue

Background Future PM

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	10	44	26	387	65	78	7	477	397	18	263	18	
Future Volume (vph)	10	44	26	387	65	78	7	477	397	18	263	18	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11	
Total Lost time (s)	4.5	4.5		4.5	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		
Frt	1.00	0.94		1.00	0.92			1.00	0.85		0.99		
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00		1.00		
Satd. Flow (prot)	1711	1701		1711	1654			1799	1531		3380		
Flt Permitted	0.95	1.00		0.95	1.00			1.00	1.00		0.91		
Satd. Flow (perm)	1711	1701		1711	1654			1792	1531		3098		
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	
Adj. Flow (vph)	10	46	27	403	68	81	7	497	414	19	274	19	
RTOR Reduction (vph)	0	21	0	0	40	0	0	0	80	0	4	0	
Lane Group Flow (vph)	10	52	0	403	109	0	0	504	334	0	308	0	
Turn Type	Split	NA		Split	NA		Perm	NA	pm+ov	Perm	NA		
Protected Phases	4	4		3	3			2	3		6		
Permitted Phases							2		2	6			
Actuated Green, G (s)	7.0	7.0		27.8	27.8			60.2	88.0		60.2		
Effective Green, g (s)	7.0	7.0		27.8	27.8			60.2	88.0		60.2		
Actuated g/C Ratio	0.06	0.06		0.26	0.26			0.55	0.81		0.55		
Clearance Time (s)	4.5	4.5		4.5	4.5			5.0	4.5		5.0		
Vehicle Extension (s)	2.0	2.0		1.0	1.0			5.0	1.0		5.0		
Lane Grp Cap (vph)	109	109		436	421			989	1236		1711		
v/s Ratio Prot	0.01	c0.03		c0.24	0.07				0.07				
v/s Ratio Perm								c0.28	0.15		0.10		
v/c Ratio	0.09	0.48		0.92	0.26			0.51	0.27		0.18		
Uniform Delay, d1	48.0	49.2		39.6	32.4			15.2	2.6		12.1		
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00		
Incremental Delay, d2	0.1	1.2		24.9	0.1			1.9	0.0		0.2		
Delay (s)	48.1	50.5		64.5	32.5			17.1	2.6		12.4		
Level of Service	D	D		E	C			B	A		B		
Approach Delay (s)		50.2			55.9			10.6			12.4		
Approach LOS		D			E			B			B		
Intersection Summary													
HCM 2000 Control Delay			26.0									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.63										
Actuated Cycle Length (s)			109.0									Sum of lost time (s)	14.0
Intersection Capacity Utilization			66.7%									ICU Level of Service	C
Analysis Period (min)			15										
c	Critical Lane Group												

Queues

12: Rockville Pike - 355/Rockville Pike- 355 & Halpine Road

Background Future PM




























Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	103	161	223	74	134	207	2229	104	1823
v/c Ratio	0.34	0.20	0.81	0.17	0.29	0.73	0.75	0.68	0.68
Control Delay	61.0	23.1	89.5	55.9	8.3	56.3	30.2	64.3	34.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.0	23.1	89.5	55.9	8.3	56.3	30.2	64.3	34.6
Queue Length 50th (ft)	107	35	263	74	0	162	689	73	583
Queue Length 95th (ft)	155	64	343	113	55	266	964	153	812
Internal Link Dist (ft)		312		302			1225		274
Turn Bay Length (ft)	250				450	165		175	
Base Capacity (vph)	422	1097	382	596	597	505	2983	184	2691
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	0.24	0.15	0.58	0.12	0.22	0.41	0.75	0.57	0.68

Intersection Summary

HCM Signalized Intersection Capacity Analysis
 12: Rockville Pike - 355/Rockville Pike- 355 & Halpine Road

Background Future PM

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		 						 			 		
Traffic Volume (vph)	98	66	87	212	70	127	197	2016	102	99	1701	30	
Future Volume (vph)	98	66	87	212	70	127	197	2016	102	99	1701	30	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11	
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	5.5	5.5		5.5	5.5		
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.91		1.00	0.91		
Fr _t	1.00	0.91		1.00	1.00	0.85	1.00	0.99		1.00	1.00		
Fl _t Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1770	3236		1770	1863	1583	1711	4880		1711	4903		
Fl _t Permitted	0.71	1.00		0.64	1.00	1.00	0.06	1.00		0.04	1.00		
Satd. Flow (perm)	1320	3236		1193	1863	1583	112	4880		77	4903		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	103	69	92	223	74	134	207	2122	107	104	1791	32	
RTOR Reduction (vph)	0	71	0	0	0	103	0	2	0	0	0	0	
Lane Group Flow (vph)	103	90	0	223	74	31	207	2227	0	104	1823	0	
Turn Type	Perm	NA		Perm	NA	Prot	pm+pt	NA		pm+pt	NA		
Protected Phases		4			8	8	1	6		5	2		
Permitted Phases	4			8			6			2			
Actuated Green, G (s)	43.2	43.2		43.2	43.2	43.2	132.3	114.5		115.2	102.9		
Effective Green, g (s)	43.2	43.2		43.2	43.2	43.2	132.3	114.5		115.2	102.9		
Actuated g/C Ratio	0.23	0.23		0.23	0.23	0.23	0.71	0.61		0.61	0.55		
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	5.5	5.5		5.5	5.5		
Vehicle Extension (s)	5.0	5.0		5.0	5.0	5.0	5.0	0.2		5.0	0.2		
Lane Grp Cap (vph)	304	745		274	429	364	282	2980		154	2690		
v/s Ratio Prot		0.03			0.04	0.02	c0.09	c0.46		0.04	0.37		
v/s Ratio Perm	0.08			c0.19			0.42			0.37			
v/c Ratio	0.34	0.12		0.81	0.17	0.08	0.73	0.75		0.68	0.68		
Uniform Delay, d ₁	60.2	57.1		68.3	57.8	56.6	49.1	26.1		42.3	30.4		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d ₂	1.4	0.2		18.6	0.4	0.2	11.4	1.8		14.3	1.4		
Delay (s)	61.6	57.3		87.0	58.2	56.8	60.6	27.9		56.5	31.8		
Level of Service	E	E		F	E	E	E	C		E	C		
Approach Delay (s)		59.0			72.7			30.7			33.1		
Approach LOS		E			E			C			C		
Intersection Summary													
HCM 2000 Control Delay			36.7									HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.78										
Actuated Cycle Length (s)			187.5									Sum of lost time (s)	17.5
Intersection Capacity Utilization			83.1%									ICU Level of Service	E
Analysis Period (min)			15										
c Critical Lane Group													

Queues

13: Twinbrook Parkway & Parklawn Drive

Background Future PM

























Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	42	111	181	183	289	33	1562	141	824
v/c Ratio	0.34	0.74	0.79	0.79	0.55	0.09	0.55	0.37	0.39
Control Delay	101.3	94.9	112.4	111.8	17.6	14.7	26.9	15.8	21.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	101.3	94.9	112.4	111.8	17.6	14.7	26.9	15.8	21.9
Queue Length 50th (ft)	62	114	268	271	62	15	462	32	303
Queue Length 95th (ft)	110	195	357	362	159	37	638	60	438
Internal Link Dist (ft)		332		479			1310		374
Turn Bay Length (ft)			200			190		240	
Base Capacity (vph)	231	250	300	304	822	515	2839	1037	2097
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	0.18	0.44	0.60	0.60	0.35	0.06	0.55	0.14	0.39

Intersection Summary

HCM Signalized Intersection Capacity Analysis

13: Twinbrook Parkway & Parklawn Drive

Background Future PM

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	44	32	68	304	39	272	31	1198	271	133	743	32	
Future Volume (vph)	44	32	68	304	39	272	31	1198	271	133	743	32	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	12	12	12	11	11	11	10	10	10	10	10	10	
Total Lost time (s)	6.5	6.5		7.0	7.0	7.0	8.0	6.0		8.0	6.0		
Lane Util. Factor	0.95	0.95		0.95	0.95	1.00	1.00	0.91		0.97	0.95		
Frt	1.00	0.90		1.00	1.00	0.85	1.00	0.97		1.00	0.99		
Flt Protected	0.95	1.00		0.95	0.96	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1681	1594		1625	1647	1531	1652	4615		3204	3283		
Flt Permitted	0.95	1.00		0.95	0.96	1.00	0.30	1.00		0.11	1.00		
Satd. Flow (perm)	1681	1594		1625	1647	1531	524	4615		374	3283		
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	
Adj. Flow (vph)	47	34	72	323	41	289	33	1274	288	141	790	34	
RTOR Reduction (vph)	0	32	0	0	0	184	0	9	0	0	1	0	
Lane Group Flow (vph)	42	79	0	181	183	105	33	1553	0	141	823	0	
Turn Type	Split	NA		Split	NA	pt+ov	pm+pt	NA		pm+pt	NA		
Protected Phases	3	3		4	4	4	1	2		1	6		
Permitted Phases							2			6			
Actuated Green, G (s)	15.9	15.9		30.8	30.8	47.6	139.4	133.5		147.2	137.4		
Effective Green, g (s)	15.9	15.9		30.8	30.8	47.6	139.4	133.5		147.2	137.4		
Actuated g/C Ratio	0.07	0.07		0.14	0.14	0.22	0.64	0.61		0.68	0.63		
Clearance Time (s)	6.5	6.5		7.0	7.0		8.0	6.0		8.0	6.0		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	0.2		3.0	0.2		
Lane Grp Cap (vph)	122	116		230	233	335	366	2832		380	2073		
v/s Ratio Prot	0.02	c0.05		c0.11	0.11	c0.07	0.00	c0.34		0.02	c0.25		
v/s Ratio Perm							0.06			0.23			
v/c Ratio	0.34	0.68		0.79	0.79	0.31	0.09	0.55		0.37	0.40		
Uniform Delay, d1	95.8	98.3		90.2	90.2	71.2	14.9	24.5		16.2	19.7		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	1.7	14.6		16.1	15.8	0.5	0.1	0.8		0.6	0.6		
Delay (s)	97.5	112.9		106.3	106.0	71.8	15.0	25.2		16.9	20.3		
Level of Service	F	F		F	F	E	B	C		B	C		
Approach Delay (s)		108.7			90.9			25.0			19.8		
Approach LOS		F			F			C			B		
Intersection Summary													
HCM 2000 Control Delay			40.1									HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.59										
Actuated Cycle Length (s)			217.5									Sum of lost time (s)	27.5
Intersection Capacity Utilization			66.6%									ICU Level of Service	C
Analysis Period (min)			15										
c Critical Lane Group													

Queues

14: Nebel Street & Randolph Road

Background Future PM



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	22	1189	203	1037	132	148	302	297	174	25
v/c Ratio	0.12	0.94	0.89	0.64	0.34	0.38	0.92	0.57	0.30	0.05
Control Delay	30.9	76.3	99.6	47.3	42.6	74.6	113.8	47.5	57.6	50.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.9	76.3	99.6	47.3	42.6	74.6	113.8	47.5	57.6	50.6
Queue Length 50th (ft)	16	~941	234	631	112	179	417	280	182	24
Queue Length 95th (ft)	36	#1195	331	725	166	259	#586	370	266	54
Internal Link Dist (ft)		613		257		122			1618	
Turn Bay Length (ft)	140		125		100			250		
Base Capacity (vph)	317	1263	438	1624	564	417	355	533	574	488
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.94	0.46	0.64	0.23	0.35	0.85	0.56	0.30	0.05

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

14: Nebel Street & Randolph Road

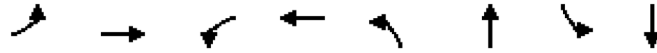
Background Future PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	1055	74	193	809	176	125	141	287	282	165	24
Future Volume (vph)	21	1055	74	193	809	176	125	141	287	282	165	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	12	12	12	11	11	11	12	12	12
Total Lost time (s)	6.0	6.5		6.0	6.5		6.5	6.5	6.5	6.5	6.5	6.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1652	3271		1770	3445		1711	1801	1531	1770	1863	1583
Flt Permitted	0.19	1.00		0.05	1.00		0.65	1.00	1.00	0.47	1.00	1.00
Satd. Flow (perm)	328	3271		95	3445		1166	1801	1531	881	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	22	1111	78	203	852	185	132	148	302	297	174	25
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	22	1189	0	203	1037	0	132	148	302	297	174	25
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Prot	pm+pt	NA	Prot
Protected Phases	1	6		5	2		3	8	8	7	4	4
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	89.1	83.2		112.3	100.4		63.6	46.4	46.4	90.2	66.5	66.5
Effective Green, g (s)	89.1	83.2		112.3	100.4		63.6	46.4	46.4	90.2	66.5	66.5
Actuated g/C Ratio	0.41	0.39		0.52	0.47		0.30	0.22	0.22	0.42	0.31	0.31
Clearance Time (s)	6.0	6.5		6.0	6.5		6.5	6.5	6.5	6.5	6.5	6.5
Vehicle Extension (s)	3.0	5.0		3.0	5.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	171	1262		229	1605		387	387	329	522	574	488
v/s Ratio Prot	0.00	c0.36		c0.10	0.30		0.03	0.08	c0.20	c0.10	0.09	0.02
v/s Ratio Perm	0.05			0.37			0.07			0.14		
v/c Ratio	0.13	0.94		0.89	0.65		0.34	0.38	0.92	0.57	0.30	0.05
Uniform Delay, d1	39.3	63.8		70.8	44.0		58.0	72.3	82.7	44.5	56.8	52.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	14.8		30.9	2.0		0.7	0.9	29.7	1.7	0.4	0.1
Delay (s)	39.6	78.6		101.7	46.0		58.7	73.2	112.3	46.2	57.2	52.4
Level of Service	D	E		F	D		E	E	F	D	E	D
Approach Delay (s)		77.9			55.1			90.2			50.4	
Approach LOS		E			E			F			D	
Intersection Summary												
HCM 2000 Control Delay			68.1			HCM 2000 Level of Service				E		
HCM 2000 Volume to Capacity ratio			0.86									
Actuated Cycle Length (s)			215.5			Sum of lost time (s)			25.5			
Intersection Capacity Utilization			86.5%			ICU Level of Service				E		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

15: Rockville Pike - 355 & Hubbard Drive/Plaza Driveway

Background Future PM



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	42	46	194	158	19	2852	168	2075
v/c Ratio	0.23	0.14	0.75	0.37	0.12	0.81	0.69	0.63
Control Delay	54.2	20.9	77.5	11.7	11.1	30.4	55.1	17.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8
Total Delay	54.2	20.9	77.5	11.7	11.1	30.4	55.1	20.4
Queue Length 50th (ft)	37	11	192	12	5	660	119	465
Queue Length 95th (ft)	72	45	267	72	16	#929	203	616
Internal Link Dist (ft)		170		149		168		419
Turn Bay Length (ft)							180	
Base Capacity (vph)	245	429	341	513	338	3528	311	3314
Starvation Cap Reductn	0	0	0	0	0	0	0	1089
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	0.11	0.57	0.31	0.06	0.81	0.54	0.93

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
 15: Rockville Pike - 355 & Hubbard Drive/Plaza Driveway

Background Future PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	12	32	186	13	138	18	2488	250	161	1966	26
Future Volume (vph)	40	12	32	186	13	138	18	2488	250	161	1966	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	12	11	11	11	11	11	11
Total Lost time (s)	7.0	7.0		7.0	7.0		6.0	5.5		6.0	5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.86		1.00	0.91	
Frt	1.00	0.89		1.00	0.86		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1711	1607		1770	1608		1711	6110		1711	4906	
Flt Permitted	0.54	1.00		0.73	1.00		0.07	1.00		0.04	1.00	
Satd. Flow (perm)	974	1607		1354	1608		122	6110		74	4906	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	42	12	33	194	14	144	19	2592	260	168	2048	27
RTOR Reduction (vph)	0	27	0	0	116	0	0	8	0	0	1	0
Lane Group Flow (vph)	42	19	0	194	42	0	19	2844	0	168	2074	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	30.3	30.3		30.3	30.3		96.4	91.4		115.7	104.7	
Effective Green, g (s)	30.3	30.3		30.3	30.3		96.4	91.4		115.7	104.7	
Actuated g/C Ratio	0.19	0.19		0.19	0.19		0.61	0.58		0.73	0.66	
Clearance Time (s)	7.0	7.0		7.0	7.0		6.0	5.5		6.0	5.5	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	0.2		5.0	0.2	
Lane Grp Cap (vph)	186	307		258	307		124	3523		243	3240	
v/s Ratio Prot		0.01			0.03		0.00	c0.47		c0.08	c0.42	
v/s Ratio Perm	0.04			c0.14			0.09			0.43		
v/c Ratio	0.23	0.06		0.75	0.14		0.15	0.81		0.69	0.64	
Uniform Delay, d1	54.2	52.5		60.5	53.2		13.8	26.6		48.3	15.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.3	0.2		13.7	0.4		1.2	2.1		10.3	1.0	
Delay (s)	55.5	52.7		74.3	53.6		15.0	28.7		58.6	16.8	
Level of Service	E	D		E	D		B	C		E	B	
Approach Delay (s)		54.0			65.0			28.6			19.9	
Approach LOS		D			E			C			B	
Intersection Summary												
HCM 2000 Control Delay			27.8			HCM 2000 Level of Service		C				
HCM 2000 Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			158.5			Sum of lost time (s)		18.5				
Intersection Capacity Utilization			84.9%			ICU Level of Service		E				
Analysis Period (min)			15									
c Critical Lane Group												

Queues

16: Chapman Ave & Josiah Henson Parkway/Randolph Road

Background Future PM




























Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	150	1089	15	805	132	52	46	142	169
v/c Ratio	0.36	0.51	0.05	0.43	0.15	0.49	0.37	0.57	0.71
Control Delay	11.9	17.2	10.6	20.8	3.1	82.5	49.6	66.6	75.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.9	17.2	10.6	20.8	3.1	82.5	49.6	66.6	75.4
Queue Length 50th (ft)	49	259	5	233	0	49	23	136	166
Queue Length 95th (ft)	92	457	15	343	33	97	67	202	240
Internal Link Dist (ft)		321		613			346		212
Turn Bay Length (ft)	350		165		215	250			
Base Capacity (vph)	527	2130	394	1894	907	115	132	340	325
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	0.28	0.51	0.04	0.43	0.15	0.45	0.35	0.42	0.52

Intersection Summary

HCM Signalized Intersection Capacity Analysis

16: Chapman Ave & Josiah Henson Parkway/Randolph Road

Background Future PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (vph)	144	973	72	14	773	127	50	24	20	152	51	96
Future Volume (vph)	144	973	72	14	773	127	50	24	20	152	51	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	11	11	11	12	12	12
Total Lost time (s)	5.0	6.0		5.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		0.95	0.95	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.93		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1652	3269		1652	3303	1478	1711	1677		1681	1605	
Flt Permitted	0.27	1.00		0.23	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	476	3269		393	3303	1478	1711	1677		1681	1605	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	150	1014	75	15	805	132	52	25	21	158	53	100
RTOR Reduction (vph)	0	3	0	0	0	57	0	20	0	0	0	0
Lane Group Flow (vph)	150	1086	0	15	805	75	52	26	0	142	169	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Split	NA		Split	NA	
Protected Phases	1	6		5	2		3	3		4	4	
Permitted Phases	6			2		2						
Actuated Green, G (s)	100.2	92.2		86.7	83.7	83.7	7.8	7.8		22.0	22.0	
Effective Green, g (s)	100.2	92.2		86.7	83.7	83.7	7.8	7.8		22.0	22.0	
Actuated g/C Ratio	0.68	0.62		0.59	0.57	0.57	0.05	0.05		0.15	0.15	
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	4.0	0.2		4.0	0.2	0.2	4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)	413	2036		255	1867	835	90	88		249	238	
v/s Ratio Prot	c0.03	c0.33		0.00	0.24		c0.03	0.02		0.08	c0.11	
v/s Ratio Perm	0.22			0.03		0.05						
v/c Ratio	0.36	0.53		0.06	0.43	0.09	0.58	0.30		0.57	0.71	
Uniform Delay, d1	10.1	15.8		13.3	18.5	14.7	68.5	67.5		58.6	60.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	1.0		0.1	0.7	0.2	10.3	2.6		3.7	10.2	
Delay (s)	10.8	16.8		13.4	19.2	14.9	78.8	70.0		62.3	70.2	
Level of Service	B	B		B	B	B	E	E		E	E	
Approach Delay (s)		16.0			18.5			74.7			66.6	
Approach LOS		B			B			E			E	
Intersection Summary												
HCM 2000 Control Delay			25.2				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			148.0				Sum of lost time (s)			23.0		
Intersection Capacity Utilization			65.2%				ICU Level of Service			C		
Analysis Period (min)			15									
c	Critical Lane Group											

HCM 6th TWSC
 3: Rockville Pike - 355 & Gas Station

Background Future AM

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗ ↑↑↑	↗ ↑↑↑			↗ ↑↑↑
Traffic Vol, veh/h	0	19	1506	25	0	2053
Future Vol, veh/h	0	19	1506	25	0	2053
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	22	1772	29	0	2415

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	-	901	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	241	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	-	241	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21.5	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	241
HCM Lane V/C Ratio	-	-	0.093
HCM Control Delay (s)	-	-	21.5
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	0.3

HCM 6th TWSC
6: Chapman Ave & Pike Center North/Driveway

Background Future AM

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	0	1	0	4	2	308	2	5	640	5
Future Vol, veh/h	0	0	0	1	0	4	2	308	2	5	640	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	1	0	5	2	362	2	6	753	6

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	953	1136	380	756	1138	182	759	0	0	364	0	0
Stage 1	768	768	-	367	367	-	-	-	-	-	-	-
Stage 2	185	368	-	389	771	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	214	201	618	297	200	829	848	-	-	1191	-	-
Stage 1	360	409	-	625	621	-	-	-	-	-	-	-
Stage 2	799	620	-	606	408	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	211	199	618	294	198	829	848	-	-	1191	-	-
Mov Cap-2 Maneuver	211	199	-	294	198	-	-	-	-	-	-	-
Stage 1	359	405	-	623	619	-	-	-	-	-	-	-
Stage 2	792	618	-	601	404	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	11	0.1	0.1
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	848	-	-	-	608	1191	-	-
HCM Lane V/C Ratio	0.003	-	-	-	0.01	0.005	-	-
HCM Control Delay (s)	9.3	0	-	0	11	8	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0	0	-	-

Intersection						
Int Delay, s/veh	1.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	35	36	324	71	36	568
Future Vol, veh/h	35	36	324	71	36	568
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	36	37	334	73	37	586

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	738	371	0	0	407	0
Stage 1	371	-	-	-	-	-
Stage 2	367	-	-	-	-	-
Critical Hdwy	6.63	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219	-
Pot Cap-1 Maneuver	369	674	-	-	1150	-
Stage 1	697	-	-	-	-	-
Stage 2	672	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	351	674	-	-	1150	-
Mov Cap-2 Maneuver	351	-	-	-	-	-
Stage 1	697	-	-	-	-	-
Stage 2	640	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.5	0	0.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	351	674	1150
HCM Lane V/C Ratio	-	-	0.103	0.055	0.032
HCM Control Delay (s)	-	-	16.4	10.7	8.2
HCM Lane LOS	-	-	C	B	A
HCM 95th %tile Q(veh)	-	-	0.3	0.2	0.1

HCM 6th TWSC
 8: Chapman Ave & Pike Center South

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T T T T		
Traffic Vol, veh/h	1	0	1	362	603	3
Future Vol, veh/h	1	0	1	362	603	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	0	1	426	709	4

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1139	357	713	0	-	0
Stage 1	711	-	-	-	-	-
Stage 2	428	-	-	-	-	-
Critical Hdwy	6.08	7.13	5.33	-	-	-
Critical Hdwy Stg 1	6.63	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.669	3.919	3.119	-	-	-
Pot Cap-1 Maneuver	242	547	538	-	-	-
Stage 1	372	-	-	-	-	-
Stage 2	635	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	242	547	538	-	-	-
Mov Cap-2 Maneuver	242	-	-	-	-	-
Stage 1	371	-	-	-	-	-
Stage 2	635	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.9	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	538	-	242	-	-
HCM Lane V/C Ratio	0.002	-	0.005	-	-
HCM Control Delay (s)	11.7	0	19.9	-	-
HCM Lane LOS	B	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕↕	↕↕		↕	
Traffic Vol, veh/h	10	300	509	14	16	8
Future Vol, veh/h	10	300	509	14	16	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	319	541	15	17	9

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	556	0	-	0	731
Stage 1	-	-	-	-	549
Stage 2	-	-	-	-	182
Critical Hdwy	4.14	-	-	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	2.22	-	-	-	3.52
Pot Cap-1 Maneuver	1011	-	-	-	357
Stage 1	-	-	-	-	542
Stage 2	-	-	-	-	831
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1011	-	-	-	352
Mov Cap-2 Maneuver	-	-	-	-	352
Stage 1	-	-	-	-	535
Stage 2	-	-	-	-	831

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	14
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1011	-	-	-	424
HCM Lane V/C Ratio	0.011	-	-	-	0.06
HCM Control Delay (s)	8.6	0.1	-	-	14
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

HCM 6th TWSC
 17: Chapman Ave/Chapman Road & Thompson Ave

Background Future AM

Intersection												
Int Delay, s/veh	3.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	3	37	30	15	2	37	142	7	7	144	9
Future Vol, veh/h	2	3	37	30	15	2	37	142	7	7	144	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	3	43	34	17	2	43	163	8	8	166	10

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	450	444	171	463	445	167	176	0	0	171	0	0
Stage 1	187	187	-	253	253	-	-	-	-	-	-	-
Stage 2	263	257	-	210	192	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	519	508	873	509	508	877	1400	-	-	1406	-	-
Stage 1	815	745	-	751	698	-	-	-	-	-	-	-
Stage 2	742	695	-	792	742	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	488	488	873	467	488	877	1400	-	-	1406	-	-
Mov Cap-2 Maneuver	488	488	-	467	488	-	-	-	-	-	-	-
Stage 1	787	741	-	725	674	-	-	-	-	-	-	-
Stage 2	697	671	-	745	738	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	9.8		13.4		1.5		0.3	
HCM LOS	A		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1400	-	-	798	483	1406	-	-
HCM Lane V/C Ratio	0.03	-	-	0.06	0.112	0.006	-	-
HCM Control Delay (s)	7.7	0	-	9.8	13.4	7.6	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.4	0	-	-

HCM 6th TWSC
 3: Rockville Pike - 355 & Gas Station

Intersection						
Int Delay, s/veh	0.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗ ↑↑↑	↗ ↑↑↑			↑↑↑
Traffic Vol, veh/h	0	58	2343	44	0	1751
Future Vol, veh/h	0	58	2343	44	0	1751
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	66	2663	50	0	1990

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	-	1357	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	119	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	119	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	67.6	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	119
HCM Lane V/C Ratio	-	-	0.554
HCM Control Delay (s)	-	-	67.6
HCM Lane LOS	-	-	F
HCM 95th %tile Q(veh)	-	-	2.7

HCM 6th TWSC
6: Chapman Ave & Pike Center North/Driveway

Background Future PM

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	1	4	4	1	7	3	745	8	5	628	4
Future Vol, veh/h	6	1	4	4	1	7	3	745	8	5	628	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	1	4	4	1	8	3	828	9	6	698	4

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1133	1555	351	1201	1553	419	702	0	0	837	0	0
Stage 1	712	712	-	839	839	-	-	-	-	-	-	-
Stage 2	421	843	-	362	714	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	158	112	645	140	112	583	891	-	-	793	-	-
Stage 1	389	434	-	326	379	-	-	-	-	-	-	-
Stage 2	581	378	-	629	433	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	153	110	645	136	110	583	891	-	-	793	-	-
Mov Cap-2 Maneuver	153	110	-	136	110	-	-	-	-	-	-	-
Stage 1	387	429	-	324	377	-	-	-	-	-	-	-
Stage 2	568	376	-	616	428	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	24	21	0	0.2
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	891	-	-	202	238	793	-	-
HCM Lane V/C Ratio	0.004	-	-	0.061	0.056	0.007	-	-
HCM Control Delay (s)	9.1	0	-	24	21	9.6	0.1	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0	-	-

Intersection						
Int Delay, s/veh	2.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗	↖			↗
Traffic Vol, veh/h	71	97	659	68	45	591
Future Vol, veh/h	71	97	659	68	45	591
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	73	100	679	70	46	609

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1111	714	0	0	749
Stage 1	714	-	-	-	-
Stage 2	397	-	-	-	-
Critical Hdwy	6.63	6.23	-	-	4.13
Critical Hdwy Stg 1	5.43	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219
Pot Cap-1 Maneuver	217	430	-	-	858
Stage 1	484	-	-	-	-
Stage 2	649	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	199	430	-	-	858
Mov Cap-2 Maneuver	199	-	-	-	-
Stage 1	484	-	-	-	-
Stage 2	596	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	23.3	0	0.9
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	199	430	858
HCM Lane V/C Ratio	-	-	0.368	0.233	0.054
HCM Control Delay (s)	-	-	33.3	15.9	9.4
HCM Lane LOS	-	-	D	C	A
HCM 95th %tile Q(veh)	-	-	1.6	0.9	0.2

HCM 6th TWSC
 8: Chapman Ave & Pike Center South

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T T T T		
Traffic Vol, veh/h	1	3	0	722	698	8
Future Vol, veh/h	1	3	0	722	698	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	4	0	849	821	9

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1675	415	830	0	-	0
Stage 1	826	-	-	-	-	-
Stage 2	849	-	-	-	-	-
Critical Hdwy	6.08	7.13	5.33	-	-	-
Critical Hdwy Stg 1	6.63	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.669	3.919	3.119	-	-	-
Pot Cap-1 Maneuver	121	502	474	-	-	-
Stage 1	317	-	-	-	-	-
Stage 2	407	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	121	502	474	-	-	-
Mov Cap-2 Maneuver	121	-	-	-	-	-
Stage 1	317	-	-	-	-	-
Stage 2	407	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	474	-	281	-	-
HCM Lane V/C Ratio	-	-	0.017	-	-
HCM Control Delay (s)	0	-	18	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑↑	
Traffic Vol, veh/h	20	541	480	31	46	28
Future Vol, veh/h	20	541	480	31	46	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	21	558	495	32	47	29

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	527	0	0	832	264
Stage 1	-	-	-	511	-
Stage 2	-	-	-	321	-
Critical Hdwy	4.14	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	3.52	3.32
Pot Cap-1 Maneuver	1036	-	-	308	734
Stage 1	-	-	-	567	-
Stage 2	-	-	-	708	-
Platoon blocked, %		-	-		
Mov Cap-1 Maneuver	1036	-	-	299	734
Mov Cap-2 Maneuver	-	-	-	299	-
Stage 1	-	-	-	551	-
Stage 2	-	-	-	708	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	16.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1036	-	-	-	385
HCM Lane V/C Ratio	0.02	-	-	-	0.198
HCM Control Delay (s)	8.5	0.1	-	-	16.6
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.7

HCM 6th TWSC
 17: Chapman Ave/Chapman Road & Thompson Ave

Background Future PM

Intersection												
Int Delay, s/veh	3.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	26	17	122	9	12	5	28	279	23	7	281	27
Future Vol, veh/h	26	17	122	9	12	5	28	279	23	7	281	27
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	28	18	130	10	13	5	30	297	24	7	299	29

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	706	709	314	771	711	309	328	0	0	321	0	0
Stage 1	328	328	-	369	369	-	-	-	-	-	-	-
Stage 2	378	381	-	402	342	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	351	359	726	317	358	731	1232	-	-	1239	-	-
Stage 1	685	647	-	651	621	-	-	-	-	-	-	-
Stage 2	644	613	-	625	638	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	329	346	726	243	345	731	1232	-	-	1239	-	-
Mov Cap-2 Maneuver	329	346	-	243	345	-	-	-	-	-	-	-
Stage 1	664	642	-	631	602	-	-	-	-	-	-	-
Stage 2	607	595	-	495	634	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	14.4		16.9		0.7		0.2	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1232	-	-	557	331	1239	-	-
HCM Lane V/C Ratio	0.024	-	-	0.315	0.084	0.006	-	-
HCM Control Delay (s)	8	0	-	14.4	16.9	7.9	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	1.3	0.3	0	-	-

APPENDIX I
Total Future
Conditions Capacity
Analyses

Pike Center
Total Future with Development Conditions Levels of Service Summary¹

Approach/ Lane Group	Existing Conditions				2034 Future Conditions without Development				Phase 1 2034 Future Conditions with Development				Phase 2 2039 Future Conditions with Development			
	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. Rockville Pike / Bou Avenue -- Orange Policy Area																
EBT	F	99.1	F	97.0	F	99.1	F	97.0	F	99.1	F	97.0	F	99.1	F	97.0
EBR	F	91.8	F	89.4	F	91.8	F	89.4	F	91.8	F	89.4	F	91.8	F	89.4
WBL	F	81.6	F	83.0	F	81.4	F	82.9	F	80.1	F	80.1	E	79.8	F	80.9
WBT	E	66.0	E	74.0	E	65.0	E	73.7	E	60.8	E	66.0	E	60.1	E	66.2
NBL	F	100.2	F	97.9	F	100.2	F	97.9	F	100.2	F	97.9	F	100.2	F	97.9
NBT	C	27.7	C	33.1	D	35.2	D	43.6	D	39.7	E	71.5	D	41.5	E	74.1
NBR	C	24.1	C	25.4	C	24.8	C	26.6	C	28.6	C	34.6	C	27.0	C	32.1
SBL	C	24.6	F	82.8	E	51.9	F	130.9	E	64.3	F	242.1	E	59.8	F	118.3
SBT	C	22.6	C	21.4	D	29.4	C	25.2	C	32.6	C	31.6	C	33.5	C	30.9
Overall	D	35.7	D	39.3	D	39.3	D	44.8	D	43.5	E	66.0	D	44.3	E	60.3
2. Rockville Pike / Pike Center Driveway / Federal Plaza Driveway -- Orange Policy Area																
EBT	E	76.3	E	78.9	E	76.3	E	78.9	E	76.3	E	79.9	E	76.3	F	124.9
EBR	E	73.5	E	62.5	E	73.5	E	62.5	E	73.5	E	62.7	E	73.5	F	96.3
WBT	E	77.0	E	74.3	E	77.0	E	74.3	E	77.6	E	75.0	E	76.0	F	119.6
NBL	A	4.7	B	15.0	B	11.5	D	51.3	B	11.0	D	54.1	B	11.6	E	60.0
NBT	A	6.1	B	15.5	A	7.5	B	19.4	A	6.5	B	19.8	A	8.7	C	26.0
SBL	A	4.3	B	13.1	A	5.0	B	19.2	A	4.7	B	19.3	A	5.9	E	67.5
SBT	A	7.9	B	18.1	B	10.6	C	25.4	A	9.7	C	24.0	B	11.6	C	25.6
Overall	A	9.6	C	21.7	B	10.8	C	26.9	A	9.8	C	26.4	B	12.3	C	34.7
3. Rockville Pike/ Shell Gas Station Driveway - Unsignalized -- Orange Policy Area																
WBR	B	13.8	D	33.9	C	21.5	F	67.6	C	22.2	F	84.8	N/A			
NBTR	-	-	-	0.0	-	-	-	-	-	-	-	-				
SBT	-	-	-	0.0	-	-	-	-	-	-	-					
Overall	-	-	-	-	-	-	A*	1.3	-	-	A*	1.6				

7. Chapman Ave / Rollins Ave - Unsignalized -- Orange Policy Area																
WBL	C	15.5	D	29.2	C	16.4	D	33.3	C	20.2	F	56.7	C	21.9	F	84.1
WBR	B	10.5	C	15.0	B	10.7	C	15.9	B	11.7	C	19.9	B	11.8	C	21.6
EBL	-	-	-	-	-	-	-	-	C	21.9	D	32.4	C	17.5	F	249.9
NBL	-	-	-	-	-	-	-	-	A	0.0	A	0.0	A	8.8	A	9.1
NBTR	-	-	-	-	-	-	-	-	-	-	-	-	A	0.0	A	0.0
SBL	A	8.2	A	9.2	A	8.2	A	9.4	A	8.2	A	9.4	A	8.2	A	9.4
SBT	A	0.2	A	0.3	A	0.2	A	0.3	A	0.2	A	0.3	A	0.2	A	0.4
Average for WBL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A*	4.0
Average for EBL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A*	5.2
8. Chapman Ave / Pike Center Driveway South - Unsignalized -- Orange Policy Area																
EBLR	C	18.4	C	16.9	C	19.9	C	18.0	N/A							
NBL	B	11.2	A	0.0	B	11.7	A	0.0								
NBT	A	0.0	-	-	A	0.0	-	-								
SBT	-	-	-	-	-	-	-	-								
SBR	-	-	-	-	-	-	-	-								
Overall	-	-	-	-	-	-	-	-								
9. Chapman Ave / Bou Ave -- Orange Policy Area																
EBL	C	23.2	C	25.9	C	23.0	C	26.8	C	22.8	C	26.2	C	22.7	C	26.3
EBT	C	21.7	C	22.7	C	21.9	C	22.4	C	22.1	C	22.7	C	22.0	C	22.4
WBL	D	35.3	D	40.4	C	34.8	D	42.4	C	34.1	D	40.6	C	34.3	D	41.8
WBT	D	37.6	D	45.2	D	37.1	D	47.8	D	36.6	D	45.9	D	36.7	D	46.8
WBR	D	36.4	D	42.5	D	36.4	D	45.0	D	35.7	D	43.0	D	36.0	D	44.3
NBL	C	29.1	C	33.7	C	28.6	D	35.6	C	27.9	C	33.9	C	28.1	D	35.0
NBT	C	29.8	D	37.1	C	29.3	D	39.5	C	28.6	D	37.4	C	28.8	D	39.0
SBL	C	32.4	D	46.9	C	33.2	E	56.6	C	32.6	D	52.3	C	33.2	E	56.0
SBT	C	30.7	D	36.5	C	30.2	D	38.7	C	29.5	D	36.7	C	29.7	D	37.9
SBR	B	18.1	B	16.8	B	18.4	B	16.6	B	18.6	B	16.7	B	19.1	B	16.8
Overall	C	25.5	C	31.8	C	26.0	C	34.3	C	26.0	C	33.2	C	26.0	C	33.8

10. Bou Ave / Pike Center Driveway - Unsignalized -- Orange Policy Area																
EBL	A	8.5	A	8.5	A	8.6	A	8.5	A	9.1	A	9.1	A	0.0	A	8.6
EBT	A	0.1	A	0.1	A	0.1	A	0.1	A	0.4	A	0.6	-	-	A	0.1
WBT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WBR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SBLR	B	13.8	C	16.3	B	14.0	C	16.6	B	14.2	C	24.5	B	12.8	C	15.5
Overall	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11. E Jefferson St / Rollins Ave -- City of Rockville																
EBL	D	48.3	D	48.1	D	48.3	D	48.1	D	48.3	D	48.1	D	48.3	D	48.1
EBT	D	50.4	D	50.5	D	50.4	D	50.5	D	50.4	D	50.5	D	50.4	D	50.5
WBL	E	56.7	E	57.6	D	54.2	E	64.5	E	57.2	E	66.5	E	57.2	E	64.5
WBT	D	35.3	C	34.5	D	37.0	C	32.5	C	34.7	C	32.5	C	34.7	C	32.5
NBT	B	10.9	B	15.3	A	9.9	B	17.1	B	11.3	B	17.1	B	11.3	B	17.1
NBR	A	2.4	A	2.6	A	2.6	A	2.6	A	2.6	A	2.6	A	2.6	A	2.6
SBT	A	9.8	B	11.1	A	8.9	B	12.4	B	10.1	B	12.4	B	10.1	B	12.4
Overall	C	23.5	C	23.2	C	20.4	C	26.0	C	22.6	C	25.9	C	22.5	C	26.0
12. Rockville Pike / Halpine Rd -- Red Policy Area																
EBL	F	90.2	F	93.8	E	65.5	E	61.6	E	65.5	E	61.6	E	65.5	E	61.6
EBT	F	83.5	E	75.3	E	64.2	E	57.3	E	64.2	E	57.3	E	64.2	E	57.3
WBL	F	82.1	E	75.2	F	90.2	F	87.0	F	90.2	F	87.0	F	90.2	F	87.0
WBT	F	83.8	E	77.8	E	64.0	E	58.2	E	64.0	E	58.2	E	64.0	E	58.2
WBR	F	81.4	E	74.0	E	63.4	E	56.8	E	63.4	E	56.8	E	63.4	E	56.8
NBL	A	3.8	B	12.2	B	14.7	E	60.6	B	15.7	E	69.8	B	15.7	E	71.3
NBT	A	5.2	B	10.4	B	15.3	C	27.9	B	15.7	C	29.8	B	15.8	C	29.8
SBL	A	3.3	B	11.2	B	10.9	E	56.5	B	11.4	E	63.6	B	11.6	E	63.6
SBT	A	6.8	B	15.8	B	17.4	C	31.8	B	17.8	C	33.2	B	17.8	C	33.4
Overall	B	13.7	C	21.0	C	22.7	D	36.7	C	22.8	D	38.2	C	22.8	D	38.3

13. Twinbrook Pkwy / Parklawn Dr -- Red Policy Area																
EBL	F	101.1	F	97.5	F	101.1	F	97.5	F	101.1	F	97.5	F	101.1	F	97.5
EBT	F	107.9	F	112.9	F	107.9	F	112.9	F	107.9	F	112.9	F	107.9	F	112.9
WBL	F	111.8	F	106.3	F	111.8	F	106.3	F	111.8	F	106.3	F	111.8	F	106.3
WBT	F	110.5	F	106.0	F	110.5	F	106.0	F	110.5	F	106.0	F	110.5	F	106.0
WBR	E	78.3	E	71.8	E	78.3	E	71.8	E	78.3	E	71.8	E	78.3	E	71.8
NBL	A	9.2	B	15.0	A	9.4	B	15.0	A	9.4	B	15.0	A	9.4	B	15.0
NBT	B	12.9	C	24.8	B	12.8	C	25.2	B	12.8	C	25.2	B	12.8	C	25.2
SBL	A	8.3	B	16.4	A	8.2	B	16.9	A	8.2	B	16.9	A	8.2	B	16.9
SBT	B	14.1	C	20.2	B	14.3	C	20.3	B	14.4	C	20.3	B	14.4	C	20.3
Overall	C	28.9	D	40.1	C	28.9	D	40.1	C	28.9	D	40.1	C	28.9	D	40.1
14. Nebel St / Randolph Rd -- Red Policy Area																
EBL	B	11.7	C	32.1	B	19.7	D	39.6	B	19.2	D	39.0	B	16.2	D	39.0
EBT	B	15.8	D	53.0	C	26.6	E	78.6	C	27.2	E	75.9	C	21.9	E	76.4
WBL	A	8.9	D	38.6	B	14.1	F	101.7	B	13.6	F	96.8	B	11.7	F	98.2
WBT	B	14.5	D	38.8	C	21.1	D	46.0	B	19.3	D	47.4	B	19.0	D	47.4
NBL	F	83.4	E	61.7	E	77.4	E	58.7	F	81.4	E	58.6	F	83.3	E	58.7
NBT	F	97.5	E	77.0	F	89.7	E	73.2	F	95.2	E	73.2	F	98.5	E	73.2
NBR	F	106.9	F	107.2	F	108.7	F	112.3	F	108.1	F	112.3	F	107.0	F	112.3
SBL	E	80.1	D	49.8	E	69.0	D	46.2	E	72.6	D	46.4	E	75.2	D	46.4
SBT	F	95.8	E	62.7	F	83.9	E	57.2	F	87.4	E	57.2	F	90.6	E	56.8
SBR	F	90.7	E	57.5	F	80.6	D	52.4	F	83.7	D	52.4	F	86.6	D	52.0
Overall	C	27.8	D	54.1	C	33.6	E	68.1	C	32.7	E	66.8	C	31.2	E	67.1
15. Rockville Pike / Hubbard Dr / Plaza Driveway -- Orange Policy Area																
EBL	E	65.9	E	55.5	E	65.9	E	55.5	E	65.9	E	55.6	E	65.9	E	55.5
EBT	E	64.4	D	52.7	E	64.4	D	52.7	E	64.4	D	52.9	E	64.4	D	52.7
WBL	E	75.5	E	74.3	E	75.5	E	74.3	E	75.5	E	73.7	E	75.5	E	74.3
WBT	E	65.3	D	53.6	E	65.3	D	53.6	E	65.3	D	53.8	E	65.3	D	53.6
NBL	A	4.7	B	12.8	B	12.7	B	15.0	B	13.3	B	15.6	B	13.7	B	16.4
NBT	A	7.0	C	23.6	A	8.4	C	28.7	A	8.6	C	29.5	A	8.6	C	31.0
SBL	A	4.1	E	56.2	A	6.0	E	58.6	A	6.3	E	58.2	A	6.3	E	59.6
SBT	A	7.0	B	13.8	B	11.5	B	16.8	B	11.8	B	17.4	B	12.0	B	18.0
Overall	B	11.2	C	25.3	B	12.5	C	27.8	B	12.7	C	28.2	B	12.8	C	29.2

16. Chapman Ave / Randolph Rd / Josiah Henson Pkwy -- Red Policy Area																	
EBL	A	6.4	B	10.3	A	7.6	B	10.8	A	7.6	B	11.1	A	8.6	B	11.7	
EBT	A	7.3	B	15.8	A	7.5	B	16.8	A	7.8	B	17.0	A	7.8	B	17.9	
WBL	A	6.4	B	13.1	A	6.6	B	13.4	A	6.6	B	13.5	A	6.6	B	14.2	
WBT	B	11.9	B	18.5	B	13.2	B	19.2	B	13.2	B	19.5	B	13.8	C	20.3	
WBR	A	7.5	B	14.9	A	7.8	B	14.9	A	7.8	B	14.9	A	7.8	B	15.6	
NBL	E	72.2	E	78.8	E	72.2	E	78.8	E	72.2	E	78.8	E	72.2	E	71.9	
NBT	E	70.6	E	70.0	E	70.6	E	70.0	E	70.6	E	70.0	E	70.6	E	71.7	
SBL	E	68.9	E	62.3	E	68.9	E	62.3	E	68.9	E	62.3	E	68.9	E	62.3	
SBT	E	71.5	E	70.2	E	71.5	E	70.2	E	71.5	E	70.2	E	71.5	E	70.2	
Overall	B	12.4	C	25.2	B	13.0	C	25.2	B	12.9	C	25.3	B	13.3	C	26.2	
17. Chapman Ave / Thompson Ave - Unsignalized -- Red Policy Area																	
EBLTR	A	9.8	B	14.4	A	9.8	B	14.4	A	9.8	B	14.4	A	9.8	B	14.4	
WBLTR	B	13.4	C	16.9	B	13.4	C	16.9	B	13.4	C	16.9	B	13.4	C	16.9	
NBL	A	7.7	A	8.0	A	7.7	A	8.0	A	7.7	A	8.0	A	7.7	A	7.9	
NBT	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	
NBR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SBL	A	7.6	A	7.9	A	7.6	A	7.9	A	7.6	A	7.9	A	7.6	A	8.0	
SBT	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	
SBR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Overall	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
18. Rockville Pike (MD 355) / Rollins Ave Extension - Unsignalized -- Orange Policy Area																	
WBR	FUTURE								D	26.5	F	292.7	D	28	F	417.7	
NBT									-	-	-	-	-	-	-		
NBR									-	-	-	-	-	-	-		
SBT									-	-	-	-	-	-	-		
Overall									-	-	A*	4.6	-	-	A*	7.6	

- Notes:
- Capacity analysis based on Highway Capacity Manual 6th methodology, using Synchro 11 unless otherwise noted.
 - Bold** roadways indicate N/S direction.
- *. Asterisks mark the use of the LATR HCM Average Delay

7. Chapman Ave / Rollins Ave - Unsignalized -- Orange Policy Area																	
EBL	-	-	-	-	-	-	-	-	-	-	10	-	15	-	15	-	128
WBL	-	-	8	-	35	-	8	-	40	-	13	-	63	-	13	-	83
WBR	-	-	5	-	20	-	5	-	23	-	5	-	30	-	5	-	35
NBL	-	-	-	-	-	-	-	-	-	-	0	-	0	-	0	-	3
NBTR	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-	0
SBL	-	-	3	-	5	-	3	-	5	-	3	-	5	-	3	-	5
SBT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8. Chapman Ave / Pike Center Driveway South - Unsignalized -- Orange Policy Area																	
EBLR	-	-	0	-	0	-	0	-	3	N/A							
NBL	-	-	0	-	0	-	0	-	0								
NBT	-	-	-	-	-	-	-	-	-								
SBT	-	-	-	-	-	-	-	-	-								
SBR	-	-	-	-	-	-	-	-	-								
9. Chapman Ave / Bou Ave -- Orange Policy Area																	
EBL	275	117	169	216	291	105	154	252	332	90	136	221	296	90	136	237	315
EBT	-	85	131	190	259	85	131	201	270	87	135	191	260	87	133	192	260
WBL	-	4	17	13	36	4	17	13	37	4	17	13	37	4	17	13	37
WBT	-	72	126	152	239	72	124	165	259	78	133	163	255	75	129	157	247
WBR	250	0	49	0	69	0	54	0	77	0	55	0	74	0	56	0	76
NBL	70	3	12	13	36	3	12	14	37	3	11	13	35	3	11	14	36
NBT	-	30	62	134	216	29	61	148	236	29	61	135	217	29	61	154	244
SBL	-	74	129	194	312	100	167	262	417	101	169	248	395	110	178	257	408
SBT	-	56	102	102	170	55	100	111	184	54	99	102	170	55	99	105	175
SBR	-	0	46	0	41	0	46	0	41	0	47	0	41	0	49	0	42
10. Bou Ave / Pike Center Driveway - Unsignalized -- Orange Policy Area																	
EBL	-	-	0	-	3	-	0	-	3	-	10	-	13	-	0	-	0
EBT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WBT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WBR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SBLR	-	-	5	-	18	-	5	-	18	-	23	-	103	-	10	-	38

11. E Jefferson St / Rollins Ave -- City of Rockville																	
EBL	-	12	34	7	23	12	34	7	23	12	34	7	23	12	34	7	23
EBT	-	37	83	35	80	37	83	35	80	37	83	35	80	37	83	35	80
WBL	-	200	276	230	328	171	240	267	436	207	289	267	436	207	289	267	436
WBT	-	20	55	54	106	20	56	51	106	20	55	51	106	20	55	51	106
NBT	-	86	172	206	347	82	167	223	347	90	172	223	347	90	172	223	347
NBR	-	0	13	0	14	0	14	0	15	0	15	0	15	0	15	0	15
SBT	-	41	80	52	88	39	77	56	88	43	80	56	88	43	80	56	88
12. Rockville Pike / Halpine Rd -- Red Policy Area																	
EBL	250	53	100	124	188	47	83	107	155	47	83	107	155	47	83	107	155
EBT	-	33	68	41	77	29	56	35	64	29	56	35	64	29	56	35	64
WBL	-	8	27	21	49	212	289	263	343	212	289	263	343	212	289	263	343
WBT	-	34	71	85	136	30	60	74	113	30	60	74	113	30	60	74	113
WBR	450	0	44	0	66	0	37	0	55	0	37	0	55	0	37	0	55
NBL	165	12	24	46	122	24	51	162	266	24	51	181	282	24	51	183	283
NBT	-	86	118	286	392	313	434	689	964	336	463	771	1075	343	473	769	1072
SBL	175	9	21	22	45	19	43	73	153	19	43	78	158	19	43	78	158
SBT	-	178	256	303	438	410	585	583	812	430	613	639	888	430	613	649	900
13. Twinbrook Pkwy / Parklawn Dr -- Red Policy Area																	
EBL	-	50	96	62	110	50	96	62	110	50	96	62	110	50	96	62	110
EBT	-	73	145	114	195	73	145	114	195	73	145	114	195	73	145	114	195
WBL	200	145	218	268	357	145	218	268	357	145	218	268	357	145	218	268	357
WBT	-	144	216	271	362	144	216	271	362	144	216	271	362	144	216	271	362
WBR	-	0	67	62	259	0	67	62	159	0	67	62	159	0	67	62	159
NBL	190	18	41	15	37	18	41	15	37	18	41	15	37	18	41	15	37
NBT	-	148	217	442	612	140	206	462	638	140	206	462	638	140	206	462	638
SBL	240	32	59	32	60	32	59	32	60	32	59	32	60	32	59	32	60
SBT	-	259	380	298	432	276	403	303	438	278	406	303	438	278	406	303	438

14. Nebel St / Randolph Rd -- Red Policy Area																	
EBL	140	6	17	14	36	7	21	16	36	7	20	16	36	6	19	16	36
EBT	-	197	297	675	930	292	447	941	1195	321	483	923	1188	290	437	933	1196
WBL	125	69	120	111	177	115	194	234	331	112	188	195	289	77	135	197	290
WBT	-	344	470	500	634	495	676	631	725	473	645	664	760	500	675	665	761
NBL	100	103	154	123	166	97	141	112	166	99	145	118	173	115	166	112	166
NBT	-	79	133	182	254	76	127	179	259	86	141	179	259	88	143	179	259
NBR	-	101	163	361	468	168	245	417	586	125	192	417	586	101	163	417	586
SBL	250	138	196	268	328	170	225	280	370	186	246	293	384	197	261	293	384
SBT	-	102	162	190	257	99	153	182	266	101	157	183	267	102	161	182	266
SBR	-	20	48	26	54	19	45	24	54	19	46	24	54	20	47	24	54
15. Rockville Pike / Hubbard Dr / Plaza Driveway -- Orange Policy Area																	
EBL	-	19	47	37	72	19	47	37	72	19	47	36	70	19	47	37	72
EBT	-	7	34	11	45	7	34	11	45	7	34	10	45	7	34	11	45
WBL	-	79	134	192	267	79	134	192	267	79	134	188	261	79	134	192	267
WBT	-	15	63	12	72	15	63	12	72	15	63	11	70	15	63	12	72
NBL	-	4	12	5	16	4	12	5	16	4	14	5	15	4	14	5	16
NBT	-	114	154	448	608	202	276	660	929	213	292	698	994	213	292	743	1038
SBL	180	8	20	119	203	8	20	119	203	8	20	114	197	8	20	119	203
SBT	-	155	209	293	394	497	642	465	616	515	663	504	671	530	683	532	701
16. Chapman Ave / Randolph Rd / Josiah Henson Pkwy -- Red Policy Area																	
EBL	350	19	37	49	92	19	37	49	92	19	37	49	92	19	37	49	92
EBT	-	107	202	219	390	119	223	259	457	132	245	268	473	135	250	269	475
WBL	165	2	8	5	15	2	8	5	15	2	8	5	15	2	8	5	15
WBT	-	283	399	205	303	341	474	233	343	338	471	245	360	375	519	243	356
WBR	215	0	0	0	33	0	0	0	33	0	0	0	33	0	0	0	33
NBL	250	12	35	49	97	12	35	49	97	12	35	49	97	12	35	49	97
NBT	-	7	28	23	67	7	28	23	67	7	28	23	67	7	28	47	99
SBL	-	27	60	136	202	27	60	136	202	27	60	136	202	27	60	136	202
SBT	-	38	76	166	240	38	76	166	240	38	76	166	240	38	76	166	240

17. Chapman Ave / Thompson Ave - Unsignalized -- Red Policy																	
EBLTR		-	5	-	33	-	5	-	33	-	5	-	33	-	5	-	33
WBLTR		-	10	-	8	-	10	-	8	-	10	-	8	-	10	-	8
NBL		-	3	-	3	-	3	-	3	-	3	-	3	-	3	-	3
NBT		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NBR		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SBL		-	0	-	0	-	0	-	0	-	0	-	0	-	0	-	0
SBT		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SBR		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18. Rockville Pike (MD 355) / Rollins Ave Extension - Unsignalized																	
WBLTR		FUTURE						-	28	-	243	-	25	-	320		
NBT								-	-	-	-	-	-				
NBR								-	-	-	-	-	-				
SBT								-	-	-	-	-	-				

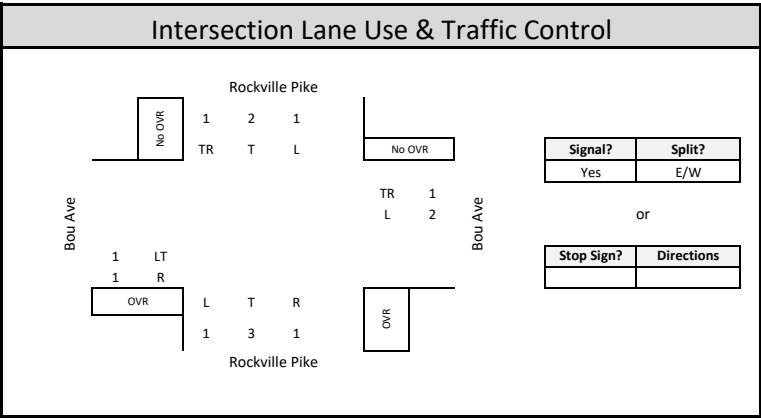
Notes:

- Capacity analysis based on Highway Capacity Manual 6th or 2000 Edition methodology, using Synchro 11.

1

Critical Lane Volume and Level of Service Calculations

Intersection: **01. Rockville Pike / Bou Ave**
 Jurisdiction: **Montgomery County, MD**
 Scenario/Design Year: **Total Future Phase 1 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	LT	35		1.00	35				35	*
	R	25	0	1.00	25				25	*
WB	2L	561		0.60	337				337	*
	TR	69	0	1.00	69				69	*
NB	3T	1635		0.37	605	169	1.10	186	791	*
	R	220	220	1.00	0				186	*
SB	2T+TR	1927	0	0.37	713	36	1.10	40	753	*
Note:								CLV	1163	
								v/c	0.750	
								LOS	C	
								Congestion Equiv.		
								1550		

Right Turn Overlap											
Approach	Excl. Right	Right Vol.				Adjacent Overlap Vol.				Overlap	
		AM	PM	LUF	AM	PM	LUF	AM	PM		
Eastbound	Yes	25	36	1.00	36	57	0.00	0	0		
Westbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0		
Northbound	Yes	220	448	0.00	561	494	0.60	220	448		
Southbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0		

PM Peak Hour Critical Lane Volume Analysis

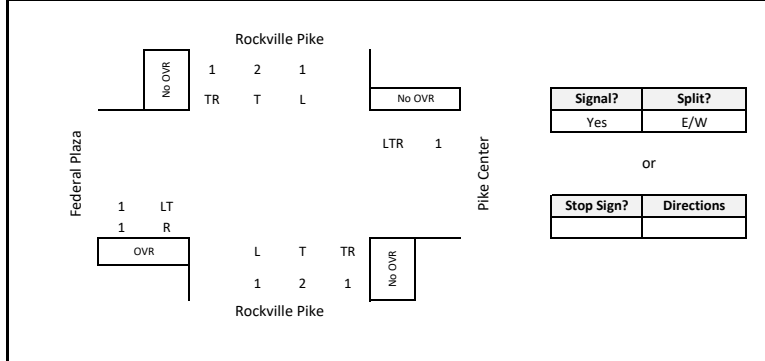
Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	LT	48		1.00	48				48	*
	R	36	0	1.00	36				36	*
WB	2L	494		0.60	296				296	*
	TR	224	0	1.00	224				224	*
NB	3T	2474		0.37	915	266	1.10	293	1208	*
	R	448	448	1.00	0				293	*
SB	2T+TR	1672	0	0.37	619	57	1.10	63	682	*
Note:								CLV	1552	
								v/c	1.001	
								LOS	E	
								Congestion Equiv.		
								1550		

Montgomery County LATR

	Lane Use Factors				LOS	
	Number of Lanes	Left Turn LUF	Through LUF		GRADE	VALUE
1	1.1	1.00		A	1000.00	
2	0.6	0.53		B	1150.00	
3	0.4	0.37		C	1300.00	
4		0.30		D	1450.00	
5		0.25		E	1600.00	
				F	1800.00	



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	18		1.00	18				18	*	
	R	56	56	1.00	0						
WB	LTR	11	0	1.00	11				11	*	
NB	2T+TR	1554	0	0.37	575	20	1.10	22	597		
	SB	2T+TR	2007	0	0.37	743	84	1.10	92	835	*
Note:									CLV	864	
									v/c	0.557	
									LOS	A	
									Congestion Equiv.		1550

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	135		1.00	135				135	*	
	R	133	133	1.00	0						
WB	LTR	55	0	1.00	55				55	*	
NB	2T+TR	2374	0	0.37	878	31	1.10	34	912	*	
	SB	2T+TR	1795	0	0.37	664	197	1.10	217	881	*
Note:									CLV	1102	
									v/c	0.711	
									LOS	B	
									Congestion Equiv.		1550

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap Vol.			Overlap		
		AM	PM	LUF	AM	PM	LUF	AM	PM	
Eastbound	Yes	56	133	1.00	84	197	1.10	56	133	
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

	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
1	1.1	1.00	
2	0.6	0.53	
3	0.4	0.37	
4		0.30	
5		0.25	

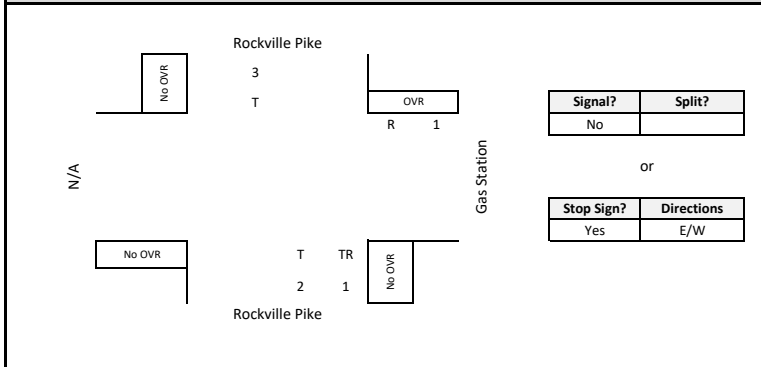
3

**Critical Lane Volume
and
Level of Service Calculations**

Intersection: **03. Rockville Pike / Gas Station**
 Jurisdiction: **Montgomery County, MD**
 Scenario/Design Year: **Total Future Phase 1 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										
WB	R	19	0	1.00	19				19	*
NB	2T+TR	1578	0	0.37	584				584	
SB	3T	2046	0	0.37	757				757	*
Note:									CLV v/c LOS	776 0.501 A
Congestion Equiv.									1550	

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										
WB	R	58	0	1.00	58				58	*
NB	2T+TR	2532	0	0.37	937				937	*
SB	3T	1814	0	0.37	671				671	
Note:									CLV v/c LOS	995 0.642 A
Congestion Equiv.									1550	

Right Turn Overlap

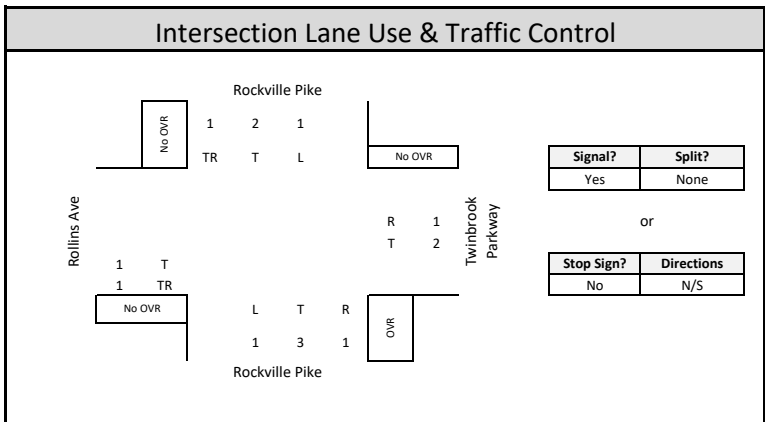
Approach	Excl. Right	Right Vol.			Adjacent Overlap Vol.			Overlap	
		AM	PM	LUF	AM	PM	LUF	AM	PM
Eastbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Westbound	Yes	19	58	1.00	0	0	0.00	0	0
Northbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Southbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0

Montgomery County LATR

	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
1	1.1	1.00	
2	0.6	0.53	
3	0.4	0.37	
4		0.30	
5		0.25	

Critical Lane Volume and Level of Service Calculations

Intersection: **04. Rockville Pike / Twinbrook Park / Rollins Ave**
 Jurisdiction: **Montgomery County, MD**
 Scenario/Design Year: **Total Future Phase 1 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	T+TR	386	0	0.53	205				205	*
WB	2T	310		0.53	164				164	
	R	190	0	1.00	190				190	
NB	3T	1436		0.37	531	205	1.10	226	757	
	R	106	0	1.00	106				332	
SB	2T+TR	1958	0	0.37	724	105	1.10	116	840	*
Note:									CLV	1045
									v/c	0.674
									LOS	B
					Congestion Equiv.					
					1550					

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	484	0	0.53	257				257	*
WB	2T	314		0.53	166				166	
	R	163	0	1.00	163				163	
NB	3T	2147		0.37	794	239	1.10	263	1057	*
	R	121	0	1.00	121				384	
SB	2T+TR	1812	0	0.37	670	143	1.10	157	827	
Note:									CLV	1314
									v/c	0.848
									LOS	D
					Congestion Equiv.					
					1550					

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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	Yes	106	121	1.00	0	0	0.00	0	0
Southbound	No	n/a	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	1.00	
2	0.6	0.53	
3	0.4	0.37	
4		0.30	
5		0.25	

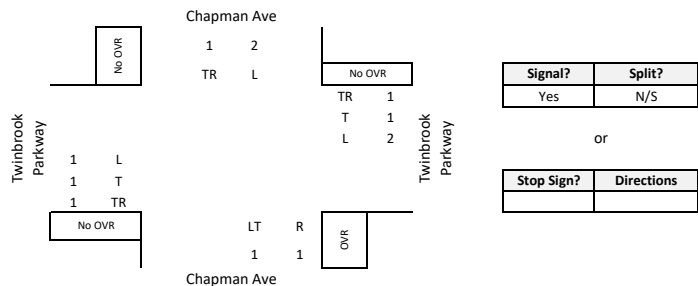
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**Critical Lane Volume
and
Level of Service Calculations**

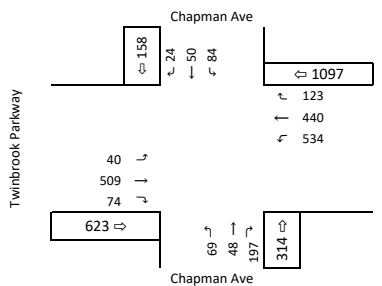
Intersection: **05. Twinbrook Park / Chapman Ave**
 Jurisdiction: **Montgomery County, MD**
 Scenario/Design Year: **Total Future Phase 1 Conditions**
 Computed by: **W+A**



Intersection Lane Use & Traffic Control



AM Peak Hour Critical Lane Volume Analysis



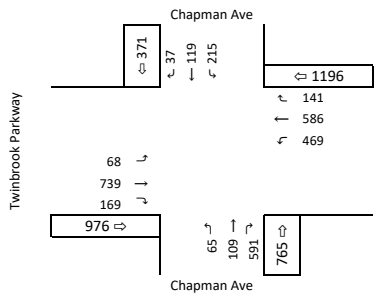
Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	T+TR	583	0	0.53	309	534	0.60	320	629	*
WB	T+TR	563	0	0.53	298	40	1.10	44	342	
NB	LT	117		1.00	117				117	*
SB	TR	50		1.00	50				50	*
SB	L	84	0	0.60	50				50	*
Note:									CLV	796
									v/c	0.514
									LOS	A
					Congestion Equiv.					
					1550					

Approach	Excl. Right	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	Yes	197	591	1.00	534	469	0.60	197	281
Southbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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	Yes	197	591	1.00	534	469	0.60	197	281
Southbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0

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	T+TR	908	0	0.53	481	469	0.60	281	762	*
WB	T+TR	727	0	0.53	385	68	1.10	75	460	
NB	LT	174		1.00	174				310	*
SB	TR	119		1.00	119				129	*
SB	L	215	0	0.60	129				129	*
Note:									CLV	1201
									v/c	0.775
									LOS	C
					Congestion Equiv.					
					1550					

Montgomery County LATR

Number of Lanes	Lane Use Factors	
	Left Turn LUF	Through LUF
1	1.1	1.00
2	0.6	0.53
3	0.4	0.37
4		0.30
5		0.25

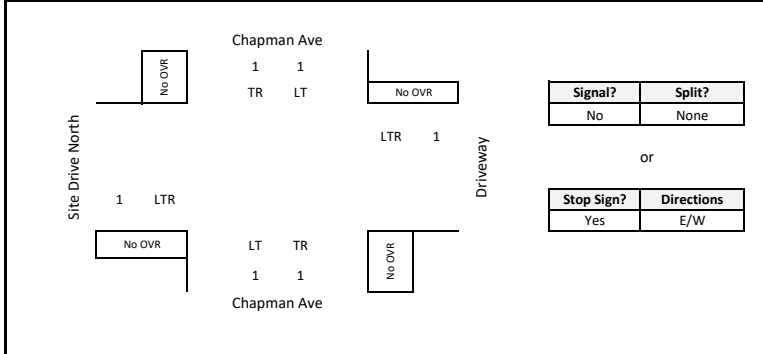
6

Critical Lane Volume and Level of Service Calculations

Intersection: **06. Chapman Ave / Site Drive North**
 Jurisdiction: **Montgomery County, MD**
 Scenario/Design Year: **Total Future Phase 1 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	0	0	1.00	0	1	1.10	1	1	
WB	LTR	5	0	1.00	5	0	1.10	0	5	*
NB	T+TR	313	0	0.53	166	5	1.10	6	172	
	L	2		1.10	2				8	
SB	T+TR	653	0	0.53	346	2	1.10	2	348	*
	L	5		1.10	6				8	
Note:									CLV	353
Congestion Equiv.									v/c	0.228
									LOS	A

PM Peak Hour Critical Lane Volume Analysis

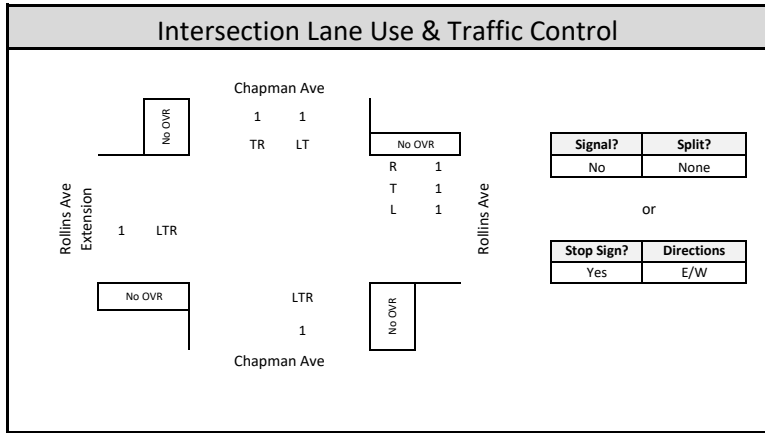
Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	LTR	5	0	1.00	5	4	1.10	4	9	
WB	LTR	12	0	1.00	12	3	1.10	3	15	*
NB	T+TR	745	0	0.53	395	5	1.10	6	401	*
	L	3		1.10	3				9	
SB	T+TR	675	0	0.53	358	3	1.10	3	361	
	L	5		1.10	6				9	
Note:									CLV	416
Congestion Equiv.									v/c	0.268
									LOS	A

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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

	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
1	1.1	1.00	
2	0.6	0.53	
3	0.4	0.37	
4		0.30	
5		0.25	



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	26	0	1.00	26	32	1.10	35	61	*
WB	T	6		1.00	6	0	1.10	0	6	
WB	R	33	0	1.00	33	0	1.10	0	33	
NB	LTR	379	0	1.00	379	36	1.10	40	419	*
SB	T+TR	576	0	0.53	305	0	1.10	0	305	
Note:									CLV	480
									v/c	0.310
									LOS	A
Congestion Equiv.										1550

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	28	0	1.00	28	59	1.10	65	93	*
WB	T	20		1.00	20	0	1.10	0	20	
WB	R	89	0	1.00	89	0	1.10	0	89	
NB	LTR	708	0	1.00	708	45	1.10	50	758	*
SB	T+TR	638	0	0.53	338	0	1.10	0	338	
Note:									CLV	851
									v/c	0.549
									LOS	A
Congestion Equiv.										1550

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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

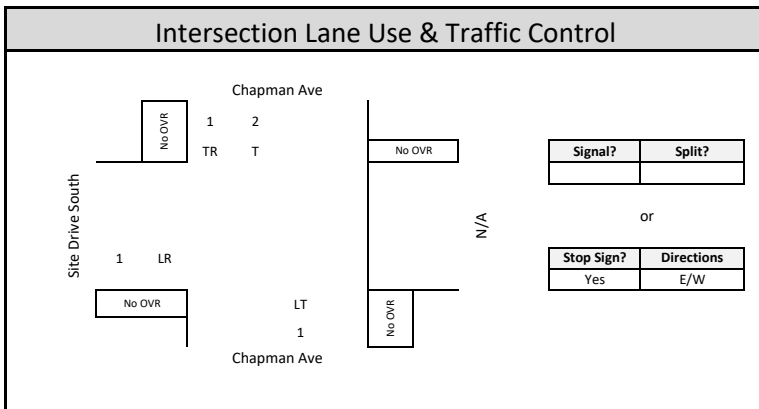
Montgomery County LATR

Number of Lanes	Lane Use Factors			GRADE	VALUE
	Left Turn LUF	Through LUF	LOS		
1	1.1	1.00	A	1000.00	
2	0.6	0.53	B	1150.00	
3	0.4	0.37	C	1300.00	
4		0.30	D	1450.00	
5		0.25	E	1600.00	
			F	1800.00	

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Critical Lane Volume and Level of Service Calculations

Intersection: **08. Chapman Ave / Site Drive South**
 Jurisdiction: **Montgomery County, MD**
 Scenario/Design Year: **Total Future Phase 1 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	LR	0	0	1.10	0			0	*	
WB									*	
NB	LT	344	0	1.00	344			344	*	
SB	T+TR	615	0	0.37	228	0	1.10	0	228	
Note:									CLV	344
Congestion Equiv.									v/c	0.222
1550									LOS	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	LR	0	0	1.10	0			0	*	
WB									*	
NB	LT	722	0	1.00	722			722	*	
SB	T+TR	754	0	0.37	279	0	1.10	0	279	
Note:									CLV	722
Congestion Equiv.									v/c	0.466
1550									LOS	A

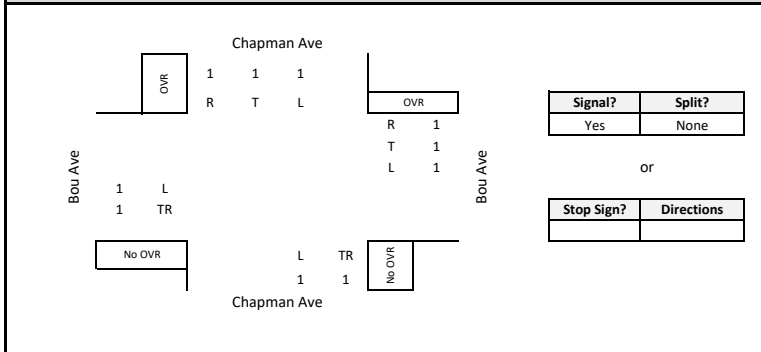
Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap Vol.			Overlap		
		AM	PM	LUF	AM	PM	LUF	AM	PM	LUF
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	1.00
2	0.6	0.53
3	0.4	0.37
4		0.30
5		0.25

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	157	0	1.00	157	6	1.10	7	164	
WB	T	100		1.00	100	147	1.10	162	262	*
WB	R	157	151	1.00	6				168	
NB	TR	45	0	1.00	45	137	1.10	151	196	
SB	T	79		1.00	79	4	1.10	4	83	*
SB	R	390	162	1.10	251				255	*
Note:									CLV	517
Congestion Equiv.									v/c	0.334
									LOS	A
										1550

Approach	Excl. Right	Right Vol.	Adjacent Overlap 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	Yes	157 253 1.00	137 249 1.10	151 253
Northbound	No	n/a n/a n/a	n/a n/a n/a	0 0
Southbound	Yes	390 322 1.00	147 323 1.10	162 322

Right Turn Overlap

Approach	Excl. Right	Right Vol.	Adjacent Overlap 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	Yes	157 253 1.00	137 249 1.10	151 253
Northbound	No	n/a n/a n/a	n/a n/a n/a	0 0
Southbound	Yes	390 322 1.00	147 323 1.10	162 322

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	297	0	1.00	297	15	1.10	17	314	
WB	T	178		1.00	178	323	1.10	355	533	*
WB	R	253	253	1.00	0				355	*
NB	TR	169	0	1.00	169	249	1.10	274	443	*
SB	T	127		1.00	127	17	1.10	19	146	
SB	R	322	322	1.10	0				19	
Note:									CLV	976
Congestion Equiv.									v/c	0.630
									LOS	A
										1550

Montgomery County LATR

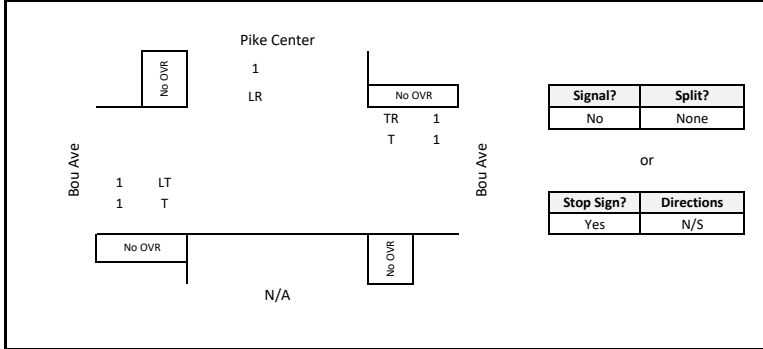
	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
1	1.1	1.00	
2	0.6	0.53	
3	0.4	0.37	
4		0.30	
5		0.25	

10
Critical Lane Volume
and
Level of Service Calculations

Intersection: 10. Bou Ave / Site Drive
Jurisdiction: Montgomery County, MD
Scenario/Design Year: Total Future Phase 1 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	2T	278	0	1.00	278	0	1.10	0	278	
WB	T+TR	529	0	0.53	280	120	1.10	132	412	*
NB										
SB	LR	116	0	1.10	128				128	*
Note:								CLV	540	
								v/c	0.348	
Congestion Equiv.								LOS	A	
								1550		

PM Peak Hour Critical Lane Volume Analysis

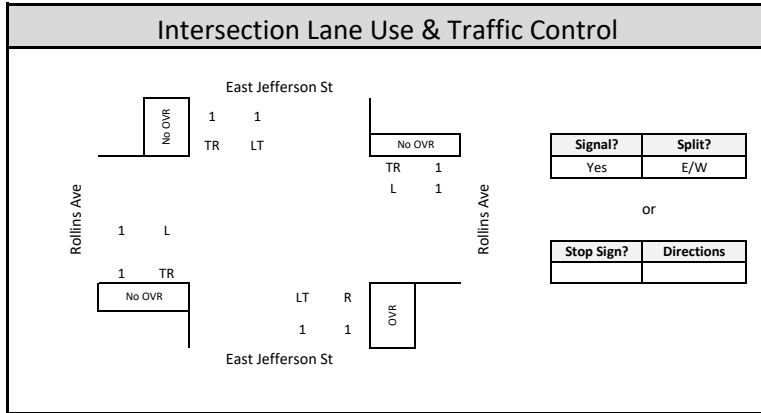
Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	2T	524	0	1.00	524	0	1.10	0	524	*
WB	T+TR	510	0	0.53	270	154	1.10	169	439	
NB										
SB	LR	276	0	1.10	304				304	*
Note:								CLV	828	
								v/c	0.534	
Congestion Equiv.								LOS	A	
								1550		

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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

	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
	1	1.1	1.00
	2	0.6	0.53
	3	0.4	0.37
	4		0.30
	5		0.25



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	88	0	1.00	88				88	*
WB	LTR	355	0	1.00	355				355	*
NB	LT	252		1.10	277	20	1.10	22	299	*
SB	R	356	0	1.00	356				378	*
SB	LTR	256	0	0.53	136	9	1.10	10	146	
Note:									CLV	821
									v/c	0.530
									LOS	A
					Congestion Equiv.					
					1550					

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	80	0	1.00	80				80	*
WB	LTR	530	0	1.00	530				530	*
NB	LT	484		1.10	532	18	1.10	20	552	*
SB	R	404	0	1.00	404				424	*
SB	LTR	299	0	0.53	158	7	1.10	8	166	
Note:									CLV	1162
									v/c	0.750
									LOS	C
					Congestion Equiv.					
					1550					

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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	Yes	356	404	1.00	285	387	0.00	0	0
Southbound	No	n/a	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	1.00	
2	0.6	0.53	
3	0.4	0.37	
4		0.30	
5		0.25	

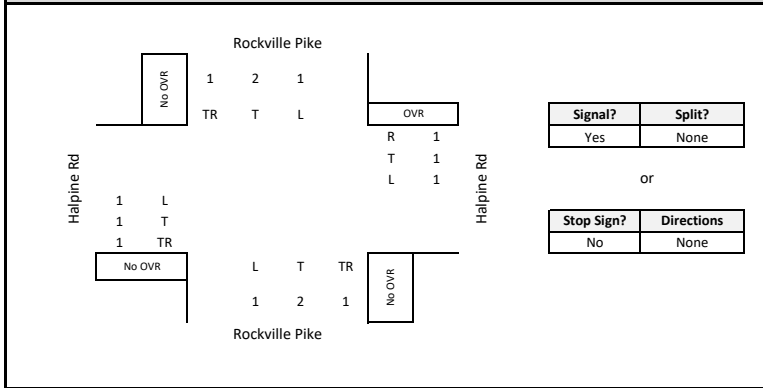
12

Critical Lane Volume and Level of Service Calculations

Intersection: 12. Rockville Pike / Halpine Rd
 Jurisdiction: Montgomery County, MD
 Scenario/Design Year: Total Future Phase 1 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	T+TR	108	0	0.53	57	171	1.10	188	245	*
WB	LTR	266	67	0.37	74	42	1.10	46	46	
NB	2T+TR	1574	0	0.37	582	63	1.10	69	651	
SB	2T+TR	1808	0	0.37	669	79	1.10	87	756	*
Note:								CLV v/c	1001 0.646	
Congestion Equiv.								LOS	B	
1550										

Approach	Excl. Right	Right Vol.	Adjacent Overlap Vol.	Overlap
Eastbound	No	n/a	n/a	0
Westbound	Yes	67	63	67
Northbound	No	n/a	n/a	0
Southbound	No	n/a	n/a	0

PM Peak Hour Critical Lane Volume Analysis

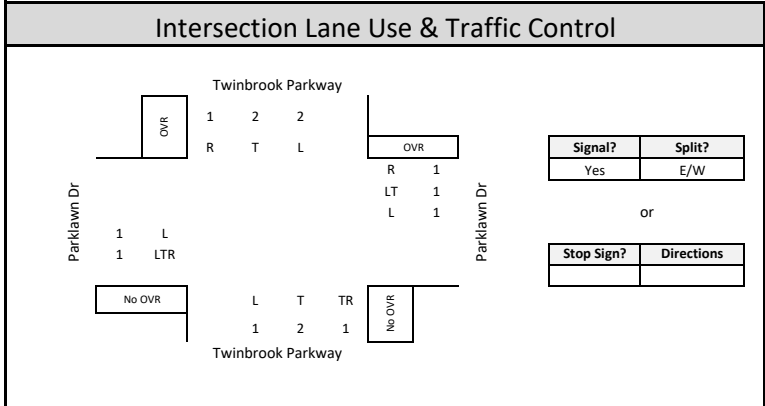
Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	T+TR	153	0	0.53	81	212	1.10	233	314	*
WB	LTR	409	109	0.37	111	98	1.10	108	219	
NB	2T+TR	2247	0	0.37	831	99	1.10	109	940	*
SB	2T+TR	1835	0	0.37	679	197	1.10	217	896	
Note:								CLV v/c	1254 0.809	
Congestion Equiv.								LOS	C	
1550										

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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	Yes	67	127	1.00	63	99	1.10	67	109
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

	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
1	1.1	1.00	
2	0.6	0.53	
3	0.4	0.37	
4		0.30	
5		0.25	



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	111	0	0.60	67				67	*	
WB	LT	182		0.60	109				109	*	
	R	124	107	1.00	17						
NB	2T+TR	767	0	0.37	284	179	0.60	107	391		
SB	T	807		0.53	428	50			483	*	
	R	63	40	1.00	23		1.10	55	78		
Note:									CLV	659	
									v/c	0.425	
									LOS	A	
					Congestion Equiv.						
					1550						

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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	Yes	124	272	1.00	179	133	0.60	107	80
Northbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Southbound	Yes	63	32	1.00	36	44	1.10	40	32

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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	Yes	124	272	1.00	179	133	0.60	107	80
Northbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Southbound	Yes	63	32	1.00	36	44	1.10	40	32

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	144	0	0.60	86				86	*	
WB	LT	343		0.60	206				206	*	
	R	272	80	1.00	192				192		
NB	2T+TR	1469	0	0.37	544	133	0.60	80	624	*	
SB	T	743		0.53	394	31			428		
	R	32	32	1.00	0		1.10	34	34		
Note:									CLV	916	
									v/c	0.591	
									LOS	A	
					Congestion Equiv.						
					1550						

Montgomery County LATR

	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
	1	1.1	1.00
	2	0.6	0.53
	3	0.4	0.37
	4		0.30
	5		0.25

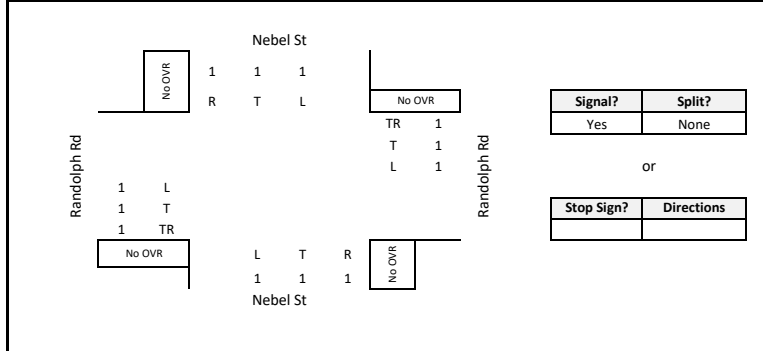
14

**Critical Lane Volume
and
Level of Service Calculations**

Intersection: **14. Nebel St / Randolph Rd**
 Jurisdiction: **Montgomery County, MD**
 Scenario/Design Year: **Total Future Phase 1 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	T+TR	731	0	0.53	387	238	1.10	262	649	*
WB	T+TR	1172	0	0.53	621	16	1.10	18	639	
NB	T	60	0	1.00	60	144	1.10	158	218	*
SB	R	85	0	1.00	85	80	1.10	88	160	
Note:									CLV	867
Congestion Equiv.									v/c	0.559
									LOS	A

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	T+TR	731	0	0.53	387	238	1.10	262	649	*
WB	T+TR	1172	0	0.53	621	16	1.10	18	639	
NB	T	60	0	1.00	60	144	1.10	158	218	*
SB	R	85	0	1.00	85	80	1.10	88	160	
Note:									CLV	867
Congestion Equiv.									v/c	0.559
									LOS	A

PM Peak Hour Critical Lane Volume Analysis

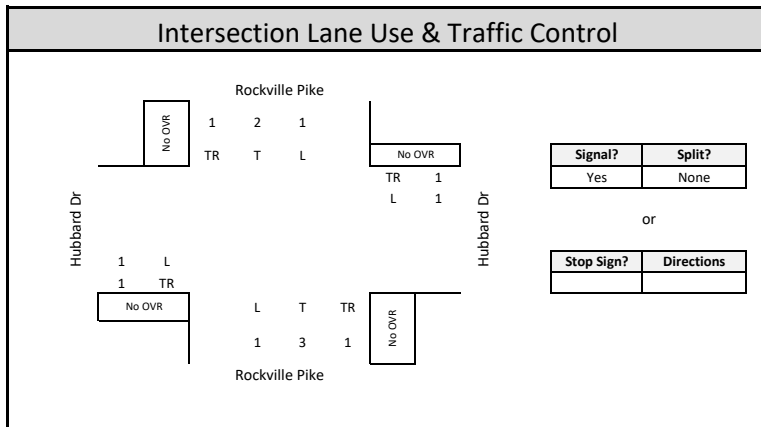
Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	T+TR	1155	0	0.53	612	169	1.10	186	798	*
WB	T+TR	1020	0	0.53	541	21	1.10	23	564	
NB	T	141	0	1.00	141	293	1.10	322	463	*
SB	R	287	0	1.00	287	131	1.10	144	609	
Note:									CLV	1407
Congestion Equiv.									v/c	0.908
									LOS	D

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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

	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
1	1.1	1.00	
2	0.6	0.53	
3	0.4	0.37	
4		0.30	
5		0.25	



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	20	0	1.00	20	77	1.10	85	105	*
WB	TR	66	0	1.00	66	20	1.10	22	88	
NB	3T+TR	1919	0	0.30	576	48	1.10	53	629	
SB	2T+TR	2543	0	0.37	941	25	1.10	28	969	*
Note:								CLV	1074	
								v/c	0.693	
								LOS	B	
								Congestion Equiv.		
								1550		

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	44	0	1.00	44	186	1.10	205	249	
	L	40		1.10	44				249	
WB	TR	151	0	1.00	151	40	1.10	44	195	*
	L	186		1.10	205				249	
NB	3T+TR	2901	0	0.30	870	161	1.10	177	1047	*
	L	18		1.10	20				197	
SB	2T+TR	2138	0	0.37	791	18	1.10	20	811	
				1.10	0				20	
Note:								CLV	1296	
								v/c	0.836	
								LOS	C	
								Congestion Equiv.		
								1550		

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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

	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
1		1.1	1.00
2		0.6	0.53
3		0.4	0.37
4			0.30
5			0.25

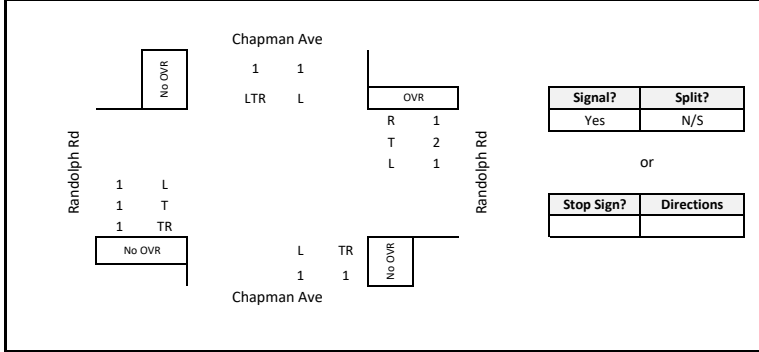
16

Critical Lane Volume and Level of Service Calculations

Intersection: 16. Chapman Ave / Randolph Rd
 Jurisdiction: Montgomery County, MD
 Scenario/Design Year: Total Future Phase 1 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	T+TR	730	0	0.53	387	9	1.10	10	397	
WB	T	1122		0.53	595	77	1.10	85	680	*
	R	66	30	1.00	36				121	
NB	LTR	21	0	1.00	21				21	*
SB	LTR	58	0	0.60	35				35	*
Note:									CLV	736
									v/c	0.475
									LOS	A
					Congestion Equiv.					
					1550					

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	T+TR	1045	0	0.53	554	14	1.10	15	569	*
WB	T	773		0.53	410	144	1.10	158	568	
	R	127	127	1.00	0				158	
NB	LTR	94	0	1.00	94				94	*
SB	LTR	299	0	0.60	179				0	
									179	*
Note:									CLV	842
									v/c	0.543
									LOS	A
					Congestion Equiv.					
					1550					

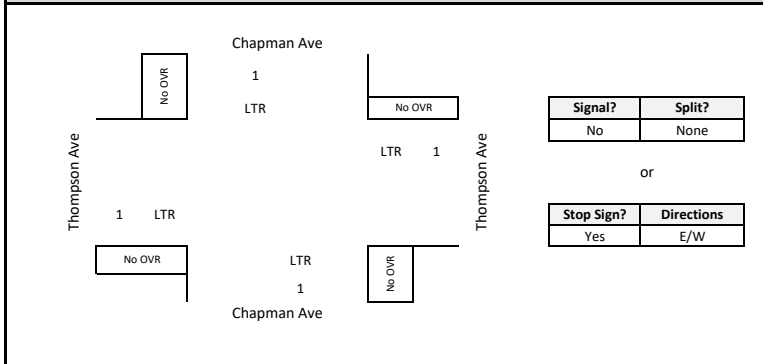
Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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	Yes	66	127	1.00	27	152	1.10	30	127
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

	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
1	1.1	1.00	
2	0.6	0.53	
3	0.4	0.37	
4		0.30	
5		0.25	

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	42	0	1.00	42				42		
WB	LTR	47	0	1.00	47				47	*	
NB	LTR	186	0	1.00	186				186	*	
SB	LTR	160	0	1.00	160				160		
Note:								CLV v/c	233 0.150		
Congestion Equiv.								LOS	1550	A	

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

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	165	0	1.00	165				165	*	
WB	LTR	26	0	1.00	26				26		
NB	LTR	330	0	1.00	330				330	*	
SB	LTR	315	0	1.00	315				315		
Note:								CLV v/c	495 0.319		
Congestion Equiv.								LOS	1550	A	

Right Turn Overlap

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

Montgomery County LATR

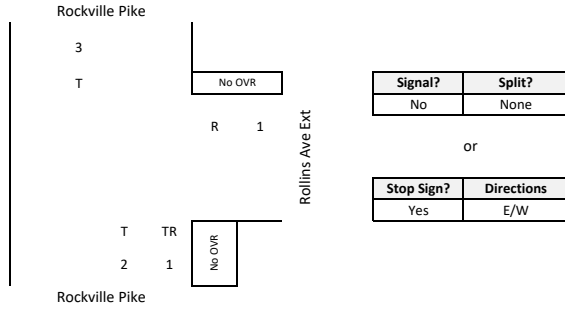
	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
1	1.1	1.00	
2	0.6	0.53	
3	0.4	0.37	
4		0.30	
5		0.25	

**Critical Lane Volume
and
Level of Service Calculations**

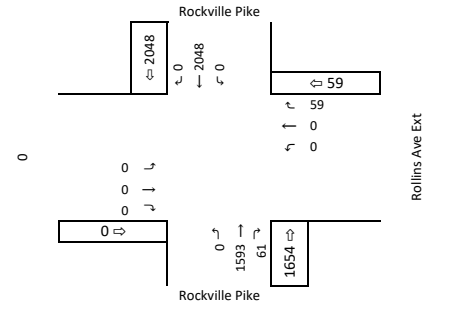
Intersection: **Rockville Pike / Rollins Ave Ext**
 Jurisdiction: **Montgomery County, MD**
 Scenario/Design Year: **Total Future Phase 1 Conditions**
 Computed by: **W+A**



Intersection Lane Use & Traffic Control



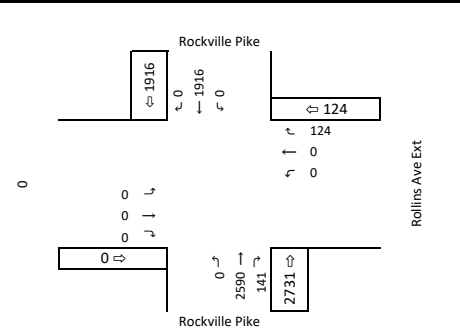
AM Peak Hour Critical Lane Volume Analysis



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										
WB	R	59	0	1.00	59				59	*
NB	2T+TR	1654	0	0.37	612				612	
SB	3T	2048	0	0.37	758				758	*
Note:									CLV	817
									v/c	0.511
									LOS	A
									Congestion Equiv. 1600	

Approach	Excl. Right	AM	PM	LUF	AM	PM	LUF	AM	PM	LUF
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	

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										
WB	R	124	0	1.00	124				124	*
NB	2T+TR	2731	0	0.37	1010				1010	*
SB	3T	1916	0	0.37	709				709	
Note:									CLV	1134
									v/c	0.709
									LOS	B
									Congestion Equiv. 1600	

Right Turn Overlap

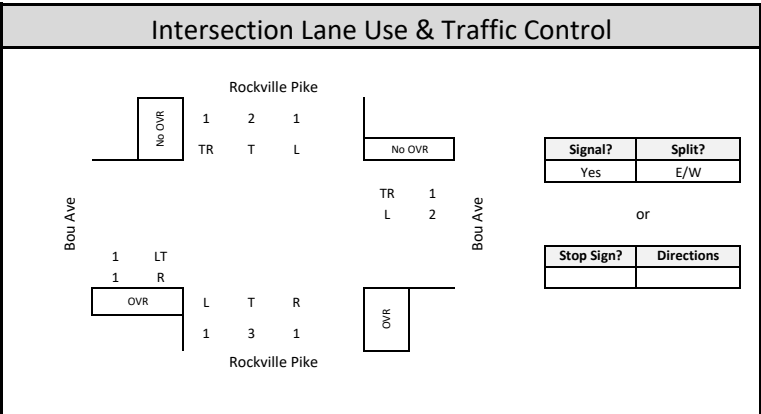
Approach	Excl. Right	Right Vol.			Adjacent Overlap Vol.				Overlap	
		AM	PM	LUF	AM	PM	LUF	AM	PM	LUF
Eastbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0	
Westbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0	
Northbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0	
Southbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0	

Montgomery County LATR

Number of Lanes	Lane Use Factors	
	Left Turn LUF	Through LUF
1	1.1	1.00
2	0.6	0.53
3	0.4	0.37
4		0.30
5		0.25

1 Critical Lane Volume and Level of Service Calculations

Intersection: **01. Rockville Pike / Bou Ave**
 Jurisdiction: **Montgomery County, MD**
 Scenario/Design Year: **Total Future Phase 2 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	LT	35		1.00	35				35	*
	R	25	0	1.00	25				25	*
WB	2L	571		0.60	343				343	*
	TR	60	0	1.00	60				60	*
NB	3T	1713		0.37	634	122	1.10	134	768	*
	R	143	143	1.00	0				134	*
SB	2T+TR	1952		0.37	722	36	1.10	40	762	*
Note:								CLV	1146	
								v/c	0.739	
								LOS	B	
					Congestion Equiv.					
					1550					

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	48		1.00	48				48	*
	R	36	0	1.00	36				36	*
WB	2L	474		0.60	284				284	*
	TR	161	0	1.00	161				161	*
NB	3T	2534		0.37	938	185	1.10	204	1142	*
	R	398	398	1.00	0				204	*
SB	2T+TR	1700		0.37	629	57	1.10	63	692	*
Note:								CLV	1474	
								v/c	0.951	
								LOS	E	
					Congestion Equiv.					
					1550					

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap Vol.			Overlap	
		AM	PM	LUF	AM	PM	LUF	AM	PM
Eastbound	Yes	25	36	1.00	36	57	0.00	0	0
Westbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Northbound	Yes	143	398	0.00	571	474	0.60	143	398
Southbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0

Montgomery County LATR

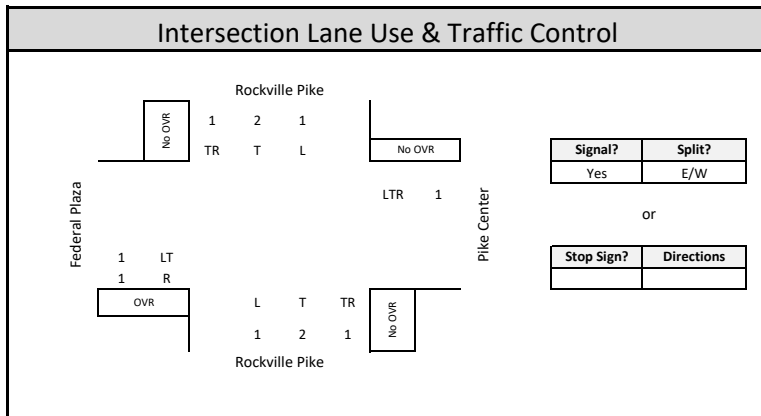
	Lane Use Factors				LOS	
	Number of Lanes	Left Turn LUF	Through LUF		GRADE	VALUE
1	1.1	1.00		A	1000.00	
2	0.6	0.53		B	1150.00	
3	0.4	0.37		C	1300.00	
4		0.30		D	1450.00	
5		0.25		E	1600.00	
				F	1800.00	

2

Critical Lane Volume and Level of Service Calculations

Intersection: 02. Rockville Pike / Pike Center / Federal Plaza

Jurisdiction: Montgomery County, MD
 Scenario/Design Year: Total Future Phase 2 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	LT	18		1.00	18				18	*
	R	56	56	1.00	0				45	*
WB	LTR	45	0	1.00	45				45	*
NB	2T+TR	1559	0	0.37	577	38	1.10	42	619	
SB	2T+TR	1960	0	0.37	725	84	1.10	92	817	*
Note:									CLV	880
									v/c	0.568
									LOS	A
									Congestion Equiv.	1550

Approach	Excl. Right	AM	PM	LUF	AM	PM	LUF	AM	PM
Eastbound	Yes	56	133	1.00	84	197	1.10	56	133
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

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap Vol.			Overlap	
		AM	PM	LUF	AM	PM	LUF	AM	PM
Eastbound	Yes	56	133	1.00	84	197	1.10	56	133
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

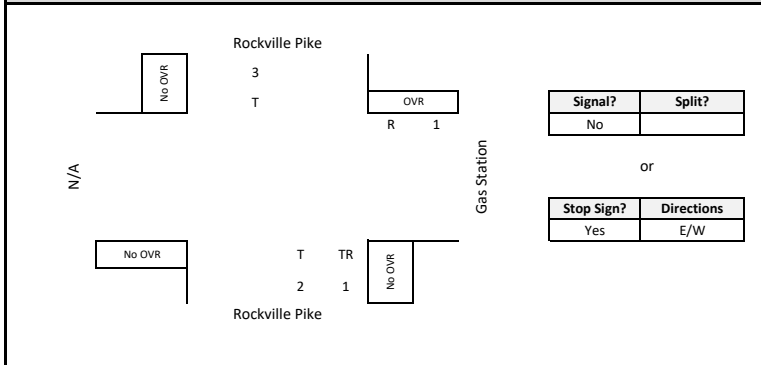
PM Peak Hour Critical Lane Volume Analysis

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	135		1.00	135				135	*
	R	133	133	1.00	0				92	*
WB	LTR	92	0	1.00	92				92	*
NB	2T+TR	2339	0	0.37	865	86	1.10	95	960	*
SB	2T+TR	1716	0	0.37	635	197	1.10	217	852	*
Note:									CLV	1187
									v/c	0.766
									LOS	C
									Congestion Equiv.	1550

Montgomery County LATR

Number of Lanes	Lane Use Factors	
	Left Turn LUF	Through LUF
1	1.1	1.00
2	0.6	0.53
3	0.4	0.37
4		0.30
5		0.25

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										*
WB	R	0	0	1.00	0				0	*
NB	2T+TR	1555	0	0.37	575				575	*
SB	3T	2016	0	0.37	746				746	*
Note:									CLV	746
Congestion Equiv.									v/c	0.481
									LOS	A

Approach	Excl. Right	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	Yes	0	0	1.00	0	0	0.00	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

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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	Yes	0	0	1.00	0	0	0.00	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

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										*
WB	R	0	0	1.00	0				0	*
NB	2T+TR	2360	0	0.37	873				873	*
SB	3T	1743	0	0.37	645				645	*
Note:									CLV	873
Congestion Equiv.									v/c	0.563
									LOS	A

Montgomery County LATR

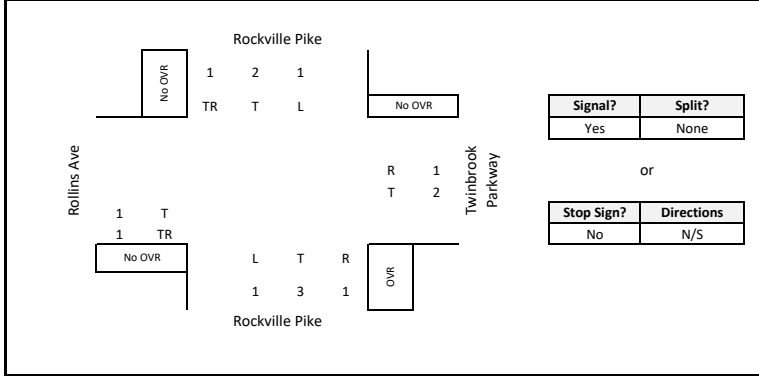
Number of Lanes	Lane Use Factors	
	Left Turn LUF	Through LUF
1	1.1	1.00
2	0.6	0.53
3	0.4	0.37
4		0.30
5		0.25

Critical Lane Volume and Level of Service Calculations

Intersection: **04. Rockville Pike / Twinbrook Park / Rollins Ave**
 Jurisdiction: **Montgomery County, MD**
 Scenario/Design Year: **Total Future Phase 2 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	T+TR	389	0	0.53	206				206	
WB	2T	310		0.53	164				164	*
	R	215	0	1.00	215				789	
NB	3T	1432		0.37	530	235	1.10	259	377	
	R	118	0	1.00	118				831	*
SB	2T+TR	1928	0	0.37	713	107	1.10	118		
Note:									CLV	1046
									v/c	0.675
Congestion Equiv.									LOS	B
									1550	

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	484	0	0.53	257				257	*
WB	2T	309		0.53	164				164	
	R	204	0	1.00	204				204	
NB	3T	2107		0.37	780	278	1.10	306	1086	*
	R	121	0	1.00	121				427	
SB	2T+TR	1788	0	0.37	662	143	1.10	157	819	
Note:									CLV	1343
									v/c	0.866
Congestion Equiv.									LOS	D
									1550	

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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	Yes	118	121	1.00	0	0	0.00	0	0
Southbound	No	n/a	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	1.00
2		0.6	0.53
3		0.4	0.37
4			0.30
5			0.25

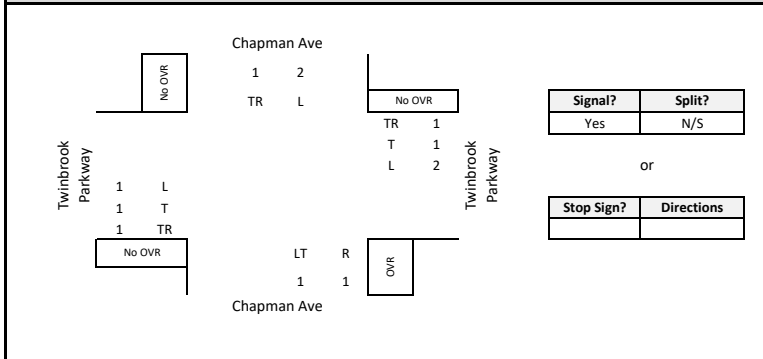
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**Critical Lane Volume
and
Level of Service Calculations**

Intersection: **05. Twinbrook Park / Chapman Ave**
 Jurisdiction: **Montgomery County, MD**
 Scenario/Design Year: **Total Future Phase 2 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	T+TR	627	0	0.53	332	534	0.60	320	652	*
WB	T+TR	563	0	0.53	298	40	1.10	44	342	
NB	LT	142		1.00	142				142	*
SB	TR	50		1.00	50				50	*
SB	L	84	0	0.60	50				50	*

Note: **CLV 844**
v/c 0.545
LOS A

Intersection Lane Use & Traffic Control											

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	T+TR	947	0	0.53	502	469	0.60	281	783	*
WB	T+TR	727	0	0.53	385	68	1.10	75	460	
NB	LT	218		1.00	218				310	*
SB	R	591	281	1.00	310				310	*
SB	TR	119		1.00	119				119	*
SB	L	215	0	0.60	129				129	*

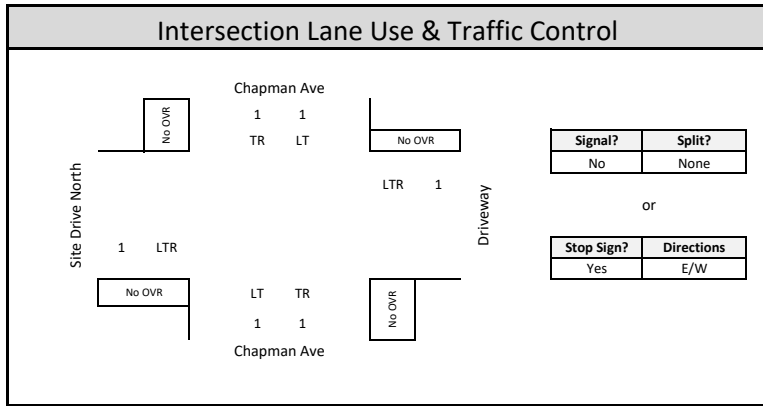
Note: **CLV 1222**
v/c 0.788
LOS C

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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	Yes	197	591	1.00	534	469	0.60	197	281
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	1.00
2	0.6	0.53
3	0.4	0.37
4		0.30
5		0.25



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	35	0	1.00	35	1	1.10	1	36	*
WB	LTR	5	0	1.00	5	24	1.10	26	31	
NB	T+TR	313	0	0.53	166	5	1.10	6	172	
	L	4		1.10	4				10	
SB	T+TR	697	0	0.53	369	4	1.10	4	373	*
	L	5		1.10	6				10	
Note:									CLV	409
Congestion Equiv.									v/c	0.264
									LOS	A
					1550					

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	38	0	1.00	38	4	1.10	4	42	
									4	
WB	LTR	12	0	1.00	12	31	1.10	34	46	*
									34	
NB	T+TR	761	0	0.53	403	5	1.10	6	409	
	L	41		1.10	45				51	
SB	T+TR	712	0	0.53	377	41	1.10	45	422	*
	L	5		1.10	6				51	
Note:									CLV	468
Congestion Equiv.									v/c	0.302
									LOS	A
					1550					

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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

	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
1	1.1	1.00	
2	0.6	0.53	
3	0.4	0.37	
4		0.30	
5		0.25	

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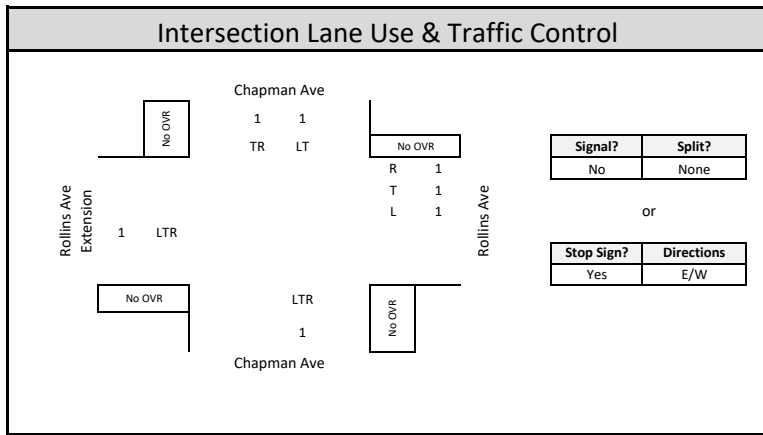
Critical Lane Volume and Level of Service Calculations

Intersection: 07. Chapman Ave / Rollins Ave

Jurisdiction: Montgomery County, MD
 Scenario/Design Year: Total Future Phase 2 Conditions
 Computed by: W+A



WELLS + ASSOCIATES



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	53	0	1.00	53	32	1.10	35	88	*
WB	T	6	0	1.00	6	0	1.10	0	6	
	R	33	0	1.00	33				33	
NB	LTR	383	0	1.00	383	36	1.10	40	423	*
SB	T+TR	614	0	0.53	325	2	1.10	2	327	
Note:								CLV	511	
								v/c	0.330	
								LOS	A	
								Congestion Equiv.	1550	

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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

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	62	0	1.00	62	59	1.10	65	127	
WB	T	20	0	1.00	20	39	1.10	43	63	*
	R	89	0	1.00	89				132	
NB	LTR	752	0	1.00	752	45	1.10	50	802	*
SB	T+TR	650	0	0.53	345	29	1.10	32	377	
Note:								CLV	934	
								v/c	0.603	
								LOS	A	
								Congestion Equiv.	1550	

Montgomery County LATR

Number of Lanes	Lane Use Factors			GRADE	VALUE
	Left Turn LUF	Through LUF	LOS		
1	1.1	1.00	A	1000.00	
2	0.6	0.53	B	1150.00	
3	0.4	0.37	C	1300.00	
4		0.30	D	1450.00	
5		0.25	E	1600.00	
			F	1800.00	

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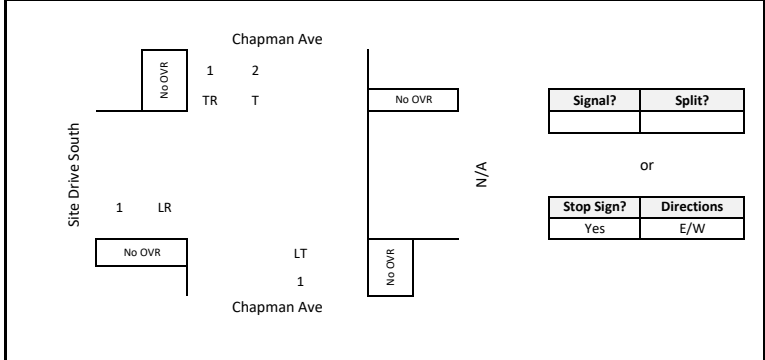
**Critical Lane Volume
and
Level of Service Calculations**

Intersection: **08. Chapman Ave / Site Drive South**
 Jurisdiction: **Montgomery County, MD**
 Scenario/Design Year: **Total Future Phase 2 Conditions**
 Computed by: **W+A**



WELLS + ASSOCIATES

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	LR	0	0	1.10	0				0	*	
WB										*	
NB	LT	372	0	1.00	372				372	*	
SB	T+TR	672	0	0.37	249	0	1.10	0	249		
Note:									CLV	372	
									v/c	0.240	
									LOS	A	
					Congestion Equiv.						
					1550						

Approach	Excl. Right	Right Vol.	Adjacent Overlap Vol.	Overlap
AM				
PM				
AM				
PM				
AM				
PM				

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	LR	0	0	1.10	0				0	*	
WB									0	*	
NB	LT	766	0	1.00	766				766	*	
SB	T+TR	742	0	0.37	275	0		0	275		
Note:									CLV	766	
									v/c	0.494	
									LOS	A	
					Congestion Equiv.						
					1550						

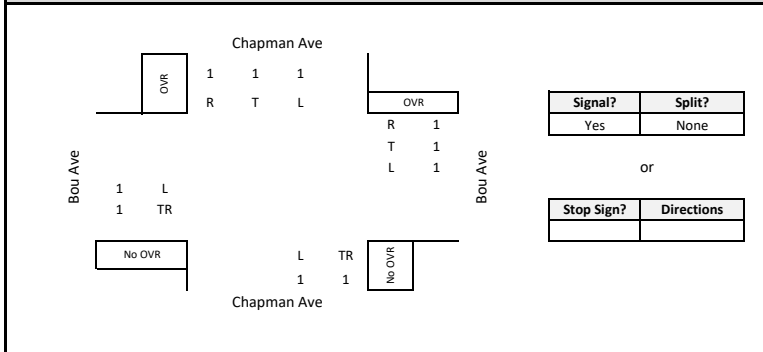
Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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

	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
1	1.1	1.00	
2	0.6	0.53	
3	0.4	0.37	
4		0.30	
5		0.25	

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	156	0	1.00	156	6	1.10	7	163	
WB	T	96		1.00	96	147	1.10	162	258	*
	R	163	160	1.00	3				165	
NB	TR	45	0	1.00	45	145	1.10	160	205	
SB	T	79		1.00	79	4	1.10	4	83	*
	R	447	162	1.10	314				318	*
Note:									CLV	576
Congestion Equiv.									v/c	0.372
									LOS	A
										1550

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	298	0	1.00	298	15	1.10	17	315	
WB	T	169		1.00	169	341	1.10	375	544	*
	R	263	263	1.00	0				375	*
NB	TR	185	0	1.00	185	248	1.10	273	458	*
									273	
SB	T	127		1.00	127	17	1.10	19	146	
	R	358	358	1.10	0				19	
Note:									CLV	1002
Congestion Equiv.									v/c	0.646
									LOS	B
										1550

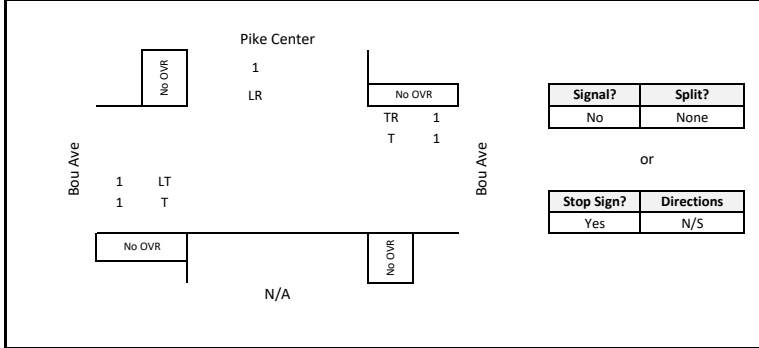
Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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	Yes	163	263	1.00	145	248	1.10	160	263
Northbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Southbound	Yes	447	358	1.00	147	341	1.10	162	358

Montgomery County LATR

	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
1	1.1	1.00	
2	0.6	0.53	
3	0.4	0.37	
4		0.30	
5		0.25	

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	2T	278	0	1.00	278	0	1.10	0	278	
WB	T+TR	582	0	0.53	308	0	1.10	0	308	*
NB										
SB	LR	61	0	1.10	67				67	*
Note:									CLV	375
									v/c	0.242
Congestion Equiv.									LOS	A
									1550	

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	2T	278	0	1.00	278	0	1.10	0	278	
WB	T+TR	582	0	0.53	308	0	1.10	0	308	*
NB										
SB	LR	61	0	1.10	67				67	*

PM Peak Hour Critical Lane Volume Analysis

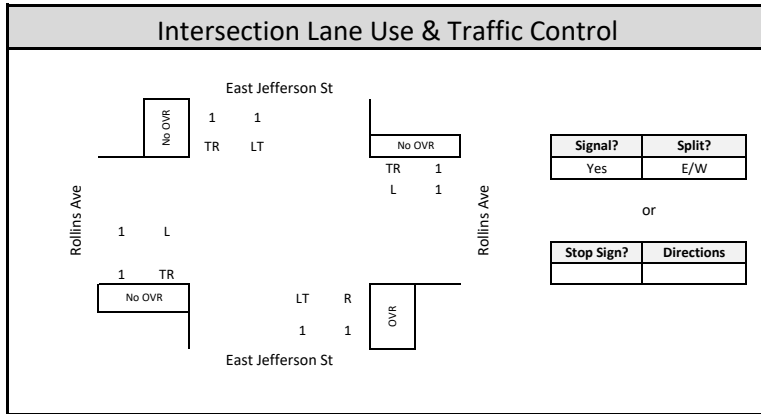
Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	2T	540	0	1.00	540	0	1.10	0	540	*
WB	T+TR	537	0	0.53	285	9	1.10	10	295	
NB										
SB	LR	176	0	1.10	194				194	*
Note:									CLV	734
									v/c	0.474
Congestion Equiv.									LOS	A
									1550	

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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	1.00
2	0.6	0.53
3	0.4	0.37
4		0.30
5		0.25



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	71	0	1.00	71				71	*	
WB	LTR	355	0	1.00	355				355	*	
NB	LT	252		1.10	277	20	1.10	22	299	*	
SB	R	359	0	1.00	359				381	*	
SB	LTR	256	0	0.53	136	9	1.10	10	146		
Note:									CLV	807	
									v/c	0.521	
									LOS	A	
					Congestion Equiv.						
					1550						

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	70	0	1.00	70				70	*	
WB	LTR	530	0	1.00	530				530	*	
NB	LT	484		1.10	532	18	1.10	20	552	*	
SB	R	397	0	1.00	397				417	*	
SB	LTR	299	0	0.53	158	7	1.10	8	166		
Note:									CLV	1152	
									v/c	0.743	
									LOS	C	
					Congestion Equiv.						
					1550						

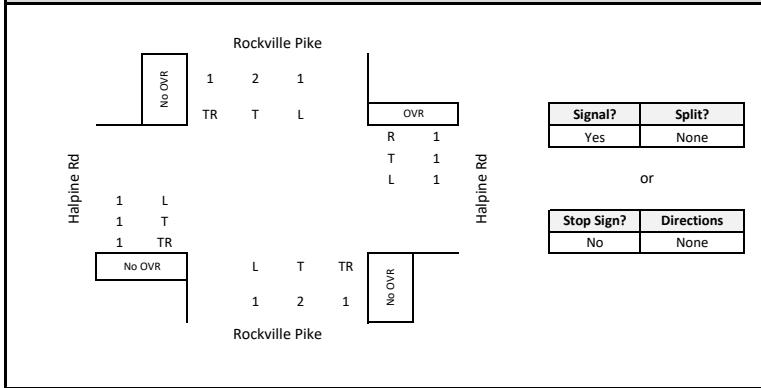
Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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	Yes	359	397	1.00	285	387	0.00	0	0
Southbound	No	n/a	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	1.00
	2	0.6	0.53
	3	0.4	0.37
	4		0.30
	5		0.25

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	T+TR	108	0	0.53	57	171	1.10	188	245	*
WB	LTR	266	67	0.37	74	42	1.10	46	46	
NB	2T+TR	1595	0	0.37	590	63	1.10	69	659	
SB	2T+TR	1808	0	0.37	669	79	1.10	87	756	*
Note:								CLV	1001	
								v/c	0.646	
								LOS	B	
					Congestion Equiv.					
					1550					

Approach	Excl. Right	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	Yes	67	127	1.00	63	99	1.10	67	109
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

Right Turn Overlap

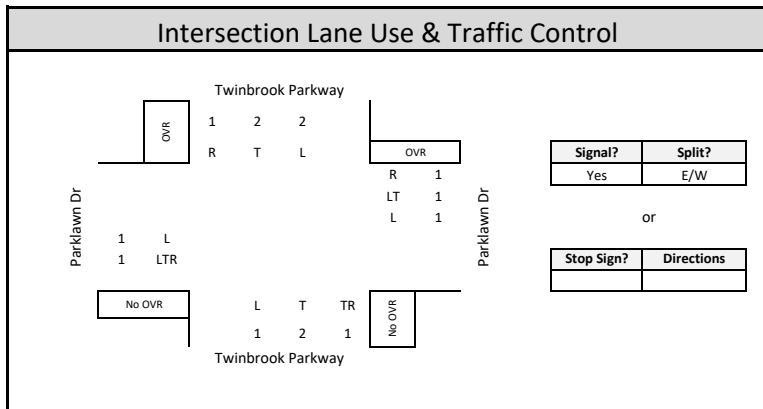
Approach	Excl. Right	Right Vol.			Adjacent Overlap Vol.			Overlap	
		AM	PM	LUF	AM	PM	LUF	AM	PM
Eastbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Westbound	Yes	67	127	1.00	63	99	1.10	67	109
Northbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Southbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0

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	T+TR	153	0	0.53	81	212	1.10	233	314	*
WB	LTR	409	109	0.37	111	98	1.10	108	219	
NB	2T+TR	2244	0	0.37	830	99	1.10	109	939	*
SB	2T+TR	1850	0	0.37	685	197	1.10	217	902	
Note:								CLV	1253	
								v/c	0.808	
								LOS	C	
					Congestion Equiv.					
					1550					

Montgomery County LATR

	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
1	1.1	1.00	
2	0.6	0.53	
3	0.4	0.37	
4		0.30	
5		0.25	



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	111	0	0.53	59				59	*
WB	LT	182		0.60	109				109	*
WB	R	124	107	1.00	17					
NB	2T+TR	767	0	0.37	284	179	0.60	107	391	
SB	T	870		0.53	461	50			516	*
SB	R	63	40	1.00	23				78	
Note:									CLV	684
Congestion Equiv.									v/c	0.441
									LOS	A
										1550

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	144	0	0.60	86				86	*
WB	LT	343		0.60	206				206	*
WB	R	272	80	1.00	192				192	
NB	2T+TR	1469	0	0.37	544	133	0.60	80	624	*
SB	T+TR	775	0	0.53	411	31			445	
SB	R	32	32	1.00	0				34	
Note:									CLV	916
Congestion Equiv.									v/c	0.591
									LOS	A
										1550

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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	Yes	124	272	1.00	179	133	0.60	107	80
Northbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Southbound	Yes	63	32	1.00	36	44	1.10	40	32

Montgomery County LATR

Number of Lanes	Lane Use Factors	
	Left Turn LUF	Through LUF
1	1.1	1.00
2	0.6	0.53
3	0.4	0.37
4		0.30
5		0.25

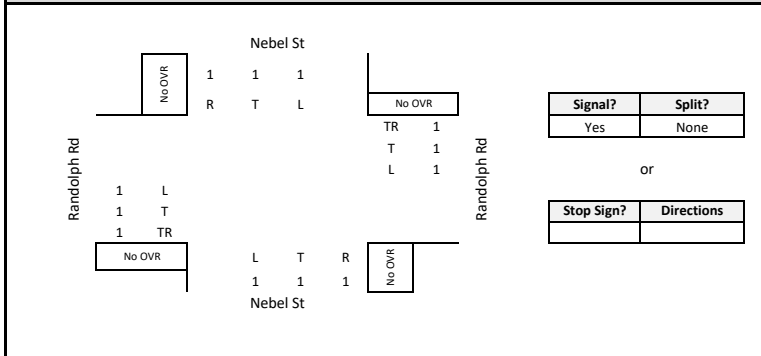
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**Critical Lane Volume
and
Level of Service Calculations**

Intersection: **14. Nebel St / Randolph Rd**
 Jurisdiction: **Montgomery County, MD**
 Scenario/Design Year: **Total Future Phase 2 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	T+TR	744	0	0.53	394	177	1.10	195	589	
WB	T+TR	1234	0	0.53	654	16	1.10	18	672	*
NB	T	60		1.00	60	151	1.10	166	226	*
SB	R	68		1.00	68					
SB	T	72		1.00	72	91	1.10	100	172	
SB	R	14		1.00	14					
Note:									CLV	898
Congestion Equiv.									v/c	0.579
									LOS	A

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	T+TR	744	0	0.53	394	177	1.10	195	589	
WB	T+TR	1234	0	0.53	654	16	1.10	18	672	*
NB	T	60		1.00	60	151	1.10	166	226	*
SB	R	68		1.00	68					
SB	T	72		1.00	72	91	1.10	100	172	
SB	R	14		1.00	14					
Note:									CLV	898
Congestion Equiv.									v/c	0.579
									LOS	A

PM Peak Hour Critical Lane Volume Analysis

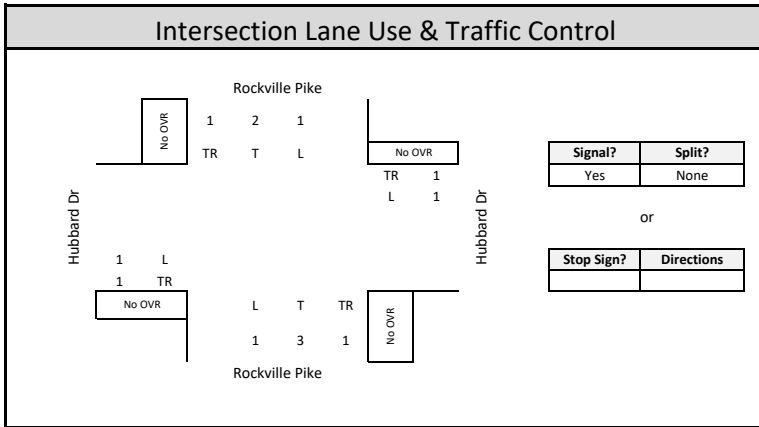
Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV
EB	T+TR	1158	0	0.53	614	169	1.10	186	800	*
WB	T+TR	1021	0	0.53	541	21	1.10	23	564	
NB	T	141		1.00	141	293	1.10	322	463	
NB	R	287		1.00	287				609	*
SB	T	165		1.00	165	125	1.10	138	303	
SB	R	24		1.00	24				162	
Note:									CLV	1409
Congestion Equiv.									v/c	0.909
									LOS	D

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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	1.00
2	0.6	0.53
3	0.4	0.37
4		0.30
5		0.25



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	20	0	1.00	20	77	1.10	85	105	*
WB	TR	66	0	1.00	66	20	1.10	22	88	
NB	3T+TR	1920	0	0.30	576	48	1.10	53	629	
SB	2T+TR	2578	0	0.37	954	25	1.10	28	982	*
Note:								CLV	1087	
								v/c	0.701	
								LOS	B	
								Congestion Equiv.	1550	

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	44	0	1.00	44	186	1.10	205	249	
WB	TR	151	0	1.00	151	40	1.10	44	195	*
NB	3T+TR	2911	0	0.30	873	161	1.10	177	1050	*
SB	2T+TR	2146	0	0.37	794	18	1.10	20	814	
Note:								CLV	1299	
								v/c	0.838	
								LOS	C	
								Congestion Equiv.	1550	

Right Turn Overlap

Approach	Excl. Right	Right Vol.			Adjacent Overlap 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	1.00
2	0.6	0.53
3	0.4	0.37
4		0.30
5		0.25

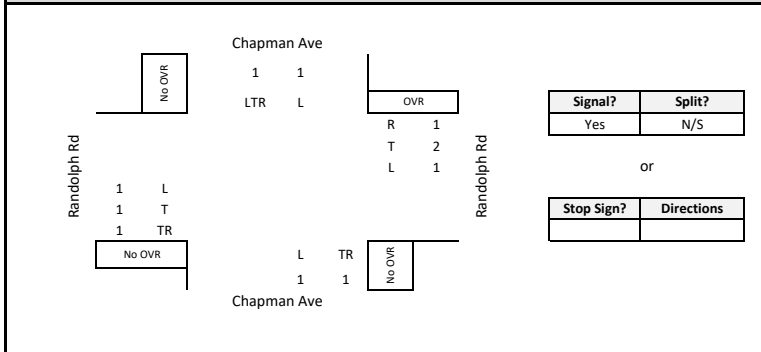
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Critical Lane Volume and Level of Service Calculations

Intersection: 16. Chapman Ave / Randolph Rd
 Jurisdiction: Montgomery County, MD
 Scenario/Design Year: Total Future Phase 2 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	T+TR	797	0	0.53	422	9	1.10	10	432	
WB	T	1189		0.53	630	77	1.10	85	715	*
	R	66	30	1.00	36				121	
NB	LTR	21	0	1.00	21				21	*
SB	LTR	58	0	0.60	35				35	*
Note:									CLV	771
Congestion Equiv.									v/c	0.497
									LOS	A
										1550

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	T+TR	1074	0	0.53	569	14	1.10	15	584	*
									15	
WB	T	797		0.53	422	144	1.10	158	580	
	R	127	127	1.00	0				158	
NB	LTR	110	0	1.00	110				110	*
									0	
SB	LTR	299	0	0.60	179				179	*
									0	
Note:									CLV	873
Congestion Equiv.									v/c	0.563
									LOS	A
										1550

Right Turn Overlap

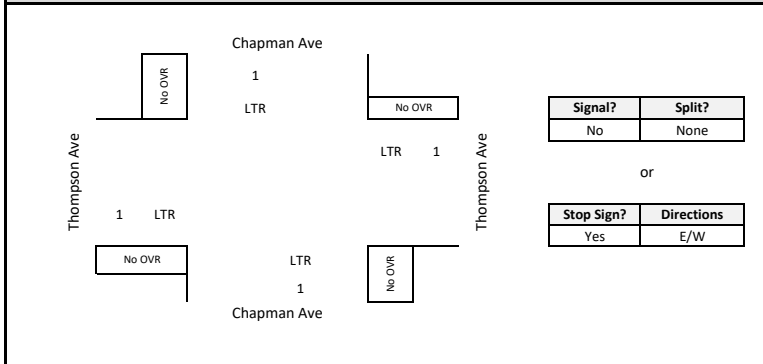
Approach	Excl. Right	Right Vol.			Adjacent Overlap Vol.			Overlap	
		AM	PM	LUF	AM	PM	LUF	AM	PM
Eastbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Westbound	Yes	66	127	1.00	27	152	1.10	30	127
Northbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0
Southbound	No	n/a	n/a	n/a	n/a	n/a	n/a	0	0

Montgomery County LATR

	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
1	1	1.1	1.00
2	2	0.6	0.53
3	3	0.4	0.37
4	4		0.30
5	5		0.25



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	42	0	1.00	42				42		
WB	LTR	47	0	1.00	47				47	*	
NB	LTR	186	0	1.00	186				186	*	
SB	LTR	160	0	1.00	160				160		
Note:									CLV v/c	233 / 0.150	
Congestion Equiv.									1550	LOS	A

PM Peak Hour Critical Lane Volume Analysis

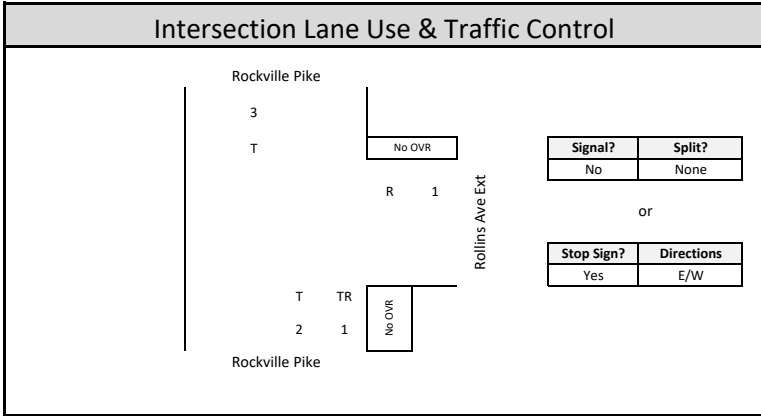
Direction	Lane Group	Lane Group Volume	Right Turn Overlap	Lane Use Factor (LUF)	Volume	Opposing Lefts	Lane Use Factor (LUF)	Opposing Volume	Critical Lane Volume (CLV)	Included in CLV	
EB	LTR	165	0	1.00	165				165	*	
WB	LTR	26	0	1.00	26				26		
NB	LTR	330	0	1.00	330				330	*	
SB	LTR	315	0	1.00	315				315		
Note:									CLV v/c	495 / 0.319	
Congestion Equiv.									1550	LOS	A

Right Turn Overlap

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

Montgomery County LATR

	Lane Use Factors					
	Number of Lanes	Left Turn LUF	Through LUF			
1	1.1	1.00				
2	0.6	0.53				
3	0.4	0.37				
4		0.30				
5		0.25				



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					48					
WB	R	48	0	1.00	48				48	*
NB	2T+TR	1726	0	0.37	639				639	
SB	3T	2026	0	0.37	750				750	*
Note:									CLV	798
									v/c	0.499
									LOS	A
Congestion Equiv.										
1600										

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					149					
WB	R	149	0	1.00	149				149	*
NB	2T+TR	2727	0	0.37	1009				1009	*
SB	3T	1863	0	0.37	689				689	
Note:									CLV	1158
									v/c	0.724
									LOS	C
Congestion Equiv.										
1600										

Right Turn Overlap

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

Montgomery County LATR

	Lane Use Factors		
	Number of Lanes	Left Turn LUF	Through LUF
1		1.1	1.00
2		0.6	0.53
3		0.4	0.37
4			0.30
5			0.25

Queues

1: Rockville Pike - 355 & Bou Ave

Total Future AM Phase 1



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	37	26	584	71	38	1703	229	176	2007
v/c Ratio	0.45	0.12	0.80	0.18	0.45	0.68	0.27	0.70	0.68
Control Delay	108.2	1.2	81.7	17.6	108.4	39.3	14.2	79.1	33.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	44.6	0.8	0.0	13.5
Total Delay	108.2	1.2	81.7	17.6	108.4	83.9	15.1	79.1	47.1
Queue Length 50th (ft)	48	0	370	11	50	646	78	132	731
Queue Length 95th (ft)	93	0	454	61	95	706	146	#238	827
Internal Link Dist (ft)	76			198		419			169
Turn Bay Length (ft)					175			245	
Base Capacity (vph)	170	280	735	394	171	2518	844	250	2931
Starvation Cap Reductn	0	0	0	0	0	958	373	0	946
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	0.22	0.09	0.79	0.18	0.22	1.09	0.49	0.70	1.01


























Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

1: Rockville Pike - 355 & Bou Ave

Total Future AM Phase 1

														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations				 				 			 			
Traffic Volume (vph)	14	21	25	561	11	58	36	1635	220	169	1921	6		
Future Volume (vph)	14	21	25	561	11	58	36	1635	220	169	1921	6		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width	10	10	10	10	10	10	11	11	11	12	12	12		
Total Lost time (s)		6.0	6.0	7.0	7.0		5.0	5.5	5.5	6.0	6.0			
Lane Util. Factor		1.00	1.00	0.97	1.00		1.00	0.91	1.00	1.00	0.91			
Frt		1.00	0.85	1.00	0.87		1.00	1.00	0.85	1.00	1.00			
Flt Protected		0.98	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00			
Satd. Flow (prot)		1704	1478	3204	1518		1711	4916	1531	1770	5083			
Flt Permitted		0.98	1.00	0.95	1.00		0.95	1.00	1.00	0.08	1.00			
Satd. Flow (perm)		1704	1478	3204	1518		1711	4916	1531	154	5083			
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96		
Adj. Flow (vph)	15	22	26	584	11	60	38	1703	229	176	2001	6		
RTOR Reduction (vph)	0	0	25	0	46	0	0	0	61	0	0	0		
Lane Group Flow (vph)	0	37	1	584	25	0	38	1703	168	176	2007	0		
Turn Type	Split	NA	Prot	Split	NA		Prot	NA	Prot	pm+pt	NA			
Protected Phases	3	3	3	4	4		1	5	5	6	2			
Permitted Phases										2				
Actuated Green, G (s)		8.6	8.6	45.7	45.7		8.6	100.2	100.2	113.1	113.1			
Effective Green, g (s)		8.6	8.6	45.7	45.7		8.6	100.2	100.2	113.1	113.1			
Actuated g/C Ratio		0.04	0.04	0.23	0.23		0.04	0.50	0.50	0.57	0.57			
Clearance Time (s)		6.0	6.0	7.0	7.0		5.0	5.5	5.5	6.0	6.0			
Vehicle Extension (s)		3.0	3.0	6.0	6.0		3.0	0.2	0.2	3.0	0.2			
Lane Grp Cap (vph)		73	63	732	346		73	2462	767	256	2874			
v/s Ratio Prot		c0.02	0.00	c0.18	0.02		0.02	c0.35	0.11	0.07	c0.39			
v/s Ratio Perm										0.32				
v/c Ratio		0.51	0.02	0.80	0.07		0.52	0.69	0.22	0.69	0.70			
Uniform Delay, d1		93.6	91.7	72.8	60.5		93.7	38.1	28.0	56.9	31.2			
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		5.4	0.1	7.3	0.2		6.5	1.6	0.7	7.5	1.4			
Delay (s)		99.1	91.8	80.1	60.8		100.2	39.7	28.6	64.3	32.6			
Level of Service		F	F	F	E		F	D	C	E	C			
Approach Delay (s)		96.1			78.0			39.6			35.2			
Approach LOS		F			E			D			D			
Intersection Summary														
HCM 2000 Control Delay			43.5									HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio			0.75											
Actuated Cycle Length (s)			200.0								31.0			
Intersection Capacity Utilization			79.1%										ICU Level of Service	D
Analysis Period (min)			15											
c Critical Lane Group														

Queues

2: Rockville Pike - 355 & Federal Plaza/Pike Center






















Total Future AM Phase 1



Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	19	58	11	88	1619	21	2091
v/c Ratio	0.25	0.36	0.14	0.50	0.40	0.09	0.56
Control Delay	79.7	8.4	42.5	16.9	6.0	4.0	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.3	0.0	1.1
Total Delay	79.7	8.4	42.5	16.9	6.4	4.0	10.3
Queue Length 50th (ft)	19	0	2	8	146	2	234
Queue Length 95th (ft)	49	10	25	56	282	11	479
Internal Link Dist (ft)	84		43		260		145
Turn Bay Length (ft)				245		175	
Base Capacity (vph)	262	313	303	303	4051	376	3706
Starvation Cap Reductn	0	0	0	0	1607	0	1262
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.19	0.04	0.29	0.66	0.06	0.86
Intersection Summary							

HCM Signalized Intersection Capacity Analysis
 2: Rockville Pike - 355 & Federal Plaza/Pike Center

Total Future AM Phase 1

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	16	2	56	0	2	9	84	1554	0	20	2005	2	
Future Volume (vph)	16	2	56	0	2	9	84	1554	0	20	2005	2	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	10	10	10	16	16	16	11	11	11	10	10	10	
Total Lost time (s)		6.5	6.5		6.5		5.0	5.5		5.0	5.5		
Lane Util. Factor		1.00	1.00		1.00		1.00	0.91		1.00	0.91		
Flt		1.00	0.85		0.89		1.00	1.00		1.00	1.00		
Flt Protected		0.96	1.00		1.00		0.95	1.00		0.95	1.00		
Satd. Flow (prot)		1664	1478		1878		1711	4916		1652	4746		
Flt Permitted		0.96	1.00		1.00		0.07	1.00		0.13	1.00		
Satd. Flow (perm)		1664	1478		1878		119	4916		230	4746		
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	
Adj. Flow (vph)	17	2	58	0	2	9	88	1619	0	21	2089	2	
RTOR Reduction (vph)	0	0	56	0	9	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	19	2	0	2	0	88	1619	0	21	2091	0	
Turn Type	Split	NA	Prot		NA		pm+pt	NA		pm+pt	NA		
Protected Phases	8	8	8	4	4		5	2		1	6		
Permitted Phases							2			6			
Actuated Green, G (s)		6.3	6.3		2.7		129.7	122.3		122.3	118.6		
Effective Green, g (s)		6.3	6.3		2.7		129.7	122.3		122.3	118.6		
Actuated g/C Ratio		0.04	0.04		0.02		0.82	0.77		0.77	0.75		
Clearance Time (s)		6.5	6.5		6.5		5.0	5.5		5.0	5.5		
Vehicle Extension (s)		3.0	3.0		3.0		3.0	0.2		3.0	0.2		
Lane Grp Cap (vph)		66	58		31		171	3793		210	3551		
v/s Ratio Prot		c0.01	0.00		c0.00		c0.02	0.33		0.00	c0.44		
v/s Ratio Perm							0.39			0.07			
v/c Ratio		0.29	0.04		0.07		0.51	0.43		0.10	0.59		
Uniform Delay, d1		73.9	73.2		76.7		8.4	6.2		4.4	9.0		
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00		
Incremental Delay, d2		2.4	0.3		1.0		2.6	0.4		0.2	0.7		
Delay (s)		76.3	73.5		77.6		11.0	6.5		4.7	9.7		
Level of Service		E	E		E		B	A		A	A		
Approach Delay (s)		74.2			77.6			6.7			9.7		
Approach LOS		E			E			A			A		
Intersection Summary													
HCM 2000 Control Delay			9.8				HCM 2000 Level of Service			A			
HCM 2000 Volume to Capacity ratio			0.56										
Actuated Cycle Length (s)			158.5				Sum of lost time (s)			23.5			
Intersection Capacity Utilization			65.3%				ICU Level of Service			C			
Analysis Period (min)			15										
c Critical Lane Group													

Queues

4: Rockville Pike - 355/Rockville Pike- 355 & Rollins Ave/Twinbrook Parkway Total Future AM Phase 1















Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	394	316	194	109	1465	108	209	1998
v/c Ratio	0.72	0.51	0.70	0.56	0.53	0.12	0.63	0.66
Control Delay	69.6	62.0	75.3	34.8	23.1	2.5	21.9	22.2
Queue Delay	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0
Total Delay	69.6	62.0	75.3	34.8	23.9	2.5	21.9	22.2
Queue Length 50th (ft)	209	161	195	36	324	0	59	459
Queue Length 95th (ft)	250	198	268	115	481	25	163	657
Internal Link Dist (ft)	1347	625			260			1225
Turn Bay Length (ft)			150				400	
Base Capacity (vph)	978	1105	494	251	2753	910	436	3039
Starvation Cap Reductn	0	0	0	0	892	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	0.40	0.29	0.39	0.43	0.79	0.12	0.48	0.66

Intersection Summary

HCM Signalized Intersection Capacity Analysis

4: Rockville Pike - 355/Rockville Pike- 355 & Rollins Ave/Twinbrook Parkway Total Future AM Phase 1

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑	↑	↑	↑↑↑	↑	↑	↑↑↑	
Traffic Volume (vph)	0	252	134	0	310	190	107	1436	106	205	1912	46
Future Volume (vph)	0	252	134	0	310	190	107	1436	106	205	1912	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	12	12	12	10	10	10	11	11	11
Total Lost time (s)		7.5			7.5	7.5	7.0	5.5	5.5	7.0	5.5	
Lane Util. Factor		0.95			0.95	1.00	1.00	0.91	1.00	1.00	0.91	
Frt		0.95			1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		1.00			1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3131			3539	1583	1652	4746	1478	1711	4898	
Flt Permitted		1.00			1.00	1.00	0.06	1.00	1.00	0.12	1.00	
Satd. Flow (perm)		3131			3539	1583	112	4746	1478	213	4898	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	257	137	0	316	194	109	1465	108	209	1951	47
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	45	0	1	0
Lane Group Flow (vph)	0	394	0	0	316	194	109	1465	63	209	1997	0
Turn Type		NA			NA	Prot	pm+pt	NA	Prot	pm+pt	NA	
Protected Phases		4			8	8	1	6	6	5	2	
Permitted Phases							6			2		
Actuated Green, G (s)		27.9			27.9	27.9	105.6	92.8	92.8	118.6	99.3	
Effective Green, g (s)		27.9			27.9	27.9	105.6	92.8	92.8	118.6	99.3	
Actuated g/C Ratio		0.17			0.17	0.17	0.66	0.58	0.58	0.74	0.62	
Clearance Time (s)		7.5			7.5	7.5	7.0	5.5	5.5	7.0	5.5	
Vehicle Extension (s)		4.0			4.0	4.0	4.0	0.2	0.2	4.0	0.2	
Lane Grp Cap (vph)		545			617	276	197	2752	857	338	3039	
v/s Ratio Prot		c0.13			0.09	0.12	0.04	0.31	0.04	c0.07	c0.41	
v/s Ratio Perm							0.32			0.38		
v/c Ratio		0.72			0.51	0.70	0.55	0.53	0.07	0.62	0.66	
Uniform Delay, d1		62.4			59.9	62.2	18.0	20.4	14.7	14.9	19.4	
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		5.0			1.0	8.4	4.1	0.7	0.2	3.8	1.1	
Delay (s)		67.4			60.8	70.6	22.1	21.2	14.9	18.7	20.6	
Level of Service		E			E	E	C	C	B	B	C	
Approach Delay (s)		67.4			64.5			20.8			20.4	
Approach LOS		E			E			C			C	
Intersection Summary												
HCM 2000 Control Delay			29.1				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			160.0				Sum of lost time (s)			20.0		
Intersection Capacity Utilization			71.8%				ICU Level of Service			C		
Analysis Period (min)			15									
c	Critical Lane Group											

Queues

5: Chapman Ave & Twinbrook Parkway

Total Future AM Phase 1



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	41	601	551	581	120	203	87	52	25
v/c Ratio	0.09	0.36	0.84	0.25	0.73	0.33	0.46	0.51	0.13
Control Delay	12.4	29.4	85.2	12.0	106.3	5.6	93.4	102.7	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.4	29.4	85.2	12.0	106.3	5.6	93.4	102.7	1.3
Queue Length 50th (ft)	12	227	344	134	148	0	55	64	0
Queue Length 95th (ft)	30	332	398	199	221	57	87	116	0
Internal Link Dist (ft)		625		1310	176			558	
Turn Bay Length (ft)	175		300						
Base Capacity (vph)	652	1677	875	2287	189	691	338	183	261
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	0.06	0.36	0.63	0.25	0.63	0.29	0.26	0.28	0.10

Intersection Summary

HCM Signalized Intersection Capacity Analysis

5: Chapman Ave & Twinbrook Parkway

Total Future AM Phase 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	509	74	534	440	123	69	48	197	84	50	24
Future Volume (vph)	40	509	74	534	440	123	69	48	197	84	50	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	11	11	11	10	10	10	10	10	10
Total Lost time (s)	5.5	6.0		5.5	6.0			6.5	6.5	6.5	6.5	6.5
Lane Util. Factor	1.00	0.95		0.97	0.95			1.00	1.00	0.97	1.00	1.00
Frt	1.00	0.98		1.00	0.97			1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1652	3241		3319	3309			1689	1478	3204	1739	1478
Flt Permitted	0.43	1.00		0.95	1.00			0.97	1.00	0.95	1.00	1.00
Satd. Flow (perm)	753	3241		3319	3309			1689	1478	3204	1739	1478
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	41	525	76	551	454	127	71	49	203	87	52	25
RTOR Reduction (vph)	0	5	0	0	9	0	0	0	136	0	0	24
Lane Group Flow (vph)	41	596	0	551	572	0	0	120	67	87	52	1
Turn Type	pm+pt	NA		Prot	NA		Split	NA	pt+ov	Split	NA	Perm
Protected Phases	5	2		1	6		4	4	4 1	3	3	
Permitted Phases	2											3
Actuated Green, G (s)	103.5	97.8		37.4	129.5			18.6	62.5	11.2	11.2	11.2
Effective Green, g (s)	103.5	97.8		37.4	129.5			18.6	62.5	11.2	11.2	11.2
Actuated g/C Ratio	0.55	0.52		0.20	0.68			0.10	0.33	0.06	0.06	0.06
Clearance Time (s)	5.5	6.0		5.5	6.0			6.5		6.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	438	1672		655	2261			165	487	189	102	87
v/s Ratio Prot	0.00	c0.18		c0.17	0.17			c0.07	0.05	0.03	c0.03	
v/s Ratio Perm	0.05											0.00
v/c Ratio	0.09	0.36		0.84	0.25			0.73	0.14	0.46	0.51	0.02
Uniform Delay, d1	20.0	27.2		73.2	11.5			83.0	44.6	86.2	86.5	84.0
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.6		9.6	0.3			14.8	0.1	1.8	4.0	0.1
Delay (s)	20.1	27.8		82.7	11.8			97.7	44.7	88.0	90.5	84.0
Level of Service	C	C		F	B			F	D	F	F	F
Approach Delay (s)		27.3			46.3			64.4			88.2	
Approach LOS		C			D			E			F	
Intersection Summary												
HCM 2000 Control Delay			46.5			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.52									
Actuated Cycle Length (s)			189.5			Sum of lost time (s)			24.5			
Intersection Capacity Utilization			59.7%			ICU Level of Service				B		
Analysis Period (min)			15									
c	Critical Lane Group											

Queues

9: Chapman Ave & Bou Ave

Total Future AM Phase 1

























Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	155	165	6	105	165	4	47	144	83	411
v/c Ratio	0.25	0.19	0.01	0.17	0.26	0.01	0.06	0.27	0.11	0.40
Control Delay	23.1	20.7	36.0	37.8	5.9	29.8	28.8	33.8	30.6	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay	23.1	20.7	36.0	37.8	5.9	29.8	28.8	33.8	30.6	2.6
Queue Length 50th (ft)	90	87	4	78	0	3	29	101	54	0
Queue Length 95th (ft)	136	135	17	133	55	11	61	169	99	47
Internal Link Dist (ft)		200		800			128		31	
Turn Bay Length (ft)	275				250	70				
Base Capacity (vph)	854	1521	410	628	639	514	724	531	732	1442
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	216
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.11	0.01	0.17	0.26	0.01	0.06	0.27	0.11	0.34

Intersection Summary

HCM Signalized Intersection Capacity Analysis

9: Chapman Ave & Bou Ave

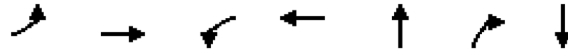
Total Future AM Phase 1

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	147	120	37	6	100	157	4	41	4	137	79	390
Future Volume (vph)	147	120	37	6	100	157	4	41	4	137	79	390
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	10	10	10	10	10	10
Total Lost time (s)	5.5	5.5		5.5	5.5	5.5	6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.96		1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1652	1677		1652	1739	1478	1652	1716		1652	1739	1478
Flt Permitted	0.62	1.00		0.65	1.00	1.00	0.70	1.00		0.73	1.00	1.00
Satd. Flow (perm)	1078	1677		1135	1739	1478	1222	1716		1263	1739	1478
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	155	126	39	6	105	165	4	43	4	144	83	411
RTOR Reduction (vph)	0	7	0	0	0	105	0	1	0	0	0	176
Lane Group Flow (vph)	155	158	0	6	105	60	4	46	0	144	83	235
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	pt+ov
Protected Phases	1	6			2			4			8	8 1
Permitted Phases	6			2		2	4			8		
Actuated Green, G (s)	84.6	84.6		60.0	60.0	60.0	70.0	70.0		70.0	70.0	95.1
Effective Green, g (s)	84.6	84.6		60.0	60.0	60.0	70.0	70.0		70.0	70.0	95.1
Actuated g/C Ratio	0.51	0.51		0.36	0.36	0.36	0.42	0.42		0.42	0.42	0.57
Clearance Time (s)	5.5	5.5		5.5	5.5	5.5	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	6.0	0.2		0.2	0.2	0.2	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	615	854		409	628	533	514	723		532	732	846
v/s Ratio Prot	0.03	0.09			0.06			0.03			0.05	c0.16
v/s Ratio Perm	c0.10			0.01		0.04	0.00			0.11		
v/c Ratio	0.25	0.19		0.01	0.17	0.11	0.01	0.06		0.27	0.11	0.28
Uniform Delay, d1	22.2	22.1		34.1	36.1	35.3	27.9	28.6		31.4	29.2	18.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.6	0.0		0.1	0.6	0.4	0.0	0.0		1.3	0.3	0.5
Delay (s)	22.8	22.1		34.1	36.6	35.7	27.9	28.6		32.6	29.5	18.6
Level of Service	C	C		C	D	D	C	C		C	C	B
Approach Delay (s)		22.5			36.0			28.5			23.2	
Approach LOS		C			D			C			C	
Intersection Summary												
HCM 2000 Control Delay			26.0	HCM 2000 Level of Service				C				
HCM 2000 Volume to Capacity ratio			0.28									
Actuated Cycle Length (s)			166.1	Sum of lost time (s)				17.0				
Intersection Capacity Utilization			48.7%	ICU Level of Service				A				
Analysis Period (min)			15									
c	Critical Lane Group											

Queues

11: East Jefferson Street & Rollins Avenue /Rollins Ave

Total Future AM Phase 1























Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	18	77	310	76	274	387	279
v/c Ratio	0.14	0.52	0.85	0.20	0.26	0.28	0.15
Control Delay	47.9	47.1	61.5	18.2	13.4	0.7	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.9	47.1	61.5	18.2	13.4	0.7	11.5
Queue Length 50th (ft)	12	37	207	20	90	0	43
Queue Length 95th (ft)	34	83	289	55	172	15	80
Internal Link Dist (ft)		438		1347	257		274
Turn Bay Length (ft)							
Base Capacity (vph)	235	253	470	485	1066	1419	1871
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	0.08	0.30	0.66	0.16	0.26	0.27	0.15

Intersection Summary

HCM Signalized Intersection Capacity Analysis
 11: East Jefferson Street & Rollins Avenue /Rollins Ave

Total Future AM Phase 1

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	44	27	285	32	38	9	243	356	20	218	18
Future Volume (vph)	17	44	27	285	32	38	9	243	356	20	218	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Total Lost time (s)	4.5	4.5		4.5	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	
Frt	1.00	0.94		1.00	0.92			1.00	0.85		0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00		1.00	
Satd. Flow (prot)	1711	1699		1711	1655			1797	1531		3371	
Flt Permitted	0.95	1.00		0.95	1.00			0.99	1.00		0.92	
Satd. Flow (perm)	1711	1699		1711	1655			1778	1531		3111	
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)	18	48	29	310	35	41	10	264	387	22	237	20
RTOR Reduction (vph)	0	21	0	0	32	0	0	0	75	0	4	0
Lane Group Flow (vph)	18	56	0	310	44	0	0	274	312	0	275	0
Turn Type	Split	NA		Split	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases	4	4		3	3			2	3		6	
Permitted Phases							2		2	6		
Actuated Green, G (s)	7.2	7.2		23.3	23.3			64.5	87.8		64.5	
Effective Green, g (s)	7.2	7.2		23.3	23.3			64.5	87.8		64.5	
Actuated g/C Ratio	0.07	0.07		0.21	0.21			0.59	0.81		0.59	
Clearance Time (s)	4.5	4.5		4.5	4.5			5.0	4.5		5.0	
Vehicle Extension (s)	2.0	2.0		1.0	1.0			5.0	1.0		5.0	
Lane Grp Cap (vph)	113	112		365	353			1052	1233		1840	
v/s Ratio Prot	0.01	c0.03		c0.18	0.03				0.05			
v/s Ratio Perm								c0.15	0.15		0.09	
v/c Ratio	0.16	0.50		0.85	0.12			0.26	0.25		0.15	
Uniform Delay, d1	48.0	49.1		41.2	34.6			10.7	2.6		10.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.2	1.3		16.0	0.1			0.6	0.0		0.2	
Delay (s)	48.3	50.4		57.2	34.7			11.3	2.6		10.1	
Level of Service	D	D		E	C			B	A		B	
Approach Delay (s)		50.0			52.7			6.2			10.1	
Approach LOS		D			D			A			B	
Intersection Summary												
HCM 2000 Control Delay			22.6	HCM 2000 Level of Service				C				
HCM 2000 Volume to Capacity ratio			0.42									
Actuated Cycle Length (s)			109.0	Sum of lost time (s)				14.0				
Intersection Capacity Utilization			59.5%	ICU Level of Service				B				
Analysis Period (min)			15									
c Critical Lane Group												

Queues

12: Rockville Pike- 355 & Halpine Road

Total Future AM Phase 1



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	44	112	178	29	70	82	1639	66	1884
v/c Ratio	0.18	0.17	0.77	0.09	0.20	0.42	0.51	0.30	0.58
Control Delay	63.3	30.0	93.9	60.3	8.9	13.7	16.2	10.9	19.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.3	30.0	93.9	60.3	8.9	13.7	16.2	10.9	19.2
Queue Length 50th (ft)	47	29	212	30	0	24	336	19	430
Queue Length 95th (ft)	83	56	289	60	37	51	463	43	613
Internal Link Dist (ft)		312		302			1225		274
Turn Bay Length (ft)	250				450	165		175	
Base Capacity (vph)	440	1083	406	596	560	524	3231	271	3267
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	0.10	0.10	0.44	0.05	0.13	0.16	0.51	0.24	0.58

Intersection Summary

HCM Signalized Intersection Capacity Analysis

12: Rockville Pike- 355 & Halpine Road

Total Future AM Phase 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	52	56	171	28	67	79	1259	315	63	1788	20
Future Volume (vph)	42	52	56	171	28	67	79	1259	315	63	1788	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	5.5	5.5		5.5	5.5	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.91		1.00	0.91	
Frt	1.00	0.92		1.00	1.00	0.85	1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3264		1770	1863	1583	1711	4768		1711	4908	
Flt Permitted	0.74	1.00		0.68	1.00	1.00	0.08	1.00		0.11	1.00	
Satd. Flow (perm)	1375	3264		1269	1863	1583	140	4768		204	4908	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	44	54	58	178	29	70	82	1311	328	66	1862	21
RTOR Reduction (vph)	0	47	0	0	0	57	0	15	0	0	0	0
Lane Group Flow (vph)	44	65	0	178	29	13	82	1624	0	66	1884	0
Turn Type	Perm	NA		Perm	NA	Prot	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8	8	1	6		5	2	
Permitted Phases	4			8			6			2		
Actuated Green, G (s)	34.1	34.1		34.1	34.1	34.1	137.5	126.4		134.3	124.8	
Effective Green, g (s)	34.1	34.1		34.1	34.1	34.1	137.5	126.4		134.3	124.8	
Actuated g/C Ratio	0.18	0.18		0.18	0.18	0.18	0.73	0.67		0.72	0.67	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	5.5	5.5		5.5	5.5	
Vehicle Extension (s)	5.0	5.0		5.0	5.0	5.0	5.0	0.2		5.0	0.2	
Lane Grp Cap (vph)	250	593		230	338	287	195	3214		222	3266	
v/s Ratio Prot		0.02			0.02	0.01	c0.02	0.34		0.02	c0.38	
v/s Ratio Perm	0.03			c0.14			0.28			0.20		
v/c Ratio	0.18	0.11		0.77	0.09	0.04	0.42	0.51		0.30	0.58	
Uniform Delay, d1	64.8	64.0		73.0	63.7	63.3	12.7	15.1		9.8	17.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.2		17.2	0.2	0.1	3.0	0.6		1.6	0.7	
Delay (s)	65.5	64.2		90.2	64.0	63.4	15.7	15.7		11.4	17.8	
Level of Service	E	E		F	E	E	B	B		B	B	
Approach Delay (s)		64.6			80.7			15.7			17.5	
Approach LOS		E			F			B			B	
Intersection Summary												
HCM 2000 Control Delay			22.8									HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			187.5								17.5	Sum of lost time (s)
Intersection Capacity Utilization			70.1%									ICU Level of Service C
Analysis Period (min)			15									
c Critical Lane Group												

Queues

13: Twinbrook Parkway & Parklawn Drive

Total Future AM Phase 1



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	34	84	97	96	132	53	816	190	926
v/c Ratio	0.36	0.68	0.71	0.69	0.37	0.14	0.26	0.22	0.41
Control Delay	107.3	84.2	122.1	120.1	12.2	8.9	12.7	8.3	15.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	107.3	84.2	122.1	120.1	12.2	8.9	12.7	8.3	15.4
Queue Length 50th (ft)	50	73	145	144	0	18	140	32	278
Queue Length 95th (ft)	96	145	218	216	67	41	206	59	406
Internal Link Dist (ft)		332		479			1310		374
Turn Bay Length (ft)			200			190		240	
Base Capacity (vph)	231	250	298	302	688	523	3123	1394	2283
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	0.15	0.34	0.33	0.32	0.19	0.10	0.26	0.14	0.41

Intersection Summary

HCM Signalized Intersection Capacity Analysis

13: Twinbrook Parkway & Parklawn Drive

Total Future AM Phase 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	36	24	51	163	19	124	50	490	277	179	807	63	
Future Volume (vph)	36	24	51	163	19	124	50	490	277	179	807	63	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	12	12	12	11	11	11	10	10	10	10	10	10	
Total Lost time (s)	6.5	6.5		7.0	7.0	7.0	8.0	6.0		8.0	6.0		
Lane Util. Factor	0.95	0.95		0.95	0.95	1.00	1.00	0.91		0.97	0.95		
Frt	1.00	0.90		1.00	1.00	0.85	1.00	0.95		1.00	0.99		
Flt Protected	0.95	1.00		0.95	0.96	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1681	1595		1625	1645	1531	1652	4489		3204	3267		
Flt Permitted	0.95	1.00		0.95	0.96	1.00	0.27	1.00		0.31	1.00		
Satd. Flow (perm)	1681	1595		1625	1645	1531	476	4489		1054	3267		
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	
Adj. Flow (vph)	38	26	54	173	20	132	53	521	295	190	859	67	
RTOR Reduction (vph)	0	33	0	0	0	111	0	20	0	0	2	0	
Lane Group Flow (vph)	34	51	0	97	96	21	53	796	0	190	924	0	
Turn Type	Split	NA		Split	NA	pt+ov	pm+pt	NA		pm+pt	NA		
Protected Phases	3	3		4	4	4	5	2		1	6		
Permitted Phases							2			6			
Actuated Green, G (s)	12.3	12.3		18.5	18.5	34.4	157.7	150.3		160.7	151.8		
Effective Green, g (s)	12.3	12.3		18.5	18.5	34.4	157.7	150.3		160.7	151.8		
Actuated g/C Ratio	0.06	0.06		0.09	0.09	0.16	0.73	0.69		0.74	0.70		
Clearance Time (s)	6.5	6.5		7.0	7.0		8.0	6.0		8.0	6.0		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	0.2		3.0	0.2		
Lane Grp Cap (vph)	95	90		138	139	242	385	3102		866	2280		
v/s Ratio Prot	0.02	c0.03		c0.06	0.06	0.01	0.00	0.18		c0.01	c0.28		
v/s Ratio Perm							0.10			0.15			
v/c Ratio	0.36	0.57		0.70	0.69	0.09	0.14	0.26		0.22	0.41		
Uniform Delay, d1	98.8	100.0		96.8	96.7	78.1	9.2	12.6		8.1	13.8		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	2.3	7.9		15.0	13.8	0.2	0.2	0.2		0.1	0.5		
Delay (s)	101.1	107.9		111.8	110.5	78.3	9.4	12.8		8.2	14.4		
Level of Service	F	F		F	F	E	A	B		A	B		
Approach Delay (s)		106.0			97.8			12.6			13.3		
Approach LOS		F			F			B			B		
Intersection Summary													
HCM 2000 Control Delay	28.9			HCM 2000 Level of Service					C				
HCM 2000 Volume to Capacity ratio	0.44												
Actuated Cycle Length (s)	217.5			Sum of lost time (s)					27.5				
Intersection Capacity Utilization	56.8%			ICU Level of Service					B				
Analysis Period (min)	15												
c Critical Lane Group													

Queues

14: Nebel Street & Randolph Road

Total Future AM Phase 1



























Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	17	769	251	1234	84	63	89	152	76	15
v/c Ratio	0.07	0.42	0.48	0.52	0.36	0.40	0.66	0.50	0.33	0.08
Control Delay	14.2	30.0	14.3	20.2	70.4	99.0	117.4	74.8	88.3	80.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.2	30.0	14.3	20.2	70.4	99.0	117.4	74.8	88.3	80.7
Queue Length 50th (ft)	7	321	112	473	99	86	125	186	101	19
Queue Length 95th (ft)	20	483	188	645	145	141	192	246	157	46
Internal Link Dist (ft)		613		257		122			1618	
Turn Bay Length (ft)	140		125		100			250		
Base Capacity (vph)	391	1849	667	2362	374	417	355	371	432	367
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.42	0.38	0.52	0.22	0.15	0.25	0.41	0.18	0.04

Intersection Summary

HCM Signalized Intersection Capacity Analysis

14: Nebel Street & Randolph Road

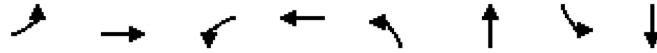
Total Future AM Phase 1

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 							
Traffic Volume (vph)	16	671	60	238	1036	136	80	60	85	144	72	14
Future Volume (vph)	16	671	60	238	1036	136	80	60	85	144	72	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	12	12	12	11	11	11	12	12	12
Total Lost time (s)	6.0	6.5		6.0	6.5		6.5	6.5	6.5	6.5	6.5	6.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1652	3263		1770	3478		1711	1801	1531	1770	1863	1583
Flt Permitted	0.20	1.00		0.29	1.00		0.71	1.00	1.00	0.51	1.00	1.00
Satd. Flow (perm)	355	3263		532	3478		1274	1801	1531	959	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	17	706	63	251	1091	143	84	63	89	152	76	15
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	17	769	0	251	1234	0	84	63	89	152	76	15
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Prot	pm+pt	NA	Prot
Protected Phases	1	6		5	2		3	8	8	7	4	4
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	126.1	122.1		153.9	143.9		34.3	18.9	18.9	48.6	26.7	26.7
Effective Green, g (s)	126.1	122.1		153.9	143.9		34.3	18.9	18.9	48.6	26.7	26.7
Actuated g/C Ratio	0.59	0.57		0.71	0.67		0.16	0.09	0.09	0.23	0.12	0.12
Clearance Time (s)	6.0	6.5		6.0	6.5		6.5	6.5	6.5	6.5	6.5	6.5
Vehicle Extension (s)	3.0	5.0		3.0	5.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	231	1848		528	2322		234	157	134	303	230	196
v/s Ratio Prot	0.00	0.24		c0.06	c0.35		0.03	0.03	c0.06	c0.05	0.04	0.01
v/s Ratio Perm	0.04			0.28			0.03			0.06		
v/c Ratio	0.07	0.42		0.48	0.53		0.36	0.40	0.66	0.50	0.33	0.08
Uniform Delay, d1	19.1	26.5		12.9	18.4		80.1	92.9	95.2	70.8	86.2	83.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.7		0.7	0.9		1.3	2.3	12.8	1.8	1.2	0.2
Delay (s)	19.2	27.2		13.6	19.3		81.4	95.2	108.1	72.6	87.4	83.7
Level of Service	B	C		B	B		F	F	F	E	F	F
Approach Delay (s)		27.0			18.3			95.1			77.9	
Approach LOS		C			B			F			E	
Intersection Summary												
HCM 2000 Control Delay			32.7				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.55									
Actuated Cycle Length (s)			215.5			Sum of lost time (s)			25.5			
Intersection Capacity Utilization			66.8%			ICU Level of Service			C			
Analysis Period (min)			15									
c	Critical Lane Group											

Queues

15: Rockville Pike - 355 & Hubbard Drive/Plaza Driveway

Total Future AM Phase 1



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	20	20	79	67	26	1958	49	2595
v/c Ratio	0.15	0.11	0.56	0.31	0.20	0.43	0.25	0.69
Control Delay	65.0	34.9	81.5	25.6	8.7	9.0	6.4	12.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.2
Total Delay	65.0	34.9	81.5	25.6	8.7	9.0	6.4	17.5
Queue Length 50th (ft)	19	7	79	15	4	213	8	515
Queue Length 95th (ft)	47	34	134	63	14	292	20	663
Internal Link Dist (ft)		170		149		168		419
Turn Bay Length (ft)							180	
Base Capacity (vph)	324	419	349	454	309	4552	359	3746
Starvation Cap Reductn	0	0	0	0	0	0	0	1089
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	0.06	0.05	0.23	0.15	0.08	0.43	0.14	0.98

Intersection Summary

HCM Signalized Intersection Capacity Analysis
 15: Rockville Pike - 355 & Hubbard Drive/Plaza Driveway

Total Future AM Phase 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	7	13	77	16	50	25	1803	116	48	2495	48
Future Volume (vph)	20	7	13	77	16	50	25	1803	116	48	2495	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	12	11	11	11	11	11	11
Total Lost time (s)	7.0	7.0		7.0	7.0		6.0	5.5		6.0	5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.86		1.00	0.91	
Frt	1.00	0.90		1.00	0.89		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1711	1625		1770	1650		1711	6138		1711	4902	
Flt Permitted	0.71	1.00		0.74	1.00		0.03	1.00		0.08	1.00	
Satd. Flow (perm)	1284	1625		1386	1650		62	6138		136	4902	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	20	7	13	79	16	51	26	1840	118	49	2546	49
RTOR Reduction (vph)	0	12	0	0	46	0	0	3	0	0	1	0
Lane Group Flow (vph)	20	8	0	79	21	0	26	1955	0	49	2594	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	16.3	16.3		16.3	16.3		121.3	116.3		126.1	118.7	
Effective Green, g (s)	16.3	16.3		16.3	16.3		121.3	116.3		126.1	118.7	
Actuated g/C Ratio	0.10	0.10		0.10	0.10		0.77	0.73		0.80	0.75	
Clearance Time (s)	7.0	7.0		7.0	7.0		6.0	5.5		6.0	5.5	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	0.2		5.0	0.2	
Lane Grp Cap (vph)	132	167		142	169		99	4503		181	3671	
v/s Ratio Prot		0.01			0.01		0.01	0.32		c0.01	c0.53	
v/s Ratio Perm	0.02			c0.06			0.19			0.20		
v/c Ratio	0.15	0.05		0.56	0.13		0.26	0.43		0.27	0.71	
Uniform Delay, d1	64.8	64.1		67.7	64.6		10.4	8.2		4.6	10.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.1	0.3		7.8	0.7		3.0	0.3		1.7	1.2	
Delay (s)	65.9	64.4		75.5	65.3		13.3	8.6		6.3	11.8	
Level of Service	E	E		E	E		B	A		A	B	
Approach Delay (s)		65.1			70.8			8.6			11.7	
Approach LOS		E			E			A			B	
Intersection Summary												
HCM 2000 Control Delay			12.7				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			158.5				Sum of lost time (s)			18.5		
Intersection Capacity Utilization			70.6%				ICU Level of Service				C	
Analysis Period (min)			15									
c Critical Lane Group												

Queues

16: Chapman Ave & Josiah Henson Parkway/Randolph Road

Total Future AM Phase 1




























Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	89	901	10	1284	76	13	12	28	39
v/c Ratio	0.28	0.35	0.02	0.55	0.07	0.15	0.13	0.25	0.37
Control Delay	6.4	7.9	5.3	14.2	0.1	70.1	52.1	69.5	74.6
Queue Delay	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0
Total Delay	6.4	7.9	5.3	14.7	0.1	70.1	52.1	69.5	74.6
Queue Length 50th (ft)	19	132	2	338	0	12	7	27	38
Queue Length 95th (ft)	37	245	8	471	0	35	28	60	76
Internal Link Dist (ft)		321		613			346		212
Turn Bay Length (ft)	350		165		215	250			
Base Capacity (vph)	460	2556	551	2337	1087	115	118	340	318
Starvation Cap Reductn	0	0	0	554	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	0.19	0.35	0.02	0.72	0.07	0.11	0.10	0.08	0.12

Intersection Summary

HCM Signalized Intersection Capacity Analysis

16: Chapman Ave & Josiah Henson Parkway/Randolph Road

Total Future AM Phase 1

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (vph)	77	704	80	9	1117	66	11	6	4	27	7	24
Future Volume (vph)	77	704	80	9	1117	66	11	6	4	27	7	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	11	11	11	12	12	12
Total Lost time (s)	5.0	6.0		5.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		0.95	0.95	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.94		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1652	3253		1652	3303	1478	1711	1688		1681	1573	
Flt Permitted	0.16	1.00		0.31	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	279	3253		544	3303	1478	1711	1688		1681	1573	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	89	809	92	10	1284	76	13	7	5	31	8	28
RTOR Reduction (vph)	0	3	0	0	0	24	0	5	0	0	0	0
Lane Group Flow (vph)	89	898	0	10	1284	52	13	7	0	28	39	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Split	NA		Split	NA	
Protected Phases	1	6		5	2		3	3		4	4	
Permitted Phases	6			2		2						
Actuated Green, G (s)	116.2	108.4		104.0	101.2	101.2	5.1	5.1		8.7	8.7	
Effective Green, g (s)	116.2	108.4		104.0	101.2	101.2	5.1	5.1		8.7	8.7	
Actuated g/C Ratio	0.79	0.73		0.70	0.68	0.68	0.03	0.03		0.06	0.06	
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	4.0	0.2		4.0	0.2	0.2	4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)	311	2382		403	2258	1010	58	58		98	92	
v/s Ratio Prot	c0.02	c0.28		0.00	c0.39		c0.01	0.00		0.02	c0.02	
v/s Ratio Perm	0.20			0.02		0.04						
v/c Ratio	0.29	0.38		0.02	0.57	0.05	0.22	0.12		0.29	0.42	
Uniform Delay, d1	6.9	7.3		6.6	12.1	7.7	69.5	69.3		66.7	67.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.5		0.0	1.0	0.1	2.7	1.3		2.2	4.2	
Delay (s)	7.6	7.8		6.6	13.2	7.8	72.2	70.6		68.9	71.5	
Level of Service	A	A		A	B	A	E	E		E	E	
Approach Delay (s)		7.8			12.8			71.4			70.4	
Approach LOS		A			B			E			E	
Intersection Summary												
HCM 2000 Control Delay			12.9	HCM 2000 Level of Service						B		
HCM 2000 Volume to Capacity ratio			0.52									
Actuated Cycle Length (s)			148.0	Sum of lost time (s)						23.0		
Intersection Capacity Utilization			57.6%	ICU Level of Service						B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th TWSC
 3: Rockville Pike - 355 & Gas Station

Total Future AM Phase 1

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗ ↑↑↑	↗ ↑↑↑			↗ ↑↑↑
Traffic Vol, veh/h	0	19	1553	25	0	2046
Future Vol, veh/h	0	19	1553	25	0	2046
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	22	1827	29	0	2407

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	-	928	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	232	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	-	232	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	22.2	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	232
HCM Lane V/C Ratio	-	-	0.096
HCM Control Delay (s)	-	-	22.2
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	0.3

HCM 6th TWSC
6: Chapman Ave & Pike Center North/Driveway

Total Future AM Phase 1

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	0	1	0	4	2	311	2	5	648	5
Future Vol, veh/h	0	0	0	1	0	4	2	311	2	5	648	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	1	0	5	2	366	2	6	762	6

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	964	1149	384	764	1151	184	768	0	0	368	0	0
Stage 1	777	777	-	371	371	-	-	-	-	-	-	-
Stage 2	187	372	-	393	780	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	210	197	614	293	197	827	842	-	-	1187	-	-
Stage 1	356	405	-	622	618	-	-	-	-	-	-	-
Stage 2	797	617	-	603	404	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	207	195	614	290	195	827	842	-	-	1187	-	-
Mov Cap-2 Maneuver	207	195	-	290	195	-	-	-	-	-	-	-
Stage 1	355	401	-	620	616	-	-	-	-	-	-	-
Stage 2	790	615	-	598	400	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	0		11		0.1		0.1	
HCM LOS	A		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	842	-	-	-	603	1187	-	-
HCM Lane V/C Ratio	0.003	-	-	-	0.01	0.005	-	-
HCM Control Delay (s)	9.3	0	-	0	11	8	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0	0	-	-

HCM 6th TWSC
 7: Chapman Ave & Rollins Ave Extension/Rollins Ave

Total Future AM Phase 1

Intersection												
Int Delay, s/veh	2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	22	4	32	6	33	0	330	49	36	568	8
Future Vol, veh/h	0	22	4	32	6	33	0	330	49	36	568	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	23	4	33	6	34	0	340	51	37	586	8

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1050	1055	297	745	1034	366	594	0	0	391	0	0
Stage 1	664	664	-	366	366	-	-	-	-	-	-	-
Stage 2	386	391	-	379	668	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.93	7.33	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	193	225	700	316	231	678	980	-	-	1166	-	-
Stage 1	417	457	-	653	622	-	-	-	-	-	-	-
Stage 2	636	606	-	616	455	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	173	214	700	278	220	678	980	-	-	1166	-	-
Mov Cap-2 Maneuver	173	214	-	278	220	-	-	-	-	-	-	-
Stage 1	417	436	-	653	622	-	-	-	-	-	-	-
Stage 2	598	606	-	553	434	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	21.9		15.9		0		0.7	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	980	-	-	240	272	578	1166	-	-
HCM Lane V/C Ratio	-	-	-	0.112	0.133	0.064	0.032	-	-
HCM Control Delay (s)	0	-	-	21.9	20.2	11.7	8.2	0.2	-
HCM Lane LOS	A	-	-	C	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.5	0.2	0.1	-	-

Intersection						
Int Delay, s/veh	2.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑↑	
Traffic Vol, veh/h	120	278	506	23	20	96
Future Vol, veh/h	120	278	506	23	20	96
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	128	296	538	24	21	102

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	562	0	-	0	954 281
Stage 1	-	-	-	-	550 -
Stage 2	-	-	-	-	404 -
Critical Hdwy	4.14	-	-	-	6.84 6.94
Critical Hdwy Stg 1	-	-	-	-	5.84 -
Critical Hdwy Stg 2	-	-	-	-	5.84 -
Follow-up Hdwy	2.22	-	-	-	3.52 3.32
Pot Cap-1 Maneuver	1005	-	-	-	257 716
Stage 1	-	-	-	-	542 -
Stage 2	-	-	-	-	643 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1005	-	-	-	218 716
Mov Cap-2 Maneuver	-	-	-	-	218 -
Stage 1	-	-	-	-	460 -
Stage 2	-	-	-	-	643 -

Approach	EB	WB	SB
HCM Control Delay, s	3	0	14.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1005	-	-	-	514
HCM Lane V/C Ratio	0.127	-	-	-	0.24
HCM Control Delay (s)	9.1	0.4	-	-	14.2
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.4	-	-	-	0.9

Intersection												
Int Delay, s/veh	3.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	3	37	30	15	2	37	142	7	7	144	9
Future Vol, veh/h	2	3	37	30	15	2	37	142	7	7	144	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	3	43	34	17	2	43	163	8	8	166	10

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	450	444	171	463	445	167	176	0	0	171	0	0
Stage 1	187	187	-	253	253	-	-	-	-	-	-	-
Stage 2	263	257	-	210	192	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	519	508	873	509	508	877	1400	-	-	1406	-	-
Stage 1	815	745	-	751	698	-	-	-	-	-	-	-
Stage 2	742	695	-	792	742	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	488	488	873	467	488	877	1400	-	-	1406	-	-
Mov Cap-2 Maneuver	488	488	-	467	488	-	-	-	-	-	-	-
Stage 1	787	741	-	725	674	-	-	-	-	-	-	-
Stage 2	697	671	-	745	738	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.8	13.4	1.5	0.3
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1400	-	-	798	483	1406	-	-
HCM Lane V/C Ratio	0.03	-	-	0.06	0.112	0.006	-	-
HCM Control Delay (s)	7.7	0	-	9.8	13.4	7.6	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.4	0	-	-

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗ ↑↑↑	↑↑↑			↑↑↑
Traffic Vol, veh/h	0	59	1648	61	0	2048
Future Vol, veh/h	0	59	1648	61	0	2048
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	64	1791	66	0	2226

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	-	929	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	231	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	-	231	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	26.5	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	- 231	-
HCM Lane V/C Ratio	-	- 0.278	-
HCM Control Delay (s)	-	- 26.5	-
HCM Lane LOS	-	- D	-
HCM 95th %tile Q(veh)	-	- 1.1	-

Queues

1: Rockville Pike - 355 & Bou Ave

Total Future PM Phase 1



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	50	37	509	231	59	2551	462	274	1724
v/c Ratio	0.53	0.17	0.75	0.48	0.56	1.02	0.54	1.29	0.62
Control Delay	110.1	1.6	81.3	13.5	110.6	69.4	25.8	216.8	33.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	33.5	4.9	0.0	6.2
Total Delay	110.1	1.6	81.3	13.5	110.6	102.9	30.7	216.8	39.2
Queue Length 50th (ft)	65	0	322	23	77	~1327	295	~408	573
Queue Length 95th (ft)	116	0	394	111	133	#1435	430	#630	682
Internal Link Dist (ft)	76			198		419			169
Turn Bay Length (ft)					175			245	
Base Capacity (vph)	170	280	694	489	171	2507	849	213	2797
Starvation Cap Reductn	0	0	0	0	0	715	311	0	1018
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	0.29	0.13	0.73	0.47	0.35	1.42	0.86	1.29	0.97

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.


























95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

1: Rockville Pike - 355 & Bou Ave

Total Future PM Phase 1

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				 				 			 	
Traffic Volume (vph)	17	31	36	494	21	203	57	2474	448	266	1654	18
Future Volume (vph)	17	31	36	494	21	203	57	2474	448	266	1654	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	11	11	11	12	12	12
Total Lost time (s)		6.0	6.0	7.0	7.0		5.0	5.5	5.5	6.0	6.0	
Lane Util. Factor		1.00	1.00	0.97	1.00		1.00	0.91	1.00	1.00	0.91	
Fr _t		1.00	0.85	1.00	0.86		1.00	1.00	0.85	1.00	1.00	
Fl _t Protected		0.98	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1708	1478	3204	1503		1711	4916	1531	1770	5077	
Fl _t Permitted		0.98	1.00	0.95	1.00		0.95	1.00	1.00	0.04	1.00	
Satd. Flow (perm)		1708	1478	3204	1503		1711	4916	1531	83	5077	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	18	32	37	509	22	209	59	2551	462	274	1705	19
RTOR Reduction (vph)	0	0	35	0	165	0	0	0	69	0	0	0
Lane Group Flow (vph)	0	50	2	509	66	0	59	2551	393	274	1724	0
Turn Type	Split	NA	Prot	Split	NA		Prot	NA	Prot	pm+pt	NA	
Protected Phases	3	3	3	4	4		1	5	5	6	2	
Permitted Phases										2		
Actuated Green, G (s)		11.2	11.2	42.3	42.3		12.3	102.0	102.0	110.2	110.2	
Effective Green, g (s)		11.2	11.2	42.3	42.3		12.3	102.0	102.0	110.2	110.2	
Actuated g/C Ratio		0.06	0.06	0.21	0.21		0.06	0.51	0.51	0.55	0.55	
Clearance Time (s)		6.0	6.0	7.0	7.0		5.0	5.5	5.5	6.0	6.0	
Vehicle Extension (s)		3.0	3.0	6.0	6.0		3.0	0.2	0.2	3.0	0.2	
Lane Grp Cap (vph)		95	82	677	317		105	2507	780	214	2797	
v/s Ratio Prot		c0.03	0.00	c0.16	0.04		0.03	c0.52	0.26	c0.13	0.34	
v/s Ratio Perm										c0.58		
v/c Ratio		0.53	0.03	0.75	0.21		0.56	1.02	0.50	1.28	0.62	
Uniform Delay, d ₁		91.8	89.2	73.9	65.0		91.2	49.0	32.3	85.0	30.5	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d ₂		5.2	0.1	6.2	0.9		6.7	22.5	2.3	157.0	1.0	
Delay (s)		97.0	89.4	80.1	66.0		97.9	71.5	34.6	242.1	31.6	
Level of Service		F	F	F	E		F	E	C	F	C	
Approach Delay (s)		93.8			75.7			66.5			60.4	
Approach LOS		F			E			E			E	
Intersection Summary												
HCM 2000 Control Delay			66.0			HCM 2000 Level of Service				E		
HCM 2000 Volume to Capacity ratio			1.13									
Actuated Cycle Length (s)			200.0			Sum of lost time (s)			31.0			
Intersection Capacity Utilization			98.7%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

Queues

2: Rockville Pike - 355 & Federal Plaza/Pike Center

Total Future PM Phase 1
























Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	140	139	57	205	2473	32	1870
v/c Ratio	0.72	0.47	0.45	0.78	0.74	0.29	0.67
Control Delay	87.3	13.9	34.8	52.7	21.1	21.9	26.2
Queue Delay	0.0	0.0	0.0	0.0	7.3	0.0	2.1
Total Delay	87.3	13.9	34.8	52.7	28.4	21.9	28.3
Queue Length 50th (ft)	142	0	10	129	617	8	474
Queue Length 95th (ft)	212	64	58	224	837	30	691
Internal Link Dist (ft)	84		43		260		145
Turn Bay Length (ft)				245		175	
Base Capacity (vph)	262	350	335	303	3327	252	2810
Starvation Cap Reductn	0	0	0	0	828	0	752
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.40	0.17	0.68	0.99	0.13	0.91

Intersection Summary

HCM Signalized Intersection Capacity Analysis
 2: Rockville Pike - 355 & Federal Plaza/Pike Center

Total Future PM Phase 1

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	127	8	133	1	9	45	197	2360	14	31	1782	13
Future Volume (vph)	127	8	133	1	9	45	197	2360	14	31	1782	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	16	16	16	11	11	11	10	10	10
Total Lost time (s)		6.5	6.5		6.5		5.0	5.5		5.0	5.5	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.91		1.00	0.91	
Frt		1.00	0.85		0.89		1.00	1.00		1.00	1.00	
Flt Protected		0.95	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1660	1478		1874		1711	4911		1652	4741	
Flt Permitted		0.95	1.00		1.00		0.06	1.00		0.04	1.00	
Satd. Flow (perm)		1660	1478		1874		116	4911		75	4741	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	132	8	139	1	9	47	205	2458	15	32	1856	14
RTOR Reduction (vph)	0	0	123	0	45	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	140	16	0	12	0	205	2473	0	32	1870	0
Turn Type	Split	NA	Prot	Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	8	8	8	4	4		5	2		1	6	
Permitted Phases							2			6		
Actuated Green, G (s)		18.6	18.6		6.0		115.4	105.1		97.9	92.6	
Effective Green, g (s)		18.6	18.6		6.0		115.4	105.1		97.9	92.6	
Actuated g/C Ratio		0.12	0.12		0.04		0.73	0.66		0.62	0.58	
Clearance Time (s)		6.5	6.5		6.5		5.0	5.5		5.0	5.5	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	0.2		3.0	0.2	
Lane Grp Cap (vph)		194	173		70		263	3256		99	2769	
v/s Ratio Prot		c0.08	0.01		c0.01		c0.09	0.50		0.01	0.39	
v/s Ratio Perm							c0.48			0.19		
v/c Ratio		0.72	0.09		0.17		0.78	0.76		0.32	0.68	
Uniform Delay, d1		67.5	62.4		73.8		40.5	18.1		17.4	22.6	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		12.4	0.2		1.1		13.6	1.7		1.9	1.3	
Delay (s)		79.9	62.7		75.0		54.1	19.8		19.3	24.0	
Level of Service		E	E		E		D	B		B	C	
Approach Delay (s)		71.3			75.0		22.5			23.9		
Approach LOS		E			E		C			C		
Intersection Summary												
HCM 2000 Control Delay			26.4				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.76									
Actuated Cycle Length (s)			158.5				Sum of lost time (s)			23.5		
Intersection Capacity Utilization			78.4%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

4: Rockville Pike - 355/Rockville Pike- 355 & Rollins Ave/Twinbrook Parkway Total Future PM Phase 1















Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	489	317	165	144	2169	122	241	1831
v/c Ratio	0.77	0.46	0.53	0.61	0.85	0.14	0.85	0.65
Control Delay	68.7	58.1	63.1	38.0	37.0	4.0	73.4	25.5
Queue Delay	0.0	0.0	0.0	0.0	46.7	0.0	0.0	0.0
Total Delay	68.7	58.1	63.1	38.0	83.6	4.0	73.4	25.5
Queue Length 50th (ft)	258	155	157	65	691	0	199	456
Queue Length 95th (ft)	307	195	225	152	#993	37	292	620
Internal Link Dist (ft)	1347	625			260			1225
Turn Bay Length (ft)			150				400	
Base Capacity (vph)	1013	1105	494	267	2547	851	365	2830
Starvation Cap Reductn	0	0	0	0	584	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	0.48	0.29	0.33	0.54	1.10	0.14	0.66	0.65

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

4: Rockville Pike - 355/Rockville Pike- 355 & Rollins Ave/Twinbrook Parkway Total Future PM Phase 1

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑			↑↑	↑	↑	↑↑↑	↑	↑	↑↑↑		
Traffic Volume (vph)	0	426	58	0	314	163	143	2147	121	239	1756	56	
Future Volume (vph)	0	426	58	0	314	163	143	2147	121	239	1756	56	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	10	10	10	12	12	12	10	10	10	11	11	11	
Total Lost time (s)		7.5			7.5	7.5	7.0	5.5	5.5	7.0	5.5		
Lane Util. Factor		0.95			0.95	1.00	1.00	0.91	1.00	1.00	0.91		
Frt		0.98			1.00	0.85	1.00	1.00	0.85	1.00	1.00		
Flt Protected		1.00			1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)		3243			3539	1583	1652	4746	1478	1711	4893		
Flt Permitted		1.00			1.00	1.00	0.08	1.00	1.00	0.04	1.00		
Satd. Flow (perm)		3243			3539	1583	134	4746	1478	78	4893		
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	
Adj. Flow (vph)	0	430	59	0	317	165	144	2169	122	241	1774	57	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	57	0	2	0	
Lane Group Flow (vph)	0	489	0	0	317	165	144	2169	65	241	1829	0	
Turn Type		NA			NA	Prot	pm+pt	NA	Prot	pm+pt	NA		
Protected Phases		4			8	8	1	6	6	5	2		
Permitted Phases							6			2			
Actuated Green, G (s)		31.5			31.5	31.5	101.8	85.9	85.9	115.2	92.6		
Effective Green, g (s)		31.5			31.5	31.5	101.8	85.9	85.9	115.2	92.6		
Actuated g/C Ratio		0.20			0.20	0.20	0.64	0.54	0.54	0.72	0.58		
Clearance Time (s)		7.5			7.5	7.5	7.0	5.5	5.5	7.0	5.5		
Vehicle Extension (s)		4.0			4.0	4.0	4.0	0.2	0.2	4.0	0.2		
Lane Grp Cap (vph)		638			696	311	236	2548	793	286	2831		
v/s Ratio Prot		c0.15			0.09	0.10	0.06	0.46	0.04	c0.12	c0.37		
v/s Ratio Perm							0.33			c0.49			
v/c Ratio		0.77			0.46	0.53	0.61	0.85	0.08	0.84	0.65		
Uniform Delay, d1		60.8			56.7	57.6	22.6	31.6	18.0	53.5	22.7		
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2		5.8			0.6	2.2	5.3	3.8	0.2	20.3	1.2		
Delay (s)		66.6			57.3	59.8	27.9	35.4	18.2	73.8	23.8		
Level of Service		E			E	E	C	D	B	E	C		
Approach Delay (s)		66.6			58.2			34.1			29.6		
Approach LOS		E			E			C			C		
Intersection Summary													
HCM 2000 Control Delay			37.4									HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.84										
Actuated Cycle Length (s)			160.0									Sum of lost time (s)	20.0
Intersection Capacity Utilization			85.0%									ICU Level of Service	E
Analysis Period (min)			15										
c Critical Lane Group													

Queues

5: Chapman Ave & Twinbrook Parkway

Total Future PM Phase 1



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	70	936	484	749	179	609	222	123	38
v/c Ratio	0.21	0.71	0.58	0.36	0.90	0.96	0.74	0.76	0.16
Control Delay	17.4	49.9	65.0	18.0	120.6	74.2	98.7	111.4	1.4
Queue Delay	0.0	1.7	0.0	0.0	0.0	22.5	0.0	0.0	0.0
Total Delay	17.4	51.6	65.0	18.0	120.6	96.8	98.7	111.4	1.4
Queue Length 50th (ft)	27	514	271	227	225	661	140	152	0
Queue Length 95th (ft)	46	599	334	278	#407	#940	190	232	0
Internal Link Dist (ft)		625		1310	176			558	
Turn Bay Length (ft)	175		300						
Base Capacity (vph)	523	1322	875	2058	200	653	338	183	261
Starvation Cap Reductn	0	221	0	0	0	67	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	0.85	0.55	0.36	0.90	1.04	0.66	0.67	0.15






















Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

5: Chapman Ave & Twinbrook Parkway

Total Future PM Phase 1

														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations														
Traffic Volume (vph)	68	739	169	469	586	141	65	109	591	215	119	37		
Future Volume (vph)	68	739	169	469	586	141	65	109	591	215	119	37		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width	10	10	10	11	11	11	10	10	10	10	10	10		
Total Lost time (s)	5.5	6.0		5.5	6.0			6.5	6.5	6.5	6.5	6.5		
Lane Util. Factor	1.00	0.95		0.97	0.95			1.00	1.00	0.97	1.00	1.00		
Fr _t	1.00	0.97		1.00	0.97			1.00	0.85	1.00	1.00	0.85		
Fl _t Protected	0.95	1.00		0.95	1.00			0.98	1.00	0.95	1.00	1.00		
Satd. Flow (prot)	1652	3211		3319	3322			1707	1478	3204	1739	1478		
Fl _t Permitted	0.37	1.00		0.95	1.00			0.98	1.00	0.95	1.00	1.00		
Satd. Flow (perm)	639	3211		3319	3322			1707	1478	3204	1739	1478		
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97		
Adj. Flow (vph)	70	762	174	484	604	145	67	112	609	222	123	38		
RTOR Reduction (vph)	0	10	0	0	8	0	0	0	48	0	0	34		
Lane Group Flow (vph)	70	926	0	484	741	0	0	179	561	222	123	4		
Turn Type	pm+pt	NA		Prot	NA		Split	NA	pt+ov	Split	NA	Perm		
Protected Phases	5	2		1	6		4	4	4 1	3	3			
Permitted Phases	2											3		
Actuated Green, G (s)	85.6	77.5		47.5	116.9			22.3	76.3	17.7	17.7	17.7		
Effective Green, g (s)	85.6	77.5		47.5	116.9			22.3	76.3	17.7	17.7	17.7		
Actuated g/C Ratio	0.45	0.41		0.25	0.62			0.12	0.40	0.09	0.09	0.09		
Clearance Time (s)	5.5	6.0		5.5	6.0			6.5		6.5	6.5	6.5		
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0		
Lane Grp Cap (vph)	331	1313		831	2049			200	595	299	162	138		
v/s Ratio Prot	0.01	c0.29		0.15	0.22			0.10	c0.38	0.07	c0.07			
v/s Ratio Perm	0.09											0.00		
v/c Ratio	0.21	0.71		0.58	0.36			0.90	0.94	0.74	0.76	0.03		
Uniform Delay, d ₁	29.7	46.5		62.3	17.9			82.4	54.5	83.7	83.8	78.1		
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d ₂	0.3	3.2		1.0	0.5			35.9	23.6	9.6	18.3	0.1		
Delay (s)	30.1	49.7		63.3	18.4			118.4	78.1	93.2	102.1	78.1		
Level of Service	C	D		E	B			F	E	F	F	E		
Approach Delay (s)		48.3			36.0			87.3			94.6			
Approach LOS		D			D			F			F			
Intersection Summary														
HCM 2000 Control Delay			58.1									HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio			0.85											
Actuated Cycle Length (s)			189.5								24.5			
Intersection Capacity Utilization			84.5%										ICU Level of Service	E
Analysis Period (min)			15											
c	Critical Lane Group													

Queues

9: Chapman Ave & Bou Ave

Total Future PM Phase 1

























Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	336	309	16	185	264	18	176	259	132	335
v/c Ratio	0.54	0.33	0.05	0.32	0.39	0.04	0.27	0.65	0.19	0.33
Control Delay	26.7	22.8	43.5	47.4	6.3	36.6	38.1	54.8	38.2	2.1
Queue Delay	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay	27.1	23.0	43.5	47.4	6.3	36.6	38.1	54.8	38.2	2.2
Queue Length 50th (ft)	221	191	13	163	0	13	135	248	102	0
Queue Length 95th (ft)	296	260	37	255	74	35	217	395	170	41
Internal Link Dist (ft)		200		800			128		31	
Turn Bay Length (ft)	275				250	70				
Base Capacity (vph)	846	1420	332	581	670	439	657	401	679	1358
Starvation Cap Reductn	167	445	0	0	0	0	0	0	0	303
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.32	0.05	0.32	0.39	0.04	0.27	0.65	0.19	0.32

Intersection Summary

HCM Signalized Intersection Capacity Analysis

9: Chapman Ave & Bou Ave

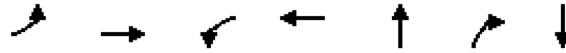
Total Future PM Phase 1

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	323	241	56	15	178	253	17	127	42	249	127	322
Future Volume (vph)	323	241	56	15	178	253	17	127	42	249	127	322
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	10	10	10	10	10	10
Total Lost time (s)	5.5	5.5		5.5	5.5	5.5	6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1652	1690		1652	1739	1478	1652	1673		1652	1739	1478
Flt Permitted	0.51	1.00		0.57	1.00	1.00	0.65	1.00		0.59	1.00	1.00
Satd. Flow (perm)	882	1690		995	1739	1478	1125	1673		1030	1739	1478
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	336	251	58	16	185	264	18	132	44	259	132	335
RTOR Reduction (vph)	0	5	0	0	0	176	0	4	0	0	0	133
Lane Group Flow (vph)	336	304	0	16	185	88	18	172	0	259	132	202
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	pt+ov
Protected Phases	1	6			2			4			8	8 1
Permitted Phases	6			2		2	4			8		
Actuated Green, G (s)	97.9	97.9		60.1	60.1	60.1	70.1	70.1		70.1	70.1	108.4
Effective Green, g (s)	97.9	97.9		60.1	60.1	60.1	70.1	70.1		70.1	70.1	108.4
Actuated g/C Ratio	0.55	0.55		0.33	0.33	0.33	0.39	0.39		0.39	0.39	0.60
Clearance Time (s)	5.5	5.5		5.5	5.5	5.5	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	6.0	0.2		0.2	0.2	0.2	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	619	921		333	582	494	439	653		402	679	892
v/s Ratio Prot	c0.10	0.18			0.11			0.10			0.08	0.14
v/s Ratio Perm	c0.20			0.02		0.06	0.02			c0.25		
v/c Ratio	0.54	0.33		0.05	0.32	0.18	0.04	0.26		0.64	0.19	0.23
Uniform Delay, d1	24.0	22.6		40.4	44.4	42.2	33.9	37.2		44.5	36.1	16.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.2	0.1		0.3	1.4	0.8	0.0	0.2		7.7	0.6	0.4
Delay (s)	26.2	22.7		40.6	45.9	43.0	33.9	37.4		52.3	36.7	16.7
Level of Service	C	C		D	D	D	C	D		D	D	B
Approach Delay (s)		24.5			44.1			37.1			33.0	
Approach LOS		C			D			D			C	
Intersection Summary												
HCM 2000 Control Delay			33.2									HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			179.5								17.0	Sum of lost time (s)
Intersection Capacity Utilization			69.5%									ICU Level of Service C
Analysis Period (min)			15									
c	Critical Lane Group											

Queues

11: East Jefferson Street & Rollins Avenue /Rollins Ave

Total Future PM Phase 1



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	10	73	403	149	504	421	312
v/c Ratio	0.08	0.51	0.92	0.32	0.50	0.30	0.18
Control Delay	46.6	46.9	67.7	22.0	18.7	0.8	13.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.6	46.9	67.7	22.0	18.7	0.8	13.2
Queue Length 50th (ft)	7	35	267	51	223	0	56
Queue Length 95th (ft)	23	80	#436	106	347	15	88
Internal Link Dist (ft)		438		1347	257		274
Turn Bay Length (ft)							
Base Capacity (vph)	235	253	470	494	1005	1391	1741
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	0.04	0.29	0.86	0.30	0.50	0.30	0.18





















Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

11: East Jefferson Street & Rollins Avenue /Rollins Ave

Total Future PM Phase 1

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	44	26	387	65	78	7	477	404	18	263	18
Future Volume (vph)	10	44	26	387	65	78	7	477	404	18	263	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Total Lost time (s)	4.5	4.5		4.5	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	
Frt	1.00	0.94		1.00	0.92			1.00	0.85		0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00		1.00	
Satd. Flow (prot)	1711	1701		1711	1654			1799	1531		3380	
Flt Permitted	0.95	1.00		0.95	1.00			1.00	1.00		0.91	
Satd. Flow (perm)	1711	1701		1711	1654			1792	1531		3098	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	10	46	27	403	68	81	7	497	421	19	274	19
RTOR Reduction (vph)	0	21	0	0	40	0	0	0	81	0	4	0
Lane Group Flow (vph)	10	52	0	403	109	0	0	504	340	0	308	0
Turn Type	Split	NA		Split	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases	4	4		3	3			2	3		6	
Permitted Phases							2		2	6		
Actuated Green, G (s)	7.0	7.0		27.8	27.8			60.2	88.0		60.2	
Effective Green, g (s)	7.0	7.0		27.8	27.8			60.2	88.0		60.2	
Actuated g/C Ratio	0.06	0.06		0.26	0.26			0.55	0.81		0.55	
Clearance Time (s)	4.5	4.5		4.5	4.5			5.0	4.5		5.0	
Vehicle Extension (s)	2.0	2.0		1.0	1.0			5.0	1.0		5.0	
Lane Grp Cap (vph)	109	109		436	421			989	1236		1711	
v/s Ratio Prot	0.01	c0.03		c0.24	0.07				0.07			
v/s Ratio Perm								c0.28	0.15		0.10	
v/c Ratio	0.09	0.48		0.92	0.26			0.51	0.27		0.18	
Uniform Delay, d1	48.0	49.2		39.6	32.4			15.2	2.6		12.1	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.1	1.2		24.9	0.1			1.9	0.0		0.2	
Delay (s)	48.1	50.5		64.5	32.5			17.1	2.6		12.4	
Level of Service	D	D		E	C			B	A		B	
Approach Delay (s)		50.2			55.9			10.5			12.4	
Approach LOS		D			E			B			B	
Intersection Summary												
HCM 2000 Control Delay			25.9	HCM 2000 Level of Service				C				
HCM 2000 Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			109.0	Sum of lost time (s)				14.0				
Intersection Capacity Utilization			66.7%	ICU Level of Service				C				
Analysis Period (min)			15									
c Critical Lane Group												

Queues

12: Rockville Pike- 355 & Halpine Road

Total Future PM Phase 1






























Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	103	161	223	74	134	207	2365	104	1932
v/c Ratio	0.34	0.20	0.81	0.17	0.29	0.77	0.79	0.69	0.72
Control Delay	61.0	23.1	89.5	55.9	8.3	67.1	31.8	69.5	35.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.0	23.1	89.5	55.9	8.3	67.1	31.8	69.5	35.8
Queue Length 50th (ft)	107	35	263	74	0	181	771	78	639
Queue Length 95th (ft)	155	64	343	113	55	282	1075	158	888
Internal Link Dist (ft)		312		302			1225		274
Turn Bay Length (ft)	250				450	165		175	
Base Capacity (vph)	422	1097	382	596	597	495	2983	180	2694
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	0.24	0.15	0.58	0.12	0.22	0.42	0.79	0.58	0.72

Intersection Summary

HCM Signalized Intersection Capacity Analysis

12: Rockville Pike- 355 & Halpine Road

Total Future PM Phase 1

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 						 		  	  	
Traffic Volume (vph)	98	66	87	212	70	127	197	2145	102	99	1805	30
Future Volume (vph)	98	66	87	212	70	127	197	2145	102	99	1805	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	5.5	5.5		5.5	5.5	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.91		1.00	0.91	
Frt	1.00	0.91		1.00	1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3236		1770	1863	1583	1711	4882		1711	4904	
Flt Permitted	0.71	1.00		0.64	1.00	1.00	0.05	1.00		0.04	1.00	
Satd. Flow (perm)	1320	3236		1193	1863	1583	91	4882		70	4904	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	103	69	92	223	74	134	207	2258	107	104	1900	32
RTOR Reduction (vph)	0	71	0	0	0	103	0	2	0	0	0	0
Lane Group Flow (vph)	103	90	0	223	74	31	207	2363	0	104	1932	0
Turn Type	Perm	NA		Perm	NA	Prot	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8	8	1	6		5	2	
Permitted Phases	4			8			6			2		
Actuated Green, G (s)	43.2	43.2		43.2	43.2	43.2	132.3	114.5		115.2	102.9	
Effective Green, g (s)	43.2	43.2		43.2	43.2	43.2	132.3	114.5		115.2	102.9	
Actuated g/C Ratio	0.23	0.23		0.23	0.23	0.23	0.71	0.61		0.61	0.55	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	5.5	5.5		5.5	5.5	
Vehicle Extension (s)	5.0	5.0		5.0	5.0	5.0	5.0	0.2		5.0	0.2	
Lane Grp Cap (vph)	304	745		274	429	364	270	2981		150	2691	
v/s Ratio Prot		0.03			0.04	0.02	c0.10	c0.48		0.05	0.39	
v/s Ratio Perm	0.08			c0.19			0.44			0.38		
v/c Ratio	0.34	0.12		0.81	0.17	0.08	0.77	0.79		0.69	0.72	
Uniform Delay, d1	60.2	57.1		68.3	57.8	56.6	55.5	27.5		47.4	31.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.4	0.2		18.6	0.4	0.2	14.3	2.3		16.2	1.7	
Delay (s)	61.6	57.3		87.0	58.2	56.8	69.8	29.8		63.6	33.2	
Level of Service	E	E		F	E	E	E	C		E	C	
Approach Delay (s)		59.0			72.7			33.0			34.7	
Approach LOS		E			E			C			C	
Intersection Summary												
HCM 2000 Control Delay			38.2				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			187.5				Sum of lost time (s)			17.5		
Intersection Capacity Utilization			85.6%				ICU Level of Service			E		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

13: Twinbrook Parkway & Parklawn Drive

Total Future PM Phase 1


























Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	42	111	181	183	289	33	1562	141	824
v/c Ratio	0.34	0.74	0.79	0.79	0.55	0.09	0.55	0.37	0.39
Control Delay	101.3	94.9	112.4	111.8	17.6	14.7	26.9	15.8	21.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	101.3	94.9	112.4	111.8	17.6	14.7	26.9	15.8	21.9
Queue Length 50th (ft)	62	114	268	271	62	15	462	32	303
Queue Length 95th (ft)	110	195	357	362	159	37	638	60	438
Internal Link Dist (ft)		332		479			1310		374
Turn Bay Length (ft)			200			190		240	
Base Capacity (vph)	231	250	300	304	822	515	2839	1037	2097
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	0.18	0.44	0.60	0.60	0.35	0.06	0.55	0.14	0.39

Intersection Summary

HCM Signalized Intersection Capacity Analysis

13: Twinbrook Parkway & Parklawn Drive

Total Future PM Phase 1

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	44	32	68	304	39	272	31	1198	271	133	743	32	
Future Volume (vph)	44	32	68	304	39	272	31	1198	271	133	743	32	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	12	12	12	11	11	11	10	10	10	10	10	10	
Total Lost time (s)	6.5	6.5		7.0	7.0	7.0	8.0	6.0		8.0	6.0		
Lane Util. Factor	0.95	0.95		0.95	0.95	1.00	1.00	0.91		0.97	0.95		
Frt	1.00	0.90		1.00	1.00	0.85	1.00	0.97		1.00	0.99		
Flt Protected	0.95	1.00		0.95	0.96	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1681	1594		1625	1647	1531	1652	4615		3204	3283		
Flt Permitted	0.95	1.00		0.95	0.96	1.00	0.30	1.00		0.11	1.00		
Satd. Flow (perm)	1681	1594		1625	1647	1531	524	4615		374	3283		
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	
Adj. Flow (vph)	47	34	72	323	41	289	33	1274	288	141	790	34	
RTOR Reduction (vph)	0	32	0	0	0	184	0	9	0	0	1	0	
Lane Group Flow (vph)	42	79	0	181	183	105	33	1553	0	141	823	0	
Turn Type	Split	NA		Split	NA	pt+ov	pm+pt	NA		pm+pt	NA		
Protected Phases	3	3		4	4	4	5	2		1	6		
Permitted Phases							2			6			
Actuated Green, G (s)	15.9	15.9		30.8	30.8	47.6	139.4	133.5		147.2	137.4		
Effective Green, g (s)	15.9	15.9		30.8	30.8	47.6	139.4	133.5		147.2	137.4		
Actuated g/C Ratio	0.07	0.07		0.14	0.14	0.22	0.64	0.61		0.68	0.63		
Clearance Time (s)	6.5	6.5		7.0	7.0		8.0	6.0		8.0	6.0		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	0.2		3.0	0.2		
Lane Grp Cap (vph)	122	116		230	233	335	366	2832		380	2073		
v/s Ratio Prot	0.02	c0.05		c0.11	0.11	c0.07	0.00	c0.34		0.02	c0.25		
v/s Ratio Perm							0.06			0.23			
v/c Ratio	0.34	0.68		0.79	0.79	0.31	0.09	0.55		0.37	0.40		
Uniform Delay, d1	95.8	98.3		90.2	90.2	71.2	14.9	24.5		16.2	19.7		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	1.7	14.6		16.1	15.8	0.5	0.1	0.8		0.6	0.6		
Delay (s)	97.5	112.9		106.3	106.0	71.8	15.0	25.2		16.9	20.3		
Level of Service	F	F		F	F	E	B	C		B	C		
Approach Delay (s)		108.7			90.9			25.0			19.8		
Approach LOS		F			F			C			B		
Intersection Summary													
HCM 2000 Control Delay			40.1									HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.59										
Actuated Cycle Length (s)			217.5									Sum of lost time (s)	27.5
Intersection Capacity Utilization			66.6%									ICU Level of Service	C
Analysis Period (min)			15										
c Critical Lane Group													

Queues

14: Nebel Street & Randolph Road

Total Future PM Phase 1



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	22	1215	178	1074	138	148	302	308	174	25
v/c Ratio	0.13	0.94	0.86	0.67	0.35	0.38	0.92	0.59	0.30	0.05
Control Delay	30.8	74.3	93.6	48.5	42.7	74.6	113.8	47.9	57.8	50.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.8	74.3	93.6	48.5	42.7	74.6	113.8	47.9	57.8	50.9
Queue Length 50th (ft)	16	~923	195	664	118	179	417	293	183	24
Queue Length 95th (ft)	36	#1188	289	760	173	259	#586	384	267	54
Internal Link Dist (ft)		613		257		122			1618	
Turn Bay Length (ft)	140		125		100			250		
Base Capacity (vph)	304	1299	438	1615	565	417	355	535	574	488
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.94	0.41	0.67	0.24	0.35	0.85	0.58	0.30	0.05

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

14: Nebel Street & Randolph Road

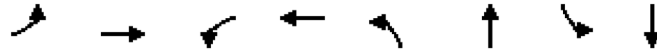
Total Future PM Phase 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	1071	84	169	833	187	131	141	287	293	165	24
Future Volume (vph)	21	1071	84	169	833	187	131	141	287	293	165	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	12	12	12	11	11	11	12	12	12
Total Lost time (s)	6.0	6.5		6.0	6.5		6.5	6.5	6.5	6.5	6.5	6.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1652	3267		1770	3442		1711	1801	1531	1770	1863	1583
Flt Permitted	0.17	1.00		0.05	1.00		0.65	1.00	1.00	0.47	1.00	1.00
Satd. Flow (perm)	289	3267		97	3442		1166	1801	1531	881	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	22	1127	88	178	877	197	138	148	302	308	174	25
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	22	1215	0	178	1074	0	138	148	302	308	174	25
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Prot	pm+pt	NA	Prot
Protected Phases	1	6		5	2		3	8	8	7	4	4
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	91.6	85.7		111.8	99.9		64.1	46.4	46.4	90.7	66.5	66.5
Effective Green, g (s)	91.6	85.7		111.8	99.9		64.1	46.4	46.4	90.7	66.5	66.5
Actuated g/C Ratio	0.43	0.40		0.52	0.46		0.30	0.22	0.22	0.42	0.31	0.31
Clearance Time (s)	6.0	6.5		6.0	6.5		6.5	6.5	6.5	6.5	6.5	6.5
Vehicle Extension (s)	3.0	5.0		3.0	5.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	160	1299		206	1595		391	387	329	526	574	488
v/s Ratio Prot	0.00	c0.37		c0.08	0.31		0.03	0.08	c0.20	c0.10	0.09	0.02
v/s Ratio Perm	0.05			0.37			0.08			0.14		
v/c Ratio	0.14	0.94		0.86	0.67		0.35	0.38	0.92	0.59	0.30	0.05
Uniform Delay, d1	38.6	62.2		67.6	45.1		57.9	72.3	82.7	44.5	56.8	52.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	13.6		29.2	2.3		0.8	0.9	29.7	2.0	0.4	0.1
Delay (s)	39.0	75.9		96.8	47.4		58.6	73.2	112.3	46.4	57.2	52.4
Level of Service	D	E		F	D		E	E	F	D	E	D
Approach Delay (s)		75.2			54.4			89.9			50.4	
Approach LOS		E			D			F			D	
Intersection Summary												
HCM 2000 Control Delay			66.8			HCM 2000 Level of Service				E		
HCM 2000 Volume to Capacity ratio			0.86									
Actuated Cycle Length (s)			215.5			Sum of lost time (s)			25.5			
Intersection Capacity Utilization			86.5%			ICU Level of Service				E		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

15: Rockville Pike - 355 & Hubbard Drive/Plaza Driveway

Total Future PM Phase 1



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	41	45	190	154	18	2960	164	2182
v/c Ratio	0.22	0.14	0.74	0.37	0.12	0.83	0.68	0.66
Control Delay	54.2	20.8	77.1	11.7	11.3	31.1	54.0	18.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2
Total Delay	54.2	20.8	77.1	11.7	11.3	31.1	54.0	22.5
Queue Length 50th (ft)	36	10	188	11	5	698	114	504
Queue Length 95th (ft)	70	45	261	70	15	#994	197	671
Internal Link Dist (ft)		170		149		168		419
Turn Bay Length (ft)							180	
Base Capacity (vph)	249	429	342	511	327	3554	312	3326
Starvation Cap Reductn	0	0	0	0	0	0	0	1052
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	0.10	0.56	0.30	0.06	0.83	0.53	0.96

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
 15: Rockville Pike - 355 & Hubbard Drive/Plaza Driveway

Total Future PM Phase 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	12	32	186	13	138	18	2651	250	161	2112	26
Future Volume (vph)	40	12	32	186	13	138	18	2651	250	161	2112	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	12	11	11	11	11	11	11
Total Lost time (s)	7.0	7.0		7.0	7.0		6.0	5.5		6.0	5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.86		1.00	0.91	
Frt	1.00	0.89		1.00	0.86		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1711	1603		1770	1607		1711	6114		1711	4907	
Flt Permitted	0.55	1.00		0.73	1.00		0.06	1.00		0.04	1.00	
Satd. Flow (perm)	988	1603		1356	1607		103	6114		74	4907	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	41	12	33	190	13	141	18	2705	255	164	2155	27
RTOR Reduction (vph)	0	27	0	0	114	0	0	8	0	0	1	0
Lane Group Flow (vph)	41	18	0	190	40	0	18	2952	0	164	2181	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	30.0	30.0		30.0	30.0		96.9	91.9		116.0	105.0	
Effective Green, g (s)	30.0	30.0		30.0	30.0		96.9	91.9		116.0	105.0	
Actuated g/C Ratio	0.19	0.19		0.19	0.19		0.61	0.58		0.73	0.66	
Clearance Time (s)	7.0	7.0		7.0	7.0		6.0	5.5		6.0	5.5	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	0.2		5.0	0.2	
Lane Grp Cap (vph)	187	303		256	304		113	3544		241	3250	
v/s Ratio Prot		0.01			0.02		0.00	c0.48		c0.08	c0.44	
v/s Ratio Perm	0.04			c0.14			0.09			0.42		
v/c Ratio	0.22	0.06		0.74	0.13		0.16	0.83		0.68	0.67	
Uniform Delay, d1	54.3	52.7		60.6	53.4		14.2	27.1		48.5	16.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.2	0.2		13.1	0.4		1.4	2.5		9.8	1.1	
Delay (s)	55.6	52.9		73.7	53.8		15.6	29.5		58.2	17.4	
Level of Service	E	D		E	D		B	C		E	B	
Approach Delay (s)		54.2			64.8			29.4			20.2	
Approach LOS		D			E			C			C	
Intersection Summary												
HCM 2000 Control Delay			28.2				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			158.5				Sum of lost time (s)			18.5		
Intersection Capacity Utilization			87.2%				ICU Level of Service			E		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

16: Chapman Ave & Josiah Henson Parkway/Randolph Road

Total Future PM Phase 1




























Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	150	1116	15	836	132	52	46	142	169
v/c Ratio	0.37	0.52	0.05	0.44	0.15	0.49	0.37	0.57	0.71
Control Delay	12.1	17.5	10.6	21.1	3.1	82.5	49.6	66.6	75.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.1	17.5	10.6	21.1	3.1	82.5	49.6	66.6	75.4
Queue Length 50th (ft)	49	268	5	245	0	49	23	136	166
Queue Length 95th (ft)	92	473	15	360	33	97	67	202	240
Internal Link Dist (ft)		321		613			346		212
Turn Bay Length (ft)	350		165		215	250			
Base Capacity (vph)	517	2130	384	1894	907	115	132	340	325
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	0.29	0.52	0.04	0.44	0.15	0.45	0.35	0.42	0.52

Intersection Summary

HCM Signalized Intersection Capacity Analysis
 16: Chapman Ave & Josiah Henson Parkway/Randolph Road

Total Future PM Phase 1

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 						 	
Traffic Volume (vph)	144	999	72	14	803	127	50	24	20	152	51	96
Future Volume (vph)	144	999	72	14	803	127	50	24	20	152	51	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	11	11	11	12	12	12
Total Lost time (s)	5.0	6.0		5.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		0.95	0.95	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.93		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1652	3270		1652	3303	1478	1711	1677		1681	1605	
Flt Permitted	0.26	1.00		0.22	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	455	3270		377	3303	1478	1711	1677		1681	1605	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	150	1041	75	15	836	132	52	25	21	158	53	100
RTOR Reduction (vph)	0	3	0	0	0	57	0	20	0	0	0	0
Lane Group Flow (vph)	150	1113	0	15	836	75	52	26	0	142	169	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Split	NA		Split	NA	
Protected Phases	1	6		5	2		3	3		4	4	
Permitted Phases	6			2		2						
Actuated Green, G (s)	100.2	92.2		86.7	83.7	83.7	7.8	7.8		22.0	22.0	
Effective Green, g (s)	100.2	92.2		86.7	83.7	83.7	7.8	7.8		22.0	22.0	
Actuated g/C Ratio	0.68	0.62		0.59	0.57	0.57	0.05	0.05		0.15	0.15	
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	4.0	0.2		4.0	0.2	0.2	4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)	401	2037		246	1867	835	90	88		249	238	
v/s Ratio Prot	c0.03	c0.34		0.00	0.25		c0.03	0.02		0.08	c0.11	
v/s Ratio Perm	0.22			0.03		0.05						
v/c Ratio	0.37	0.55		0.06	0.45	0.09	0.58	0.30		0.57	0.71	
Uniform Delay, d1	10.3	15.9		13.4	18.7	14.7	68.5	67.5		58.6	60.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	1.1		0.1	0.8	0.2	10.3	2.6		3.7	10.2	
Delay (s)	11.1	17.0		13.5	19.5	14.9	78.8	70.0		62.3	70.2	
Level of Service	B	B		B	B	B	E	E		E	E	
Approach Delay (s)		16.3			18.8			74.7			66.6	
Approach LOS		B			B			E			E	
Intersection Summary												
HCM 2000 Control Delay			25.3				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			148.0				Sum of lost time (s)			23.0		
Intersection Capacity Utilization			65.9%				ICU Level of Service			C		
Analysis Period (min)			15									
c	Critical Lane Group											

Intersection						
Int Delay, s/veh	1.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗ ↑↑↑	↗ ↑↑↑			↗ ↑↑↑
Traffic Vol, veh/h	0	58	2488	44	0	1814
Future Vol, veh/h	0	58	2488	44	0	1814
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	66	2827	50	0	2061

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	-	1439	0	0	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-
Pot Cap-1 Maneuver	0	105	-	-	0
Stage 1	0	-	-	-	0
Stage 2	0	-	-	-	0
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	-	105	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	84.8	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	105
HCM Lane V/C Ratio	-	-	0.628
HCM Control Delay (s)	-	-	84.8
HCM Lane LOS	-	-	F
HCM 95th %tile Q(veh)	-	-	3.1

HCM 6th TWSC
 6: Chapman Ave & Pike Center North/Driveway

Total Future PM Phase 1

Intersection												
Int Delay, s/veh	0.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	1	4	4	1	7	3	737	8	5	675	0
Future Vol, veh/h	3	1	4	4	1	7	3	737	8	5	675	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1	4	4	1	8	3	819	9	6	750	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1178	1596	375	1218	1592	414	750	0	0	828	0	0
Stage 1	762	762	-	830	830	-	-	-	-	-	-	-
Stage 2	416	834	-	388	762	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	146	106	623	136	106	587	855	-	-	799	-	-
Stage 1	363	412	-	331	383	-	-	-	-	-	-	-
Stage 2	585	381	-	607	412	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	141	104	623	132	104	587	855	-	-	799	-	-
Mov Cap-2 Maneuver	141	104	-	132	104	-	-	-	-	-	-	-
Stage 1	360	407	-	329	380	-	-	-	-	-	-	-
Stage 2	572	378	-	593	407	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB			
HCM Control Delay, s	22.6		21.5		0		0.2			
HCM LOS	C		C							

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	855	-	-	214	231	799	-	-
HCM Lane V/C Ratio	0.004	-	-	0.042	0.058	0.007	-	-
HCM Control Delay (s)	9.2	0	-	22.6	21.5	9.5	0.1	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.2	0	-	-

HCM 6th TWSC
 7: Chapman Ave & Rollins Ave Extension/Rollins Ave

Total Future PM Phase 1

Intersection												
Int Delay, s/veh	4.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	19	9	59	20	89	0	659	49	45	591	47
Future Vol, veh/h	0	19	9	59	20	89	0	659	49	45	591	47
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	20	9	61	21	92	0	679	51	46	609	48

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1486	1455	329	1112	1454	705	657	0	0	730	0	0
Stage 1	725	725	-	705	705	-	-	-	-	-	-	-
Stage 2	761	730	-	407	749	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.93	7.33	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	94	129	667	174	130	435	928	-	-	872	-	-
Stage 1	383	429	-	426	438	-	-	-	-	-	-	-
Stage 2	397	427	-	593	418	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	60	118	667	140	119	435	928	-	-	872	-	-
Mov Cap-2 Maneuver	60	118	-	140	119	-	-	-	-	-	-	-
Stage 1	383	393	-	426	438	-	-	-	-	-	-	-
Stage 2	299	427	-	509	383	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB		
HCM Control Delay, s	32.4		35		0		0.9		
HCM LOS	D		E						

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	928	-	-	160	137	343	872	-	-
HCM Lane V/C Ratio	-	-	-	0.18	0.519	0.298	0.053	-	-
HCM Control Delay (s)	0	-	-	32.4	56.7	19.9	9.4	0.3	-
HCM Lane LOS	A	-	-	D	F	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.6	2.5	1.2	0.2	-	-

Intersection						
Int Delay, s/veh	5.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑↑	
Traffic Vol, veh/h	154	524	471	39	46	230
Future Vol, veh/h	154	524	471	39	46	230
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	159	540	486	40	47	237

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	526	0	-	0	1094 263
Stage 1	-	-	-	-	506 -
Stage 2	-	-	-	-	588 -
Critical Hdwy	4.14	-	-	-	6.84 6.94
Critical Hdwy Stg 1	-	-	-	-	5.84 -
Critical Hdwy Stg 2	-	-	-	-	5.84 -
Follow-up Hdwy	2.22	-	-	-	3.52 3.32
Pot Cap-1 Maneuver	1037	-	-	-	208 735
Stage 1	-	-	-	-	571 -
Stage 2	-	-	-	-	518 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1037	-	-	-	162 735
Mov Cap-2 Maneuver	-	-	-	-	162 -
Stage 1	-	-	-	-	446 -
Stage 2	-	-	-	-	518 -

Approach	EB	WB	SB
HCM Control Delay, s	2.5	0	24.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1037	-	-	-	462
HCM Lane V/C Ratio	0.153	-	-	-	0.616
HCM Control Delay (s)	9.1	0.6	-	-	24.5
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.5	-	-	-	4.1

HCM 6th TWSC
 17: Chapman Ave/Chapman Road & Thompson Ave

Total Future PM Phase 1

Intersection												
Int Delay, s/veh	3.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	26	17	122	9	12	5	28	279	23	7	281	27
Future Vol, veh/h	26	17	122	9	12	5	28	279	23	7	281	27
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	28	18	130	10	13	5	30	297	24	7	299	29

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	706	709	314	771	711	309	328	0	0	321	0	0
Stage 1	328	328	-	369	369	-	-	-	-	-	-	-
Stage 2	378	381	-	402	342	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	351	359	726	317	358	731	1232	-	-	1239	-	-
Stage 1	685	647	-	651	621	-	-	-	-	-	-	-
Stage 2	644	613	-	625	638	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	329	346	726	243	345	731	1232	-	-	1239	-	-
Mov Cap-2 Maneuver	329	346	-	243	345	-	-	-	-	-	-	-
Stage 1	664	642	-	631	602	-	-	-	-	-	-	-
Stage 2	607	595	-	495	634	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	14.4		16.9		0.7		0.2	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1232	-	-	557	331	1239	-	-
HCM Lane V/C Ratio	0.024	-	-	0.315	0.084	0.006	-	-
HCM Control Delay (s)	8	0	-	14.4	16.9	7.9	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	1.3	0.3	0	-	-

HCM 6th TWSC
 18: Rockville Pike - 355 & Rollins Ave Extension

Total Future PM Phase 1

Intersection						
Int Delay, s/veh	7.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗ ↑↑↑	↗ ↑↑↑			↑↑↑
Traffic Vol, veh/h	0	124	2570	141	0	1916
Future Vol, veh/h	0	124	2570	141	0	1916
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	135	2793	153	0	2083

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	-	1473	0	0	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-
Pot Cap-1 Maneuver	0	~ 99	-	-	0
Stage 1	0	-	-	-	0
Stage 2	0	-	-	-	0
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	-	~ 99	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	292.7	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	99
HCM Lane V/C Ratio	-	-	1.361
HCM Control Delay (s)	-	-	292.7
HCM Lane LOS	-	-	F
HCM 95th %tile Q(veh)	-	-	9.7

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Queues

1: Rockville Pike - 355 & Bou Ave

Total Future AM Phase 2




























Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	37	26	595	62	38	1784	149	127	2033
v/c Ratio	0.45	0.12	0.80	0.16	0.45	0.71	0.18	0.53	0.70
Control Delay	108.2	1.2	81.5	19.0	108.4	41.1	7.1	69.4	34.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	48.0	0.0	0.0	17.1
Total Delay	108.2	1.2	81.5	19.0	108.4	89.0	7.1	69.4	51.5
Queue Length 50th (ft)	48	0	375	11	50	701	18	83	756
Queue Length 95th (ft)	93	0	463	57	95	757	64	167	844
Internal Link Dist (ft)	76			198		419			169
Turn Bay Length (ft)					175			245	
Base Capacity (vph)	170	280	742	392	171	2501	839	238	2914
Starvation Cap Reductn	0	0	0	0	0	921	0	0	927
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	0.22	0.09	0.80	0.16	0.22	1.13	0.18	0.53	1.02

Intersection Summary

HCM Signalized Intersection Capacity Analysis

1: Rockville Pike - 355 & Bou Ave

Total Future AM Phase 2

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations				 				 			 		
Traffic Volume (vph)	14	21	25	571	11	49	36	1713	143	122	1946	6	
Future Volume (vph)	14	21	25	571	11	49	36	1713	143	122	1946	6	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	10	10	10	10	10	10	11	11	11	12	12	12	
Total Lost time (s)		6.0	6.0	7.0	7.0		5.0	5.5	5.5	6.0	6.0		
Lane Util. Factor		1.00	1.00	0.97	1.00		1.00	0.91	1.00	1.00	0.91		
Frt		1.00	0.85	1.00	0.88		1.00	1.00	0.85	1.00	1.00		
Flt Protected		0.98	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)		1704	1478	3204	1524		1711	4916	1531	1770	5083		
Flt Permitted		0.98	1.00	0.95	1.00		0.95	1.00	1.00	0.07	1.00		
Satd. Flow (perm)		1704	1478	3204	1524		1711	4916	1531	130	5083		
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	
Adj. Flow (vph)	15	22	26	595	11	51	38	1784	149	127	2027	6	
RTOR Reduction (vph)	0	0	25	0	39	0	0	0	62	0	0	0	
Lane Group Flow (vph)	0	37	1	595	23	0	38	1784	87	127	2033	0	
Turn Type	Split	NA	Prot	Split	NA		Prot	NA	Prot	pm+pt	NA		
Protected Phases	3	3	3	4	4		1	5	5	6	2		
Permitted Phases										2			
Actuated Green, G (s)		8.6	8.6	46.4	46.4		8.6	99.6	99.6	112.4	112.4		
Effective Green, g (s)		8.6	8.6	46.4	46.4		8.6	99.6	99.6	112.4	112.4		
Actuated g/C Ratio		0.04	0.04	0.23	0.23		0.04	0.50	0.50	0.56	0.56		
Clearance Time (s)		6.0	6.0	7.0	7.0		5.0	5.5	5.5	6.0	6.0		
Vehicle Extension (s)		3.0	3.0	6.0	6.0		3.0	0.2	0.2	3.0	0.2		
Lane Grp Cap (vph)		73	63	743	353		73	2448	762	244	2856		
v/s Ratio Prot		c0.02	0.00	c0.19	0.01		0.02	c0.36	0.06	0.05	c0.40		
v/s Ratio Perm										0.24			
v/c Ratio		0.51	0.02	0.80	0.06		0.52	0.73	0.11	0.52	0.71		
Uniform Delay, d1		93.6	91.7	72.4	59.9		93.7	39.6	26.7	57.8	32.0		
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2		5.4	0.1	7.4	0.2		6.5	1.9	0.3	2.0	1.5		
Delay (s)		99.1	91.8	79.8	60.1		100.2	41.5	27.0	59.8	33.5		
Level of Service		F	F	E	E		F	D	C	E	C		
Approach Delay (s)		96.1			78.0			41.5			35.1		
Approach LOS		F			E			D			D		
Intersection Summary													
HCM 2000 Control Delay			44.3		HCM 2000 Level of Service					D			
HCM 2000 Volume to Capacity ratio			0.77										
Actuated Cycle Length (s)			200.0		Sum of lost time (s)					31.0			
Intersection Capacity Utilization			79.9%		ICU Level of Service					D			
Analysis Period (min)			15										
c Critical Lane Group													

Queues

2: Rockville Pike - 355 & Federal Plaza/New Street

Total Future AM Phase 2
























Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	19	58	47	88	1624	40	2042
v/c Ratio	0.25	0.36	0.41	0.50	0.43	0.17	0.58
Control Delay	79.7	8.4	52.6	17.4	9.3	6.0	12.2
Queue Delay	0.0	0.0	0.0	0.0	0.4	0.0	1.0
Total Delay	79.7	8.4	52.6	17.4	9.6	6.0	13.3
Queue Length 50th (ft)	19	0	25	17	237	8	358
Queue Length 95th (ft)	49	10	69	56	322	19	500
Internal Link Dist (ft)	84		73		260		145
Turn Bay Length (ft)				245		175	
Base Capacity (vph)	262	313	323	301	3758	360	3500
Starvation Cap Reductn	0	0	0	0	1364	0	1101
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.19	0.15	0.29	0.68	0.11	0.85

Intersection Summary

HCM Signalized Intersection Capacity Analysis
 2: Rockville Pike - 355 & Federal Plaza/New Street

Total Future AM Phase 2

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	2	56	21	2	22	84	1548	11	38	1958	2
Future Volume (vph)	16	2	56	21	2	22	84	1548	11	38	1958	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	16	16	16	11	11	11	10	10	10
Total Lost time (s)		6.5	6.5		6.5		5.0	5.5		5.0	5.5	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.91		1.00	0.91	
Fr _t		1.00	0.85		0.93		1.00	1.00		1.00	1.00	
Fl _t Protected		0.96	1.00		0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1664	1478		1927		1711	4911		1652	4746	
Fl _t Permitted		0.96	1.00		0.98		0.07	1.00		0.13	1.00	
Satd. Flow (perm)		1664	1478		1927		124	4911		219	4746	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	17	2	58	22	2	23	88	1612	11	40	2040	2
RTOR Reduction (vph)	0	0	56	0	22	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	19	2	0	25	0	88	1624	0	40	2042	0
Turn Type	Split	NA	Prot	Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	8	8	8	4	4		5	2		1	6	
Permitted Phases							2			6		
Actuated Green, G (s)		6.3	6.3		6.6		124.4	116.6		119.8	114.3	
Effective Green, g (s)		6.3	6.3		6.6		124.4	116.6		119.8	114.3	
Actuated g/C Ratio		0.04	0.04		0.04		0.78	0.74		0.76	0.72	
Clearance Time (s)		6.5	6.5		6.5		5.0	5.5		5.0	5.5	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	0.2		3.0	0.2	
Lane Grp Cap (vph)		66	58		80		175	3612		215	3422	
v/s Ratio Prot		c0.01	0.00		c0.01		c0.02	0.33		0.01	c0.43	
v/s Ratio Perm							0.37			0.13		
v/c Ratio		0.29	0.04		0.31		0.50	0.45		0.19	0.60	
Uniform Delay, d ₁		73.9	73.2		73.7		9.3	8.3		5.5	10.8	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d ₂		2.4	0.3		2.2		2.3	0.4		0.4	0.8	
Delay (s)		76.3	73.5		76.0		11.6	8.7		5.9	11.6	
Level of Service		E	E		E		B	A		A	B	
Approach Delay (s)		74.2			76.0			8.8			11.5	
Approach LOS		E			E			A			B	
Intersection Summary												
HCM 2000 Control Delay			12.3				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			158.5				Sum of lost time (s)				23.5	
Intersection Capacity Utilization			66.0%				ICU Level of Service				C	
Analysis Period (min)			15									
c Critical Lane Group												

Queues

4: Rockville Pike - 355 & Rollins Ave/Twinbrook Parkway

Total Future AM Phase 2















Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	397	316	219	109	1461	120	240	1967
v/c Ratio	0.68	0.48	0.74	0.56	0.56	0.14	0.68	0.66
Control Delay	65.6	59.3	75.2	36.3	26.9	3.9	28.9	23.7
Queue Delay	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0
Total Delay	65.6	59.3	75.2	36.3	27.8	3.9	28.9	23.7
Queue Length 50th (ft)	205	156	218	38	357	0	104	476
Queue Length 95th (ft)	246	193	294	119	519	37	213	668
Internal Link Dist (ft)	1347	625			260			1225
Turn Bay Length (ft)			150				400	
Base Capacity (vph)	978	1105	494	250	2598	866	432	2971
Starvation Cap Reductn	0	0	0	0	763	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	0.41	0.29	0.44	0.44	0.80	0.14	0.56	0.66

Intersection Summary

HCM Signalized Intersection Capacity Analysis

4: Rockville Pike - 355 & Rollins Ave/Twinbrook Parkway

Total Future AM Phase 2

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑			↑↑	↑	↑	↑↑↑	↑	↑	↑↑↑		
Traffic Volume (vph)	0	255	134	0	310	215	107	1432	118	235	1882	46	
Future Volume (vph)	0	255	134	0	310	215	107	1432	118	235	1882	46	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	10	10	10	12	12	12	10	10	10	11	11	11	
Total Lost time (s)		7.5			7.5	7.5	7.0	5.5	5.5	7.0	5.5		
Lane Util. Factor		0.95			0.95	1.00	1.00	0.91	1.00	1.00	0.91		
Frt		0.95			1.00	0.85	1.00	1.00	0.85	1.00	1.00		
Flt Protected		1.00			1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)		3132			3539	1583	1652	4746	1478	1711	4898		
Flt Permitted		1.00			1.00	1.00	0.07	1.00	1.00	0.11	1.00		
Satd. Flow (perm)		3132			3539	1583	118	4746	1478	201	4898		
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	
Adj. Flow (vph)	0	260	137	0	316	219	109	1461	120	240	1920	47	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	54	0	1	0	
Lane Group Flow (vph)	0	397	0	0	316	219	109	1461	66	240	1966	0	
Turn Type		NA			NA	Prot	pm+pt	NA	Prot	pm+pt	NA		
Protected Phases		4			8	8	1	6	6	5	2		
Permitted Phases							6			2			
Actuated Green, G (s)		30.1			30.1	30.1	100.4	87.6	87.6	116.9	97.1		
Effective Green, g (s)		30.1			30.1	30.1	100.4	87.6	87.6	116.9	97.1		
Actuated g/C Ratio		0.19			0.19	0.19	0.63	0.55	0.55	0.73	0.61		
Clearance Time (s)		7.5			7.5	7.5	7.0	5.5	5.5	7.0	5.5		
Vehicle Extension (s)		4.0			4.0	4.0	4.0	0.2	0.2	4.0	0.2		
Lane Grp Cap (vph)		589			665	297	196	2598	809	357	2972		
v/s Ratio Prot		0.13			0.09	c0.14	0.04	0.31	0.04	c0.09	c0.40		
v/s Ratio Perm							0.30			c0.40			
v/c Ratio		0.67			0.48	0.74	0.56	0.56	0.08	0.67	0.66		
Uniform Delay, d1		60.4			57.9	61.2	18.2	23.7	17.1	24.2	20.7		
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2		3.3			0.7	9.8	4.2	0.9	0.2	5.4	1.2		
Delay (s)		63.7			58.6	71.0	22.3	24.6	17.3	29.6	21.8		
Level of Service		E			E	E	C	C	B	C	C		
Approach Delay (s)		63.7			63.7			23.9			22.7		
Approach LOS		E			E			C			C		
Intersection Summary													
HCM 2000 Control Delay			31.0									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.71										
Actuated Cycle Length (s)			160.0									Sum of lost time (s)	20.0
Intersection Capacity Utilization			71.3%									ICU Level of Service	C
Analysis Period (min)			15										
c	Critical Lane Group												

Queues

5: Chapman Ave & Twinbrook Parkway

Total Future AM Phase 2



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	41	647	551	581	146	203	87	52	25
v/c Ratio	0.09	0.40	0.84	0.26	0.76	0.32	0.46	0.51	0.13
Control Delay	13.1	31.4	85.2	13.1	105.3	5.4	93.4	102.7	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.1	31.4	85.2	13.1	105.3	5.4	93.4	102.7	1.3
Queue Length 50th (ft)	14	258	344	144	178	0	55	64	0
Queue Length 95th (ft)	30	357	398	199	265	57	87	116	0
Internal Link Dist (ft)		625		1310	176			558	
Turn Bay Length (ft)	175		300						
Base Capacity (vph)	639	1614	875	2233	201	711	338	183	261
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	0.06	0.40	0.63	0.26	0.73	0.29	0.26	0.28	0.10

Intersection Summary

HCM Signalized Intersection Capacity Analysis

5: Chapman Ave & Twinbrook Parkway

Total Future AM Phase 2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	40	509	118	534	440	123	94	48	197	84	50	24	
Future Volume (vph)	40	509	118	534	440	123	94	48	197	84	50	24	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	10	10	10	11	11	11	10	10	10	10	10	10	
Total Lost time (s)	5.5	6.0		5.5	6.0			6.5	6.5	6.5	6.5	6.5	
Lane Util. Factor	1.00	0.95		0.97	0.95			1.00	1.00	0.97	1.00	1.00	
Fr _t	1.00	0.97		1.00	0.97			1.00	0.85	1.00	1.00	0.85	
Fl _t Protected	0.95	1.00		0.95	1.00			0.97	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1652	3210		3319	3309			1683	1478	3204	1739	1478	
Fl _t Permitted	0.43	1.00		0.95	1.00			0.97	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	753	3210		3319	3309			1683	1478	3204	1739	1478	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	
Adj. Flow (vph)	41	525	122	551	454	127	97	49	203	87	52	25	
RTOR Reduction (vph)	0	9	0	0	9	0	0	0	133	0	0	24	
Lane Group Flow (vph)	41	638	0	551	572	0	0	146	70	87	52	1	
Turn Type	pm+pt	NA		Prot	NA		Split	NA	pt+ov	Split	NA	Perm	
Protected Phases	5	2		1	6		4	4	4	3	3		
Permitted Phases	2											3	
Actuated Green, G (s)	100.5	94.7		37.4	126.3			21.7	65.6	11.2	11.2	11.2	
Effective Green, g (s)	100.5	94.7		37.4	126.3			21.7	65.6	11.2	11.2	11.2	
Actuated g/C Ratio	0.53	0.50		0.20	0.67			0.11	0.35	0.06	0.06	0.06	
Clearance Time (s)	5.5	6.0		5.5	6.0			6.5		6.5	6.5	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	426	1604		655	2205			192	511	189	102	87	
v/s Ratio Prot	0.00	c0.20		c0.17	0.17			c0.09	0.05	0.03	c0.03		
v/s Ratio Perm	0.05											0.00	
v/c Ratio	0.10	0.40		0.84	0.26			0.76	0.14	0.46	0.51	0.02	
Uniform Delay, d ₁	21.4	29.6		73.2	12.7			81.4	42.5	86.2	86.5	84.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d ₂	0.1	0.7		9.6	0.3			16.1	0.1	1.8	4.0	0.1	
Delay (s)	21.5	30.3		82.7	13.0			97.5	42.7	88.0	90.5	84.0	
Level of Service	C	C		F	B			F	D	F	F	F	
Approach Delay (s)		29.8			47.0			65.6			88.2		
Approach LOS		C			D			E			F		
Intersection Summary													
HCM 2000 Control Delay			47.6									HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.55										
Actuated Cycle Length (s)			189.5									Sum of lost time (s)	24.5
Intersection Capacity Utilization			62.5%									ICU Level of Service	B
Analysis Period (min)			15										
c	Critical Lane Group												

Queues

9: Chapman Ave & Bou Ave

Total Future AM Phase 2

























Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	155	164	6	101	172	4	47	153	83	471
v/c Ratio	0.25	0.19	0.01	0.16	0.27	0.01	0.07	0.29	0.11	0.45
Control Delay	23.1	20.6	36.2	37.8	5.8	29.8	28.9	34.4	30.7	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay	23.1	20.6	36.2	37.8	5.8	29.8	28.9	34.4	30.7	2.8
Queue Length 50th (ft)	90	87	4	75	0	3	29	110	55	0
Queue Length 95th (ft)	136	133	17	129	56	11	61	178	99	49
Internal Link Dist (ft)		200		800			128		31	
Turn Bay Length (ft)	275				250	70				
Base Capacity (vph)	853	1516	409	626	642	513	722	530	731	1441
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	205
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.11	0.01	0.16	0.27	0.01	0.07	0.29	0.11	0.38

Intersection Summary

HCM Signalized Intersection Capacity Analysis

9: Chapman Ave & Bou Ave

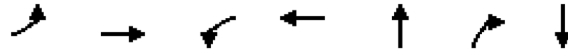
Total Future AM Phase 2

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	147	119	37	6	96	163	4	41	4	145	79	447	
Future Volume (vph)	147	119	37	6	96	163	4	41	4	145	79	447	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	10	10	10	10	10	10	10	10	10	10	10	10	
Total Lost time (s)	5.5	5.5		5.5	5.5	5.5	6.0	6.0		6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1652	1677		1652	1739	1478	1652	1716		1652	1739	1478	
Flt Permitted	0.62	1.00		0.65	1.00	1.00	0.70	1.00		0.73	1.00	1.00	
Satd. Flow (perm)	1086	1677		1136	1739	1478	1222	1716		1263	1739	1478	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	155	125	39	6	101	172	4	43	4	153	83	471	
RTOR Reduction (vph)	0	7	0	0	0	110	0	1	0	0	0	201	
Lane Group Flow (vph)	155	157	0	6	101	62	4	46	0	153	83	270	
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	pt+ov	
Protected Phases	1	6			2			4			8	8 1	
Permitted Phases	6			2		2	4			8			
Actuated Green, G (s)	85.0	85.0		60.0	60.0	60.0	70.0	70.0		70.0	70.0	95.5	
Effective Green, g (s)	85.0	85.0		60.0	60.0	60.0	70.0	70.0		70.0	70.0	95.5	
Actuated g/C Ratio	0.51	0.51		0.36	0.36	0.36	0.42	0.42		0.42	0.42	0.57	
Clearance Time (s)	5.5	5.5		5.5	5.5	5.5	6.0	6.0		6.0	6.0		
Vehicle Extension (s)	6.0	0.2		0.2	0.2	0.2	3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)	620	856		409	626	532	513	721		530	731	847	
v/s Ratio Prot	0.03	0.09			0.06			0.03			0.05	c0.18	
v/s Ratio Perm	c0.10			0.01		0.04	0.00			0.12			
v/c Ratio	0.25	0.18		0.01	0.16	0.12	0.01	0.06		0.29	0.11	0.32	
Uniform Delay, d1	22.2	22.0		34.2	36.2	35.6	28.1	28.7		31.8	29.4	18.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.6	0.0		0.1	0.6	0.4	0.0	0.0		1.4	0.3	0.6	
Delay (s)	22.7	22.0		34.3	36.7	36.0	28.1	28.8		33.2	29.7	19.1	
Level of Service	C	C		C	D	D	C	C		C	C	B	
Approach Delay (s)		22.4			36.2			28.7			23.4		
Approach LOS		C			D			C			C		
Intersection Summary													
HCM 2000 Control Delay			26.0									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.31										
Actuated Cycle Length (s)			166.5									Sum of lost time (s)	17.0
Intersection Capacity Utilization			52.3%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

Queues

11: East Jefferson Street & Rollins Avenue /Rollins Ave

Total Future AM Phase 2























Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	18	77	310	76	274	390	279
v/c Ratio	0.14	0.52	0.85	0.20	0.26	0.28	0.15
Control Delay	47.9	47.1	61.5	18.2	13.4	0.7	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.9	47.1	61.5	18.2	13.4	0.7	11.5
Queue Length 50th (ft)	12	37	207	20	90	0	43
Queue Length 95th (ft)	34	83	289	55	172	15	80
Internal Link Dist (ft)		438		1347	257		274
Turn Bay Length (ft)							
Base Capacity (vph)	235	253	470	485	1066	1419	1871
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	0.08	0.30	0.66	0.16	0.26	0.27	0.15

Intersection Summary

HCM Signalized Intersection Capacity Analysis

11: East Jefferson Street & Rollins Avenue /Rollins Ave

Total Future AM Phase 2

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	44	27	285	32	38	9	243	359	20	218	18
Future Volume (vph)	17	44	27	285	32	38	9	243	359	20	218	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Total Lost time (s)	4.5	4.5		4.5	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	
Frt	1.00	0.94		1.00	0.92			1.00	0.85		0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00		1.00	
Satd. Flow (prot)	1711	1699		1711	1655			1797	1531		3371	
Flt Permitted	0.95	1.00		0.95	1.00			0.99	1.00		0.92	
Satd. Flow (perm)	1711	1699		1711	1655			1778	1531		3111	
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)	18	48	29	310	35	41	10	264	390	22	237	20
RTOR Reduction (vph)	0	21	0	0	32	0	0	0	76	0	4	0
Lane Group Flow (vph)	18	56	0	310	44	0	0	274	314	0	275	0
Turn Type	Split	NA		Split	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases	4	4		3	3			2	3		6	
Permitted Phases							2		2	6		
Actuated Green, G (s)	7.2	7.2		23.3	23.3			64.5	87.8		64.5	
Effective Green, g (s)	7.2	7.2		23.3	23.3			64.5	87.8		64.5	
Actuated g/C Ratio	0.07	0.07		0.21	0.21			0.59	0.81		0.59	
Clearance Time (s)	4.5	4.5		4.5	4.5			5.0	4.5		5.0	
Vehicle Extension (s)	2.0	2.0		1.0	1.0			5.0	1.0		5.0	
Lane Grp Cap (vph)	113	112		365	353			1052	1233		1840	
v/s Ratio Prot	0.01	c0.03		c0.18	0.03				0.05			
v/s Ratio Perm								c0.15	0.15		0.09	
v/c Ratio	0.16	0.50		0.85	0.12			0.26	0.25		0.15	
Uniform Delay, d1	48.0	49.1		41.2	34.6			10.7	2.6		10.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.2	1.3		16.0	0.1			0.6	0.0		0.2	
Delay (s)	48.3	50.4		57.2	34.7			11.3	2.6		10.1	
Level of Service	D	D		E	C			B	A		B	
Approach Delay (s)		50.0			52.7			6.2			10.1	
Approach LOS		D			D			A			B	
Intersection Summary												
HCM 2000 Control Delay			22.5	HCM 2000 Level of Service				C				
HCM 2000 Volume to Capacity ratio			0.42									
Actuated Cycle Length (s)			109.0	Sum of lost time (s)				14.0				
Intersection Capacity Utilization			59.7%	ICU Level of Service				B				
Analysis Period (min)			15									
c Critical Lane Group												

Queues

12: Rockville Pike - 355/Rockville Pike- 355 & Halpine Road

Total Future AM Phase 2



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	44	112	178	29	70	82	1661	66	1884
v/c Ratio	0.18	0.17	0.77	0.09	0.20	0.42	0.51	0.30	0.58
Control Delay	63.3	30.0	93.9	60.3	8.9	13.7	16.4	11.0	19.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.3	30.0	93.9	60.3	8.9	13.7	16.4	11.0	19.2
Queue Length 50th (ft)	47	29	212	30	0	24	343	19	430
Queue Length 95th (ft)	83	56	289	60	37	51	473	43	613
Internal Link Dist (ft)		312		302			1225		274
Turn Bay Length (ft)	250				450	165		175	
Base Capacity (vph)	440	1083	406	596	560	524	3230	268	3267
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	0.10	0.10	0.44	0.05	0.13	0.16	0.51	0.25	0.58

Intersection Summary

HCM Signalized Intersection Capacity Analysis
 12: Rockville Pike - 355/Rockville Pike- 355 & Halpine Road

Total Future AM Phase 2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	52	56	171	28	67	79	1280	315	63	1788	20
Future Volume (vph)	42	52	56	171	28	67	79	1280	315	63	1788	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	5.5	5.5		5.5	5.5	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.91		1.00	0.91	
Frt	1.00	0.92		1.00	1.00	0.85	1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3264		1770	1863	1583	1711	4770		1711	4908	
Flt Permitted	0.74	1.00		0.68	1.00	1.00	0.08	1.00		0.11	1.00	
Satd. Flow (perm)	1375	3264		1269	1863	1583	140	4770		198	4908	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	44	54	58	178	29	70	82	1333	328	66	1862	21
RTOR Reduction (vph)	0	47	0	0	0	57	0	15	0	0	0	0
Lane Group Flow (vph)	44	65	0	178	29	13	82	1646	0	66	1884	0
Turn Type	Perm	NA		Perm	NA	Prot	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8	8	1	6		5	2	
Permitted Phases	4			8			6			2		
Actuated Green, G (s)	34.1	34.1		34.1	34.1	34.1	137.5	126.4		134.3	124.8	
Effective Green, g (s)	34.1	34.1		34.1	34.1	34.1	137.5	126.4		134.3	124.8	
Actuated g/C Ratio	0.18	0.18		0.18	0.18	0.18	0.73	0.67		0.72	0.67	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	5.5	5.5		5.5	5.5	
Vehicle Extension (s)	5.0	5.0		5.0	5.0	5.0	5.0	0.2		5.0	0.2	
Lane Grp Cap (vph)	250	593		230	338	287	195	3215		218	3266	
v/s Ratio Prot		0.02			0.02	0.01	c0.02	0.35		0.02	c0.38	
v/s Ratio Perm	0.03			c0.14			0.28			0.20		
v/c Ratio	0.18	0.11		0.77	0.09	0.04	0.42	0.51		0.30	0.58	
Uniform Delay, d1	64.8	64.0		73.0	63.7	63.3	12.7	15.2		10.0	17.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.2		17.2	0.2	0.1	3.0	0.6		1.6	0.7	
Delay (s)	65.5	64.2		90.2	64.0	63.4	15.7	15.8		11.6	17.8	
Level of Service	E	E		F	E	E	B	B		B	B	
Approach Delay (s)		64.6			80.7			15.8			17.6	
Approach LOS		E			F			B			B	
Intersection Summary												
HCM 2000 Control Delay			22.8									C
HCM 2000 Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			187.5							17.5		
Intersection Capacity Utilization			70.1%									C
ICU Level of Service												
Analysis Period (min)			15									
c Critical Lane Group												

Queues

13: Twinbrook Parkway & Parklawn Drive

Total Future AM Phase 2

























Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	34	84	97	96	132	53	816	190	926
v/c Ratio	0.36	0.68	0.71	0.69	0.37	0.14	0.26	0.22	0.41
Control Delay	107.3	84.2	122.1	120.1	12.2	8.9	12.7	8.3	15.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	107.3	84.2	122.1	120.1	12.2	8.9	12.7	8.3	15.4
Queue Length 50th (ft)	50	73	145	144	0	18	140	32	278
Queue Length 95th (ft)	96	145	218	216	67	41	206	59	406
Internal Link Dist (ft)		332		479			1310		374
Turn Bay Length (ft)			200			190		240	
Base Capacity (vph)	231	250	298	302	688	523	3123	1394	2283
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	0.15	0.34	0.33	0.32	0.19	0.10	0.26	0.14	0.41

Intersection Summary

HCM Signalized Intersection Capacity Analysis

13: Twinbrook Parkway & Parklawn Drive

Total Future AM Phase 2

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	24	51	163	19	124	50	490	277	179	807	63
Future Volume (vph)	36	24	51	163	19	124	50	490	277	179	807	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	11	11	10	10	10	10	10	10
Total Lost time (s)	6.5	6.5		7.0	7.0	7.0	8.0	6.0		8.0	6.0	
Lane Util. Factor	0.95	0.95		0.95	0.95	1.00	1.00	0.91		0.97	0.95	
Frt	1.00	0.90		1.00	1.00	0.85	1.00	0.95		1.00	0.99	
Flt Protected	0.95	1.00		0.95	0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1681	1595		1625	1645	1531	1652	4489		3204	3267	
Flt Permitted	0.95	1.00		0.95	0.96	1.00	0.27	1.00		0.31	1.00	
Satd. Flow (perm)	1681	1595		1625	1645	1531	476	4489		1054	3267	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	38	26	54	173	20	132	53	521	295	190	859	67
RTOR Reduction (vph)	0	33	0	0	0	111	0	20	0	0	2	0
Lane Group Flow (vph)	34	51	0	97	96	21	53	796	0	190	924	0
Turn Type	Split	NA		Split	NA	pt+ov	pm+pt	NA		pm+pt	NA	
Protected Phases	3	3		4	4	4	1	2		1	6	
Permitted Phases							2			6		
Actuated Green, G (s)	12.3	12.3		18.5	18.5	34.4	157.7	150.3		160.7	151.8	
Effective Green, g (s)	12.3	12.3		18.5	18.5	34.4	157.7	150.3		160.7	151.8	
Actuated g/C Ratio	0.06	0.06		0.09	0.09	0.16	0.73	0.69		0.74	0.70	
Clearance Time (s)	6.5	6.5		7.0	7.0		8.0	6.0		8.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	0.2		3.0	0.2	
Lane Grp Cap (vph)	95	90		138	139	242	385	3102		866	2280	
v/s Ratio Prot	0.02	c0.03		c0.06	0.06	0.01	0.00	0.18		c0.01	c0.28	
v/s Ratio Perm							0.10			0.15		
v/c Ratio	0.36	0.57		0.70	0.69	0.09	0.14	0.26		0.22	0.41	
Uniform Delay, d1	98.8	100.0		96.8	96.7	78.1	9.2	12.6		8.1	13.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.3	7.9		15.0	13.8	0.2	0.2	0.2		0.1	0.5	
Delay (s)	101.1	107.9		111.8	110.5	78.3	9.4	12.8		8.2	14.4	
Level of Service	F	F		F	F	E	A	B		A	B	
Approach Delay (s)		106.0			97.8			12.6			13.3	
Approach LOS		F			F			B			B	
Intersection Summary												
HCM 2000 Control Delay	28.9			HCM 2000 Level of Service				C				
HCM 2000 Volume to Capacity ratio	0.44											
Actuated Cycle Length (s)	217.5			Sum of lost time (s)				27.5				
Intersection Capacity Utilization	56.8%			ICU Level of Service				B				
Analysis Period (min)	15											
c Critical Lane Group												

Queues

14: Nebel Street & Randolph Road

Total Future AM Phase 2

























Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	17	783	186	1299	96	63	72	159	76	15
v/c Ratio	0.07	0.39	0.38	0.54	0.42	0.46	0.62	0.54	0.37	0.09
Control Delay	12.3	24.0	12.4	19.8	73.7	104.7	117.5	78.0	92.9	84.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.3	24.0	12.4	19.8	73.7	104.7	117.5	78.0	92.9	84.2
Queue Length 50th (ft)	6	290	77	500	115	88	101	197	102	20
Queue Length 95th (ft)	19	437	135	675	166	143	163	261	161	47
Internal Link Dist (ft)		613		257		122			1618	
Turn Bay Length (ft)	140		125		100			250		
Base Capacity (vph)	374	2001	679	2390	365	417	355	363	432	367
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.39	0.27	0.54	0.26	0.15	0.20	0.44	0.18	0.04

Intersection Summary

HCM Signalized Intersection Capacity Analysis

14: Nebel Street & Randolph Road

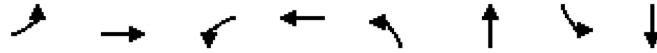
Total Future AM Phase 2

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	688	56	177	1097	137	91	60	68	151	72	14
Future Volume (vph)	16	688	56	177	1097	137	91	60	68	151	72	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	12	12	12	11	11	11	12	12	12
Total Lost time (s)	6.0	6.5		6.0	6.5		6.5	6.5	6.5	6.5	6.5	6.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1652	3266		1770	3480		1711	1801	1531	1770	1863	1583
Flt Permitted	0.18	1.00		0.29	1.00		0.71	1.00	1.00	0.49	1.00	1.00
Satd. Flow (perm)	306	3266		545	3480		1274	1801	1531	915	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	17	724	59	186	1155	144	96	63	72	159	76	15
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	17	783	0	186	1299	0	96	63	72	159	76	15
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Prot	pm+pt	NA	Prot
Protected Phases	1	6		5	2		3	8	8	7	4	4
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	136.0	132.0		155.6	145.6		33.3	16.5	16.5	46.9	23.6	23.6
Effective Green, g (s)	136.0	132.0		155.6	145.6		33.3	16.5	16.5	46.9	23.6	23.6
Actuated g/C Ratio	0.63	0.61		0.72	0.68		0.15	0.08	0.08	0.22	0.11	0.11
Clearance Time (s)	6.0	6.5		6.0	6.5		6.5	6.5	6.5	6.5	6.5	6.5
Vehicle Extension (s)	3.0	5.0		3.0	5.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	218	2000		493	2351		230	137	117	293	204	173
v/s Ratio Prot	0.00	0.24		c0.03	c0.37		0.03	0.03	0.05	c0.06	0.04	0.01
v/s Ratio Perm	0.05			0.24			0.03			c0.06		
v/c Ratio	0.08	0.39		0.38	0.55		0.42	0.46	0.62	0.54	0.37	0.09
Uniform Delay, d1	16.1	21.3		11.2	18.1		81.6	95.2	96.4	72.6	89.1	86.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.6		0.5	0.9		1.7	3.3	10.5	2.6	1.6	0.3
Delay (s)	16.2	21.9		11.7	19.0		83.3	98.5	107.0	75.2	90.6	86.6
Level of Service	B	C		B	B		F	F	F	E	F	F
Approach Delay (s)		21.7			18.1			94.8			80.6	
Approach LOS		C			B			F			F	
Intersection Summary												
HCM 2000 Control Delay			31.2			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			215.5			Sum of lost time (s)			25.5			
Intersection Capacity Utilization			68.9%			ICU Level of Service				C		
Analysis Period (min)			15									
c	Critical Lane Group											

Queues

15: Rockville Pike - 355 & Hubbard Drive/Plaza Driveway

Total Future AM Phase 2



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	20	20	79	67	26	1959	49	2631
v/c Ratio	0.15	0.11	0.56	0.31	0.20	0.43	0.25	0.70
Control Delay	65.0	34.9	81.5	25.6	8.7	9.0	6.5	12.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.1
Total Delay	65.0	34.9	81.5	25.6	8.7	9.0	6.5	18.6
Queue Length 50th (ft)	19	7	79	15	4	213	8	530
Queue Length 95th (ft)	47	34	134	63	14	292	20	683
Internal Link Dist (ft)		170		149		168		419
Turn Bay Length (ft)							180	
Base Capacity (vph)	324	419	349	454	309	4552	358	3746
Starvation Cap Reductn	0	0	0	0	0	0	0	1071
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	0.06	0.05	0.23	0.15	0.08	0.43	0.14	0.98

Intersection Summary

HCM Signalized Intersection Capacity Analysis
 15: Rockville Pike - 355 & Hubbard Drive/Plaza Driveway

Total Future AM Phase 2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	7	13	77	16	50	25	1804	116	48	2530	48
Future Volume (vph)	20	7	13	77	16	50	25	1804	116	48	2530	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	12	11	11	11	11	11	11
Total Lost time (s)	7.0	7.0		7.0	7.0		6.0	5.5		6.0	5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.86		1.00	0.91	
Frt	1.00	0.90		1.00	0.89		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1711	1625		1770	1650		1711	6138		1711	4902	
Flt Permitted	0.71	1.00		0.74	1.00		0.03	1.00		0.08	1.00	
Satd. Flow (perm)	1284	1625		1386	1650		62	6138		136	4902	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	20	7	13	79	16	51	26	1841	118	49	2582	49
RTOR Reduction (vph)	0	12	0	0	46	0	0	3	0	0	1	0
Lane Group Flow (vph)	20	8	0	79	21	0	26	1956	0	49	2630	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	16.3	16.3		16.3	16.3		121.3	116.3		126.1	118.7	
Effective Green, g (s)	16.3	16.3		16.3	16.3		121.3	116.3		126.1	118.7	
Actuated g/C Ratio	0.10	0.10		0.10	0.10		0.77	0.73		0.80	0.75	
Clearance Time (s)	7.0	7.0		7.0	7.0		6.0	5.5		6.0	5.5	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	0.2		5.0	0.2	
Lane Grp Cap (vph)	132	167		142	169		99	4503		181	3671	
v/s Ratio Prot		0.01			0.01		0.01	0.32		c0.01	c0.54	
v/s Ratio Perm	0.02			c0.06			0.19			0.20		
v/c Ratio	0.15	0.05		0.56	0.13		0.26	0.43		0.27	0.72	
Uniform Delay, d1	64.8	64.1		67.7	64.6		10.8	8.2		4.6	10.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.1	0.3		7.8	0.7		3.0	0.3		1.7	1.2	
Delay (s)	65.9	64.4		75.5	65.3		13.7	8.6		6.3	12.0	
Level of Service	E	E		E	E		B	A		A	B	
Approach Delay (s)		65.1			70.8			8.6			11.9	
Approach LOS		E			E			A			B	
Intersection Summary												
HCM 2000 Control Delay			12.8				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			158.5				Sum of lost time (s)			18.5		
Intersection Capacity Utilization			71.3%				ICU Level of Service				C	
Analysis Period (min)			15									
c Critical Lane Group												

Queues

16: Chapman Ave & Josiah Henson Parkway/Randolph Road

Total Future AM Phase 2



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	89	916	10	1367	76	13	12	28	39
v/c Ratio	0.30	0.36	0.02	0.58	0.07	0.15	0.13	0.25	0.37
Control Delay	6.9	7.9	5.3	14.9	0.1	70.1	52.1	69.5	74.6
Queue Delay	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0
Total Delay	6.9	7.9	5.3	15.5	0.1	70.1	52.1	69.5	74.6
Queue Length 50th (ft)	19	135	2	375	0	12	7	27	38
Queue Length 95th (ft)	37	250	8	519	0	35	28	60	76
Internal Link Dist (ft)		321		613			346		212
Turn Bay Length (ft)	350		165		215	250			
Base Capacity (vph)	438	2556	545	2337	1087	115	118	340	318
Starvation Cap Reductn	0	0	0	530	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	0.20	0.36	0.02	0.76	0.07	0.11	0.10	0.08	0.12

Intersection Summary

HCM Signalized Intersection Capacity Analysis

16: Chapman Ave & Josiah Henson Parkway/Randolph Road

Total Future AM Phase 2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	717	80	9	1189	66	11	6	4	27	7	24
Future Volume (vph)	77	717	80	9	1189	66	11	6	4	27	7	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	11	11	11	12	12	12
Total Lost time (s)	5.0	6.0		5.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		0.95	0.95	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.94		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1652	3254		1652	3303	1478	1711	1688		1681	1573	
Flt Permitted	0.14	1.00		0.31	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	247	3254		535	3303	1478	1711	1688		1681	1573	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	89	824	92	10	1367	76	13	7	5	31	8	28
RTOR Reduction (vph)	0	3	0	0	0	24	0	5	0	0	0	0
Lane Group Flow (vph)	89	913	0	10	1367	52	13	7	0	28	39	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Split	NA		Split	NA	
Protected Phases	1	6		5	2		3	3		4	4	
Permitted Phases	6			2		2						
Actuated Green, G (s)	116.2	108.4		104.0	101.2	101.2	5.1	5.1		8.7	8.7	
Effective Green, g (s)	116.2	108.4		104.0	101.2	101.2	5.1	5.1		8.7	8.7	
Actuated g/C Ratio	0.79	0.73		0.70	0.68	0.68	0.03	0.03		0.06	0.06	
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	4.0	0.2		4.0	0.2	0.2	4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)	288	2383		397	2258	1010	58	58		98	92	
v/s Ratio Prot	c0.02	c0.28		0.00	c0.41		c0.01	0.00		0.02	c0.02	
v/s Ratio Perm	0.22			0.02		0.04						
v/c Ratio	0.31	0.38		0.03	0.61	0.05	0.22	0.12		0.29	0.42	
Uniform Delay, d1	7.8	7.4		6.6	12.6	7.7	69.5	69.3		66.7	67.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	0.5		0.0	1.2	0.1	2.7	1.3		2.2	4.2	
Delay (s)	8.6	7.8		6.6	13.8	7.8	72.2	70.6		68.9	71.5	
Level of Service	A	A		A	B	A	E	E		E	E	
Approach Delay (s)		7.9			13.5			71.4			70.4	
Approach LOS		A			B			E			E	
Intersection Summary												
HCM 2000 Control Delay			13.3				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			148.0				Sum of lost time (s)				23.0	
Intersection Capacity Utilization			59.6%				ICU Level of Service				B	
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th TWSC
6: Chapman Ave & Pike Center North/Driveway

Total Future AM Phase 2

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	24	0	35	1	0	4	4	311	2	5	651	46
Future Vol, veh/h	24	0	35	1	0	4	4	311	2	5	651	46
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	28	0	41	1	0	5	5	366	2	6	766	54

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	998	1183	410	772	1209	184	820	0	0	368	0	0
Stage 1	805	805	-	377	377	-	-	-	-	-	-	-
Stage 2	193	378	-	395	832	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	198	188	591	289	182	827	805	-	-	1187	-	-
Stage 1	342	393	-	616	614	-	-	-	-	-	-	-
Stage 2	790	614	-	602	382	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	194	185	591	265	179	827	805	-	-	1187	-	-
Mov Cap-2 Maneuver	194	185	-	265	179	-	-	-	-	-	-	-
Stage 1	339	389	-	611	609	-	-	-	-	-	-	-
Stage 2	779	609	-	555	379	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	19.2		11.3		0.1		0.1	
HCM LOS	C		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	805	-	-	323	581	1187	-	-
HCM Lane V/C Ratio	0.006	-	-	0.215	0.01	0.005	-	-
HCM Control Delay (s)	9.5	0	-	19.2	11.3	8	0	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.8	0	0	-	-

Intersection												
Int Delay, s/veh	2.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	22	31	32	6	33	2	332	49	36	606	8
Future Vol, veh/h	0	22	31	32	6	33	2	332	49	36	606	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	23	32	33	6	34	2	342	51	37	625	8

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1095	1100	317	770	1079	368	633	0	0	393	0	0
Stage 1	703	703	-	372	372	-	-	-	-	-	-	-
Stage 2	392	397	-	398	707	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.93	7.33	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	179	212	680	304	218	677	948	-	-	1164	-	-
Stage 1	395	439	-	648	618	-	-	-	-	-	-	-
Stage 2	632	603	-	600	437	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	159	201	680	254	207	677	948	-	-	1164	-	-
Mov Cap-2 Maneuver	159	201	-	254	207	-	-	-	-	-	-	-
Stage 1	394	417	-	646	616	-	-	-	-	-	-	-
Stage 2	592	601	-	514	416	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.5	16.8	0	0.6
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	948	-	-	342	249	569	1164	-	-
HCM Lane V/C Ratio	0.002	-	-	0.16	0.145	0.065	0.032	-	-
HCM Control Delay (s)	8.8	0	-	17.5	21.9	11.8	8.2	0.2	-
HCM Lane LOS	A	A	-	C	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.6	0.5	0.2	0.1	-	-

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑↑	
Traffic Vol, veh/h	0	278	563	19	19	42
Future Vol, veh/h	0	278	563	19	19	42
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	296	599	20	20	45

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	619	0	-	0	757 310
Stage 1	-	-	-	-	609 -
Stage 2	-	-	-	-	148 -
Critical Hdwy	4.14	-	-	-	6.84 6.94
Critical Hdwy Stg 1	-	-	-	-	5.84 -
Critical Hdwy Stg 2	-	-	-	-	5.84 -
Follow-up Hdwy	2.22	-	-	-	3.52 3.32
Pot Cap-1 Maneuver	957	-	-	-	344 686
Stage 1	-	-	-	-	505 -
Stage 2	-	-	-	-	864 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	957	-	-	-	344 686
Mov Cap-2 Maneuver	-	-	-	-	344 -
Stage 1	-	-	-	-	505 -
Stage 2	-	-	-	-	864 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	12.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	957	-	-	-	524
HCM Lane V/C Ratio	-	-	-	-	0.124
HCM Control Delay (s)	0	-	-	-	12.8
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.4

HCM 6th TWSC
 17: Chapman Ave/Chapman Road & Thompson Ave

Total Future AM Phase 2

Intersection												
Int Delay, s/veh	3.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	3	37	30	15	2	37	142	7	7	144	9
Future Vol, veh/h	2	3	37	30	15	2	37	142	7	7	144	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	3	43	34	17	2	43	163	8	8	166	10

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	450	444	171	463	445	167	176	0	0	171	0	0
Stage 1	187	187	-	253	253	-	-	-	-	-	-	-
Stage 2	263	257	-	210	192	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	519	508	873	509	508	877	1400	-	-	1406	-	-
Stage 1	815	745	-	751	698	-	-	-	-	-	-	-
Stage 2	742	695	-	792	742	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	488	488	873	467	488	877	1400	-	-	1406	-	-
Mov Cap-2 Maneuver	488	488	-	467	488	-	-	-	-	-	-	-
Stage 1	787	741	-	725	674	-	-	-	-	-	-	-
Stage 2	697	671	-	745	738	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	9.8		13.4		1.5		0.3	
HCM LOS	A		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1400	-	-	798	483	1406	-	-
HCM Lane V/C Ratio	0.03	-	-	0.06	0.112	0.006	-	-
HCM Control Delay (s)	7.7	0	-	9.8	13.4	7.6	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.4	0	-	-

HCM 6th TWSC
 18: Rockville Pike - 355 & Rollins Ave Extension

07/17/2024

Intersection						
Int Delay, s/veh	0.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑ ↑↑	↑ ↑↑			↑ ↑↑
Traffic Vol, veh/h	0	48	1728	110	0	2026
Future Vol, veh/h	0	48	1728	110	0	2026
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	52	1878	120	0	2202

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	-	999	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	208	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	-	208	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	28	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	208
HCM Lane V/C Ratio	-	-	0.251
HCM Control Delay (s)	-	-	28
HCM Lane LOS	-	-	D
HCM 95th %tile Q(veh)	-	-	1

Queues

1: Rockville Pike - 355 & Bou Ave

Total Future PM Phase 2



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	50	37	489	166	59	2612	410	191	1753
v/c Ratio	0.53	0.17	0.75	0.39	0.56	1.03	0.48	0.89	0.62
Control Delay	110.1	1.6	81.9	15.3	110.6	71.5	24.1	114.3	32.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	29.9	3.5	0.0	7.3
Total Delay	110.1	1.6	81.9	15.3	110.6	101.4	27.6	114.3	39.8
Queue Length 50th (ft)	65	0	313	24	77	~1353	243	201	569
Queue Length 95th (ft)	116	0	378	98	133	#1494	370	#374	698
Internal Link Dist (ft)	76			198		419			169
Turn Bay Length (ft)					175			245	
Base Capacity (vph)	170	280	683	435	171	2540	850	214	2832
Starvation Cap Reductn	0	0	0	0	0	717	338	0	1040
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	0.29	0.13	0.72	0.38	0.35	1.43	0.80	0.89	0.98

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

1: Rockville Pike - 355 & Bou Ave

Total Future PM Phase 2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	31	36	474	21	140	57	2534	398	185	1682	18
Future Volume (vph)	17	31	36	474	21	140	57	2534	398	185	1682	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	11	11	11	12	12	12
Total Lost time (s)		6.0	6.0	7.0	7.0		5.0	5.5	5.5	6.0	6.0	
Lane Util. Factor		1.00	1.00	0.97	1.00		1.00	0.91	1.00	1.00	0.91	
Fr _t		1.00	0.85	1.00	0.87		1.00	1.00	0.85	1.00	1.00	
Fl _t Protected		0.98	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1708	1478	3204	1512		1711	4916	1531	1770	5077	
Fl _t Permitted		0.98	1.00	0.95	1.00		0.95	1.00	1.00	0.04	1.00	
Satd. Flow (perm)		1708	1478	3204	1512		1711	4916	1531	81	5077	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	18	32	37	489	22	144	59	2612	410	191	1734	19
RTOR Reduction (vph)	0	0	35	0	115	0	0	0	59	0	0	0
Lane Group Flow (vph)	0	50	2	489	51	0	59	2612	351	191	1753	0
Turn Type	Split	NA	Prot	Split	NA		Prot	NA	Prot	pm+pt	NA	
Protected Phases	3	3	3	4	4		1	5	5	6	2	
Permitted Phases										2		
Actuated Green, G (s)		11.2	11.2	40.9	40.9		12.3	103.3	103.3	111.6	111.6	
Effective Green, g (s)		11.2	11.2	40.9	40.9		12.3	103.3	103.3	111.6	111.6	
Actuated g/C Ratio		0.06	0.06	0.20	0.20		0.06	0.52	0.52	0.56	0.56	
Clearance Time (s)		6.0	6.0	7.0	7.0		5.0	5.5	5.5	6.0	6.0	
Vehicle Extension (s)		3.0	3.0	6.0	6.0		3.0	0.2	0.2	3.0	0.2	
Lane Grp Cap (vph)		95	82	655	309		105	2539	790	214	2832	
v/s Ratio Prot		c0.03	0.00	c0.15	0.03		0.03	c0.53	0.23	c0.09	0.35	
v/s Ratio Perm										0.40		
v/c Ratio		0.53	0.03	0.75	0.17		0.56	1.03	0.44	0.89	0.62	
Uniform Delay, d ₁		91.8	89.2	74.7	65.5		91.2	48.4	30.3	84.5	29.8	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d ₂		5.2	0.1	6.2	0.7		6.7	25.7	1.8	33.9	1.0	
Delay (s)		97.0	89.4	80.9	66.2		97.9	74.1	32.1	118.3	30.9	
Level of Service		F	F	F	E		F	E	C	F	C	
Approach Delay (s)		93.8			77.2			68.9			39.5	
Approach LOS		F			E			E			D	
Intersection Summary												
HCM 2000 Control Delay			60.3			HCM 2000 Level of Service				E		
HCM 2000 Volume to Capacity ratio			0.95									
Actuated Cycle Length (s)			200.0			Sum of lost time (s)			31.0			
Intersection Capacity Utilization			94.8%			ICU Level of Service				F		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

2: Rockville Pike - 355 & Federal Plaza/New Street

Total Future PM Phase 2
























Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	140	139	95	205	2436	90	1788
v/c Ratio	0.79	0.49	0.69	0.78	0.73	0.66	0.59
Control Delay	132.3	17.1	99.4	55.6	28.4	74.0	28.1
Queue Delay	0.0	0.0	0.0	0.0	47.1	0.0	8.5
Total Delay	132.3	17.1	99.4	55.6	75.5	74.0	36.5
Queue Length 50th (ft)	220	0	103	153	869	76	580
Queue Length 95th (ft)	303	79	176	273	1173	159	817
Internal Link Dist (ft)	84		73		260		145
Turn Bay Length (ft)				245		175	
Base Capacity (vph)	348	419	423	440	3326	379	3039
Starvation Cap Reductn	0	0	0	0	1112	0	1225
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.33	0.22	0.47	1.10	0.24	0.99

Intersection Summary

HCM Signalized Intersection Capacity Analysis
 2: Rockville Pike - 355 & Federal Plaza/New Street

Total Future PM Phase 2

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	127	8	133	27	9	56	197	2309	30	86	1703	13
Future Volume (vph)	127	8	133	27	9	56	197	2309	30	86	1703	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	16	16	16	11	11	11	10	10	10
Total Lost time (s)		6.5	6.5		6.5		5.0	5.5		5.0	5.5	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.91		1.00	0.91	
Fr _t		1.00	0.85		0.92		1.00	1.00		1.00	1.00	
Fl _t Protected		0.95	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1660	1478		1909		1711	4906		1652	4741	
Fl _t Permitted		0.95	1.00		0.99		0.08	1.00		0.04	1.00	
Satd. Flow (perm)		1660	1478		1909		149	4906		61	4741	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	132	8	139	28	9	58	205	2405	31	90	1774	14
RTOR Reduction (vph)	0	0	124	0	28	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	140	15	0	67	0	205	2436	0	90	1788	0
Turn Type	Split	NA	Prot	Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	8	8	8	4	4		5	2		1	6	
Permitted Phases							2			6		
Actuated Green, G (s)		25.5	25.5		13.7		180.8	161.7		166.9	152.8	
Effective Green, g (s)		25.5	25.5		13.7		180.8	161.7		166.9	152.8	
Actuated g/C Ratio		0.11	0.11		0.06		0.76	0.68		0.70	0.64	
Clearance Time (s)		6.5	6.5		6.5		5.0	5.5		5.0	5.5	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	0.2		3.0	0.2	
Lane Grp Cap (vph)		177	158		109		263	3326		136	3037	
v/s Ratio Prot		c0.08	0.01		c0.03		c0.08	0.50		0.04	0.38	
v/s Ratio Perm							c0.52			0.42		
v/c Ratio		0.79	0.09		0.61		0.78	0.73		0.66	0.59	
Uniform Delay, d ₁		103.9	96.1		109.8		46.4	24.6		56.0	24.7	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d ₂		21.0	0.3		9.8		13.6	1.5		11.5	0.8	
Delay (s)		124.9	96.3		119.6		60.0	26.0		67.5	25.6	
Level of Service		F	F		F		E	C		E	C	
Approach Delay (s)		110.6			119.6		28.7			27.6		
Approach LOS		F			F		C			C		
Intersection Summary												
HCM 2000 Control Delay			34.7				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			238.5				Sum of lost time (s)			23.5		
Intersection Capacity Utilization			78.3%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

4: Rockville Pike - 355 & Rollins Ave/Twinbrook Parkway

Total Future PM Phase 2



Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	489	312	206	144	2128	122	281	1806
v/c Ratio	0.77	0.45	0.66	0.61	0.88	0.15	0.86	0.64
Control Delay	68.7	57.9	69.3	37.6	40.6	4.4	71.8	25.3
Queue Delay	0.0	0.0	0.0	0.0	46.4	0.0	0.0	0.0
Total Delay	68.7	57.9	69.3	37.6	87.0	4.4	71.8	25.3
Queue Length 50th (ft)	258	153	202	59	707	0	238	446
Queue Length 95th (ft)	307	192	280	150	#1013	39	336	607
Internal Link Dist (ft)	1347	625			260			1225
Turn Bay Length (ft)			150				400	
Base Capacity (vph)	1013	1105	494	270	2428	818	378	2830
Starvation Cap Reductn	0	0	0	0	527	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	0.48	0.28	0.42	0.53	1.12	0.15	0.74	0.64













Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

4: Rockville Pike - 355 & Rollins Ave/Twinbrook Parkway

Total Future PM Phase 2

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑			↑↑	↑	↑	↑↑↑	↑	↑	↑↑↑		
Traffic Volume (vph)	0	426	58	0	309	204	143	2107	121	278	1732	56	
Future Volume (vph)	0	426	58	0	309	204	143	2107	121	278	1732	56	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	10	10	10	12	12	12	10	10	10	11	11	11	
Total Lost time (s)		7.5			7.5	7.5	7.0	5.5	5.5	7.0	5.5		
Lane Util. Factor		0.95			0.95	1.00	1.00	0.91	1.00	1.00	0.91		
Frt		0.98			1.00	0.85	1.00	1.00	0.85	1.00	1.00		
Flt Protected		1.00			1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)		3243			3539	1583	1652	4746	1478	1711	4893		
Flt Permitted		1.00			1.00	1.00	0.08	1.00	1.00	0.04	1.00		
Satd. Flow (perm)		3243			3539	1583	146	4746	1478	81	4893		
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	
Adj. Flow (vph)	0	430	59	0	312	206	144	2128	122	281	1749	57	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	60	0	2	0	
Lane Group Flow (vph)	0	489	0	0	312	206	144	2128	62	281	1804	0	
Turn Type		NA			NA	Prot	pm+pt	NA	Prot	pm+pt	NA		
Protected Phases		4			8	8	1	6	6	5	2		
Permitted Phases							6			2			
Actuated Green, G (s)		31.5			31.5	31.5	97.8	81.9	81.9	115.5	92.6		
Effective Green, g (s)		31.5			31.5	31.5	97.8	81.9	81.9	115.5	92.6		
Actuated g/C Ratio		0.20			0.20	0.20	0.61	0.51	0.51	0.72	0.58		
Clearance Time (s)		7.5			7.5	7.5	7.0	5.5	5.5	7.0	5.5		
Vehicle Extension (s)		4.0			4.0	4.0	4.0	0.2	0.2	4.0	0.2		
Lane Grp Cap (vph)		638			696	311	238	2429	756	329	2831		
v/s Ratio Prot		c0.15			0.09	0.13	0.06	0.45	0.04	c0.14	0.37		
v/s Ratio Perm							0.31			c0.47			
v/c Ratio		0.77			0.45	0.66	0.61	0.88	0.08	0.85	0.64		
Uniform Delay, d1		60.8			56.6	59.3	18.9	34.6	19.9	53.4	22.5		
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2		5.8			0.6	5.7	5.0	4.8	0.2	19.5	1.1		
Delay (s)		66.6			57.2	65.1	23.9	39.4	20.1	72.9	23.6		
Level of Service		E			E	E	C	D	C	E	C		
Approach Delay (s)		66.6			60.3			37.5			30.2		
Approach LOS		E			E			D			C		
Intersection Summary													
HCM 2000 Control Delay			39.5									HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.85										
Actuated Cycle Length (s)			160.0									Sum of lost time (s)	20.0
Intersection Capacity Utilization			86.4%									ICU Level of Service	E
Analysis Period (min)			15										
c	Critical Lane Group												

Queues

5: Chapman Ave & Twinbrook Parkway

Total Future PM Phase 2



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	70	976	484	749	224	609	222	123	38
v/c Ratio	0.21	0.74	0.58	0.36	1.13	0.96	0.74	0.76	0.16
Control Delay	17.4	51.1	65.0	18.0	170.7	74.2	98.7	111.4	1.4
Queue Delay	0.0	2.3	0.0	0.0	0.0	22.5	0.0	0.0	0.0
Total Delay	17.4	53.3	65.0	18.0	170.7	96.8	98.7	111.4	1.4
Queue Length 50th (ft)	27	544	271	227	~332	661	140	152	0
Queue Length 95th (ft)	46	633	334	278	#537	#940	190	232	0
Internal Link Dist (ft)		625		1310	176			558	
Turn Bay Length (ft)	175		300						
Base Capacity (vph)	523	1318	875	2058	199	653	338	183	261
Starvation Cap Reductn	0	211	0	0	0	67	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	0.88	0.55	0.36	1.13	1.04	0.66	0.67	0.15

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.






















Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
 5: Chapman Ave & Twinbrook Parkway

Total Future PM Phase 2

														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations														
Traffic Volume (vph)	68	739	208	469	586	141	109	109	591	215	119	37		
Future Volume (vph)	68	739	208	469	586	141	109	109	591	215	119	37		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width	10	10	10	11	11	11	10	10	10	10	10	10		
Total Lost time (s)	5.5	6.0		5.5	6.0			6.5	6.5	6.5	6.5	6.5		
Lane Util. Factor	1.00	0.95		0.97	0.95			1.00	1.00	0.97	1.00	1.00		
Fr _t	1.00	0.97		1.00	0.97			1.00	0.85	1.00	1.00	0.85		
Fl _t Protected	0.95	1.00		0.95	1.00			0.98	1.00	0.95	1.00	1.00		
Satd. Flow (prot)	1652	3195		3319	3322			1696	1478	3204	1739	1478		
Fl _t Permitted	0.37	1.00		0.95	1.00			0.98	1.00	0.95	1.00	1.00		
Satd. Flow (perm)	639	3195		3319	3322			1696	1478	3204	1739	1478		
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97		
Adj. Flow (vph)	70	762	214	484	604	145	112	112	609	222	123	38		
RTOR Reduction (vph)	0	13	0	0	8	0	0	0	48	0	0	34		
Lane Group Flow (vph)	70	963	0	484	741	0	0	224	561	222	123	4		
Turn Type	pm+pt	NA		Prot	NA		Split	NA	pt+ov	Split	NA	Perm		
Protected Phases	5	2		1	6		4	4	4 1	3	3			
Permitted Phases	2											3		
Actuated Green, G (s)	85.6	77.5		47.5	116.9			22.3	76.3	17.7	17.7	17.7		
Effective Green, g (s)	85.6	77.5		47.5	116.9			22.3	76.3	17.7	17.7	17.7		
Actuated g/C Ratio	0.45	0.41		0.25	0.62			0.12	0.40	0.09	0.09	0.09		
Clearance Time (s)	5.5	6.0		5.5	6.0			6.5		6.5	6.5	6.5		
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	3.0		
Lane Grp Cap (vph)	331	1306		831	2049			199	595	299	162	138		
v/s Ratio Prot	0.01	c0.30		0.15	0.22			c0.13	c0.38	0.07	c0.07			
v/s Ratio Perm	0.09											0.00		
v/c Ratio	0.21	0.74		0.58	0.36			1.13	0.94	0.74	0.76	0.03		
Uniform Delay, d ₁	29.7	47.4		62.3	17.9			83.6	54.5	83.7	83.8	78.1		
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d ₂	0.3	3.8		1.0	0.5			101.6	23.6	9.6	18.3	0.1		
Delay (s)	30.1	51.1		63.3	18.4			185.2	78.1	93.2	102.1	78.1		
Level of Service	C	D		E	B			F	E	F	F	E		
Approach Delay (s)		49.7			36.0			106.9			94.6			
Approach LOS		D			D			F			F			
Intersection Summary														
HCM 2000 Control Delay			63.4									HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio			0.86											
Actuated Cycle Length (s)			189.5								24.5			
Intersection Capacity Utilization			85.8%										ICU Level of Service	E
Analysis Period (min)			15											
c	Critical Lane Group													

Queues

9: Chapman Ave & Bou Ave

Total Future PM Phase 2



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	355	310	16	176	274	18	193	258	132	373
v/c Ratio	0.56	0.33	0.05	0.31	0.41	0.04	0.30	0.68	0.20	0.36
Control Delay	26.8	22.5	44.7	48.5	6.4	37.9	40.0	58.6	39.5	2.2
Queue Delay	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay	27.2	22.7	44.7	48.5	6.4	37.9	40.0	58.6	39.5	2.3
Queue Length 50th (ft)	237	192	13	157	0	14	154	257	105	0
Queue Length 95th (ft)	315	260	37	247	76	36	244	408	175	42
Internal Link Dist (ft)		200		800			128		31	
Turn Bay Length (ft)	275				250	70				
Base Capacity (vph)	847	1400	328	573	671	431	650	380	669	1348
Starvation Cap Reductn	173	458	0	0	0	0	0	0	0	303
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.33	0.05	0.31	0.41	0.04	0.30	0.68	0.20	0.36

Intersection Summary

HCM Signalized Intersection Capacity Analysis

9: Chapman Ave & Bou Ave

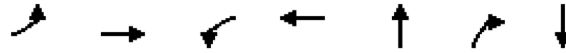
Total Future PM Phase 2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	341	242	56	15	169	263	17	143	42	248	127	358
Future Volume (vph)	341	242	56	15	169	263	17	143	42	248	127	358
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	10	10	10	10	10	10
Total Lost time (s)	5.5	5.5		5.5	5.5	5.5	6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1652	1690		1652	1739	1478	1652	1679		1652	1739	1478
Flt Permitted	0.52	1.00		0.57	1.00	1.00	0.65	1.00		0.57	1.00	1.00
Satd. Flow (perm)	897	1690		994	1739	1478	1122	1679		989	1739	1478
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	355	252	58	16	176	274	18	149	44	258	132	373
RTOR Reduction (vph)	0	4	0	0	0	184	0	4	0	0	0	146
Lane Group Flow (vph)	355	306	0	16	176	90	18	189	0	258	132	227
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	pt+ov
Protected Phases	1	6			2			4			8	8 1
Permitted Phases	6			2		2	4			8		
Actuated Green, G (s)	100.4	100.4		60.1	60.1	60.1	70.1	70.1		70.1	70.1	110.9
Effective Green, g (s)	100.4	100.4		60.1	60.1	60.1	70.1	70.1		70.1	70.1	110.9
Actuated g/C Ratio	0.55	0.55		0.33	0.33	0.33	0.39	0.39		0.39	0.39	0.61
Clearance Time (s)	5.5	5.5		5.5	5.5	5.5	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	6.0	0.2		0.2	0.2	0.2	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	639	932		328	574	488	432	646		380	669	900
v/s Ratio Prot	c0.11	0.18			0.10			0.11			0.08	0.15
v/s Ratio Perm	c0.20			0.02		0.06	0.02			c0.26		
v/c Ratio	0.56	0.33		0.05	0.31	0.19	0.04	0.29		0.68	0.20	0.25
Uniform Delay, d1	24.0	22.3		41.5	45.4	43.5	35.0	38.8		46.6	37.2	16.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.3	0.1		0.3	1.4	0.8	0.0	0.3		9.4	0.7	0.4
Delay (s)	26.3	22.4		41.8	46.8	44.3	35.0	39.0		56.0	37.9	16.8
Level of Service	C	C		D	D	D	D	D		E	D	B
Approach Delay (s)		24.5			45.2			38.7			33.7	
Approach LOS		C			D			D			C	
Intersection Summary												
HCM 2000 Control Delay			33.8									HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			182.0								17.0	Sum of lost time (s)
Intersection Capacity Utilization			70.8%									ICU Level of Service C
Analysis Period (min)			15									
c Critical Lane Group												

Queues

11: East Jefferson Street & Rollins Avenue /Rollins Ave

Total Future PM Phase 2



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	10	73	403	149	504	414	312
v/c Ratio	0.08	0.51	0.92	0.32	0.50	0.30	0.18
Control Delay	46.6	46.9	67.7	22.0	18.7	0.8	13.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.6	46.9	67.7	22.0	18.7	0.8	13.2
Queue Length 50th (ft)	7	35	267	51	223	0	56
Queue Length 95th (ft)	23	80	#436	106	347	15	88
Internal Link Dist (ft)		438		1347	257		274
Turn Bay Length (ft)							
Base Capacity (vph)	235	253	470	494	1005	1390	1741
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	0.04	0.29	0.86	0.30	0.50	0.30	0.18





















Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

11: East Jefferson Street & Rollins Avenue /Rollins Ave

Total Future PM Phase 2

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	10	44	26	387	65	78	7	477	397	18	263	18	
Future Volume (vph)	10	44	26	387	65	78	7	477	397	18	263	18	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11	
Total Lost time (s)	4.5	4.5		4.5	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		
Frt	1.00	0.94		1.00	0.92			1.00	0.85		0.99		
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00		1.00		
Satd. Flow (prot)	1711	1701		1711	1654			1799	1531		3380		
Flt Permitted	0.95	1.00		0.95	1.00			1.00	1.00		0.91		
Satd. Flow (perm)	1711	1701		1711	1654			1792	1531		3098		
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	
Adj. Flow (vph)	10	46	27	403	68	81	7	497	414	19	274	19	
RTOR Reduction (vph)	0	21	0	0	40	0	0	0	80	0	4	0	
Lane Group Flow (vph)	10	52	0	403	109	0	0	504	334	0	308	0	
Turn Type	Split	NA		Split	NA		Perm	NA	pm+ov	Perm	NA		
Protected Phases	4	4		3	3			2	3		6		
Permitted Phases							2		2		6		
Actuated Green, G (s)	7.0	7.0		27.8	27.8			60.2	88.0		60.2		
Effective Green, g (s)	7.0	7.0		27.8	27.8			60.2	88.0		60.2		
Actuated g/C Ratio	0.06	0.06		0.26	0.26			0.55	0.81		0.55		
Clearance Time (s)	4.5	4.5		4.5	4.5			5.0	4.5		5.0		
Vehicle Extension (s)	2.0	2.0		1.0	1.0			5.0	1.0		5.0		
Lane Grp Cap (vph)	109	109		436	421			989	1236		1711		
v/s Ratio Prot	0.01	c0.03		c0.24	0.07				0.07				
v/s Ratio Perm								c0.28	0.15		0.10		
v/c Ratio	0.09	0.48		0.92	0.26			0.51	0.27		0.18		
Uniform Delay, d1	48.0	49.2		39.6	32.4			15.2	2.6		12.1		
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00		
Incremental Delay, d2	0.1	1.2		24.9	0.1			1.9	0.0		0.2		
Delay (s)	48.1	50.5		64.5	32.5			17.1	2.6		12.4		
Level of Service	D	D		E	C			B	A		B		
Approach Delay (s)		50.2			55.9			10.6			12.4		
Approach LOS		D			E			B			B		
Intersection Summary													
HCM 2000 Control Delay			26.0									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.63										
Actuated Cycle Length (s)			109.0									Sum of lost time (s)	14.0
Intersection Capacity Utilization			66.7%									ICU Level of Service	C
Analysis Period (min)			15										
c	Critical Lane Group												

Queues

12: Rockville Pike - 355/Rockville Pike- 355 & Halpine Road

Total Future PM Phase 2



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	103	161	223	74	134	207	2362	104	1948
v/c Ratio	0.34	0.20	0.81	0.17	0.29	0.77	0.79	0.69	0.72
Control Delay	61.0	23.1	89.5	55.9	8.3	68.2	31.8	69.5	36.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.0	23.1	89.5	55.9	8.3	68.2	31.8	69.5	36.0
Queue Length 50th (ft)	107	35	263	74	0	183	769	78	649
Queue Length 95th (ft)	155	64	343	113	55	283	1072	158	900
Internal Link Dist (ft)		312		302			1225		274
Turn Bay Length (ft)	250				450	165		175	
Base Capacity (vph)	422	1097	382	596	597	494	2983	180	2694
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	0.24	0.15	0.58	0.12	0.22	0.42	0.79	0.58	0.72

Intersection Summary

HCM Signalized Intersection Capacity Analysis
 12: Rockville Pike - 355/Rockville Pike- 355 & Halpine Road

Total Future PM Phase 2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	98	66	87	212	70	127	197	2142	102	99	1820	30	
Future Volume (vph)	98	66	87	212	70	127	197	2142	102	99	1820	30	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11	
Total Lost time (s)	6.5	6.5		6.5	6.5	6.5	5.5	5.5		5.5	5.5		
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.91		1.00	0.91		
Fr _t	1.00	0.91		1.00	1.00	0.85	1.00	0.99		1.00	1.00		
Fl _t Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1770	3236		1770	1863	1583	1711	4882		1711	4904		
Fl _t Permitted	0.71	1.00		0.64	1.00	1.00	0.05	1.00		0.04	1.00		
Satd. Flow (perm)	1320	3236		1193	1863	1583	88	4882		70	4904		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	103	69	92	223	74	134	207	2255	107	104	1916	32	
RTOR Reduction (vph)	0	71	0	0	0	103	0	2	0	0	0	0	
Lane Group Flow (vph)	103	90	0	223	74	31	207	2360	0	104	1948	0	
Turn Type	Perm	NA		Perm	NA	Prot	pm+pt	NA		pm+pt	NA		
Protected Phases		4			8	8	1	6		5	2		
Permitted Phases	4			8			6			2			
Actuated Green, G (s)	43.2	43.2		43.2	43.2	43.2	132.3	114.5		115.2	102.9		
Effective Green, g (s)	43.2	43.2		43.2	43.2	43.2	132.3	114.5		115.2	102.9		
Actuated g/C Ratio	0.23	0.23		0.23	0.23	0.23	0.71	0.61		0.61	0.55		
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	5.5	5.5		5.5	5.5		
Vehicle Extension (s)	5.0	5.0		5.0	5.0	5.0	5.0	0.2		5.0	0.2		
Lane Grp Cap (vph)	304	745		274	429	364	268	2981		150	2691		
v/s Ratio Prot		0.03			0.04	0.02	c0.10	c0.48		0.05	0.40		
v/s Ratio Perm	0.08			c0.19			0.45			0.38			
v/c Ratio	0.34	0.12		0.81	0.17	0.08	0.77	0.79		0.69	0.72		
Uniform Delay, d ₁	60.2	57.1		68.3	57.8	56.6	56.4	27.5		47.4	31.7		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d ₂	1.4	0.2		18.6	0.4	0.2	14.9	2.2		16.2	1.7		
Delay (s)	61.6	57.3		87.0	58.2	56.8	71.3	29.8		63.6	33.4		
Level of Service	E	E		F	E	E	E	C		E	C		
Approach Delay (s)		59.0			72.7			33.1			34.9		
Approach LOS		E			E			C			C		
Intersection Summary													
HCM 2000 Control Delay			38.3									HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.81										
Actuated Cycle Length (s)			187.5									Sum of lost time (s)	17.5
Intersection Capacity Utilization			85.5%									ICU Level of Service	E
Analysis Period (min)			15										
c Critical Lane Group													

Queues

13: Twinbrook Parkway & Parklawn Drive

Total Future PM Phase 2


























Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	42	111	181	183	289	33	1562	141	824
v/c Ratio	0.34	0.74	0.79	0.79	0.55	0.09	0.55	0.37	0.39
Control Delay	101.3	94.9	112.4	111.8	17.6	14.7	26.9	15.8	21.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	101.3	94.9	112.4	111.8	17.6	14.7	26.9	15.8	21.9
Queue Length 50th (ft)	62	114	268	271	62	15	462	32	303
Queue Length 95th (ft)	110	195	357	362	159	37	638	60	438
Internal Link Dist (ft)		332		479			1310		374
Turn Bay Length (ft)			200			190		240	
Base Capacity (vph)	231	250	300	304	822	515	2839	1037	2097
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	0.18	0.44	0.60	0.60	0.35	0.06	0.55	0.14	0.39

Intersection Summary

HCM Signalized Intersection Capacity Analysis

13: Twinbrook Parkway & Parklawn Drive

Total Future PM Phase 2

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	44	32	68	304	39	272	31	1198	271	133	743	32	
Future Volume (vph)	44	32	68	304	39	272	31	1198	271	133	743	32	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	12	12	12	11	11	11	10	10	10	10	10	10	
Total Lost time (s)	6.5	6.5		7.0	7.0	7.0	8.0	6.0		8.0	6.0		
Lane Util. Factor	0.95	0.95		0.95	0.95	1.00	1.00	0.91		0.97	0.95		
Frt	1.00	0.90		1.00	1.00	0.85	1.00	0.97		1.00	0.99		
Flt Protected	0.95	1.00		0.95	0.96	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1681	1594		1625	1647	1531	1652	4615		3204	3283		
Flt Permitted	0.95	1.00		0.95	0.96	1.00	0.30	1.00		0.11	1.00		
Satd. Flow (perm)	1681	1594		1625	1647	1531	524	4615		374	3283		
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	
Adj. Flow (vph)	47	34	72	323	41	289	33	1274	288	141	790	34	
RTOR Reduction (vph)	0	32	0	0	0	184	0	9	0	0	1	0	
Lane Group Flow (vph)	42	79	0	181	183	105	33	1553	0	141	823	0	
Turn Type	Split	NA		Split	NA	pt+ov	pm+pt	NA		pm+pt	NA		
Protected Phases	3	3		4	4	4	1	2		1	6		
Permitted Phases							2			6			
Actuated Green, G (s)	15.9	15.9		30.8	30.8	47.6	139.4	133.5		147.2	137.4		
Effective Green, g (s)	15.9	15.9		30.8	30.8	47.6	139.4	133.5		147.2	137.4		
Actuated g/C Ratio	0.07	0.07		0.14	0.14	0.22	0.64	0.61		0.68	0.63		
Clearance Time (s)	6.5	6.5		7.0	7.0		8.0	6.0		8.0	6.0		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	0.2		3.0	0.2		
Lane Grp Cap (vph)	122	116		230	233	335	366	2832		380	2073		
v/s Ratio Prot	0.02	c0.05		c0.11	0.11	c0.07	0.00	c0.34		0.02	c0.25		
v/s Ratio Perm							0.06			0.23			
v/c Ratio	0.34	0.68		0.79	0.79	0.31	0.09	0.55		0.37	0.40		
Uniform Delay, d1	95.8	98.3		90.2	90.2	71.2	14.9	24.5		16.2	19.7		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	1.7	14.6		16.1	15.8	0.5	0.1	0.8		0.6	0.6		
Delay (s)	97.5	112.9		106.3	106.0	71.8	15.0	25.2		16.9	20.3		
Level of Service	F	F		F	F	E	B	C		B	C		
Approach Delay (s)		108.7			90.9			25.0			19.8		
Approach LOS		F			F			C			B		
Intersection Summary													
HCM 2000 Control Delay			40.1									HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.59										
Actuated Cycle Length (s)			217.5									Sum of lost time (s)	27.5
Intersection Capacity Utilization			66.6%									ICU Level of Service	C
Analysis Period (min)			15										
c Critical Lane Group													

Queues

14: Nebel Street & Randolph Road

Total Future PM Phase 2



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	22	1219	178	1075	132	148	302	308	174	25
v/c Ratio	0.13	0.94	0.87	0.67	0.34	0.38	0.92	0.59	0.30	0.05
Control Delay	30.8	74.8	95.2	48.6	42.5	74.6	113.8	47.9	57.3	50.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.8	74.8	95.2	48.6	42.5	74.6	113.8	47.9	57.3	50.5
Queue Length 50th (ft)	16	~933	197	665	112	179	417	293	182	24
Queue Length 95th (ft)	36	#1196	290	761	166	259	#586	384	266	54
Internal Link Dist (ft)		613		257		122			1618	
Turn Bay Length (ft)	140		125		100			250		
Base Capacity (vph)	304	1299	437	1614	565	417	355	535	579	492
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.94	0.41	0.67	0.23	0.35	0.85	0.58	0.30	0.05

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.























95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

14: Nebel Street & Randolph Road

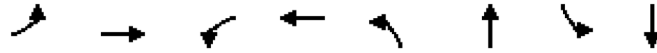
Total Future PM Phase 2

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	1074	84	169	833	188	125	141	287	293	165	24
Future Volume (vph)	21	1074	84	169	833	188	125	141	287	293	165	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	12	12	12	11	11	11	12	12	12
Total Lost time (s)	6.0	6.5		6.0	6.5		6.5	6.5	6.5	6.5	6.5	6.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1652	3267		1770	3441		1711	1801	1531	1770	1863	1583
Flt Permitted	0.17	1.00		0.05	1.00		0.65	1.00	1.00	0.47	1.00	1.00
Satd. Flow (perm)	288	3267		95	3441		1166	1801	1531	881	1863	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	22	1131	88	178	877	198	132	148	302	308	174	25
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	22	1219	0	178	1075	0	132	148	302	308	174	25
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Prot	pm+pt	NA	Prot
Protected Phases	1	6		5	2		3	8	8	7	4	4
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	91.6	85.7		111.8	99.9		63.6	46.4	46.4	90.7	67.0	67.0
Effective Green, g (s)	91.6	85.7		111.8	99.9		63.6	46.4	46.4	90.7	67.0	67.0
Actuated g/C Ratio	0.43	0.40		0.52	0.46		0.30	0.22	0.22	0.42	0.31	0.31
Clearance Time (s)	6.0	6.5		6.0	6.5		6.5	6.5	6.5	6.5	6.5	6.5
Vehicle Extension (s)	3.0	5.0		3.0	5.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	159	1299		205	1595		387	387	329	526	579	492
v/s Ratio Prot	0.00	c0.37		c0.08	0.31		0.03	0.08	c0.20	c0.10	0.09	0.02
v/s Ratio Perm	0.05			0.37			0.07			0.14		
v/c Ratio	0.14	0.94		0.87	0.67		0.34	0.38	0.92	0.59	0.30	0.05
Uniform Delay, d1	38.6	62.4		68.3	45.1		58.0	72.3	82.7	44.5	56.4	52.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	14.0		29.9	2.3		0.7	0.9	29.7	2.0	0.4	0.1
Delay (s)	39.0	76.4		98.2	47.4		58.7	73.2	112.3	46.4	56.8	52.0
Level of Service	D	E		F	D		E	E	F	D	E	D
Approach Delay (s)		75.7			54.6			90.2			50.3	
Approach LOS		E			D			F			D	
Intersection Summary												
HCM 2000 Control Delay			67.1			HCM 2000 Level of Service				E		
HCM 2000 Volume to Capacity ratio			0.86									
Actuated Cycle Length (s)			215.5			Sum of lost time (s)			25.5			
Intersection Capacity Utilization			86.6%			ICU Level of Service				E		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

15: Rockville Pike - 355 & Hubbard Drive/Plaza Driveway

Total Future PM Phase 2



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	42	46	194	158	19	3032	168	2235
v/c Ratio	0.23	0.14	0.75	0.37	0.14	0.86	0.69	0.67
Control Delay	54.2	20.9	77.5	11.7	11.8	32.6	55.1	18.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.8
Total Delay	54.2	20.9	77.5	11.7	11.8	32.6	55.1	24.7
Queue Length 50th (ft)	37	11	192	12	5	743	119	532
Queue Length 95th (ft)	72	45	267	72	16	#1038	203	701
Internal Link Dist (ft)		170		149		168		419
Turn Bay Length (ft)							180	
Base Capacity (vph)	245	429	341	513	322	3531	311	3314
Starvation Cap Reductn	0	0	0	0	0	0	0	1024
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	0.11	0.57	0.31	0.06	0.86	0.54	0.98






















Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

15: Rockville Pike - 355 & Hubbard Drive/Plaza Driveway

Total Future PM Phase 2

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	12	32	186	13	138	18	2661	250	161	2120	26
Future Volume (vph)	40	12	32	186	13	138	18	2661	250	161	2120	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	12	11	11	11	11	11	11
Total Lost time (s)	7.0	7.0		7.0	7.0		6.0	5.5		6.0	5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.86		1.00	0.91	
Frt	1.00	0.89		1.00	0.86		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1711	1607		1770	1608		1711	6115		1711	4907	
Flt Permitted	0.54	1.00		0.73	1.00		0.05	1.00		0.04	1.00	
Satd. Flow (perm)	974	1607		1354	1608		94	6115		74	4907	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	42	12	33	194	14	144	19	2772	260	168	2208	27
RTOR Reduction (vph)	0	27	0	0	116	0	0	8	0	0	0	0
Lane Group Flow (vph)	42	19	0	194	42	0	19	3024	0	168	2235	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	30.3	30.3		30.3	30.3		96.4	91.4		115.7	104.7	
Effective Green, g (s)	30.3	30.3		30.3	30.3		96.4	91.4		115.7	104.7	
Actuated g/C Ratio	0.19	0.19		0.19	0.19		0.61	0.58		0.73	0.66	
Clearance Time (s)	7.0	7.0		7.0	7.0		6.0	5.5		6.0	5.5	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	0.2		5.0	0.2	
Lane Grp Cap (vph)	186	307		258	307		108	3526		243	3241	
v/s Ratio Prot		0.01			0.03		0.01	c0.49		c0.08	c0.46	
v/s Ratio Perm	0.04			c0.14			0.10			0.43		
v/c Ratio	0.23	0.06		0.75	0.14		0.18	0.86		0.69	0.69	
Uniform Delay, d1	54.2	52.5		60.5	53.2		14.8	28.1		49.3	16.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.3	0.2		13.7	0.4		1.6	2.9		10.3	1.2	
Delay (s)	55.5	52.7		74.3	53.6		16.4	31.0		59.6	18.0	
Level of Service	E	D		E	D		B	C		E	B	
Approach Delay (s)		54.0			65.0			31.0			20.9	
Approach LOS		D			E			C			C	
Intersection Summary												
HCM 2000 Control Delay			29.2				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.82									
Actuated Cycle Length (s)			158.5				Sum of lost time (s)			18.5		
Intersection Capacity Utilization			87.4%				ICU Level of Service			E		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

16: Chapman Ave & Josiah Henson Parkway/Randolph Road

Total Future PM Phase 2




























Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	150	1119	15	830	132	52	63	142	169
v/c Ratio	0.38	0.54	0.05	0.45	0.15	0.49	0.53	0.57	0.71
Control Delay	12.5	18.3	10.6	22.0	3.1	82.5	69.5	66.6	75.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.5	18.3	10.6	22.0	3.1	82.5	69.5	66.6	75.4
Queue Length 50th (ft)	49	269	5	243	0	49	47	136	166
Queue Length 95th (ft)	92	475	15	356	33	97	99	202	240
Internal Link Dist (ft)		321		613			346		212
Turn Bay Length (ft)	350		165		215	250			
Base Capacity (vph)	508	2073	375	1833	882	115	127	340	325
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	0.30	0.54	0.04	0.45	0.15	0.45	0.50	0.42	0.52

Intersection Summary

HCM Signalized Intersection Capacity Analysis

16: Chapman Ave & Josiah Henson Parkway/Randolph Road

Total Future PM Phase 2

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (vph)	144	1002	72	14	797	127	50	40	20	152	51	96
Future Volume (vph)	144	1002	72	14	797	127	50	40	20	152	51	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	11	11	11	12	12	12
Total Lost time (s)	5.0	6.0		5.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		0.95	0.95	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.95		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1652	3270		1652	3303	1478	1711	1711		1681	1605	
Flt Permitted	0.26	1.00		0.21	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	454	3270		371	3303	1478	1711	1711		1681	1605	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	150	1044	75	15	830	132	52	42	21	158	53	100
RTOR Reduction (vph)	0	3	0	0	0	59	0	12	0	0	0	0
Lane Group Flow (vph)	150	1116	0	15	830	73	52	51	0	142	169	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Split	NA		Split	NA	
Protected Phases	1	6		5	2		3	3		4	4	
Permitted Phases	6			2		2						
Actuated Green, G (s)	98.8	90.8		85.2	82.2	82.2	9.2	9.2		22.0	22.0	
Effective Green, g (s)	98.8	90.8		85.2	82.2	82.2	9.2	9.2		22.0	22.0	
Actuated g/C Ratio	0.67	0.61		0.58	0.56	0.56	0.06	0.06		0.15	0.15	
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	4.0	0.2		4.0	0.2	0.2	4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)	396	2006		239	1834	820	106	106		249	238	
v/s Ratio Prot	c0.03	c0.34		0.00	0.25		c0.03	0.03		0.08	c0.11	
v/s Ratio Perm	0.22			0.03		0.05						
v/c Ratio	0.38	0.56		0.06	0.45	0.09	0.49	0.48		0.57	0.71	
Uniform Delay, d1	10.8	16.8		14.1	19.5	15.4	67.1	67.1		58.6	60.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	1.1		0.2	0.8	0.2	4.8	4.6		3.7	10.2	
Delay (s)	11.7	17.9		14.2	20.3	15.6	71.9	71.7		62.3	70.2	
Level of Service	B	B		B	C	B	E	E		E	E	
Approach Delay (s)		17.2			19.6			71.8			66.6	
Approach LOS		B			B			E			E	
Intersection Summary												
HCM 2000 Control Delay			26.2	HCM 2000 Level of Service				C				
HCM 2000 Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			148.0	Sum of lost time (s)				23.0				
Intersection Capacity Utilization			66.0%	ICU Level of Service				C				
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th TWSC
6: Chapman Ave & Pike Center North/Driveway

Total Future PM Phase 2

Intersection												
Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	31	1	37	4	1	7	41	753	8	5	654	58
Future Vol, veh/h	31	1	37	4	1	7	41	753	8	5	654	58
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	34	1	41	4	1	8	46	837	9	6	727	64

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1282	1709	396	1310	1737	423	791	0	0	846	0	0
Stage 1	771	771	-	934	934	-	-	-	-	-	-	-
Stage 2	511	938	-	376	803	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	122	90	603	117	86	579	825	-	-	787	-	-
Stage 1	359	408	-	286	343	-	-	-	-	-	-	-
Stage 2	514	341	-	617	394	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	108	79	603	98	76	579	825	-	-	787	-	-
Mov Cap-2 Maneuver	108	79	-	98	76	-	-	-	-	-	-	-
Stage 1	321	402	-	256	307	-	-	-	-	-	-	-
Stage 2	452	305	-	565	388	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	35.9		26.3		1		0.2	
HCM LOS	E		D					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	825	-	-	191	182	787	-	-
HCM Lane V/C Ratio	0.055	-	-	0.401	0.073	0.007	-	-
HCM Control Delay (s)	9.6	0.5	-	35.9	26.3	9.6	0.1	-
HCM Lane LOS	A	A	-	E	D	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	1.8	0.2	0	-	-

HCM 6th TWSC
 7: Chapman Ave & Rollins Ave Extension/Rollins Ave

Total Future PM Phase 2

Intersection												
Int Delay, s/veh	14.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	39	19	4	59	20	89	29	674	49	45	631	19
Future Vol, veh/h	39	19	4	59	20	89	29	674	49	45	631	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	40	20	4	61	21	92	30	695	51	46	651	20

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1590	1559	336	1209	1544	721	671	0	0	746	0	0
Stage 1	753	753	-	781	781	-	-	-	-	-	-	-
Stage 2	837	806	-	428	763	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.93	7.33	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	79	112	661	149	114	426	917	-	-	860	-	-
Stage 1	369	417	-	387	404	-	-	-	-	-	-	-
Stage 2	360	394	-	576	412	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	47	97	661	112	98	426	917	-	-	860	-	-
Mov Cap-2 Maneuver	47	97	-	112	98	-	-	-	-	-	-	-
Stage 1	348	381	-	365	381	-	-	-	-	-	-	-
Stage 2	252	372	-	496	377	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	249.9		47.3		0.3		1	
HCM LOS	F		E					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	917	-	-	60	110	318	860	-	-
HCM Lane V/C Ratio	0.033	-	-	1.065	0.647	0.321	0.054	-	-
HCM Control Delay (s)	9.1	0	-	249.9	84.1	21.6	9.4	0.4	-
HCM Lane LOS	A	A	-	F	F	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	5.1	3.3	1.4	0.2	-	-

Intersection						
Int Delay, s/veh	2.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑↑	
Traffic Vol, veh/h	9	540	492	45	49	127
Future Vol, veh/h	9	540	492	45	49	127
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	557	507	46	51	131

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	553	0	0	827	277
Stage 1	-	-	-	530	-
Stage 2	-	-	-	297	-
Critical Hdwy	4.14	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	3.52	3.32
Pot Cap-1 Maneuver	1013	-	-	310	720
Stage 1	-	-	-	555	-
Stage 2	-	-	-	728	-
Platoon blocked, %		-	-		
Mov Cap-1 Maneuver	1013	-	-	306	720
Mov Cap-2 Maneuver	-	-	-	306	-
Stage 1	-	-	-	548	-
Stage 2	-	-	-	728	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	15.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1013	-	-	-	523
HCM Lane V/C Ratio	0.009	-	-	-	0.347
HCM Control Delay (s)	8.6	0.1	-	-	15.5
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	1.5

HCM 6th TWSC
 17: Chapman Ave/Chapman Road & Thompson Ave

Total Future PM Phase 2

Intersection												
Int Delay, s/veh	3.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	26	17	122	9	12	5	28	279	23	7	281	27
Future Vol, veh/h	26	17	122	9	12	5	28	279	23	7	281	27
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	28	18	130	10	13	5	30	297	24	7	299	29

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	706	709	314	771	711	309	328	0	0	321	0	0
Stage 1	328	328	-	369	369	-	-	-	-	-	-	-
Stage 2	378	381	-	402	342	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	351	359	726	317	358	731	1232	-	-	1239	-	-
Stage 1	685	647	-	651	621	-	-	-	-	-	-	-
Stage 2	644	613	-	625	638	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	329	346	726	243	345	731	1232	-	-	1239	-	-
Mov Cap-2 Maneuver	329	346	-	243	345	-	-	-	-	-	-	-
Stage 1	664	642	-	631	602	-	-	-	-	-	-	-
Stage 2	607	595	-	495	634	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	14.4		16.9		0.7		0.2	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1232	-	-	557	331	1239	-	-
HCM Lane V/C Ratio	0.024	-	-	0.315	0.084	0.006	-	-
HCM Control Delay (s)	8	0	-	14.4	16.9	7.9	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	1.3	0.3	0	-	-

HCM 6th TWSC
 18: Rockville Pike - 355 & Rollins Ave Extension

07/17/2024

Intersection						
Int Delay, s/veh	13.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑ ↑ ↑	↑ ↑ ↑			↑ ↑ ↑
Traffic Vol, veh/h	0	149	2542	198	0	1863
Future Vol, veh/h	0	149	2542	198	0	1863
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	162	2763	215	0	2025

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	1489	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	7.14	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.92	-
Pot Cap-1 Maneuver	0	~ 97	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	-	~ 97	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	417.7	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	97
HCM Lane V/C Ratio	-	-	1.67
HCM Control Delay (s)	-	-	417.7
HCM Lane LOS	-	-	F
HCM 95th %tile Q(veh)	-	-	12.8

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	Policy Area	Operating Condition	Measure of Performance	Existing Conditions		Future Background Conditions		P1 Total Future Conditions		P2 Total Future Conditions		Background vs. Total Future	
				AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
01. Rockville Pike / Bou Ave	Orange	Signalized	CLV Pass/Fail (1550 CLV Max)	829 Pass	1154 Pass	1088 Pass	1349 Pass	1163 Pass	1552 Fail	1146 Pass	1474 Pass	+58 +5.3%	+125 +9.3%
02. Rockville Pike / Pike Center / Federal Plaza	Orange	Signalized	CLV Pass/Fail (1550 CLV Max)	625 Pass	874 Pass	868 Pass	1060 Pass	864 Pass	1102 Pass	880 Pass	1187 Pass	+12 +1.4%	+127 +12.0%
03. Rockville Pike / Gas Station	Orange	Unsignalized	CLV Pass/Fail (1550 CLV Max)	535 Pass	748 Pass	779 Pass	941 Pass	776 Pass	995 Pass	746 Pass	873 Pass	-33 -4.2%	-68 -7.2%
04. Rockville Pike / Twinbrook Park / Rollins Ave	Red	Signalized	CLV Pass/Fail (1550 CLV Max)	778 Pass	977 Pass	1032 Pass	1218 Pass	1045 Pass	1314 Pass	1046 Pass	1343 Pass	+14 +1.4%	+125 +10.3%
05. Twinbrook Park / Chapman Ave	Red	Signalized	CLV Pass/Fail (1550 CLV Max)	724 Pass	1128 Pass	790 Pass	1180 Pass	796 Pass	1201 Pass	844 Pass	1222 Pass	+54 +6.8%	+42 +3.6%
06. Chapman Ave / Site Drive North	Orange	Unsignalized	CLV Pass/Fail (1550 CLV Max)	318 Pass	399 Pass	349 Pass	424 Pass	353 Pass	416 Pass	409 Pass	468 Pass	+60 +17.2%	+44 +10.4%
07. Chapman Ave / Rollins Ave	Orange	Unsignalized	CLV Pass/Fail (1550 CLV Max)	454 Pass	826 Pass	474 Pass	874 Pass	480 Pass	851 Pass	511 Pass	934 Pass	+37 +7.8%	+60 +6.9%
08. Chapman Ave / Site Drive South	Orange	Unsignalized	CLV Pass/Fail (1550 CLV Max)	343 Pass	675 Pass	363 Pass	723 Pass	344 Pass	722 Pass	372 Pass	766 Pass	+9 +2.5%	+43 +5.9%
09. Chapman Ave / Bou Ave	Orange	Signalized	CLV Pass/Fail (1550 CLV Max)	479 Pass	912 Pass	509 Pass	976 Pass	517 Pass	976 Pass	576 Pass	1002 Pass	+67 +13.2%	+26 +2.7%
10. Bou Ave / Site Drive	Orange	Unsignalized	CLV Pass/Fail (1550 CLV Max)	343 Pass	597 Pass	326 Pass	622 Pass	540 Pass	828 Pass	375 Pass	734 Pass	+49 +15.0%	+112 +18.0%
11. Rollins Ave / East Jefferson St	City of Rockville	Signalized	CLV Pass/Fail (1550 CLV Max)	729 Pass	1106 Pass	751 Pass	1162 Pass	821 Pass	1162 Pass	807 Pass	1152 Pass	+56 +7.5%	-10 -0.9%
12. Rockville Pike / Halpine Rd	Red	Signalized	CLV Pass/Fail (1550 CLV Max)	657 Pass	877 Pass	982 Pass	1207 Pass	1001 Pass	1254 Pass	1001 Pass	1253 Pass	+19 +1.9%	+46 +3.8%
13. Twinbrook Park / Parklawn Dr	Red	Signalized	CLV Pass/Fail (1550 CLV Max)	636 Pass	900 Pass	657 Pass	916 Pass	659 Pass	916 Pass	684 Pass	916 Pass	+27 +4.1%	- -
14. Nebel St / Randolph Rd	Red	Signalized	CLV Pass/Fail (1550 CLV Max)	745 Pass	1228 Pass	842 Pass	1407 Pass	867 Pass	1407 Pass	898 Pass	1409 Pass	+56 +6.7%	+2 +0.1%
15. Rockville Pike / Hubbard Dr	Orange	Signalized	CLV Pass/Fail (1550 CLV Max)	584 Pass	1083 Pass	1059 Pass	1247 Pass	1074 Pass	1296 Pass	1087 Pass	1299 Pass	+28 +2.6%	+52 +4.2%
16. Chapman Ave / Randolph Rd	Red	Signalized	CLV Pass/Fail (1550 CLV Max)	678 Pass	802 Pass	736 Pass	842 Pass	736 Pass	842 Pass	771 Pass	873 Pass	+35 +4.8%	+31 +3.7%
17. Chapman Ave / Thompson Ave	Red	Unsignalized	CLV Pass/Fail (1550 CLV Max)	233 Pass	495 Pass	233 Pass	495 Pass	233 Pass	495 Pass	233 Pass	495 Pass	- -	- -
18. Rockville Pike / Rollins Ave Ext	Orange	Unsignalized	CLV Pass/Fail (1550 CLV Max)	0 Pass	0 Pass	0 Pass	0 Pass	817 Pass	1134 Pass	798 Pass	1158 Pass		