

City Council of Hyattsville, Maryland

AGENDA

City Council Regular Meeting

Monday, October 1, 2018

8:00 PM



Council Chambers

Hyattsville Municipal Building

4310 Gallatin Street, 3rd Floor

Hyattsville, MD 20781

(301) 985-5000 www.hyattsville.org

CITY COUNCIL

[Mayor Candace B. Hollingsworth](#)

[Edouard Haba, Council President, Ward 4](#)

[Kevin Ward, Council Vice President, Ward 1](#)

[Bart Lawrence, Ward 1](#)

[Robert S. Croslin, Ward 2](#)

[Shani N. Warner, Ward 2](#)

[Carrianna Suiter, Ward 3](#)

[Thomas Wright, Ward 3](#)

[Paula J. Perry, Ward 4](#)

[Joseph Solomon, Ward 5](#)

[Erica Spell, Ward 5](#)

ADMINISTRATION

Tracey E. Nicholson, City Administrator

Laura Reams, City Clerk, 301-985-5009, lreams@hyattsville.org

WELCOME TO THE CITY OF HYATTSVILLE CITY COUNCIL MEETING! Your participation at this public meeting is valued and appreciated.

Agenda/Packet: The Agenda/Packet is available for review at the Hyattsville Municipal Building and online at www.hyattsville.org prior the scheduled meeting (generally available no later than the Friday prior to the scheduled Monday meeting). Please note, times given for agenda items are estimates only. Matters other than those indicated on the agenda may also be considered at Council discretion.

Americans with Disabilities Act: In compliance with the ADA, if you need special assistance to participate in this meeting or other services in conjunction with this meeting, please contact the City Clerk's Office at (301) 985-5009. Notification 48 hours prior to the meeting will enable the City to make reasonable arrangements to ensure accessibility to this meeting.

Audible Devices: Please ensure all audible devices are turned off or otherwise not audible when the City Council is in session. Thank you.

Consent Agenda: Items listed on the Consent agenda are considered to be routine in nature, and are normally approved by one motion. Please note that most items on the Consent agenda have been discussed at a previous meeting. If a Councilmember wishes to comment on a particular item, that item shall be removed from the Consent agenda to "action" to allow for additional discussion.

Public Input: If you wish to address the Council during the Public Comment period, please submit an Audience Participation Form to the City Clerk prior to the beginning of the meeting. Matters identified during Public Comment that are not on that meeting's agenda will be referred to staff for follow-up or considered on a future agenda. Issues that require a response will be addressed publically at the next regular Council meeting. Speakers are requested to keep their comments to no more than two (2) minutes per speaker. Written comments or supporting documents may be turned in to the City Clerk for distribution to the Mayor and Council.

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1. **Call to Order and Council Roll Call**
2. **Pledge of Allegiance to the Flag**
3. **Approval of Agenda**
4. **Approval of the Minutes**
5. **Public Comment (8:10 p.m. – 8:20 p.m.) Limit 2 minutes per speaker**
6. **Presentations (8:20 p.m. - 9:05 p.m.)**

6.a) FY17 Audit Update (5 minutes)

HCC-86-FY19

Lead Sponsor: At the Request of the City Administrator

Co-Sponsor(s): N/A

6.b) Hyattsville Transportation Study (25 minutes)

HCC-67-FY19

Lead Sponsor: At the Request of the City Administrator

Co-Sponsor(s): N/A

[Final Draft Memo.docx](#)

[Draft Final Report HVL Clean revised 092018.pdf](#)

[Appendix A: Hyattsville Transportation Study - Existing Conditions Memo](#)

[Appendix B: 2037 AM Build](#)

[Appendix B: 2037 AM No Build](#)

[Appendix B: 2037 PM Build](#)

[Appendix B: 2037 PM No Build](#)

[Appendix C: Wayfinding Submittal](#)

[Appendix D: Hyattsville TS Planning Level Cost Estimate](#)

[2018-09-26 Final Report Presentation to City Council.pdf](#)

6.c) Rhode Island Avenue Trolley Trail Extension Update (15 minutes)

HCC-78-FY19

Lead Sponsor: At the Request of the City Administrator

Co-Sponsor(s): N/A

[Memo - Rhode Island Avenue Trolley Trail.doc](#)

[Rhode Island Trolley Trail Presentation.pdf](#)

7. Consent Items (9:05 p.m. - 9:10 p.m.)

7.a) FY19 Budget Appropriation - MPCTC Grant: Emergency Response Team (ERT) Training Conference

HCC-79-FY19

I move that the Mayor and Council accept and appropriate into the FY19 budget a grant award from the Maryland Police and Correctional Training Commissions in the amount of \$1,500 for an Emergency Response Team Training Conference.

Lead Sponsor: At the Request of the City Administrator

Co-Sponsor(s): N/A

7.b) Proclamation: Breast Cancer Awareness Month

HCC-81-FY19

I move that the Mayor and Council recognize October 2018 as Breast Cancer Awareness Month in the City of Hyattsville

Lead Sponsor: At the Request of the City Administrator

Co-Sponsor(s): N/A

[Breast Cancer Awareness Month Proclamation 2018.docx](#)

7.c) Proclamation: Domestic Violence Awareness Month

HCC-82-FY19

I move that the Mayor and Council recognize October 2018 as Domestic Violence Awareness Month in the City of Hyattsville

Lead Sponsor: At the Request of the City Administrator

Co-Sponsor(s): N/A

[Domestic Violence Awareness Month Proclamation 2018.docx](#)

7.d) Proclamation: National Disability Employment Awareness Month

HCC-83-FY19

I move that the Mayor and Council recognize October 2018 as National Disability Employment Awareness Month in the City of Hyattsville.

Lead Sponsor: At the Request of the City Administrator

Co-Sponsor(s): N/A

[Disability Employment Awareness Month 2018.docx](#)

7.e) Proclamation: Energy Efficiency Day

HCC-84-FY19

I move that the Mayor and Council proclaim October 5, 2018 to be Energy Efficiency Day in the City of Hyattsville.

Lead Sponsor: At the Request of the City Administrator

Co-Sponsor(s): N/A

[Energy Efficiency Day 2018.docx](#)

7.f) Sonny Frazier Toy Drive

HCC-85-FY19

I move that the Mayor & Council authorize a donation to the Sonny Frazier Toy Drive which benefits children and youth of Hyattsville. The donation will have two parts: (1) The City will donate \$500 directly to the Sonny Frazier Toy Drive, and (2) the City will provide a matching grant dollar for dollar for funds raised at the 8th annual Hyattsville Heroes Bowl, to a maximum of \$1,000. The Heroes Bowl is scheduled for October 27, 2018 at Magruder Park at 3:00 p.m.

Lead Sponsor: At the Request of the City Administrator

Co-Sponsor(s): N/A

8. Action Items (9:10 p.m. - 9:20 p.m.)

8.a) Hyattsville Ordinance 2018-05, Amendment to Chapter 114, Article IV: Residential Parking Zones (5 minutes)

HCC-87-FY19

I move that the Mayor and Council introduce Hyattsville Ordinance 2018-05, an Ordinance whereby the City of Hyattsville amends Chapter 114 to refine the City's residential parking permit system (FIRST READING).

Lead Sponsor: At the Request of the City Administrator

Co-Sponsor(s): N/A

[Ordinance 2018-05 Residential Parking \(Ch. 114\) FINAL.docx](#)

[MM Re Ordinance 2018 Residential Parking \(Ch. 114\) 5-7-2018 Comments.pdf](#)

8.b) FY19 Capital Budget Amendment: 3505 Hamilton Street (5 minutes)

HCC-76-FY19

I move that the Mayor and Council amend the FY2019 Capital Budget and appropriate \$8,289,000 for construction costs, contingency's, permits, fees, storage containers, mural storage and other costs directly attributed to renovation of the 3505 Hamilton Street facility.

Lead Sponsor: At the Request of the City Administrator

Co-Sponsor(s): N/A

9. Discussion Items (9:20 p.m. - 9:35 p.m.)

9.a) Hyattsville Armory Apartments PPS (15 minutes)

HCC-51-FY19

Lead Sponsor: At the Request of the City Administrator

Co-Sponsor(s): N/A

[Armory Apartments PPS Discussion Memo.docx](#)

[Hyattsville-UIP-Elevations-180717 \(1\).pdf](#)

[PPS 4-17008_DevelopmentExhibit.pdf](#)

[Planning Committee Minutes- 07.17.18.docx](#)

10. Council Dialogue (9:35 p.m. - 9:45 p.m.)

11. Community Notices and Meetings

11.a) City Calendar: October 2 - October 15, 2018

HCC-88-FY19

Lead Sponsor: At the Request of the City Administrator

Co-Sponsor(s):

[Main City Calendar_Oct 2 - Oct 15 2018.docx](#)

12. Motion to Adjourn



Hyattsville City Council Agenda Item Report

Meeting Date: October 1, 2018

Submitted by: Ron Brooks

Submitting Department: Finance

Item Type: Audit

Agenda Section: Presentations (8:20 p.m. - 9:05 p.m.)

SUBJECT

FY17 Audit Update (5 minutes)

HCC-86-FY19

Recommendation:

Sponsor(s):

At the Request of the City Administrator

Co-Sponsor(s):

N/A

ATTACHMENTS

Summary Background:

The FY17 audit is moving through various stages. The auditors are analyzing State and County receivables and payables which includes each agency documenting disbursement to the City by providing confirmation letters to our auditors. Government Accounting Standards Board (GASB) announcement #77 which is "Tax Abatement Disclosure" will be a required informational section in the financial statements of the FY17 audit and each year thereafter. Our goal is to complete this audit by the end of this calendar year.

Next Steps:

Continue to work through the audit until completion.

Fiscal Impact:

Late audit filings can result in loss of State Grants and loss of revenues from the State of Maryland.

City Administrator Comments:

See summary above.

Community Engagement:

N/A

Strategic Goals:

Goal 1 – Ensure Transparent and Accessible Governance

Legal Review Required?

N/A



Hyattsville City Council Agenda Item Report

Meeting Date: October 1, 2018

Submitted by: Katie Gerbes

Submitting Department: Community & Economic Development

Item Type: Planning & Development

Agenda Section: Presentations (8:20 p.m. - 9:05 p.m.)

SUBJECT

Hyattsville Transportation Study (25 minutes)

HCC-67-FY19

Recommendation:

Sponsor(s):

At the Request of the City Administrator

Co-Sponsor(s):

N/A

ATTACHMENTS

[Final Draft Memo.docx](#)

[Draft Final Report HVL Clean_revised 092018.pdf](#)

[Appendix A: Hyattsville Transportation Study - Existing Conditions Memo](#)

[Appendix B: 2037 AM_Build](#)

[Appendix B: 2037 AM_No Build](#)

[Appendix B: 2037 PM_Build](#)

[Appendix B: 2037 PM_No Build](#)

[Appendix C: Wayfinding Submittal](#)

[Appendix D: Hyattsville TS Planning Level Cost Estimate](#)

[2018-09-26_Final Report Presentation to City Council.pdf](#)

Summary Background:

Representatives from Toole Design Group will present the major findings of the Hyattsville Transportation Study. The Hyattsville Transportation Study summarizes current transportation related trends in the City, and provides a list of recommendations of changes to make within the City to improve traffic flow and multimodal mobility.

Next Steps:

The transportation plan will be brought back to the City Council in October or November for adoption. The staff will prioritize and evaluate for implementation as appropriate.

Fiscal Impact:

N/A

City Administrator Comments:

For Presentation

Community Engagement:

There were several rounds of public meetings held to gather resident feedback to inform the Hyattsville Transportation Study. A total of 7 meetings were held, as well as online Wikimaps and pages on the Speak Up site were created in order to further gather community input.

Strategic Goals:

Goal 3 – Promote a Safe and Vibrant Community

Legal Review Required?

N/A



Memo

To: Mayor and City Council

CC: Tracey Nicholson, City Administrator
Lesley Riddle, Director, Department of Public Works
Hal Metzler, Project Manager, Department of Public Works

From: Katie Gerbes, Community Planner

Date: September 19, 2018

Re: Hyattsville Transportation Study – Final Report

Attachments: Hyattsville Transportation Study
Appendix A: Technical Memorandum I: Existing Conditions Report
Appendix B: Technical Memorandum II: Future Conditions Results
Appendix C: Wayfinding Report
Appendix D: Planning-Level Cost Estimate

The purpose of this memorandum is to provide the Mayor and members of the City Council with information on the final draft of the Hyattsville Transportation Study.

Project Summary

In July 2017, the City retained the services of Toole Design Group to perform a city-wide Transportation Study. The project kicked off in Fall 2017 by gathering community input on transportation related concerns within the City. In March 2018, Toole presented an Existing Condition Report, which provided a review of past studies; a summary of data collection and assessment; the Wikimap summary; school area circulation observations; existing motor vehicle traffic conditions and the origin-destination analysis. In May 2018, Staff published a list of draft recommendations on the Speak Up website, allowing residents an opportunity to review some of the proposed changes and provide comments on them. The comment period for the draft recommendations closed in June 2018.

From all of the feedback throughout this process, Toole has provided the City with the final draft of the Hyattsville Transportation Study. The study itself is divided into eight (8) sections, including the current state of transportation in Hyattsville, major transportation findings, future transportation needs, the

proposed transportation network and implementation strategies. The study also has four (4) appendices with additional information and data.

Next Steps

The draft of the Hyattsville Transportation Study will be placed on the Speak Up website prior to the City Council meeting for residents to review and provide commentary. RJ Eldridge of Toole Design Group will present the City Council with a summary of the Hyattsville Transportation Study at the October 1, 2018 meeting. The document is tentatively scheduled to come back to the City Council for adoption at one of the upcoming City Council meetings.



Hyattsville Transportation Study

Draft Final Report

September 20, 2018

Prepared by:

TooleDesignGroup

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Table of Contents

1. Executive Summary.....	5
Hyattsville's Transportation Vision.....	6
2. Introduction.....	8
Why This Study is Needed.....	8
Travel Behavior Change.....	9
Study Approach.....	10
3. The State of Transportation in Hyattsville.....	12
City History	12
Hyattsville Today	12
What About All the Previous Studies?	13
4. Major Transportation Findings.....	16
Challenges for People Walking.....	17
Challenges for People Biking.....	17
Challenges for People Driving	18
Big Data Analysis.....	19
Parking Assessment.....	21
Wayfinding and Signage	23
School Access.....	24
5. Future Transportation Needs	24
Critical Street Connections	24
Future Vehicular Needs	25
Future Bicycle and Pedestrian Needs	27
Future Transit Needs	31
Wayfinding Sign Design and Placement	31
6. Proposed Transportation Network	33
Goals and Vision	33
Strategy Recommendations.....	33
Strategy 1: Complete the City's street grid with new street connections.	33
Strategy 2: Design streets for lower speeds.	34

Strategy 3: Prioritize people on foot in street design.	35
Strategy 4: Reduce the number of one-way streets.	36
Strategy 5: Prioritize the comfort of people on bikes in street design.	36
Strategy 6: Design intersections to improve safety for all.	37
Strategy 7: Prioritize connections to and from the Metro stations and Arts District	39
Strategy 8: Integrate trails into the local transportation network.	40
Project Recommendations	41
7. Implementation	46
Top scored projects	46
Sequential Action Plan	48
Implementation Strategy	50
8. Conclusion	52

Appendices

Appendix A: Technical Memorandum 1: Existing Conditions Report

Appendix B: Technical Memorandum 2: Future Condition Results

Appendix C: Wayfinding Report

Appendix D: Planning-Level Cost Estimate

I. Executive Summary

Cities around the country are fundamentally rethinking the way people move – taking a more holistic approach that considers all modes of transportation and community benefits, beyond just moving automobiles. With the motto of “A World Within Walking Distance,” Hyattsville prides itself on being truly multimodal. This study reflects these national trends and local priorities.

This Transportation Study takes a comprehensive look at the City of Hyattsville’s transportation network and recommends several improvements. In addition to detailed technical analysis, such as collecting traffic data and roadway inventory and modeling future traffic intersections, this process builds on prior studies, and includes substantial public input received throughout the project. This Study will help the City plan and build a transportation system that works for everyone, regardless of age, mobility, or transportation mode. It will help the City support anticipated growth and investment, improve and maintain existing transportation infrastructure, carry out new projects, and determine priorities for the next twenty years.

This Study seeks to carry out the vision of the Speak Up! HVL Community Sustainability Plan, Hyattsville’s framework for the city’s future growth and evolution. It has six goals, which align with those goals set out in the Sustainability Plan:

- Improve safety along major roads
- Enhance and increase safe connectivity for pedestrians
- Improve traffic flow within neighborhoods
- Strengthen connectivity for cyclists
- Support development around the Metro stations and Gateway Arts District
- Support environmentally friendly, sustainable growth

These six goals form the basis for a set of eight strategies that will guide the City as it further invests in its transportation system. These strategies will help the City determine what projects to fund and construct, which transportation modes to prioritize in each location or setting, and articulate its transportation needs to the County and State, which are responsible for some of the larger roads within City limits. Those eight strategies are:

- Strategy 1: Complete the City's street grid with new street connections.
- Strategy 2: Design streets for lower speeds.
- Strategy 3: Prioritize people on foot in street design.
- Strategy 4: Where appropriate, change traffic circulation.
- Strategy 5: Prioritize the comfort of people on bikes in street design.
- Strategy 6: Design intersections to improve safety for all users.
- Strategy 7: Prioritize connections to and from the Metro stations and Arts District
- Strategy 8: Integrate trails into the local transportation network.

These strategies informed the development of 61 transportation projects the City can execute in the coming years. Each of these projects has been ranked based on their ability to achieve the Sustainability Plan's goals, producing a list of 20 top priority projects for the City. More information on the strategies, as well as the list of recommended projects, can be found in Chapter 6, which discusses the City's proposed transportation network.

This Study is intended to guide capital and operating investment in the City of Hyattsville's transportation system. Through extensive data collection and analysis, and with significant input from the people who make this community great, the City has developed a vision for making the City an easier and safer place to get around. It builds on the City's rich history as a local and regional transportation hub, while preparing it for a more socially, economically, and environmentally sustainable future. This Study provides a framework for future investments in the City that will help everyone who lives, works, or visits Hyattsville.

In the very near future, Hyattsville will be a place where anyone, regardless of age, background, or ability, can travel safely, comfortably, and affordably. Its transportation network will prioritize people-friendly streets that add energy and vitality to their surroundings while accommodating the inevitable flow of traffic into and out of the City. The transportation system will support its sustainability goals, prioritizing active transportation for shorter trips and access to rapid transit for longer trips. Hyattsville's streets will serve as the backdrop for community events and festivals, as well as the rhythms of everyday life: traveling to school or work, running errands at a local business, enjoying a leisurely stroll or bike ride, spending time with friends, family, and loved ones.

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2. Introduction

Since the late 1990's, the City of Hyattsville and surrounding parts of Prince George's County have grown substantially, which has brought significant transportation challenges. The City has conducted several studies over the past several years to address these challenges, including vehicular traffic counts, bicycle and pedestrian accessibility, as well as policy analysis. To build on these efforts and create a holistic vision for its transportation network, in 2017 the City secured the services of Toole Design Group (TDG) to prepare a city-wide multimodal Transportation Study.

This Transportation Study provides a comprehensive assessment of the transportation network of the City of Hyattsville and recommends several improvements that are anticipated to address both the existing and future transportation challenges. This document provides a summary of different modal assessment while the accompanying technical appendices provides the detailed analysis, as well as public input received during the course of the project. The recommendations of this Study will help the City build a transportation system that works for everyone, regardless of age, mobility, or transportation mode. It will help the City support anticipated growth and investment, improve and maintain existing transportation infrastructure, carry out new projects, and determine priorities for the next twenty years.

To do so, the City has six goals for this Transportation Study:

- Identify **bicycle** and **pedestrian** needs of the City
- Evaluate existing and future **roadway needs**
- Evaluate **one-way streets** and circulation
- Evaluate **parking issues** on specific areas
- Prepare a **wayfinding plan**
- Evaluate **school traffic** and infrastructure

Why This Study is Needed

There are three overarching trends shaping transportation issues in Hyattsville today: growth in population, changes in transportation behaviors, and travel to or through the City. This Study aims to address all three.

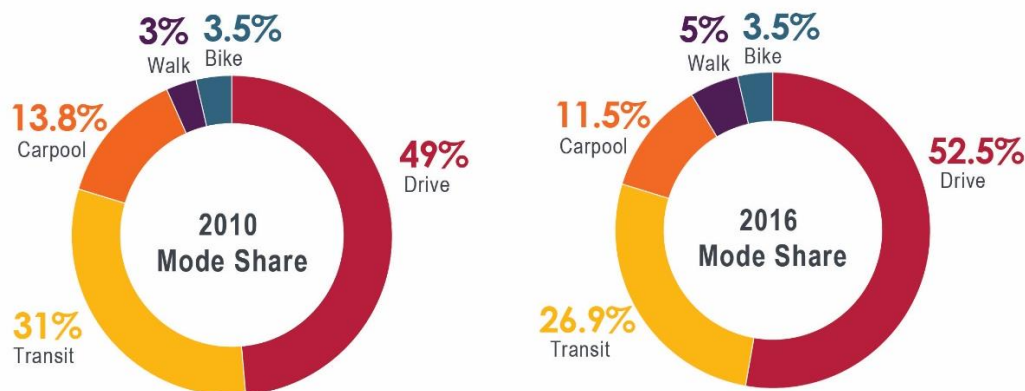
Population Growth

Hyattsville has experienced considerable growth over the past twenty-six years, with its population increasing from 13,864 in 1990 to 18,262 in 2016, according to the Census. Much of that growth has occurred around in two areas: around the Prince George's Plaza Metro station, which has become a hub for shopping, offices, and multi-family housing; and the Gateway Arts District along Baltimore Avenue (Route 1), the City's historic heart and now home to hundreds of new homes, shops, and arts institutions. In addition, the Riverfront at West Hyattsville Metro development at the West Hyattsville Metro station is anticipated to include 183 townhomes

and 400 apartments. Meanwhile, most employed residents continue to commute to jobs outside the City. From 2002 to 2015, the percentage of residents who both live and work in the City decreased from 4.7% to 2.5%, according to the American Community Survey.

Travel Behavior Change

As of 2015, the largest destinations for residents commuting out of Hyattsville for work are Washington, DC (38.7%); three communities in Maryland, College Park (4.4%), Bethesda (2.8%), and Silver Spring (2.4%); and Arlington, VA (2.0%). The number of workers per household is growing, increasing from an average of 1.78 workers per household in 2009 to 1.98 workers in 2016. Subsequently, the number of people traveling to and from work is increasing faster than the growth in population. The average number of cars per household is lower in Hyattsville than the national average, and car ownership rates appear to be declining: in 2016, 60% of Hyattsville households have had access to one or no vehicles, compared to 55% in 2010. Hyattsville residents' active transportation habits have changed during the same period. More City residents are walking to work; 5% walked in 2016, compared to 3% in 2010. Bicycling habits remained consistent at 3.5%. At the same time, more residents are driving to work (52.5% compared to 49%), fewer are taking transit (31% to 26.9%), and fewer are carpooling (13.8% to 11.5%).



Mode Shift Between 2010 and 2016

This shifting travel behavior may be the result of trends happening outside of the City's control, such as the reliability of the Metrorail system, or the rise of ride-hailing services such as Lyft and Uber that allow residents to use transit less. However, the increase in walking and decrease in car ownership indicate that more residents are taking advantage of the City's compact, walkable neighborhoods, and the trend indicates that there are opportunities to encourage more walking and bicycling. Based on the input received during the public meetings held for the project, residents frequently comment that because of their condition, the streets are not always comfortable or safe for them to use when they get around on foot or bike today.

Traffic Volume Changes

Several State of Maryland roads run through Hyattsville, carrying traffic originating and ending in other jurisdictions. The volume of traffic on those roads has changed in recent years, according to Average Annual Daily Traffic (AADT) counts from the Maryland State Highway Administration. As shown in Table I, between 2010 and 2017, motor traffic volumes decreased on Queens Chapel Road (MD 500) and Hamilton Street/38th Street (MD 208), while it increased on East-West Highway (MD 410), Route 1, and Route 1 Alternate (both of which are signed as Baltimore Avenue). This may be due in part to growth in the Prince George's Plaza and Gateway Arts District, both of which are regional destinations for shopping, dining, and entertainment. It may also be the result of growth in surrounding areas, which has generated increased through traffic within the City itself.

Table I : Average Annual Daily Traffic (AADT) Changes on Major Streets in Hyattsville

Road	Location	2010 ADT	2017 ADT	% Change
East-West Highway	East of Belcrest Road	26,660	31,101	16.66%
	East of Adelphi Road	48,370	49,271	1.86%
Queens Chapel Road	South of East-West Highway	24,312	22,582	-7.12%
	South of Ager Road	41,882	35,850	-14.40%
Hamilton Street	East of Queens Chapel Road	17,372	15,880	-8.59%
38th Street	South of Hamilton Street	7,042	6,943	-1.41%
Baltimore Avenue (Route 1)	South of Jefferson Street	25,830	31,851	23.31%
	North of Decatur Street	13,230	16,871	27.52%

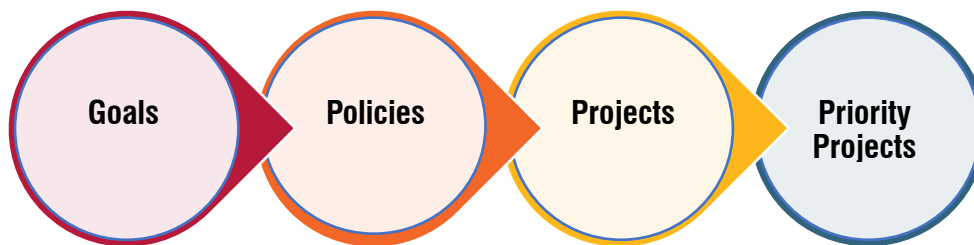
While this Study cannot directly address regional traffic behavior, it can provide recommendations that City of Hyattsville would like to see implemented by Maryland State Highway Administration (SHA) that address the impact of regional traffic on residents. Moreover, this Study recommends transportation options for residents, workers, and visitors, and improve traffic circulation through the City so that through traffic does not restrict local residents' ability to travel within their community and enjoy their public streets.

Study Approach

In 2017, the City released its Speak Up! HVL Community Sustainability Plan, which used an extensive outreach process to produce a vision for creating a stronger economy, a greater sense of community, and a healthier environment. This Study seeks to carry out the vision of the Community Sustainability Plan, Hyattsville's framework for the city's future growth and evolution. The Study has six goals, which align with those goals set out in the Sustainability Plan:

- Improve safety along major roads
- Enhance and increase safe connectivity for pedestrians
- Improve traffic flow within neighborhoods
- Strengthen connectivity for cyclists
- Support development around the Metro stations and Gateway Arts District
- Support environmentally friendly, sustainable growth

These six goals form the basis for a set of policies that will guide the City as it further develops its transportation system. These policies will help the City determine what projects to fund and construct, which transportation modes to prioritize in each location or setting, and articulate its transportation needs to the County and State, which are responsible for some roads within City limits. In the context of this Study, these policies were used to create a list of 61 transportation projects that the City can execute in the coming years. A 23-point scale, using metrics derived from the six Community Sustainability Plan goals, was created to rank each of these projects, producing a list of 20 top priority projects for the City. The chart below illustrates this process by which the Study Team developed the Study.



More specifically, this Study undertook the following detailed data collection and analyses to determine the transportation needs of the City:

- Collected current traffic data, roadway inventory and conducted analysis to quantify the multimodal assessment at key intersections and roadways (See Existing Condition Memo in Appendix A);
- Analyzed future traffic conditions at study intersections by incorporating future traffic growth and trips generated by approved developments;
- Solicited input from the public through various mechanisms, including seven public meetings, pop-up tables at public events, and on-line WikiMap survey;
- Reviewed previous planning documents that relate to transportation in the City, including the Prince George's Plaza Transit District Development Plan, the West Hyattsville Transit District Development Plan, the Gateway Arts District Sector Plan, the Hyattsville Pedestrian and Bicycle Master Plan, and the Speak Up! HVL Community Sustainability Plan;
- Compiled transportation improvement recommendations that meet the current and future transportation needs of Hyattsville;

- Based on the analysis performed in this Study, prepared a Sequential Action Plan to assist City staff in implementing the recommended projects and policies.

3. The State of Transportation in Hyattsville

City History

Since its founding, transportation has shaped Hyattsville's development patterns. During the 19th century, the Washington and Baltimore Turnpike and the Baltimore and Ohio Railroad's Washington Line connected the city to Washington and Baltimore, as well as communities in between. Shortly after Hyattsville's incorporation in 1886, it was already one of the largest communities in Prince George's County. In 1893, the electric streetcar connected the city to Washington, DC, establishing it as a commuter suburb. Hyattsville also became a regionally significant destination when its main street, Baltimore Avenue, was named part of Route 1, a national highway corridor between Maine and Florida.

During the 20th century, Hyattsville began to take its current form. A system of regional stream valley parks was established along the Anacostia River during the 1930s, resulting in the creation of the Northwest Branch and Northeast Branch trails in the City. Regional bus service came to the area in the 1950s, followed by the opening of Metro's Green Line in 1991, which brought two stations, West Hyattsville and Prince George's Plaza. Today, Hyattsville is a vital part of the Washington, DC metropolitan area, due in large part to its extensive and well-traveled transportation system.

Hyattsville Today

Located in northern Prince George's County, Hyattsville today is an increasingly popular destination for people seeking easy access to Washington, DC and regional job centers. It is a very diverse community, with residents hailing from many cultures and backgrounds. There is no majority racial or ethnic group in the City.

Hyattsville has three primary activity centers that draw visitors and shoppers from within the City and the surrounding area. **Hyattsville Crossing** (formerly **Prince George's Plaza**), located at the Prince George's Plaza Metro station, is home to a regional, car-oriented shopping mall with many big-box retailers, as well as several office buildings, the Hyattsville branch of the Prince George's County library system, the Hyattsville campus of Prince George's Community College, and a growing residential population. **West Hyattsville**, also the site of a Metro station and a significant residential development under construction, has a smaller, neighborhood-focused shopping district along Queens Chapel Road and is adjacent to Northwest Branch Park. The **Gateway Arts District** extends along Baltimore Avenue (Route 1) from Mount Rainier and the Washington, D.C. border to the historic heart of Hyattsville. Within the City, the Gateway Arts District is home to several arts institutions and locally-owned shops and restaurants, along with Hyattsville City Hall, Prince George's County's District Court, and Prince George's County Police District 1.

According to the United States Census, the City is the 14th-largest municipality in the State of Maryland, and the 5th largest municipality in Prince George's County in terms of population. However, in terms of population and employment density, Hyattsville is the 2nd most dense community in the County, which indicates that public investment in high-quality multimodal transportation network in the City will likely be used extensively by residents and employees.

Table 2 : Comparison with Communities in Prince George's County

	Population	Employment	Land Area (sq. mi.)	Population Density	Employment Density	Metro Stations
Bowie	57,633	14,742	18.43	3127	800	0
College Park	31,942	28,362	5.64	5663	5029	1
Laurel	25,703	12,624	4.3	5977	2936	0
Greenbelt	23,623	3,238	6.28	3762	516	1
Hyattsville	18,262	8,482	2.67	6840	3177	2
New Carrollton	12,727	661	1.53	8318	432	0

What About All the Previous Studies?

This Study builds on several previous studies that have guided the growth and development of the City of Hyattsville and incorporates many of their goals and recommendations. The following is a summary of selected plans. Technical Memorandum I: Existing Conditions Report in Appendix A provides more detail information about all the past studies reviewed as part of this project.

2005 West Hyattsville Transit District Development Plan (TDDP)

The West Hyattsville TDDP, was the County's first "form-based" zoning plan, drafted by the Maryland-National Capital Park and Planning Commission, outlines a vision for a transit-oriented community around the West Hyattsville Metro station. Located in southwest Hyattsville, this is identified as an area of the City that will absorb much of its population growth in the coming years. To accommodate that growth, the TDDP recommends a mix of townhomes, apartments, and small-scale retail, a series of new or expanded parks, and a new street grid providing new pedestrian, bicycle, and motor vehicle connections between Ager Road and Queens Chapel Road. Many of the recommendations from the West Hyattsville TDDP are currently being implemented, including the Ager Road Complete Street project as well as a significant residential development north of the West Hyattsville Metro station.

2008 Pedestrian and Bicycle Study

Drafted by the citizen-led Hyattsville Bike and Pedestrian Safety Committee, the Bicycle and Pedestrian Master Plan contains recommendations for making the walking and bicycling experience in the City safer and more convenient. It recommends the implementation of City-wide sidewalk standards, including closing gaps in existing sidewalks, requiring that sidewalks are of a minimum width, and enforcing basic ADA requirements for all sidewalks. It designates several corridors throughout the City where pedestrian and bicycle access should be a priority,

and identifies specific improvements, including high-visibility crosswalks, street lighting, new or renovated curb ramps, and construction of wider sidewalks. Several of these corridors have been incorporated into this Study's recommendations, including:

- Belcrest Road
- Jamestown Road
- Nicholson Street between Ager Road and Queens Chapel Road
- Hamilton Street between Ager Road and 38th Street
- Jefferson Street between 40th Avenue and Baltimore Avenue
- 38th Street between Hamilton Street and Northwest Branch Trail
- 40th Avenue and 41st Avenue between Jefferson Street and Queens Chapel Road

2010 Citywide Traffic Study and Transportation Plan

Drafted in 2010 for the City of Hyattsville, the Citywide Traffic Study and Transportation Plan examined traffic conditions in the City, analyzing several dozen intersections. It forecast future traffic volumes and identified potential modifications to improve motor vehicle traffic flow. Additionally, it identifies opportunities to create new active transportation facilities in the City and improve the walking and biking experience. This Study incorporates, with modifications where appropriate, several of the 2010 plan recommendations, including:

- Construction of new sidewalks and high-visibility crosswalk;
- Installation of a High Intensity Activated Crosswalk (HAWK) signal at the Northwest Branch trail crossing of Queens Chapel Road;
- Addition of bike lanes along Adelphi Road;
- Installation of new traffic signals on Ager Road and on Queens Chapel Road;
- Conversion of select one-way residential streets to two-way streets.

2016 Prince George's Plaza Transit District Development Plan (TDDP)

Created by the Maryland-National Capital Park and Planning Commission, the Prince George's Plaza TDDP envisions the creation of a new town center around the Prince George's Plaza Metro station and the Mall at Prince George's. Like the West Hyattsville TDDP, the Plan recommends the creation of new local streets and the extension of existing streets such as America Boulevard to form a street grid. It suggests the implementation of bike lanes on streets including Belcrest Road and Toledo Terrace. It also discusses the long-term redevelopment of the mall as an urban, mixed-use district. This Plan includes many of its recommendations, such as the reconstruction of Toledo Drive, though it proposes multi-use path instead of on-street bike lanes along East-West Highway.

This study also incorporates recommendations and insights from the following plans:

- 2014 West Hyattsville Pedestrian Safety Study
- 2015 City of Hyattsville Customer Preference Survey
- 2004 Gateway Arts District Sector Plan
- ATHA Bikeshare Study

- Hyattsville Elementary School Safe Routes to School activities

Late in 2017, Prince George's County adopted new design standards for urbanized parts of the County, applicable primarily to County roads within the I-495 Beltway. The Prince George's County Urban Street Design Standards are a useful resource when considering Complete Streets retrofits in Hyattsville.

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4. Major Transportation Findings

As part of this Study, extensive data collection and analysis was conducted on various roadways and intersections. Vehicular turning movement, pedestrian, and bicycle counts were collected at 39 intersections throughout the City, during the AM and PM peak hours. An inventory of pedestrian and bicycle infrastructure was collected within a quarter mile of five public schools across the City. Roadway inventory, including quality of sidewalks, was also taken on 16 miles of mostly city-owned and maintained roadways. Appendix A provides the detailed finding of the assessment in Technical Memorandum I: Existing Conditions Report.

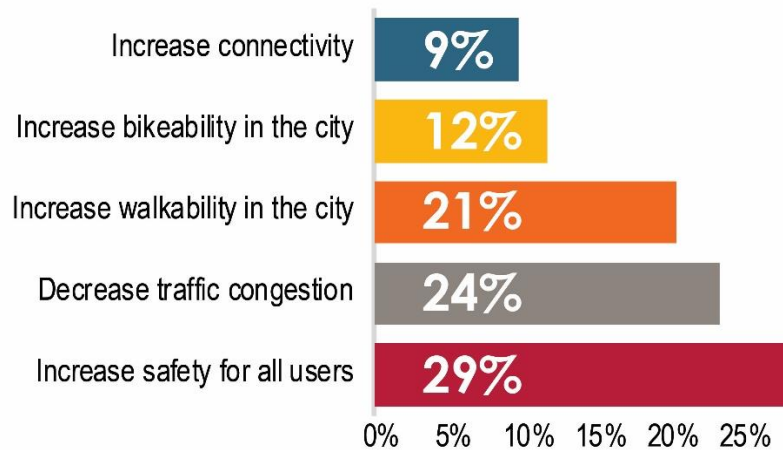
A major effort of this Study was to solicit input from the public to ensure that their concerns are addressed. Two public meetings were held during the project. The 1st public meeting was held at the beginning of the project and allowed residents to set the direction of the Study. The major input of the 1st public meeting was to focus on the safety of pedestrians and bicyclists as they travel within the City, traffic congestion at major roadways, and cut-through traffic on certain local streets.



Participants at the first public meeting

The 2nd public meeting was held to present the draft findings and recommendations of the Study. This meeting allowed residents to provide comments on the draft recommendations so that the City can address them before it is finalized. Additional public meetings were held in each Ward, to focus on Ward-specific issues. In addition to the public meetings, City staff held public outreach efforts with various organizations and at public events including the Summer Jam series, farmer's market, etc.

One of the most effective public engagement tools was the online interactive map (WikiMap), hosted on the Speak Up! HVL website, which received over 600 responses. Through the Wikimap and its corresponding survey, respondents were asked about their top priorities for the Study; 29% said it was to increase safety for all users regardless of travel mode; 24% said it was to decrease traffic congestion; 21% said it was to increase walkability in the City; 12% said it was to increase bikeability in the City; and 9% said it was to increase connectivity. These inputs provided valuable information to the City to help determine the specific needs of the community. The following section describes the key findings of the Study.



WikiMap Respondents' Priorities for this Study

Challenges for People Walking

While the City of Hyattsville has a comprehensive network of sidewalks, there are significant gaps in pedestrian accessibility. 10% of the streets that were inventoried lack sidewalks, including large sections of Queens Chapel Road, Ager Road, 38th Avenue, 41st Avenue, and 42nd Avenue. Many other streets have narrow sidewalks less than four feet wide, the minimum requirement under Americans with Disabilities Act (ADA) standards.

There is a wide variety in the presence and quality of other pedestrian facilities, such as curb ramps, crosswalks, pedestrian signals, accessible bus stops, wayfinding, and regulatory signs. 38% of the intersections studied (15 of 39) did not have any crosswalks, mostly on local streets such as 41st Avenue, 42nd Avenue, and Lancer Drive. Several bus stops along major corridors did not provide accessible landing pads or connection to existing sidewalks, making it difficult for residents or visitors with disabilities to use the existing bus service. Similarly, uneven sidewalks and sloping driveways present barriers for people with disabilities or parents using strollers.

Most streets without sidewalks tend to be in residential neighborhoods, which often make up the very beginning or the very end of a pedestrian's trip.

Challenges for People Biking

The City's bicycle network contains over 31 miles of bicycle infrastructure, mostly consisting of on-street facilities such as shared-lane markings, known as sharrows, and off-street trails such as the Northeast Branch and Northwest Branch trails. Most bicycle facilities are in good condition. The City's narrow streets and 25-mph posted speed limit make it relatively easy for residents and visitors to travel by bicycle. A network of sharrows and wayfinding currently exists on Gallatin Street, Hamilton Street, Nicholson Street, and 40th Avenue. However, existing one-way street configurations on streets such as Longfellow, Oglethorpe, Hamilton, Gallatin, and Farragut can make trips cumbersome and circuitous, especially throughout downtown Hyattsville.

Respondents noted a variety of issues that make it difficult to walk or bike, including a lack of marked crosswalks, heavy and fast traffic, wide streets that encourage motorists to speed, long waits to cross the street at intersections, and a lack of sidewalks.

Respondents identified several streets that were difficult for walking or biking, or were barriers to walking and biking, including:

- East-West Highway
- Queens Chapel Road
- Rhode Island Avenue (Anacostia River to Farragut Street)
- 42nd Avenue (Oglethorpe Street to East-West Highway)
- Hamilton Street (Queens Chapel Road to 38th Street)
- 38th Street (Northwest Branch Trail to Hamilton Street)

Challenges for People Driving

While motor vehicle congestion does occur within the City, the major roads and intersections in Hyattsville do allow relatively high traffic throughput, with some delays at peak travel times. The City has several state and county roadways, such as Baltimore Avenue (Route 1), Queens Chapel Road, Adelphi Road, and East-West Highway, that serve as regional commuting routes. Drivers using these roads may experience significant delay at certain intersections due to rush hour congestion. The existing operational analysis of 33 study intersections showed that during either AM or PM peak hours, following nine intersections are currently operating with significant delay (>80 seconds) during periods of peak congestion:

- Baltimore Avenue (Route 1) / East-West Highway (MD 410)
- Baltimore Avenue (Route 1) / Hamilton Street (south) / Alternate US 1
- Baltimore Avenue (Alt Route 1) / Charles Armentrout Street
- Toledo Terrace / East-West Highway (MD 410)
- Editors Park Drive / East-West Highway (MD 410)
- Belcrest Road / East-West Highway (MD 410)
- East-West Highway (MD 410) / Queens Chapel Road (MD 500) / Adelphi Road
- Ager Road / Nicholson Street
- Adelphi Road / Campus Drive



It should be noted that all the intersections identified above are either on county or state roadways. While these roadways and intersections are used extensively by regional traffic, they also provide vital access to residents of Hyattsville and impact their ability to travel around the City to conduct daily activities. The improvements recommended by Hyattsville at these intersections, as well as proposed new connections, are

important to residents of the City and should be considered as part of any future improvements on these roadways.

Because of the delays at the major roadways, residents of Hyattsville are concerned about cut-through traffic on local streets. The local streets that were identified as experiencing significant cut-through traffic were:

- Queensbury Road
- Jefferson Street
- Nicholson Street
- 42nd Avenue
- Hamilton Street

This Study evaluated the operation of these streets and have recommended solutions that are anticipated to reduce cut-through traffic, while also encouraging more bicycle and pedestrian use.

Big Data Analysis

This Study used state-of-the-art big data collection method of using anonymized cell-phone location services to determine the travel pattern within and outside the City. The following section summarizes the analysis process and findings; and more details are included in Appendix A.

Hyattsville was divided into 16 zones based on different land-uses as well as two outside zones, one containing Maryland outside of Hyattsville, and another containing Washington, DC and Northern Virginia. The data revealed that only about 15% of trips start and end within Hyattsville, while approximately 52% of the trips start or end in other areas of Maryland. The rest of the trips either start or end in DC + Northern Virginia.

The travel patterns between the 16 internal zones within Hyattsville also revealed several important trends. It showed that the zone representing Prince George's Plaza (south of MD 410, west of MD 500 and north of Nicholson Street) (Zone 4 the map on the following page) is a strong destination for adjacent zones, especially from areas south of Nicholson Street (Zones 2 and 3 on the map). However, due to lack of direct roadway connections between these zones, the vast majority of residents would have to drive on Queens Chapel Road and East-West Highway to travel between these zones.

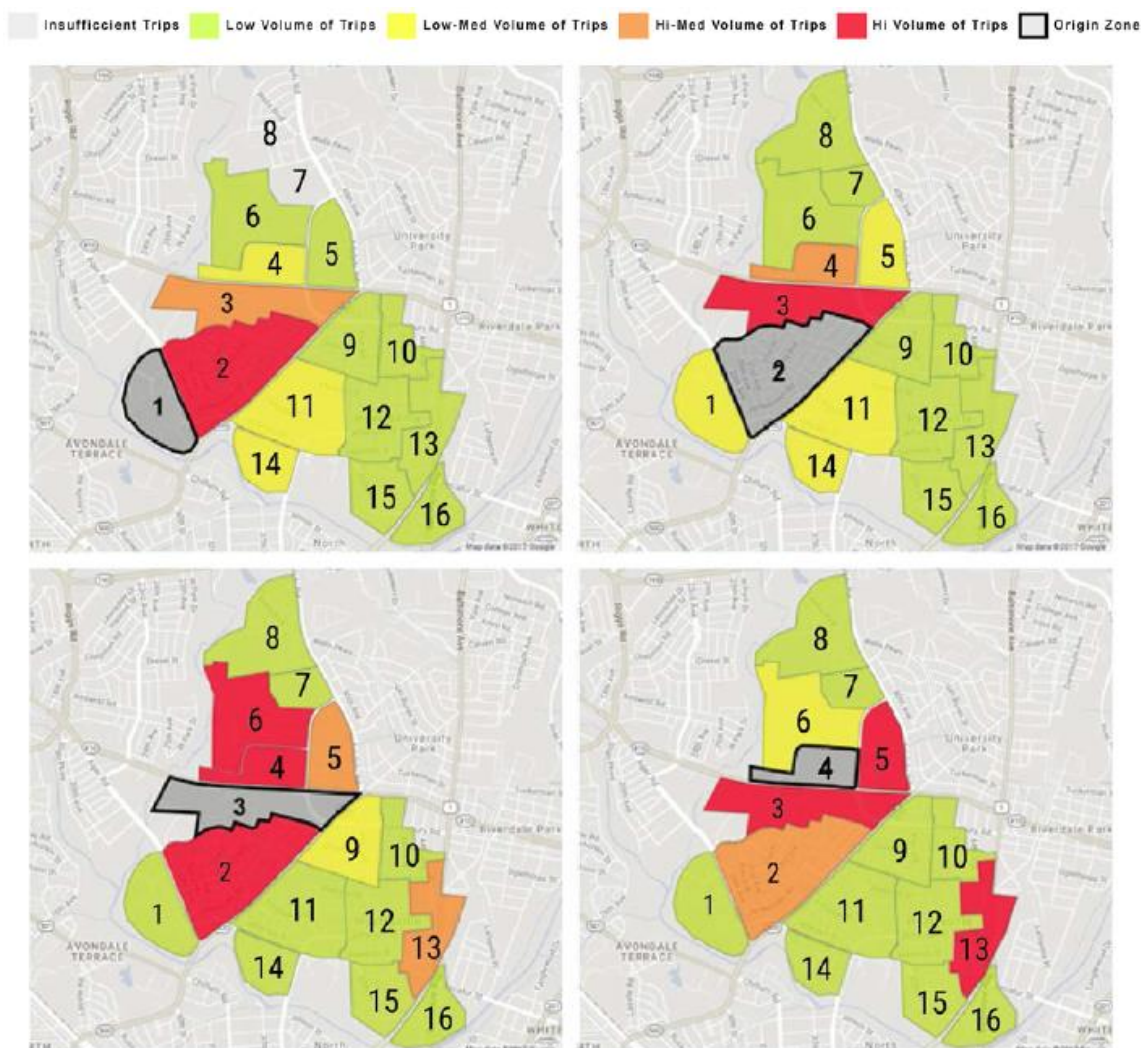
This travel pattern indicates a demand for a more direct connection between these two zones, which could have the additional benefit of reducing local traffic on Queens Chapel and East-West Highway. While a direct roadway connection may not be desirable, a high-quality bicycle and pedestrian connection will likely provide an efficient and direct connection that could accommodate a number of neighborhood trips while reducing traffic from surrounding major roadways, providing much needed relief to residents in adjacent neighborhoods.

Similarly, the big data analysis showed a high number of trips between the Mall at Prince George's and University Town Center on the north side of East-West Highway (MD 410)

(Zone 4 in the map below) and the Arts District on Baltimore Avenue (Route 1) (Zone 13 in the map below). This indicates the demand for the trips between these areas is high and is currently being undertaken by driving personal vehicles. As these areas are less than 1.5 miles apart, providing high-quality alternate modes of transportation can reduce vehicular trips between these areas.

The following maps are an example of the big data analysis of local travel habits. In each map, the area in grey is where trips are originating from, and the darkest-colored zones are where most of those trips end up. These maps illustrate that many trips in Hyattsville are between adjacent zones; for example, most trips originating in Zone 1 (containing the West Hyattsville Metro station) end in Zone 2 (containing nearby residential neighborhoods and the Queens Chapel Town Center shopping area).

Figure 1 : Example of Big Data Analysis Output showing Trips Originating in Grey Zone and Ending in Other Colored Zones



Parking Assessment

Vehicular parking has historically been a challenge in few areas of Hyattsville, for example, near Gateway Arts District and residential areas south of the Prince George's Plaza Metro station. City of Hyattsville identified over 7 miles of roadway segments to assess parking during both early morning and late evening hours. The morning parking counts were taken before 6:30 am and the evening counts were taken between 6:30 pm – 8:30 pm. The morning hour was chosen as that is when maximum residential parking occupancy occurs. Similarly, the evening hour was chosen such that the parking demand is high due to competing parking demand between residential parking and evening retail parking.

The data collected during both hours showed that only about 0.5 miles of block segments experienced parking utilization of over 80%. This indicates that adequate on-street parking is available on most of the street segments assessed.

The block segments with over 80% parking utilization are listed below. Appendix A includes maps with parking utilization on all the streets where parking data was collected.

Morning Hour High Parking Utilization Streets

- Gallatin Street, from 36th Avenue to 36th Place
- Jamestown Road, from Manorwood Drive to Lancer Drive
- Oglethorpe Street, from 41st Avenue to 42nd Avenue
- 42nd Place from Rhode Island Avenue to the alley

Evening Hour High Parking Utilization Streets

- Jamestown Road from Manorwood Drive to Lancer Drive
- Oglethorpe Street from 38th Place to 39th Avenue
- Oglethorpe Street from 41st Avenue to 42nd Avenue
- 42nd Place from Rhode Island Avenue to the alley

Findings

Three of these street segments, Gallatin Street from 36th Avenue to 36th Place; Jamestown Road from Manorwood Drive to Lancer Drive; and Oglethorpe Street from 38th Place to 39th Avenue, are characterized by detached or semi-detached homes with frequent curb cuts. In some cases there is limited off-street parking, or the off-street parking may not be convenient for some housing types (e.g. a single driveway for a duplex structure).

Oglethorpe Street from 41st Avenue to 42nd Avenue is close to two apartment complexes and Hyattsville Middle School, suggesting that the high rate of parking usage may be driven by residents of those two complexes or school faculty and staff. Another contributing factor is that on-street parking is restricted east of 42nd Avenue (adjacent to the middle school) and on 42nd Avenue south of Oglethorpe which pushes parking demand further west.

42nd Place is adjacent to an evolving commercial district on Rhode Island Avenue, and may be experiencing spillover from the businesses, churches and multifamily buildings along the street.

While many of these have their own parking lots, the availability of free on-street parking likely contributes to the higher occupancy rate. Furthermore, the nature of these businesses is changing with retail establishments where customers stay for one or more hours at a time replacing other types of businesses that may have had relatively few visiting customers.

Recommendations

Tiered residential permit parking fees. In some cases – one household may be responsible for many of the cars parked on a street. Some cities have tiered residential parking permit programs wherein the first one or two parking permits are free, or very low cost. However, additional permits increase in cost (e.g. \$10 for first permit, \$20 for second permit, \$30 for third permit).

Expand residential parking permit zones. Streets near schools and multifamily buildings often experience overflow parking from these uses. The City should evaluate the extents of current parking districts and expand them where parking congestion is an issue.

Evaluate Hyattsville Middle School parking impacts. The City should work with PGCPs and Hyattsville Middle School leadership to determine if overflow parking from the school is exacerbating parking congestion on nearby streets. If this is a problem, work with the PGCPs and the school to address the issue through Transportation Demand Management programs that encourage use of transit, carpooling, walking or biking, and other strategies to reduce people driving alone to the school. Longer term, it may be appropriate to expand the school's parking lot.

Install metered parking (42nd Place only). As the number of businesses on southern Rhode Island Avenue increases, there will be increased demand for parking. In the short term, consider extending the two-hour parking distance further north on 42nd Place, and extending the hours beyond 6pm if evening parking congestions remains an issue. This could be coupled with free parking for permitted residents. As new businesses open and parking demand increases, consider metered parking with automated pay stations as has been implemented in some of the City's public lots.

Improve wayfinding and connections to city parking lots. Better wayfinding that directs visitors to the City's existing parking lots can reduce impacts on neighborhood streets. Additionally, better wayfinding and improved pathways between city parking lots and commercial destinations will encourage more people to 'park and walk.' Improvements include pedestrian-scale lighting, managing vegetation, signage directing people to destinations, art along the pathways, etc.

Parking Lot Districts in commercial areas. The growth and success of Hyattsville's commercial districts while undoubtedly lead to increased demand for vehicle parking, which can in turn create issues on nearby residential streets. The City should consider establishing one or more Parking Lot Districts (PLDs) wherein resources are pooled to create centralized parking solutions, including surface or structured parking lots, valet services and even parking shuttles. PLDs can be funded in a variety of ways- including parking revenues, business contributions, and

fee payments in lieu of providing required onsite parking. PLDs can help small lot and infill developments meet parking requirements without sacrificing limited onsite space.

General Considerations. Any changes to the City’s parking regulations and programs should be accompanied with extensive outreach and education. Parking can be a very sensitive issue for residents and businesses, and it is important that any changes are implemented methodically and with ample communication. Furthermore anything that involves regulatory changes should be implemented with a warning period for the first weeks before any tickets or fines are issued.

Administrative costs and increased workload should also be considered. Expanding the City’s parking permit program will require additional staff time to process applications. Increasing the amount of regulated parking (i.e. permitted, metered) will increase the enforcement workload as well.

Wayfinding and Signage

Wayfinding signs are important for providing direction to motorists and non-driving travelers. Effective signage can reduce congestion by directing drivers to parking and other destinations, as people are guided to the most direct routes. In addition, good signage is an important aspect of enhancing the “sense of place” to residents and visitors alike. Good signage accentuates the character of the City and conveys the sense of community. This Study evaluated the

design and condition of existing wayfinding signs for both motorized and non-motorized mode of transportation. It also recommends new wayfinding sign design that builds on the streetcar history of Hyattsville and provides a consistent design for different types of signs.

Existing wayfinding signs are generally in good condition and are concentrated along existing bicycle and pedestrian routes. However, there is a variety of wayfinding sign designs in the City, including bike route signs, Anacostia Trails Heritage Area signs, and vehicle-oriented signs. Many of these signs do not comply with Manual on Uniform Traffic Control Devices (MUTCD) size, color, or font standards, nor do they have a consistent design showcasing the City’s unique character and branding. This Study worked with City staff to select a branded wayfinding sign design that respects Hyattsville history and provides a consistent design for all the signs. More information on wayfinding can be found in Chapter 5 and Appendix C.

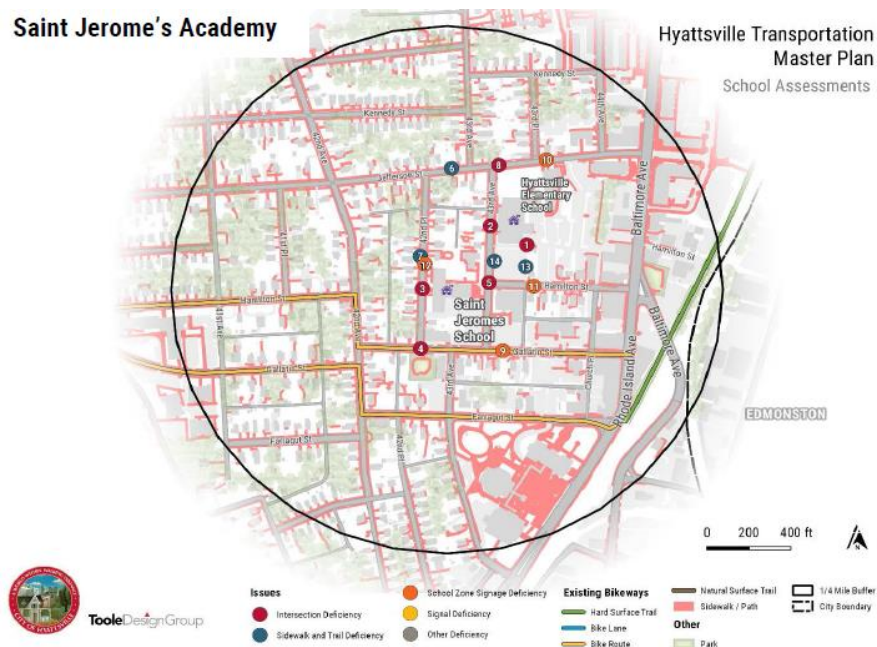


Existing Wayfinding Signs

School Access

This Study examined access and circulation related to five elementary and middle schools in the City: Saint Jerome's Academy, Hyattsville Elementary School, Hyattsville Middle School, Edward Felegy Elementary School, and Nicholas Orem Middle School. Common issues affecting access to each school included missing or deficient curb ramps; sidewalks that are obstructed or below minimum widths, cars parked too close to intersections, relatively high vehicle speeds along major walking or biking routes, missing "School Zone" speed restriction signage, and crosswalks below minimum width standards. Additional detailed assessment of each of the school is provided in the Technical Memorandum I: Existing Conditions Report in Appendix A. Figure 2 shows the example of the school assessment for Saint Jerome's Academy.

Figure 2 : School Area Deficiencies for Saint Jerome's Academy
(See Appendix A for other school assessments)



5. Future Transportation Needs

As the City continues to grow and evolve, so will its transportation system in both scope and in variety. The following sections describe some of the key challenges as well as the principles which form the foundation for the recommendations of this Study.

Critical Street Connections

Hyattsville's streets are one of the city's most significant public assets. A dense network of streets is key to providing efficient traffic circulation, regardless of the mode of transportation. Impinging the circulation on any one or series of streets may result in trips diverted to other streets. Hence, one of the most effective ways to address future growth in population, employment and resulting traffic is to ensure that the Hyattsville has a policy to develop a

connected street network. This allows the city to distribute the traffic more equitably and improve the quality of life of the residents.



Sparse street network (left image) concentrates traffic on small number of street, while dense connected street network (right image) distributes the traffic evenly and improves resiliency.

While the City has an extensive street network, there remain missing links in the grid; particularly between East-West Highway and neighborhoods to the south, and along the Queens Chapel/Adelphi Road corridors. Likewise, the one-way streets on local corridors such as Longfellow Street create broken connections within the street network. These missing links force residents to take long, circuitous routes for short, local trips, which may encourage them to drive instead of walking or bicycling due to the additional distance. As a result, local traffic contributes to more congestion on the main roads, which already must carry through and regional traffic. Filling in some of these missing connections and turning select one-way streets into two-way streets will improve access and mobility throughout the City. This will reduce the burden on local streets while also giving people a more safe and comfortable option to travel without an automobile.

Future Vehicular Needs

The overall population and employment growth of Prince George's County and the Washington DC metro area, in addition to the anticipated growth in Hyattsville, will affect travel behaviors and traffic volumes on the streets within the City. This growth will require Hyattsville to be smart and deliberate about the investments that it makes to improve the transportation system for current and future residents and businesses and makes the best use of public resources.

This Study makes several improvement recommendations at major intersections as they are critical bottlenecks in the transportation network within the City limits. However, it should be noted that a vast majority of these intersections are on County and State roadways. As such, the City does not have the authority to implement the recommended improvements and can only request changes by the responsible agency. Nonetheless, safe operations of these intersections are critically important to the residents of Hyattsville as they provide vital access to local and regional destinations. It is anticipated that Prince George's County DPWT and

Maryland SHA will take the recommended improvements into consideration in any future project for roadways.

This Study recognizes that simply adding vehicular capacity at existing roadways and intersections is not a sustainable mitigation measure as any added capacity will likely be filled by induced traffic demand created by the addition of the capacity. Furthermore, it is well understood that adding vehicular capacity by adding lanes will reduce safety for pedestrians and bicyclists while eliminating the sense-of-place of the area. Lastly, increasing capacity for motor vehicles often requires acquisition of additional right of way (which may in turn require demolishing existing structures). As such, physical improvements were identified that would a) improve vehicular safety and capacity at critical intersections without having a major negative impact on bicycle and pedestrian environment, b) improve bicycle and pedestrian environment without adding significant vehicular delay; and c) limit the need to widen roads and/or intersections. These improvements recommendations are listed in the following chapter.

What is Induced Traffic?

It is the latent traffic demand that fills any new added vehicular capacity of the roadway, which results in recurrence of congestion.

Analysis for this Study used the Metropolitan Washington Council of Governments (MWCOG) regional travel demand model data as well as site-generated trips from approved developments in Hyattsville to forecast 2032 future traffic volume at several intersections in the City. Study intersections were analyzed for the AM and PM peak hours. Intersections where the forecasted traffic growth resulted in extreme delay in the future, i.e. more than 200 seconds of average delay, were identified for future long-term improvements. This approach is taken for two main reasons; 1) The advent of transformational transportation technology will likely continue to have dramatic impact on travel behavior in the future. Thus, future traffic volume forecast is unpredictable. 2) Adding vehicular capacity to accommodate estimated future traffic growth will have substantial negative impact on the near-term pedestrian and bicycle environment, as well as the built environment and sense-of-place around the intersection.

The recommended projects in this Study include both short-term and long-term improvements at critical intersections, as described above. Appendix B provides the future intersection operational results.

Traffic Calming

Residents of Hyattsville are concerned about volume and speed of traffic on neighborhood streets. With anticipated future traffic growth, especially on major roadways within the City, these issues are likely to get worse in the future. One of the key tools to address this future vehicular need is to implement a robust traffic calming policy and program. The City's current municipal code (Chapter 114 Article II, Traffic Regulations) defines traffic calming devices, procedure to request, public hearings, removal and maintenance of the devices. While the code provides many critical elements of the program, it lacks, 1) the engineering guidance on which type of device is appropriate for what type of issue, 2) definition of what constitutes a "speeding problem," and 3) definition of "sufficient volume of non-residential traffic." Absence

of these critical elements in the municipal code and the City's procedure could potentially contribute to inconsistent implementation of the traffic calming program.

One strategy used by many communities to address the speed and volume issues on a roadway, while still accommodating local trips is to identify them as bicycle boulevards (also called neighborhood slow streets). These types of streets prioritize bicycle and pedestrian modes while still accommodating local traffic, thus decreases the propensity of it being used for cut-through traffic. See the section on bicycle facility types for more detail.

Future Bicycle and Pedestrian Needs

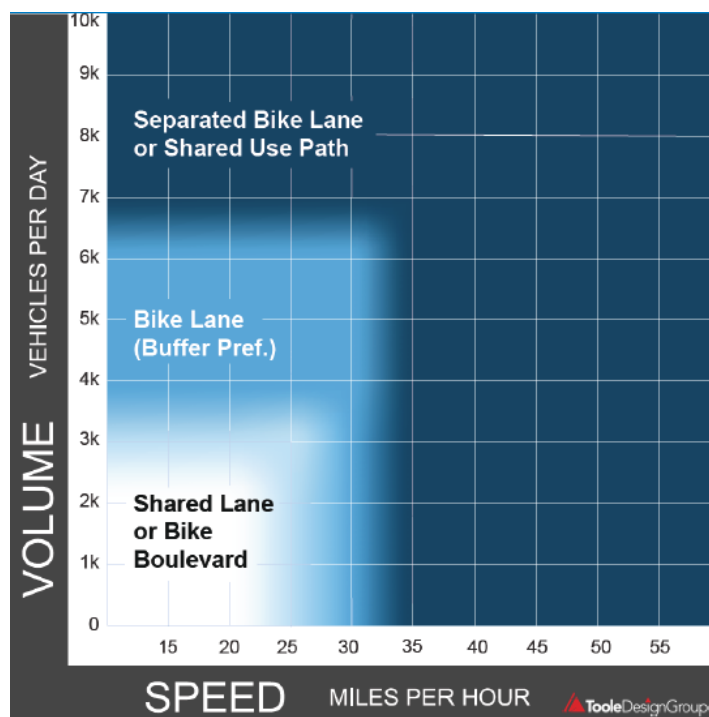
With increased development around the Metro stations and in the Gateway Arts District, it is expected that pedestrian and bicycle traffic will increase in the coming years, especially due to the proximity of these local destinations. More people may work, shop, go to school, or participate in leisure activities close to home, or make greater use of the City's public transportation assets. To reduce reliance on single-occupancy vehicle for travel, especially for short trip lengths around town, Hyattsville should invest in infrastructure that supports other modes of travel. Cities around the country are finding that developing high-quality bicycle and pedestrian facilities is having a positive impact on economic activity and investment, transportation affordability, public health and general well-being of residents.

Bicycle Facility Types

The current state-of-the-practice in bicycle facility design is based on identifying vulnerable users, such as families bicycling together or children, as the design users of the facility. This means designing facilities that are safe for everyone so that families feel comfortable enough to use it. This has resulted in bicycle facility type guidance that is based on the roadway context—specifically vehicular speed and volume. Generally, bicycle facilities adjacent to high speed and volume roadways should have increased physical separation. This Study recommends bicycle facilities that are in line with this principle.

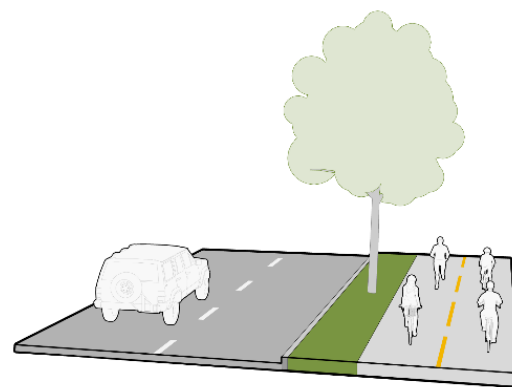
Below is a chart from the forthcoming AASHTO (American Association of State Highway and Transportation Officials) Guide for the Design of Bicycle Facilities, which provides general guidelines for designing bicycle facilities based on the roadway's speed and traffic volume. On slower streets with little traffic, it recommends that bicyclists share space with drivers, but on streets with higher speeds or greater traffic, it recommends striped bike lanes with buffers, or separated bike lanes or paths that are fully separated from motor vehicles. The following is a description of different types of bicycle facilities that may be appropriate for streets within the City.

Figure 3 : Bicycle Facility Selection Chart



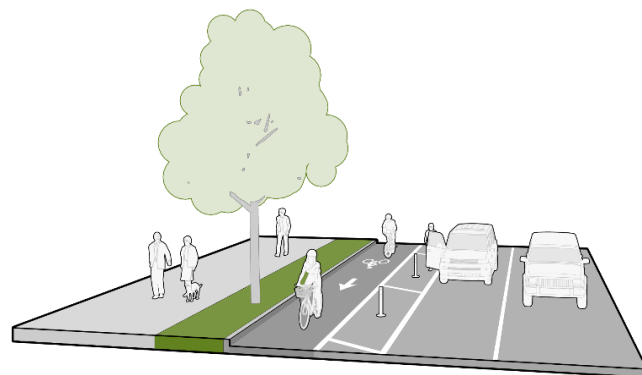
Multiuse Paths

Multiuse paths are dedicated facilities for bicyclists and pedestrians that are typically located adjacent to high-speed roads with very few roadway or driveway crossings. They are accommodated within the rights-of-way of the roadways. They are preferred by less experienced bicyclists because of their separation from traffic. More experienced bicyclists may avoid them if pedestrians and slower bicyclists are present. Snow removal and sweeping of these paths may require specialized equipment. Additionally, tree roots growing under the pavement may require periodic maintenance to preserve a comfortably smooth pathway surface. Multiuse paths are also referred to as Shared Use Paths.



Separated Bike Lanes

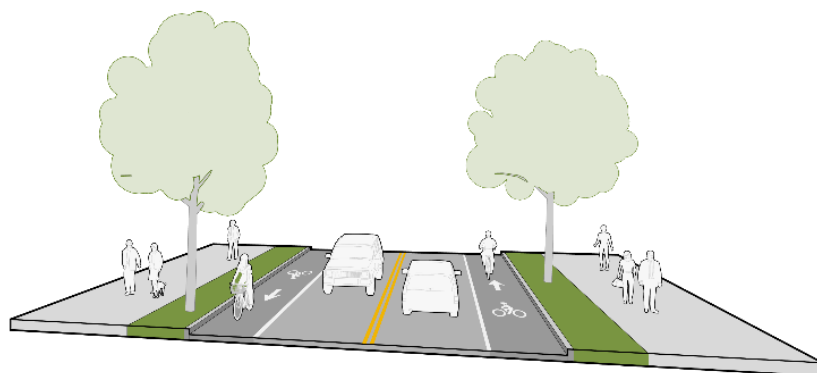
Separated Bicycle Lanes (SBLs) are on-street bicycle lanes that are physically separated from motor vehicle traffic. SBLs can be designed for one-way or two-way bicycle traffic. Additionally, they can be level with the travel lane, raised but still lower than the sidewalk, or level with the sidewalk. This bikeway type combines the user experience of a multiuse path with the on-street infrastructure of bike lanes. Separation from traffic



can be achieved with physical elements such as a lane of parallel parking, planters, curbing, or flexible posts. SBLs require added design considerations at driveways, transit stops, and intersections (especially for two-way Separated Bike Lanes) to manage conflicts with turning vehicles and crossing pedestrians. They may require bicycle-specific signals, signal phasing or protected intersection designs that slow turning vehicle speeds. Colored pavement or other visual treatments may be used to enhance visibility and raise awareness of the SBL, especially at conflict areas like driveways and intersections. Stormwater treatment is one of the considerations when installing protection such as curbs. This may be mitigated by installing pre-cast concrete blocks with drainage sleeves that allow storm water to access existing gutter and storm drain systems. Specialized street sweepers may be required to maintain narrow facilities.

Conventional Bike Lanes

This bikeway type uses signage and striping to allocate dedicated roadway space to bicyclists. It encourages predictable movements by bicyclists and motorists. Care must be taken to properly design bike lanes to meet or exceed minimum standards, particularly for width, and to properly restrict cars from parking in them.



Substandard bike lanes may not attract riders and may not be comfortable for casual or less confident bicyclists. It is also important that bike lane treatments be carried through intersections to provide continuity and guidance for bicyclists where the potential for conflicts is highest. Where bike lanes must end due to space constrictions or must transition to another facility type, advance warning and/or wayfinding signage for an alternative route should be provided to instruct bicyclists how to proceed. Bike lanes generally need to be swept periodically to keep debris from accumulating in them, especially if they are located adjacent to a curb.

Bicycle Boulevard

Bicycle boulevards (also referred to as neighborhood greenways or neighborhood slow streets) are low-speed, low-volume shared roadways that create a high comfort walking and bicycling environment, while still allowing local vehicle traffic. Traffic



calming or diversion treatments are often used to promote speed and volume reduction. Shared lane markings and wayfinding signs are often used to help bicyclists navigate the route and raise awareness that bicyclists are present. Bicycle boulevards also feature enhanced treatments at arterial/collector street intersections to provide safe and convenient crossings. Maintenance requirements are generally low because cars share the same space, although traffic calming elements would add maintenance needs if they are installed. Generally, roadways with an average of fewer than 3,000 vehicles per day and 25 mph speed are ideal for bicycle boulevards. If the current operating volume and speeds are higher, then traffic calming devices such as, speed humps, traffic diverters, chicanes, etc., can be installed to ensure that the operational characteristics of the roadway encourages families to ride bicycle together.

Pedestrian Crossing Guidance

One of the main hurdles for pedestrian travel is safety at major roadway crossings. This issue was raised during public meetings and WikiMap surveys. While reducing the crossing distance by eliminating travel lanes, etc., is an ideal solution, in most instances, it is cost prohibitive. Furthermore, installing a full traffic signal with pedestrian signal heads must meet strict signal warrants established in the MUTCD (Manual on Uniform Traffic Control Devices), the federal government's standards for the design and placement of traffic signs and signals. As a result, it may not be possible to install a traffic signal at every location where pedestrians are crossing.

In order to assist pedestrian crossings at uncontrolled locations, the Federal Highway Administration (FHWA) published the *Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations* in 2017, which includes the guidance for pedestrian crash countermeasures based on roadway configurations, speed limits, and average daily traffic volumes, as shown in Table 3. Hyattsville should use this guideline to install safe pedestrian crossings at unsafe locations with high pedestrian crossing demand.

Table 3 : Uncontrolled Crossing Counter Measures
(Source: FHWA Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations)

Roadway Configuration	Speed Limit								
	≤30 mph	35 mph	≥40 mph	≤30 mph	35 mph	≥40 mph	≤30 mph	35 mph	≥40 mph
	Vehicle AADT <9,000			Vehicle AADT 9,000–15,000			Vehicle AADT >15,000		
2 lanes*	1 2 3 4 5 6	1 3 5 6 7	1 3 5 6 7	1 3 4 5 6	1 3 5 6 7	1 3 5 6 7	1 3 4 5 6 7	1 3 5 6 7	1 3 5 6 7
3 lanes with raised median*	1 2 3 4 5	1 3 5 7	1 3 5 7	1 3 4 5 7	1 3 5 7	1 3 5 7	1 3 4 5 7	1 3 5 7	1 3 5 7
3 lanes w/o raised median†	1 2 3 4 5 6 7	1 3 5 6 7	1 3 5 6 7	1 3 4 5 6 7	1 3 5 6 7	1 3 5 6 7	1 3 4 5 6 7	1 3 5 6 7	1 3 5 6 7
4+ lanes with raised median‡	1 3 5	1 3 5 7	1 3 5 7	1 3 5 7	1 3 5 7	1 3 5 7	1 3 5 7	1 3 5 7	1 3 5 7
4+ lanes w/o raised median‡	1 3 5 6 7 8	1 3 5 6 7 8	1 3 5 6 7 8	1 3 5 6 7 8	1 3 5 6 7 8	1 3 5 6 7 8	1 3 5 6 7 8	1 3 5 6 7 8	1 3 5 6 7 8

*One lane in each direction †One lane in each direction with two-way left-turn lane ‡Two or more lanes in each direction

Given the set of conditions in a cell,

- ① Signifies that the countermeasure should always be considered, but not mandated or required, based upon engineering judgment at a marked uncontrolled crossing location.
- # Signifies that the countermeasure is a candidate treatment at a marked uncontrolled crossing location.

The absence of a number signifies that the countermeasure is generally not an appropriate treatment, but exceptions may be considered following engineering judgment.

- 1 High-visibility crosswalk markings, parking restriction on crosswalk approach, adequate nighttime lighting levels
- 2 Raised crosswalk
- 3 Advance Yield Here To (Stop Here For) Pedestrians sign and yield (stop) line
- 4 In-Street Pedestrian Crossing sign
- 5 Curb extension
- 6 Pedestrian refuge island
- 7 Pedestrian Hybrid Beacon
- 8 Road Diet

This table was developed using information from: Zegeer, C. V., Stewart, J. R., Huang, H. H., Lagerwey, P. A., Feaganes, J., & Campbell, B. J. (2005). *Safety effects of marked versus unmarked crosswalks at uncontrolled locations: Final report and recommended guidelines* (No. FHWA-HRT-04-100); *Manual on Uniform Traffic Control Devices*, 2009 Edition, Chapter 4F, Pedestrian Hybrid Beacons; the *Crash Modification Factors (CMF) Clearinghouse website* (<http://www.cmfclearinghouse.org/>); and the *Pedestrian Safety Guide and Countermeasure Selection System (PEDSAFE) website* (<http://www.pedbikesafe.org/PEDSAFE/>).

Future Transit Needs

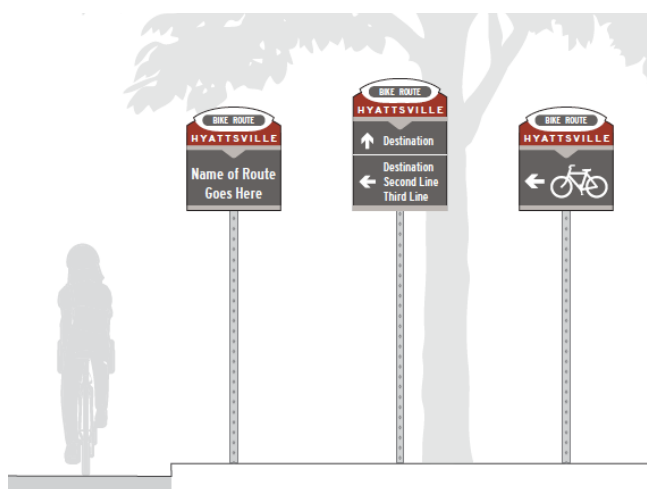
Hyattsville is served relatively well by regional transit service, including two Metro stations, Metrobus, The Bus, and UMD shuttle. However, the big data analysis as well as public input revealed that there is significant demand for travel between Hyattsville Crossing, the Gateway Arts District, and West Hyattsville. However, the current transit services do not provide direct and efficient route connecting these destinations. As such, this Study identified the need to conduct an operational and financial feasibility study to provide high-frequency shuttle service between these destinations.

Wayfinding Sign Design and Placement

As part of this Study, the project team worked closely with City staff to develop a set of new designs for all wayfinding signs in the City. The recommended design takes inspiration from significance of streetcars Hyattsville's transportation history and provides unique branding for the City and that enhances the sense-of-place in the community. The figure below provides the proposed design for various types of wayfinding signs. Each of the sign type is designed to provide specific information to bicyclists, pedestrians and motorists. However, they all have the same design elements to provide consistent branding and improve aesthetics.

The project team also developed installation details and as well as identified bicycle routes, sign texts and placement to assist City in installation of these signs. These details are provided in Appendix C of this Study.

Figure 4 Proposed Wayfinding Sign Design



Bicycle Wayfinding Signs



Kiosk Sign



Vehicular Wayfinding



Sign Detail Example

6. Proposed Transportation Network

Goals and Vision

This Study includes goals, policies, and strategies that can be used to shape public and private transportation initiatives for the next decade. Throughout the planning process, community stakeholders expressed a desire for a safer walking and bicycling experience, improved access to shops, schools, leisure activities, improved transit, and better traffic flow. The following statement describes what the City of Hyattsville will look like after the implementation of the goals expressed in this Study.

In the near future, Hyattsville will be a place where anyone, regardless of age, background, or ability, can travel safely, comfortably, and affordably. Its transportation network will prioritize people-friendly streets that add energy and vitality to their surroundings, while accommodating the inevitable flow of traffic into and out of the City. The transportation system will support Hyattsville's sustainability goals by prioritizing active transportation for shorter trips and access to rapid transit for longer trips. Hyattsville's streets will serve as the backdrop for community events and festivals, as well as the rhythms of everyday life: traveling to school or work, running errands at a local business, enjoying a leisurely stroll or bike ride, spending time with friends, family, and loved ones.

Strategy Recommendations

In order to implement the above goals and vision, several strategies are recommended. The projects identified for each strategy highlight specific projects that support and advance the strategy. These projects, and several others are listed in the Project Recommendation section.

Strategy I: Complete the City's street grid with new street connections.

- **Project: New street between Toledo Terrace and Heurich Park Road.** A lack of street connections between East-West Highway, Ager Road, and Queens Chapel Road forces residents on long, circuitous paths to make local trips, encouraging people to drive and generating additional traffic congestion. A new street from the end of Toledo Terrace to Heurich Park Road (or 31st Avenue) will significantly improve traffic flow and circulation, particularly for local trips. The design may require incorporation of traffic calming treatments to ensure that this does not create a new traffic burden on neighborhoods. This connection would require additional analysis and a feasibility study.
- **Project: Improve the McClanahan Park connection between Jamestown Road and the Prince George's Plaza Metro station.** Today, area residents rely on informal foot paths connecting dead-end neighborhood streets south of the station to the Prince George's Plaza Metro station and shopping areas along East-West Highway. Improved sidewalk connections and a small, neighborhood-scaled plaza at McClanahan Park would make it safer, easier and more inviting to walk to the station, while providing much needed community open space.
- **Project: Public plaza connection between 33rd Avenue and Editors Park Drive.** The big data analysis showed high number of trips between the commercial developments

along East-West Highway and neighborhood to the south of Nicholson Street.

Currently, most trips between these areas are made by car. However, these trips can easily be made by foot or bicycle if safe and inviting infrastructure is present.

Neighborhoods immediately south of the Metro Green Line tracks currently rely on a handful of foot paths connecting dead-end streets south of the tracks to the Prince George's Plaza Metro station, the Mall at Prince George's, and Nicholas Orem Middle School. One of those streets is 33rd Avenue, which currently has a path connecting it to the dead-end Editors Park Drive and Orem Middle School. Turning this path into a plaza would create a new public open space, encourage more walking and biking to the mall area, in turn increasing safety with more pedestrian activity and eyes on the street.

- **Project: Connect missing links in the neighborhood street network.** Dead-end streets can impede connections for people on foot or bicycle, funnel more traffic onto the streets that do provide through-connections, and reduce accessibility for emergency vehicles. Connecting these broken links could improve access throughout the City and make it easier for people to take short trips by any mode without traveling on already burdened major roads. It is recommended the City undertake a feasibility study of connecting the following dead-end streets:
 - Calverton Drive to Dean Drive
 - Oliver Street between 42nd Place and 43rd Avenue
 - Queens Chapel Road and Manorwood Drive intersection

Furthermore, as large land parcels redevelop in the future, e.g. the Mall at Prince George's or expansion of the University Town Center, the City should consider establishing an urban street grid network to improve multimodal circulation as well as enhance the livability of the area.

It should be noted that in each case, new streets are proposed to preserve right-of-way if or when redevelopment occurs at that location. The City has no intention of seizing private property to construct these roads. New streets are intended to create access to new development, serve new residents and businesses, and improve local traffic for current residents by completing the street grid. They are not intended to encourage cut-through traffic on existing streets. All new streets should be designed to discourage cut-through traffic by incorporating traffic calming devices or via other measures.

Strategy 2: Design streets for lower speeds.

- **Project: Rebuild Hamilton Street as a Complete Street between Jamestown Road and 40th Avenue.** Hamilton Street is a state highway and a major connection between the West Hyattsville Metro station, the Queens Chapel Town Center, and Magruder Park. However, it has long stretches without sidewalks, no bicycle accommodations, and has an overly wide design that encourages speeding and unsafe driving behavior. To reduce speeding and make this the east-west main street for Hyattsville that is safe and comfortable for all users, Hamilton Street should be redesigned as a Complete Street, with bike lanes, ample and continuous sidewalks, additional pedestrian crossings and narrower motor vehicle lanes and potentially other traffic calming measures. This will

require coordination with SHA and potential opportunity for the City taking over control and ownership of the street from the SHA after the reconstruction. The design should consider the new police station on Hamilton and emergency responders ability to navigate the street.

- **Project: Rebuild Toledo Road as a Complete Street between Toledo Place and Adelphi Road.** Toledo Road is a local street within the Prince George's Plaza Transit District but currently lacks continuous sidewalks or bicycle accommodations for its entire length. Working in conjunction with the owners of the Mall at Prince George's and University Town Center, rebuild this street as a Complete Street with sidewalks, bike lanes, and a two-lane street section.

Strategy 3: Prioritize people on foot in street design.

- **Project: Complete missing links in the sidewalk network.** Sidewalks are a crucial part of making it easy, comfortable, and safe to walk in the City, particularly around major destinations such as the Metro stations and Arts District. While the City has an extensive sidewalk network, there remain several blocks in those areas currently lack complete or accessible sidewalks on one or both sides of the street. New sidewalks are recommended in the following locations:
 - Along 38th Avenue between from Hamilton Street to Northwest Branch Trail
 - Along 41st Avenue between Nicholson Street and Oglethorpe Street
 - Along the south side of Maryhurst Drive between Madison Street and Madison Place
 - Along the Oliver Street right-of-way between 42nd Avenue and 42nd Place
- **Project: Complete off-street links in the sidewalk and trail network.** In areas with dead-end or discontinuous streets, there are opportunities for off-street trail connections that can leverage the existing sidewalk network to dramatically improve access for people traveling on foot. Multi-use paths are recommended in the following locations:
 - Between Northwestern High School and Toledo Terrace or Belcrest Road
 - Between Nicholas Orem Middle School and 34th Avenue (upgrade existing path to accessible standards)
 - Between Nicholas Orem Middle School and the intersection of 35th Avenue and Oliver Street
 - Between First Baptist Church and the intersection of 42nd Place and Macaroy Alley
- **Project: Create safer pedestrian crossings citywide.** Many intersections in high-traffic areas, such as near transit stops, schools, or shopping areas currently lack high-visibility crosswalks that indicate to drivers where to stop and tell people crossing on foot, especially those with disabilities, where they can do so safely. Other intersections have wide turning radii that encourage drivers to speed, giving them less time to react to the presence of people crossing the street. It is recommended the City create pedestrian-friendly intersections through the provision of high-visibility crosswalks and curb extensions, where appropriate, throughout Hyattsville. Taking advantage of

reconstruction and development opportunities to strategically improve intersections is encouraged. Every pedestrian crossing that is made safer and more comfortable will enhance and the pedestrian network and increase the walkability of the City.

- **Project: Update and implement traffic calming program.** City's current traffic calming policy and program lays a strong foundation to build an effective program. The policy should be updated to define important parameters that are critical for its successful implementation, like excessive speed and non-residential traffic. In addition, the program should be updated to include guidance on effectiveness and implementation of traffic control devices. Traffic calming should be implemented on following streets:
 - 3900 block of Jefferson Street
 - Queensbury Road

Strategy 4: Reduce the number of one-way streets.

- **Project: Convert one-way to two-way streets or change circulation.** One-way streets are common on Hyattsville's narrower streets, particularly around the Arts District and in Hyattsville Hills. However, some one-way streets can increase traffic congestion by forcing drivers to take long, circuitous routes, impede travel by not providing a route for a return trip, and even encourage speeding on streets with excess width. Additional discussion about one-way streets and how they relate to the City's street network can be found in Chapter 5. The City should change traffic circulation on the following streets:
 - Hamilton Street – convert to two-way from Route 1 to 43rd Ave
 - Hamilton Street – convert to two-way from 40th Avenue to 42nd Avenue
 - Farragut Street – convert to two-way from 42nd Avenue to access to the Prince George's County Services Complex.
 - Jefferson Street – convert to two-way or reverse one-way from 35th Avenue to Queens Chapel Road
 - Oglethorpe Street – convert to two-way from 42nd Place to 44th Avenue
 - Jamestown Road – convert to two-way from 31st Avenue to Lancer Drive

Strategy 5: Prioritize the comfort of people on bikes in street design.

- **Project: Create bike boulevards on lower-speed streets that could provide key bicycling connections but are too narrow for bike lanes.** Nearly all of the City is within a comfortable bicycling distance of major destinations, such as the Metro stations, the Prince George's Plaza transit district, or the Gateway Arts District. Most neighborhood streets lack bicycle accommodations but are too narrow to accommodate dedicated bike lanes or would require parking removal for their installation. Many of these streets are ideal for a bike boulevard, which uses signs, pavement markings and traffic calming to create a low-speed street that is comfortable for bicycling. Bike boulevards can also help address speeding and discourage cut-through traffic through traffic calming. It is recommended that the City convert the following streets to bike boulevards:
 - Jamestown Road between Ager Road and Oliver Street
 - Jefferson Street between 40th Avenue and Baltimore Avenue

- Nicholson Street between Ager Road and Queens Chapel Road
- Oglethorpe Street between Queens Chapel Road and Baltimore Avenue
- 40th Avenue between Hamilton Street and 41st Avenue
- 41st Avenue between 40th Avenue and Queens Chapel Road
- **Project: Provide separated bike lanes on Belcrest Road and Toledo Terrace.** Belcrest Road and Toledo Terrace are important local connections within the Prince George's Plaza Transit District and are home to thousands of residents in recently-constructed multi-family buildings. However, both streets currently lack safe bicycle accommodations. Separated bike lanes on both streets would be a key part of the City's bicycle network. Note: a portion of Toledo Terrace lies outside of the boundaries of the City of Hyattsville, however, the City should advocate for this work to be completed as the only access to Toledo Terrace is by using roads within the City.
- **Project: Provide separated bike lanes (or multi-use path) on Adelphi Road.** Adelphi Road is a key north-south connection between the Prince George's Plaza area and communities adjacent to the City, including the University of Maryland and the Town of University Park. Providing separated bike lanes on this corridor would create an alternative to driving into the City for short trips, reducing traffic volumes and parking needs in the transit district. It is recommended separated bike lanes (or multi-use path) are installed on Adelphi Road from Queens Chapel Road to City limits. As this road is owned by SHA, coordination with the State Highway Administration and a feasibility study would be required to explore potential street sections and configurations.
- **Project: Install multi-use path on East-West Highway.** East-West Highway is a key east-west connection through the City (owned by SHA), but is largely inaccessible to people traveling by bike. There are currently no bicycle facilities on or parallel to this street, which is the primary connection across the Northwest Branch of the Anacostia River to points west. Due to the high traffic volume and speed on the roadway, even protected bicycle lane is not anticipated to feel safe for many users. Hence, a high-quality, separated multi-use path is recommended along the roadway. A multi-use path on the north side of East-West Highway would improve access to the Mall at Prince George's, University Town Center, and the Prince George's Plaza Metro station. It is recommended the City work with SHA to provide a multi-use path on the north side of East-West Highway from 23rd Avenue to Adelphi Road.

Strategy 6: Design intersections to improve safety for all.

- **Project: Redesign the intersection of Baltimore Avenue (Route 1, Route 1 Alternate), and Hamilton Street.** This intersection forms the southern gateway to the Gateway Arts District, as well as a key connection over the MARC tracks. However, it experiences significant backups on Route 1 Alternate and Hamilton Street, and is very difficult for people to cross on foot. Converting Hamilton from a one-way eastbound to a one-way westbound street and adding a new southbound left-turn lane can reduce backups, while also improving circulation for Hyattsville Elementary School and St. Jerome Academy. Tightening the geometry of the intersection can improve the

pedestrian connection. Redesigning this intersection can be an opportunity to create a more welcoming entrance to Hyattsville's section of Route 1.

- **Project: Reconfigure intersections on East-West Highway to reduce delay for all users and improve the crossing experience for pedestrians and bicyclists.** While East-West Highway serves regional traffic, it is also the spine of the Prince George's Plaza Transit District and, as a result, must accommodate the needs of nearby residents, including those taking short trips. Long traffic signal cycles not only cause backups on side streets but create unacceptable delays for people walking or bicycling. The lane configuration and signal timing for these six intersections should be updated to improve its operation (see Project Recommendation section for specific recommendations):
 - East-West Highway and Toledo Terrace
 - East-West Highway and Editors Park Drive
 - East-West Highway and Belcrest Road
 - East-West Highway, Queens Chapel Road, and Adelphi Road
 - East-West Highway and Baltimore Avenue (Route 1)
- **Project: Install single-lane modern roundabout at the 40th Avenue, Gallatin Street & Hamilton Street intersection.** The intersection is one of the key entrances to Magruder Park and the historic residential areas of Hyattsville. Furthermore, the five approaches of the intersection make it an ideal candidate for a roundabout.
- **Project: Reconfigure intersections to improve safety.** In order to improve safety at intersections, the lane configuration can be modified to reduce turning vehicle speed and pedestrian crossing distances, while ensuring that vehicular operation is not deteriorated considerably. This can be achieved by eliminating turn lanes where it is not necessary, updating traffic signal phasing and timings, etc. Lane configuration changes are recommended at the following intersections (see Project Recommendation section for specific recommendation):
 - Route 1 and Farragut Street
 - Ager Road and Hamilton Street
 - Queens Chapel Road, Queensbury Road, and Belcrest Road
- **Project: New traffic signals at critical intersections such as Baltimore Avenue (Route 1 Alternate) and Charles Armentrout Drive.** Charles Armentrout Drive is an important local connection between Rhode Island Avenue and industrial activities on Baltimore Avenue (Route 1 Alternate). Currently, the intersection of Armentrout Drive and Baltimore Avenue is uncontrolled and has dangerously poor sight distance, which creates significant backups, particularly for traffic turning left (north) from Armentrout Drive to Baltimore Avenue. A traffic signal would improve traffic flow and safety while creating a safe grade-level crossing for people on foot or bicycle. Baltimore Avenue is a state route, so this project would require coordination with SHA.
- **Project: New traffic signals on Ager Road at Lancer Drive and Nicholson Street.** The Ager Road road diet (reducing pavement width) currently being built by Prince George's County DPWT is intended to calm speeding on Ager Road and make it safer to cross between the West Hyattsville Metro station, the Queens Chapel Town Center, and

surrounding residential areas. New traffic signals at Lancer Drive and Nicholson Street will create safer crossings for people on foot or bike, while improving circulation within the neighborhoods. A Lancer Drive signal will also create access to the new residential development currently under construction west of the Metro station. As Ager Road is a County route, this would require coordination with Prince George's County DPWT.

- **Project: Study the feasibility of a new traffic signal at East-West Highway and America Boulevard as part of future development of the area.** As University Town Center builds out, the need for additional access from East-West Highway will increase, particularly for people on foot or bicycle. A signalized intersection with future redevelopment that require full access (instead of existing right-in/right-out access), would allow people additional access to this development and improve connections to the Prince George's Plaza Metro station. As East-West Highway is a state route, coordination with SHA and a feasibility study should analyze the potential effects of a new traffic signal on adjacent intersections.
- **Project: New traffic signals on Queens Chapel Road at Lancer Drive and Nicholson Street.** Queens Chapel Road is currently home to the longest stretch in the City without a signalized intersection, measuring 1.5 miles. People on foot or bike must travel far out of their way to cross at a signal or risk their safety crossing against the light. Two new traffic signals at Lancer Drive and Nicholson Street will create safer crossings, calm traffic by reducing the ability to gain speed between lights and improve circulation between residential areas in the City. (A signal at the intersection of Queens Chapel Road and Nicholson Street is currently under design by SHA.)

Strategy 7: Prioritize connections to and from the Metro stations and Arts District

- **Project: Working with private property owners, develop a new street network around the Prince George's Plaza Transit District.** Today, the areas around the Prince George's Plaza Metro station are largely characterized by large, privately-owned developments with long blocks, and limited pedestrian or bicycle connections. The University Town Center and Editors Park developments both include a network of local streets designed to provide more internal connectivity. Long-term plans to expand University Town Center and redevelop the Mall at Prince George's should include additional street connections to the grid, including the following links:
 - Editors Park Drive between East-West Highway and Toledo Terrace
 - Freedom Way between Toledo Terrace and Belcrest Road
 - America Boulevard between East-West Highway and Queens Chapel Road
 - America Boulevard between Toledo Road and Belcrest Road
- **Project: Work with private property owners to develop a new street network around the West Hyattsville Metro station.** A new residential development is currently under construction on the north side of the station that will include several new, private streets connecting to Ager Road. On the south side of the station, long-term plans call for extending Hamilton Street and Jamestown Road, and providing additional street connections between Ager Road and Queens Chapel Road. Hyattsville

should work with WMATA, PG DPWT and future developers to incorporate new street connections with short blocks and frequent crossings.

- **Project: Conduct feasibility study to assess the viability of establishing a shuttle service between the Metro Stations and the Arts District.** The big data analysis and public input clearly indicated the high travel demand between these areas in the city. The City should evaluate the financial and operational feasibility of establishing a shuttle service between these destinations.

Strategy 8: Integrate trails into the local transportation network.

- **Project: Install pedestrian/bicycle actuated traffic control devices on the Northwest Branch Trail where it crosses major streets, including Queens Chapel Road and 38th Street, and East-West Highway.** These devices give people traveling on foot or bike a safe way to cross busy roads. These intersections should be analyzed either for rectangular rapid flashing beacon or High Intensity Activated Crosswalk (HAWK) signal, also known as a pedestrian hybrid beacon.

Project Recommendations

The comprehensive data collection and analysis, as well as several rounds of public engagement conducted as part of this Study, identified several key multimodal mobility challenges within Hyattsville. This ranged from lack of adequate pedestrian facilities around schools, opportunities to improve multimodal circulation throughout the City, opportunities to improve bicycle travel within the City, lack of consistent wayfinding signs, and the opportunity to establish shuttle service. The table below lists the all of the recommended projects for this Study. A map of the recommended projects can be found on page 48.

Figure 5 : Project Recommendations

Project ID	Category	Project Name	Description
BB-1	Bike boulevard	Jefferson Street Bike Blvd (40th Ave to Trolley Trail)	Designate and design as bike boulevard to improve east-west bicycle connectivity
BB-2	Bike boulevard	Nicholson Street Bike Blvd (Ager Rd to 40 th Avenue)	Designate and design as bike boulevard to improve east-west bicycle connectivity
BB-3	Bike boulevard	Jamestown Road Bike Blvd (Ager Rd to Oliver Rd)	Designate and design as bike boulevard as alternate to bicycling on Queens Chapel Road
BB-4	Bike boulevard	40th/41st Avenue Bike Blvd	Designate and design as bike boulevard to connect Magruder Park to East-West Highway and beyond
BB-5	Bike boulevard	Oglethorpe Street Bike Blvd	Designate and design as bike boulevard to improve east-west bicycle connectivity
BP-1	Bicycle/Pedestrian Actuators	NW Branch Trail Crossing at 38th Street	Install Rectangular Rapid Flashing Beacon (RRFB), raised crossing, or High Intensity Activated Crosswalk (HAWK) signal
BP-2	Bicycle/Pedestrian Actuators	NW Branch Trail Crossing at Queens Chapel Road	Redesign to reduce crossing distance and install a High Intensity Activated Crosswalk (HAWK) signal
CC-1	Circulation Change	Gallatin Street two-way conversion	Convert to two-way from 42nd Ave to Route 1
CC-2	Circulation Change	Hamilton Street one-way flip	Convert EB one-way to WB one-way from 43rd Ave to Route 1
CC-3	Circulation Change	Circulation change implementation	Review additional proposed circulation changes and determine timeline for implementation
I-1	Intersection	Route 1, Route 1-Alt & Hamilton Street (south) Improvement	Redesign intersection to add SBLT lane and new WBTH movement. Consider converting the signal at Hamilton St (north) intersection to stop-controlled to improve north-south vehicular flow in the area
I-2	Intersection	40th Avenue, Gallatin Street, & Hamilton St. Roundabout	Install roundabout to improve traffic flow, safety, and gateway treatment to City's core
I-3	Intersection	East-West Highway & Toledo Terrace Improvement	Restripe SB and NB approaches to provide separate LT and shared TH-RT lanes. Remove WBRT lane to reduce pedestrian crossing distance
I-4	Intersection	East-West Highway & Editor's Park Drive Improvement	Consider removing EBRT lane due to low turning volume and to reduce pedestrian crossing distance
I-5	Intersection	East-West Highway & Belcrest Road improvement	Consider reconfiguring to exclusive dual NBLT and single SBLT lanes to improve vehicular operation

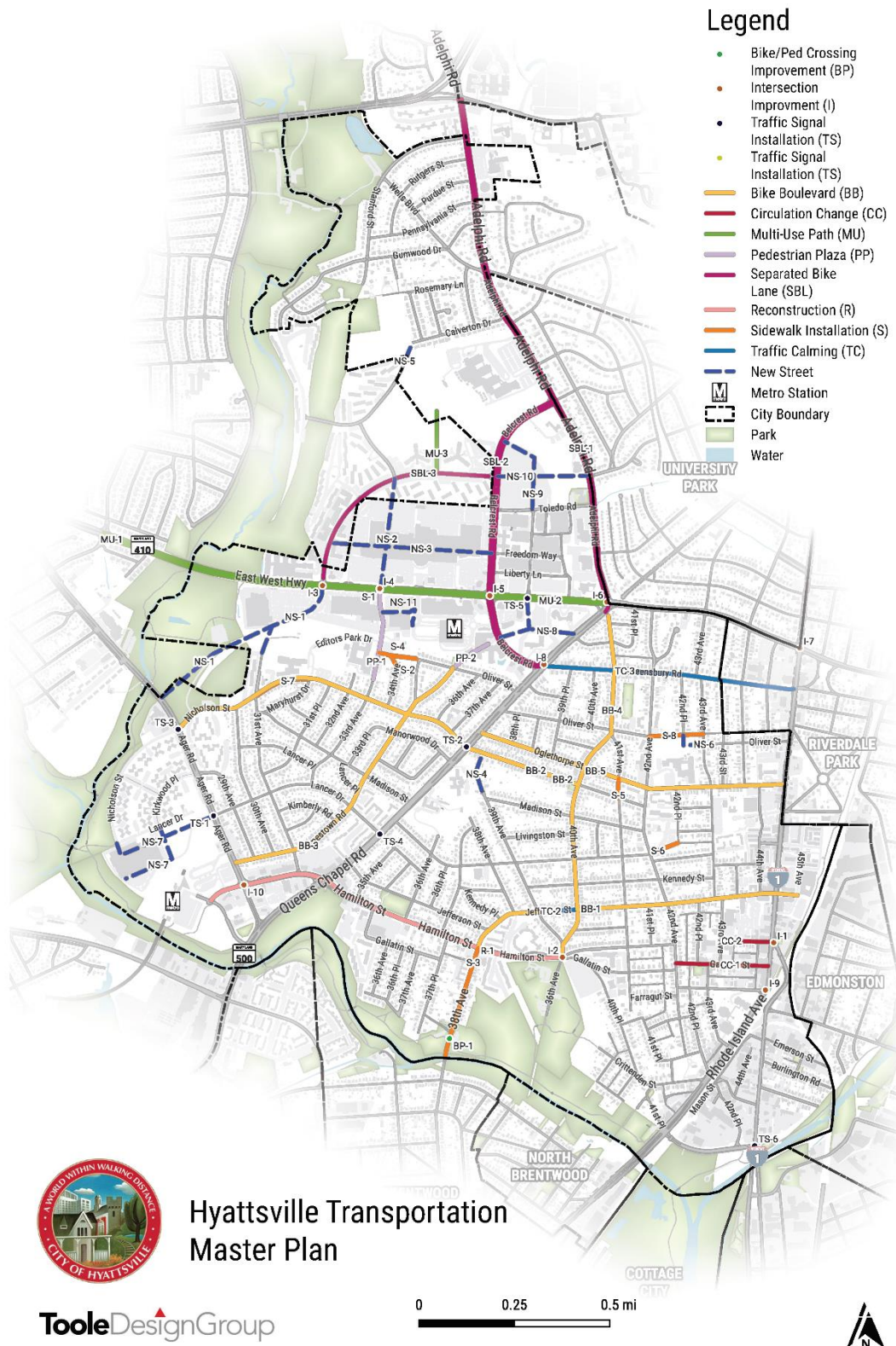
Project ID	Category	Project Name	Description
I-6	Intersection	East-West Highway, Queens Chapel Road, & Adelphi Rd Improvements	Consider realigning the NS approaches to intersect at closer to 90° and provide exclusive NBLT and SBLT lanes to improve vehicular operation
I-7	Intersection	East-West Highway & Route 1 Improvement	Consider providing dual westbound left-turn lanes
I-8	Intersection	Queens Chapel Road & Queensbury Road-Belcrest Road	Consider restricting movement to right-in/right-out/left-in as the last option to reduce cut-through traffic on Queensbury Road
I-9	Intersection	Route 1 and Farragut Street Reconfiguration	Consider consolidating two eastbound lanes to one to reduce pedestrian crossing distance.
I-10	Intersection	Ager Road & Hamilton Street Reconfiguration	Consider reconfiguring WB approach to shared LT-TH and TH-RT lanes due to low through volume and to reduce pedestrian crossing distance
MU-1	Multiuse Path	East-West Highway Multiuse Path (Toledo Terrace to 23rd Avenue)	Install multi-use trail on north side instead of bike lanes, eliminate continuous right turn lane
MU-2	Multiuse Path	East-West Highway Multiuse Path (Toledo Terrace to Adelphi Road)	Install multi-use trail on north side instead of bike lanes, eliminate continuous right turn lane
MU-3	Multiuse Path	Northwestern High School Multiuse Trail Connection	Construct multiuse path between Northwestern HS fields and Toledo Terrace or Belcrest Road, or through future Landy Property development
NS-1	New street	Toledo Terrace to Heurich Park Road Connection	Study alternative routes for the new street connection to improve circulation and reduce congestion on East-West Hwy. A portion of this road would lie outside the City limits and requires coordination with Prince George's County
NS-2	New street	Editors Park Drive Connection from East-West Highway to Toledo Road	Build future Complete Street grid network as part of any future redevelopment of the area
NS-3	New street	Freedom Way Connection from Toledo Terrace to Belcrest Road	Build future Complete Street grid network as part of any future redevelopment of the area
NS-4	New street	38th Street extension from current terminus to Queens Chapel Rd & Manorwood Dr.	Construct two lane roadway with sidewalks to alleviate traffic on Nicholson St and 40th Ave and improve local connection
NS-5	New street	Calverton Drive extension to Dean Drive	Construction two lane roadway with sidewalks and bike lanes to provide multimodal connection
NS-6	New street	Oliver Street extension from 43rd Avenue to 42nd Place	Construction two lane roadway with sidewalks to assist with traffic circulation in the neighborhood
NS-7	New street	New street network around the West Hyattsville Metro station	Build future Complete Street grid network as part of any future redevelopment of the area
NS-8	New street	America Boulevard between East-West Highway and Queens Chapel Road	Build future Complete Street grid network as part of any future redevelopment of the area
NS-9	New street	America Boulevard extension from Toledo Road to Belcrest Road	Build future Complete Street grid network as part of any future redevelopment of the area

Project ID	Category	Project Name	Description
NS-10	New street	Toledo Terrace extension between Belcrest Road and Adelphi Road	Build future Complete Street grid network as part of any future redevelopment of the area
NS-11	New street	Sentinel Drive between Editors Park Drive and Prince George's Plaza Metro entrance	Build future Complete Street grid network as part of any future redevelopment of the area
PC-1	Pedestrian Crossings	Citywide pedestrian improvements	Install curb extensions, high-visibility crosswalks, Rectangular Rapid Flashing Beacon (RRFB), pedestrian hybrid beacons, where appropriate
PP-1	Pedestrian Plaza	33rd Avenue to Editors Park Drive Plaza	Construct public plaza connection between 33rd Avenue and East-West Highway
PP-2	Pedestrian Plaza	McClanahan Park	Construct plaza/wider sidewalk/trail from Jamestown Rd to Prince George's Plaza Metro station at McClanahan Park
SBL-1	Separated Bike Lanes	Adelphi Road Separated Bike Lanes	Install Separated Bike Lanes (or multi-use trail) from East West Highway to city limit
SBL-2	Separated Bike Lanes	Belcrest Road Separated Bike Lanes	Install Separated Bike Lanes (or multiuse path) from Adelphi Rd to Queens Chapel Rd)
SBL-3	Separated Bike Lanes	Toledo Terrace Separated Bike Lanes	Install Separated Bike Lanes from Belcrest Rd to EW Highway
R-1	Reconstruction	Hamilton Street Complete Street Design and Construction	Work with the State to redesign as a Complete Street to enhance east-west connection for people traveling on foot or bike from West Hyattsville Metro to Magruder Park and the Arts District
R-2	Reconstruction	Toledo Road Complete Street Design and Construction	Design and build Complete Street from Adelphi Road to Toledo Place
S-1	Sidewalk installation	East-West Highway to mall at Editors Park Drive	Work with developer to create accessible entrance to mall
S-2	Sidewalk installation	34th Avenue to Middle School Ped Connection	Install accessible pathway connecting Nicholas Orem Middle School to 34th Avenue
S-3	Sidewalk installation	38th Avenue Sidewalk from Hamilton Street to Northwest Branch Trail	Install missing sidewalk (could require additional ROW on either side)
S-4	Sidewalk installation	Oliver Street Ped connection to Orem Middle School	Build accessible path to Oliver Street behind baseball field connecting to existing stairs, ROW exists on south side for a new path
S-5	Sidewalk installation	41st Avenue Sidewalk from Nicholson Street to Oglethorpe Street	Construct new sidewalk
S-6	Sidewalk installation	42nd Place to 42nd Ave Ped Connection near Macaroy Street	Consider building pathway connecting 42nd Place to First Baptist Church
S-7	Sidewalk installation	Maryhurst Drive Sidewalk installation	Install new sidewalk on the south side of Maryhurst Drive
S-8	Sidewalk installation	Oliver Street Sidewalk between 42nd Avenue and 43rd Avenue	Construct sidewalk within the existing ROW

Project ID	Category	Project Name	Description
SS-1	Streetscape	Various streets	Strengthen the pedestrian environment by widening sidewalks, installing street furniture, improving lighting, discouraging the use of slip lanes and right turn only lanes
TC-1	Traffic Calming	Revamp the traffic calming program	Update the current program in the municipal code to include specific guidance on volume and speed thresholds
TC-2	Traffic Calming	3900 Block of Jefferson Street Traffic Calming	Install curb extension on the NW corner of 38 th St/ Jefferson St intersection and other measures to discourage cut-through traffic
TC-3	Traffic Calming	Queensbury Road Traffic Calming	Install traffic calming devices to discourage cut-through traffic
TS-1	Traffic signal	Ager Road and Lancer Drive Traffic signal	Install traffic signal to improve operation and safety for all users
TS-2	Traffic signal	Queens Chapel Road and Nicholson Street Traffic Signal	Install traffic signal to improve operation and safety for all users
TS-3	Traffic signal	Ager Road and Nicholson Street Traffic Signal	Conduct signal warrant analysis and improve pedestrian safety
TS-4	Traffic signal	Queens Chapel Road and Lancer Drive Traffic Signal	Install traffic signal to improve operation and safety for all users
TS-5	Traffic signal	East-West Highway and America Boulevard Traffic Signal	Potential future signal as part of area redevelopment
TS-6	Traffic signal	Route 1 Alternate and Armentrout Drive Traffic Signal	Install traffic signal to improve operation and safety for all users
WF-1	Wayfinding	Wayfinding Overhaul	Install new wayfinding signs on bicycle boulevards and major destinations

EB: Eastbound; WB: Westbound; NB: Northbound; SB: Southbound; LT: Left-Turn; RT: Right-Turn; TH: Through

Figure 6 :Map of Recommended Projects



7. Implementation

There are several important transportation projects across the City of Hyattsville that would have a meaningful impact on accessibility, mobility, and quality of life. However, the City cannot build everything all at once, and must invest wisely in projects that can have the largest impact while effectively addressing stated goals. Many of the improvements will require coordination with other parties including SHA, Prince George's DPWT, and private developers/property owners. To find the projects that the City should place emphasis on, each of the 61 recommended projects were ranked on a 23-point scale, using the following metrics based on the six Speak Up! HVL goals. Each metric was allocated a point on 1-5 scale based on its compatibility with the Study's vision, with 5 being the highest point. These metrics are:

1. **Improve safety on major roads.** Projects that meet this requirement will make it safer for people travel within the City by a variety of modes. (4 points)
2. **Safer connectivity for pedestrians.** Projects that meet this requirement will improve access for people traveling on foot, with an emphasis on completing missing links in the sidewalk and trail network and improving crossings of busy roads. (5 points)
3. **Improve traffic flow within neighborhoods.** Projects that meet this requirement will reduce the number of circuitous local trips that add unnecessary traffic on residential streets, while creating new opportunities for people on foot or bike to make short trips safely and comfortably. (3 points)
4. **Strengthen connectivity for cyclists.** Projects that meet this requirement will improve access for people traveling by bicycle, with an emphasis on completing missing links in the bicycling network and improving crossings of busy roads. (5 points)
5. **Support the Metro stations and Gateway Arts District.** Projects that meet this requirement will support pedestrian-, bicycle-, and transit-friendly development in the City's three activity centers, by making it easier to travel to and from them without a car. An emphasis is placed on projects within a half-mile of the West Hyattsville Metro station, Prince George's Plaza Metro station, and Gateway Arts District. (4 points)
6. **Support sustainable growth.** Projects that support metrics 2, 4, and 5 will receive an extra point for supporting environmentally, socially, and economically sustainable development within the City. (2 points).

This system can be used by the City in the future to rate other transportation projects that arise, allowing officials to make wise decisions about which investments to make.

Top scoring projects

The following projects scored towards the top of the list for transportation investments. These projects address the City's sustainability goals, as well as significant travel issues that residents, workers, and visitors currently face. They can impact many people's access and mobility within the City within a short period of time.

Figure 7 :Top 20 Scored Projects

Project ID	Category	Project Name	Speak Up HVL Priorities						Total Points
			Improve safety on major roads	Safe connectivity for pedestrians	Traffic flow in neighborhoods	Strengthen connectivity for cyclists	Support Metro/Arts District	Sustainable growth	
R-1	Reconstruction	Hamilton Street Complete Street Design and Construction	✓	✓	✓	✓	✓	✓	23
NS-1	New street	Toledo Terrace to Heurich Park Road Connection	✓	✓	✓	✓	✓	✓	23
BP-1	Bike/Ped Crossing	NW Branch Trail Crossing at 38th Street (MD 208) south of Gaines Alley	✓	✓		✓	✓	✓	20
BP-2	Bike/Ped Crossing	NW Branch Trail Crossing at Queens Chapel Road (MD 500) south of Jamestown Road	✓	✓		✓	✓	✓	20
I-1	Intersection	Route 1, Route 1-Alt & Hamilton Street (south) Improvement	✓	✓		✓	✓	✓	20
I-2	Intersection	40th Avenue, Gallatin Street, & Hamilton St. Roundabout	✓	✓		✓	✓	✓	20
MU-1	Multiuse Path	East-West Highway Multiuse Path (Toledo Terrace to 23rd Avenue)	✓	✓		✓	✓	✓	20
MU-2	Multiuse Path	East-West Highway Multiuse Path (Toledo Terrace to Adelphi Road)	✓	✓		✓	✓	✓	20
PP-1	Pedestrian Plaza	33rd Avenue to Editors Park Drive Plaza		✓	✓	✓	✓	✓	19
TS-1	Traffic signal	Ager Road and Lancer Drive Traffic signal		✓	✓	✓	✓	✓	19
TC-1	Traffic Calming	Revamp the traffic calming program	✓	✓	✓	✓			17
TC-2	Traffic Calming	3900 Block of Jefferson Street Traffic Calming	✓	✓	✓	✓			17
TC-3	Traffic Calming	Queensbury Road Traffic Calming	✓	✓	✓	✓			17
TS-2	Traffic signal	Queens Chapel Road and Nicholson Street Traffic Signal	✓	✓	✓	✓			17
TS-3	Traffic signal	Ager Road and Nicholson Street Traffic Signal	✓	✓	✓	✓			17
TS-4	Traffic signal	Queens Chapel Road and Lancer Drive Traffic Signal	✓	✓	✓	✓			17
BB-1	Bike boulevard	Jefferson Street or Gallatin Street Bike Blvd (40th Ave to Trolley Trail)	✓		✓	✓	✓		16
PP-2	Pedestrian Plaza	Jamestown Road Plaza		✓		✓	✓	✓	16
R-2	Reconstruction	Toledo Road Complete Street Design and Construction	✓	✓		✓		✓	16
S-1	Sidewalk installation	East-West Highway to Mall at Editors Park Drive		✓		✓	✓	✓	16

Sequential Action Plan

Planning, obtaining funding and implementing projects from design to construction require a considerable level of effort from City Staff. This report aims to provide the City with the information to make educated decisions not only about what to implement, but how to implement.

The top 20 projects that will have the most impact on the City of Hyattsville and help reach the transportation goals are listed and ranked above in Table 5. The ranking should serve as guidance for the City, and the projects should be implemented as groups if geographically practical and if funding allows. A planning level cost estimate for each recommended priority project is included in Appendix D of the report. A planning level cost estimate is essential for budgeting City funds toward these projects and for informing negotiations with future land developers.

Several projects, specifically the new street projects, are intended to be implemented as a part of future development. With these projects, the City can be specific in discussion with future developers and ensure that their development plan accommodates City's recommended projects. The earlier and clearer the request, the more likely a developer can include it in their plan. The new streets are not the only projects that can be implemented by developers. Other projects that are on or adjacent to their site may be negotiated into their project with their preliminary plan approvals. Often the new development will warrant the addition of a traffic signal and new signal priority projects should be give precedence. This can be especially important on projects that require SHA and DPW&T approval. The developer's experience in these areas can be very valuable. The recommended projects in this transportation plan aim to make Hyattsville a more vibrant and active City which in-turn makes developers properties more profitable.

However, the City cannot solely rely on developers to fund and implement all of the changes that will meet the transportation goals and vision for the City. Development is controlled by the market and although collaboration can be mutually beneficial, the City loses control over the timeline of design and construction. The City will need to implement projects through their Capital Improvement Programs and apply for additional funding through grants. A planning level cost estimate has been prepared for each recommended project and is included in Appendix D.

When implementing projects, it may make sense for the City to consider grouping projects by project type, by geography, or by corridor (or some combination of the three). Similarly, there may be occasions where two or more projects must be implemented simultaneously or in close succession to achieve full benefit and functionality. The following table provides a proposed grouping of projects for the sequential action plan. Projects with the same Group Number in the first column make sense to be implemented as a package of projects, rather than in isolation. This proposed grouping does not preclude the City from taking other approaches (e.g. completing all sidewalk installation projects as part of one City-wide contract) and should be revisited from time to time to confirm the groupings still make sense.

Table 6 : Suggested Project Groups

Groups	Project ID	Category	Project Name
1	R-1	Reconstruction	Hamilton Street Complete Street Design and Construction
	I-10	Intersection	Ager Road & Hamilton Street Reconfiguration
2	I-3	Intersection	East-West Highway & Toledo Terrace Improvement
	NS-1	New street	Toledo Terrace to Heurich Park Road Connection
	SBL-3	Separated Bike Lanes	Toledo Terrace Separated Bike Lanes
3	BP-1	Bike/Ped Crossing	NW Branch Trail Crossing at 38th Street (MD 208) south of Gaines Alley
	BP-2	Bike/Ped Crossing	NW Branch Trail Crossing at Queens Chapel Road (MD 500) south of Jamestown Road
4	CC-1	Circulation Change	Gallatin Street two-way conversion
	CC-2	Circulation Change	Hamilton Street one-way flip
	CC-3	Circulation Change	Circulation Change Implementation
	I-1	Intersection	Route 1, Route 1-Alt & Hamilton Street Improvement
	I-9	Intersection	Route 1 and Farragut Street Reconfiguration
5	I-2	Intersection	40th Avenue, Gallatin Street, & Hamilton St. Roundabout
	TS-6	Traffic signal	Route 1 Alternate and Armentrout Drive Traffic Signal
6	I-4	Intersection	East-West Highway, Queens Chapel Road, & Adelphi Rd Improvements
	MU-1	Multiuse Path	East-West Highway Multiuse Path (Toledo Terrace to 23rd Avenue)
	MU-2	Multiuse Path	East-West Highway Multiuse Path (Toledo Terrace to Adelphi Road)
7	PP-1	Pedestrian Plaza	33rd Avenue to Editors Park Drive Plaza
	PP-2	Pedestrian Plaza	Jamestown Road Plaza
	NS-10	New street	Sentinel Drive between Editors Park Drive and Prince George's Plaza Metro entrance
8	NS-7	New street	New street network around the West Hyattsville Metro station
	TS-1	Traffic signal	Ager Road and Lancer Drive Traffic signal
	TS-4	Traffic signal	Queens Chapel Road and Lancer Drive Traffic Signal
9	TC-1	Traffic Calming	Revamp the traffic calming program
	TC-2	Traffic Calming	3900 Block of Jefferson Street Traffic Calming
	TC-3	Traffic Calming	Queensbury Road Traffic Calming
10	TS-2	Traffic signal	Queens Chapel Road and Nicholson Street Traffic Signal
11	BB-2	Bike boulevard	Nicholson Street Bike Blvd from Ager Rd to 40th Ave
	BB-3	Bike boulevard	Jamestown Road Bike Blvd from Ager Rd to Oliver Rd
	S-7	Sidewalk installation	Nicholson St Sidewalk installation
	TS-3	Traffic signal	Ager Road and Nicholson Street Traffic Signal

Groups	Project ID	Category	Project Name
12	BB-1	Bike boulevard	Jefferson Street or Gallatin Street Bike Blvd (40th Ave to Trolley Trail)
	BB-4	Bike boulevard	40th/41st Avenue Bike Blvd
	BB-5	Bike boulevard	Oglethorpe Street Bike Blvd
	S-3	Sidewalk installation	38th Avenue Sidewalk from Hamilton St to Northwest Branch Trail
	S-5	Sidewalk installation	41st Avenue Sidewalk from Nicholson Street to Oglethorpe St
	S-6	Sidewalk installation	42nd Place to 42nd Ave Ped Connection near Macaroy Street
	S-8	Sidewalk installation	Oliver Street Sidewalk between 42nd Avenue and 43rd Avenue
13	NS-2	New street	Editors Park Drive Connection from East-West Highway to Toledo Road
	NS-3	New street	Freedom Way Connection from Toledo Terrace to Belcrest Road
	R-2	Reconstruction	Toledo Road Complete Street Design and Construction
	S-1	Sidewalk installation	East-West Highway to mall at Editors Park Drive
14	NS-10	New street	Toledo Terrace extension between Belcrest Road and Adelphi Road
	NS-9	New street	America Boulevard extension from Toledo Road to Belcrest Road
	I-5	Intersection	East-West Highway & Belcrest Road improvement
	SBL-1	Separated Bike Lanes	Adelphi Road Separated Bike Lanes
	SBL-2	Separated Bike Lanes	Belcrest Road Separated Bike Lanes
15	I-7	Intersection	East-West Highway & Route 1 Improvement
16	NS-8	New street	America Boulevard between East-West Highway and Queens Chapel Road
	I-6	Intersection	East-West Highway, Queens Chapel Road, & Adelphi Rd Improvements
	I-8	Intersection	Queens Chapel Road & Queensbury Road-Belcrest Road
	TS-5	Traffic signal	East-West Highway and America Boulevard Traffic Signal
17	NS-4	New street	39th Avenue extension from Madison Street to Nicholson Street
	NS-6	New street	Oliver Street extension from 43rd Avenue to 42nd Place
18	MU-3	Multiuse Path	Northwestern High School Multiuse Trail Connection
	NS-5	New street	Calverton Drive extension to Dean Drive
19	S-2	Sidewalk installation	34th Avenue to Middle School Ped Connection
	S-4	Sidewalk installation	Oliver Street Ped connection to NO Middle School
20	PC-1	Pedestrian Crossings	Citywide pedestrian improvements
	SS-1	Streetscape	Various streets
21	WF-1	Wayfinding	Wayfinding Overhaul

Implementation Strategy

To implement the various projects, the Study recommends that the City partake in the following approaches:

Establish quarterly working session with SHA, DPW&T and other implementing agencies

As many of the major projects within Hyattsville are on facilities owned by regional entities, it is important to establish regular meetings with the agencies to ensure that the priorities identified

by the City are included in their annual projects. Working with implementing agencies early in the process allows the project scope of work to address Hyattsville concerns. For example, any future project on East-West Highway in Hyattsville should evaluate the feasibility to build multi-use path along the corridor, as identified by this Study.

Identify Initial Projects to Implement

Of the top 20 projects listed in Table 5, depending on the funds available, identify handful of projects to implement in the next few budget cycles. It should be noted that some of the projects may benefit from collaboration between different departments in order to pool funds allocated to the departments. For example, Community and Economic Development Department may be interested to be part of updating wayfinding signs that will help improve the streetscape.

Once the project has been identified, review the recommended project list in Table 4 to note projects that are in the same geography which may benefit from economies of scale for being included in the project. For example, if a new traffic signal project is approved, including sidewalks or wayfinding signs within a block of the location will ensure the best and most optimal use of scarce public resources.

Identify Priority Area to Implement in Alternate Budget Cycle

The City currently has several programs in the Capital Improvement Plan, including sidewalk and roadway improvement, ADA compliance, lighting improvements, and residential signage, among others. While these funds are essential to address critical infrastructure needs in all areas of the City, it might be more impactful to focus the implementation of the funds in priority areas of the City in alternate budget cycle. The priority area may be established by evaluating the total need of the area versus the availability of funds for the budget cycle. This method of fund allocation allows regular maintenance of other areas of the City to occur in budget cycle when the funds are not allocated to the priority areas.

Enhance Existing Annual Sidewalk Improvement Program

Based on extensive sidewalk deficiencies identified in the Study, Hyattsville can provide more funding to improve existing sidewalks and meet ADA and state requirements. In order to meet the sustainability goals of the City, the sidewalk improvement program should be enhanced to include streetscape and stormwater improvement such that the livability of the project area is improved.

8. Conclusion

Over the past year, the Study Team has worked with community members and City of Hyattsville officials and staff to develop a vision for a place where streets are not simply a way to get through the City, but an opportunity to enrich the daily life of the City's residents, businesses, and visitors. Through extensive public input, research, data collection, and analysis, the Study Team identified the transportation challenges facing the City, including gaps in the pedestrian and bicycle network that make it difficult to walk or bike, delays from congestion at major intersections during rush hour, concerns with high-speed cut-through traffic on local streets, and a need for better wayfinding to provide clear direction to travelers and visitors.

From this, the Study Team identified a list of goals for improving the transportation system, building upon the vision laid out by the Speak Up HVL! Community Sustainability Plan:

- Improve safety along major roads
- Enhance and increase safe connectivity for pedestrians
- Improve traffic flow within neighborhoods
- Strengthen connectivity for cyclists
- Support development around the Metro stations and Gateway Arts District
- Support environmentally friendly, sustainable growth

These six goals form the basis for a set of policies that will guide the City as it further invests in its transportation system. These policies will help the City determine what projects to fund and construct, which transportation modes to prioritize in each location or setting, and articulate its transportation needs to the County and State, which are responsible for some of the larger roads within City limits. These policies were used to create a list of 61 transportation projects that the City can execute in the coming years. A 23-point scale, using metrics derived from the six Speak Up HVL! Goals, was created to rank each of these projects, producing a list of 20 top priority projects that could have a transformative impact on travel in Hyattsville.

This Study will serve as a guide to shaping and investing in Hyattsville's transportation system in the coming years. It will help the City build a transportation system that works for everyone, regardless of age, mobility, or transportation mode. It will help the City support anticipated growth and investment, improve and maintain existing transportation infrastructure, carry out new projects, and determine priorities for the next twenty years. Additionally, it will affirm the City's goals to become a more socially, economically, and environmentally sustainable place.

This Study reflects a broader, nationwide shift in rethinking the way people move, considering all modes of transportation, not just moving automobiles, and casting our public streets as places where people can play a more active role in their community. With these recommendations in hand, the City can work with Prince George's County, the State of Maryland, and other entities to make the right investments in its transportation system. Finally, this Study also allows Hyattsville to accommodate future growth, and the transportation

challenges that come with it, in a way that enriches existing communities while supporting the creation of new places that people will love and cherish.



Hyattsville Transportation Study

TECHNICAL MEMORANDUM I

Existing Conditions Report

February 25, 2018

Prepared by:
TooleDesignGroup

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Table of Contents

1.	Introduction	I
	City Characteristics.....	I
2.	Review of Past Studies	3
3.	Data Collection and Assessment.....	11
	Collection of GIS data from the City.....	11
	Field Assessment.....	11
	Summary of Findings	12
4.	Wikimap Summary	31
5.	School Area Circulation Observations	38
6.	Existing Motor Vehicle Traffic Conditions	42
	Historical Traffic Data	42
	Traffic Data Collection.....	43
	Traffic Counts and Volumes.....	43
	Intersection Traffic Control and Lane Configurations.....	46
	Measures of Effectiveness	47
	Traffic Operational Results.....	49
7.	Origin-Destination Analysis.....	56
	Methodology:.....	56
	Results.....	56
	Destination Maps	63
	Local Street Travel Pattern Assessment	67

Appendix I-A: School Infrastructure Assessment Reports

Appendix I-B: Existing Traffic Volume Figures

Appendix I-C: Existing Lane Configuration

Appendix I-D: Existing LOS by Movement

Appendix I-E: Existing Intersection Operational Results VISTRO HCM Report

Appendix I-F: Existing 95th-Pecentile Queue and Storage

List of Tables

Table 1: Requested Data from the City	11
Table 2: Field Assessment – Proposed Data to be Collected	12
Table 3: Select Segment Characteristics.....	17
Table 4: Existing Bicycle Facilities (miles).....	27
Table 5: Historical AADT Data	42
Table 6: Intersection Traffic Count Summary.....	45
Table 7: Intersection Volumes Balanced.....	46
Table 8: Study Intersections and Existing Traffic Control.....	47
Table 9: LOS and Delay Thresholds, Signalized Intersections.....	48
Table 10: LOS and Delay Thresholds, Unsignalized Intersections	48
Table 11: Existing (2017) Intersection Delay and LOS	50
Table 12: Average Origin Rates.....	58
Table 13: Average Destination Rates.....	59

List of Figures

Figure 1: Proposed Bicycle and Pedestrian Routes	5
Figure 2: Existing and Proposed Streets and Road Facilities.....	7
Figure 3: Proposed Street Typology.....	8
Figure 4: Proposed Phasing and Bikeshare Station Locations.....	9
Figure 5: Proposed Fieldwork Locations.....	13
Figure 6: Existing High Visibility Crosswalk on Intersection of Oglethorpe Street and 42 nd Avenue	14
Figure 7: Intersections Assessment – Existing Crosswalk Type	15
Figure 8: Intersections Assessment - Existing Traffic Control Devices	16
Figure 9: Functional Classification.....	18
Figure 10: Right of Way Ownership.....	19
Figure 11: Existing Sidewalk Obstruction on Local Street	20
Figure 12A-12C: Sidewalk Coverage.....	21
Figure 13: Segment Assessments	24
Figure 14: Existing conditions along Baltimore Avenue (Route 1)	25
Figure 15: Missing Curb Ramps in Front of St. Jerome Academy; Faded Crosswalk on Adelphi Road	25
Figure 16: Uneven Sidewalk and sloping driveways create access management issues on sidewalks...	26
Figure 17: Existing Sidewalk is too Narrow to Accommodate side-by-side stroller traffic.....	26
Figure 18: Existing Wayfinding does not comply with current MUTCD Standards.....	27
Figure 19: Existing Bikeways.....	28
Figure 20: Disjointed Wayfinding in Study Area.....	29
Figure 21: Wayfinding Assessment	30
Figure 22: Screenshot of Wikimap.....	31
Figure 23: Demographic Distribution of Respondents.....	31
Figure 24: Residency and Work Status.....	32

Figure 25: Ward of Residency/ Age and Sex	32
Figure 26: Bicycling Habits and Walking Habits	33
Figure 27: Priorities for the Transportation Study.....	33
Figure 28: Areas Experiencing Parking Issues and High Traffic	34
Figure 29: Difficult Routes for Walking and Biking and Barriers for Walking and Biking	35
Figure 30: Areas Where Improved Connectivity is Needed; Transit Connectivity Needed	36
Figure 31: Destinations and Routes People Walk and Bike.....	37
Figure 32: School Area Deficiencies.....	38
Figure 33: Historical Annual Average Daily Traffic Volumes.....	43
Figure 34: Study Intersections.....	44
Figure 35: Level of Service (AM Peak)	51
Figure 36: Level of Service (PM Peak)	52
Figure 37: Origin-Destination Zones for Analysis.....	57
Figure 38: Example Regional Travel Pattern of One of the Internal Zones.....	58
Figure 39: Proportion of Trips Originating in a Zone that Ended in Another Zone	59
Figure 40: Proportion of Trips Ending in a Zone that Originated in Another Zone	63

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I. Introduction

Over the past several years, the City of Hyattsville has conducted several studies to address several transportation concerns facing the City. These studies independently evaluated numerous topics including vehicular traffic counts, pedestrian and bicycle accessibility, as well as policy analysis. Within this context, the City secured the services of Toole Design Group (TDG) and its partners to prepare a city-wide transportation study that builds on previous studies and incorporates an analysis of existing conditions. The final transportation plan will provide recommendations for improvements to the transportation network for all modes (motor vehicle, bicycle and pedestrian). This Plan will help the City improve and maintain existing transportation infrastructure, carry out new projects, and determine priorities for the next 20 years. This memorandum provides a summary of existing conditions related to the transportation modes which will inform recommendations that advance the City's transportation goals.

The document is organized in eight sections: Sections 1 and 2 provide a synopsis of citywide transportation characteristics, and a summary of past plans that are pertinent to this Study. The subsequent sections provide baseline conditions based on field observations (Section 3), a summary of public feedback received via online crowdsourcing map (Section 4); school area circulation and access (Section 5); and traffic conditions (Sections 6 and 7).

City Characteristics

Incorporated in 1886, the City of Hyattsville is located just over one mile from the District of Columbia, and is one of the oldest incorporated municipalities within Prince George's County, Maryland. With over 18,000 residents (according to the latest U.S. Census estimates) the City has experienced an increase in population since the late 1990's. This is due in part to its transit connections, and proximity to activity and job centers throughout the region.

Hyattsville has two metro stations within city limits served by the WMATA Green Line. Prince George's Plaza and West Hyattsville Metrorail stations average around 5,000 and 8,000 riders per weekday respectively, according to WMATA.¹ The City is also served by a number of WMATA and The Bus (Prince George's County bus service) regional and local bus lines. The Riverdale MARC Station, just east of the City, provides commuter rail connections between Baltimore and Washington, D.C.

The City has a network of narrow low-speed local roadways and larger regional roadways - some of which dissect the city and act as barriers for walking and biking. While most roadways are owned and maintained by the City, four major roadways are owned and maintained by the Maryland State Highway Administration (SHA). These include, Baltimore Avenue/ Rhode Island Avenue, US1-A (Baltimore Avenue); East-West Highway (MD 410); Queens Chapel Rd (MD 500); and parts of Hamilton Street (MD 208). Ager Road and Adelphi Road are the main roadways owned and maintained by the Prince George's County Dept. of Public Works and Transportation (DPWT).

¹WMATA ridership data Sept 2010 – February 2016

The Northwest Branch Trail runs along the Anacostia River in southern and western Hyattsville. This provides regional bicycle and pedestrian connectivity to Washington, D.C. and Montgomery County, MD through the Anacostia Tributary Trail System which is maintained by the Maryland National Capital Park and Planning Commission – Prince Georges County (MNCPPC-PG). Additional details on existing conditions related to the roadway network are in Sections 3 through 7 of this memo.

2. Review of Past Studies

To provide baseline information about local standards and procedures, the Study Team conducted a literature review of past studies and plans. This section provides a summary of major outcomes and projects along a number of important transportation corridors affecting the comfort and connectivity of all modes throughout the City. The following plans were reviewed as part of this study:

I. 2010 Citywide Traffic Study and Transportation Plan

The 2010 Transportation Plan, prepared by Sabra, Wang & Associates, Inc., collected and analyzed data on the City's existing and projected future transportation network. The Plan also developed a computer model of the City's street network, including roadway geometry, traffic volumes, and traffic control including traffic signal timing and phasing. The study covered three phases:

- Traffic data collection and existing conditions analysis
- Citywide traffic study and transportation plan
- Wayfinding services

The document identified short- and long- term strategies for 1) reducing congestion; 2) enhancing mobility and safety for all modes; 3) improving inter-modal connections; and 4) minimizing the impact on residential streets. The future conditions portion of the study projected:

- An increase of 3,000 am peak and 4,000 pm peak vehicle trips due to increased developments by year 2030.
- A more than 30 percent increase in daily traffic on State and County roads related to new developments in adjacent municipalities.
- Several intersections with LOS E or F during peak hours on State and County roads.

Related to connectivity and safety, the Plan also noted that few streets provide continuous east-west connections within Hyattsville (only two: Queensbury Road and Hamilton Street/40th Place/Crittenden Street). These streets currently carry mainly local traffic, but could experience increases from non-local traffic if State and County routes are at capacity.

Finally, the Plan called for the following short-term improvements:

- Develop and implement a Safe Routes to School program for Hyattsville Elementary
- Install speed cameras to increase compliance with posted speed limits in school zones:
 - US 1 at Farragut Street, Jefferson Street, Hamilton Street and/or Madison Street (St. Jerome's, Hyattsville Elementary, DeMatha)
 - MD 410 East-West Highway between Belcrest Road and Editor's Park Drive (Nicholas Orem, Concordia Lutheran)
 - 42nd Avenue at Oglethorpe Street (Hyattsville Middle)

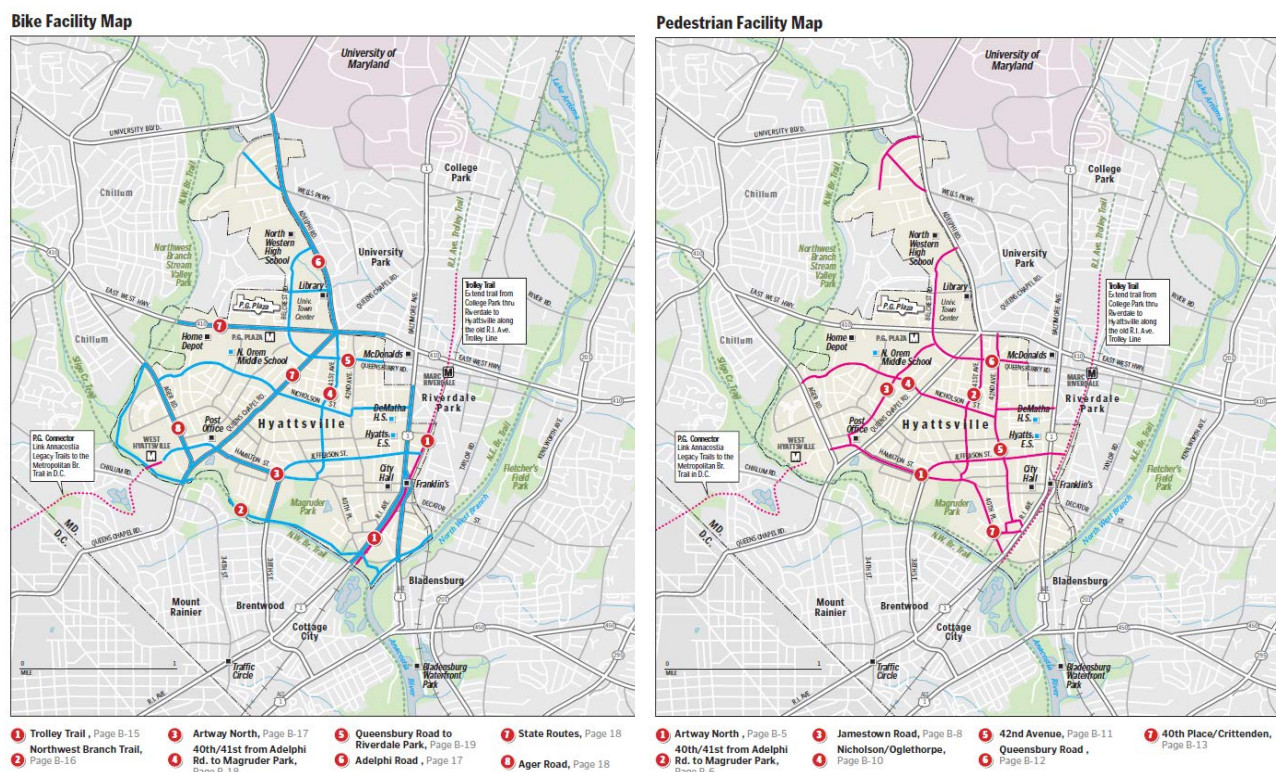
- o Adelphi Rd between Belcrest Road and Wells Parkway (Northwestern High School.
 - o Ager Road at Nicholson (West Hyattsville Elementary)
- Install new bicycle/pedestrian actuators:
 - o MD 208/ 38th Street south of Gaines Alley
 - o MD 500/ Queens Chapel south of Jamestown Road
- Install new sidewalks along 38th Avenue and Hamilton Street
- Work with WMATA to upgrade high-volume bus stops on Hamilton and 38th and East-West Highway and Toledo Terrace
- Work with SHA to finalize design and implementation of Queens Chapel Road streetscaping and crossings
- Work with SHA to review signal phasing/timing at
 - o Queens Chapel Road at Queensbury Road/ Belcrest Road
 - o US I from US I Alternate to East-West Highway
- Install access restrictions along Lancer Drive east of Queens Chapel Road to discourage cut-through traffic.
- Improve key pedestrian crossings at
 - o Adelphi Road at Wells Parkway
 - o Ager Road at Nicholson Street
 - o East-West Highway at Queens Chapel Road
 - o Queens Chapel Road at Queensbury Road
- Develop proposed cross-sections, signing and marking for implementation of key bicycle corridor connections (shared lanes, painted lanes, shoulder use, etc.)
 - o Adelphi Road and 40th Street/ Sheridan St (University Park) parallel to Adelphi Road
 - o Rhode Island Avenue Trolley Trail (US I)
 - o Ager Road
 - o Queens Chapel Road and/ or Jamestown Road parallel to Queens Chapel Road
- Intersection improvements to mitigate failing level of service
 - o US I Alternate at Armentrout Drive
 - o Ager Road at Nicholson Street, Ager Road at Lancer Drive
 - o Queens Chapel Road at Lancer, Longfellow, Jefferson, Madison, Manorwood, Nicholson, Oglethorpe and Oliver Streets

2. 2008 Pedestrian and Bicycle Study

This plan was developed by the Hyattsville Bicycle and Pedestrian Safety Committee which was established in 2006 and is comprised of residents and public officials. The six main recommendations of the plan pertain to:

- Designating pedestrian routes (see figure below)
- Establishing and/or improving bike routes (see figure below)
- Pursuing major intersection safety improvements
- Ensuring well-lit streets
- Making ADA-compliant pedestrian access a high priority
- Implementing city-wide sidewalk standards

Figure 1: Proposed Bicycle and Pedestrian Routes



Several corridors were designated bicycle and pedestrian routes and as such received several recommendations which were then prioritized into three tiers: 1) urgent, 2) important, 3) not immediate. The following projects received the highest prioritization based on safety concerns:

- 38th Avenue sidewalk installation (Hamilton to Northwest Branch Trail)
- 41st Avenue Intersection with Queensbury
- Artway North pedestrian and bicycle improvements
- 40th and 41st Avenue pedestrian route improvements
- Belcrest at East-West Hwy intersection improvements
- Belcrest at Queens Chapel intersection improvements
- Jamestown Road pedestrian route improvements
- Northwest Branch Trail at US I intersection
- Northwest Branch Trail at Queens Chapel intersection improvements
- Northwest Branch Trail re-designation as a M-NCPPC commuter route and lighting of the trail
- Trolley Trail installation parallel to US I on old trolley right-of-way, North of the Flatiron Building.

3. 2014 West Hyattsville Pedestrian Safety Study

The West Hyattsville Pedestrian Safety Study, completed by The Traffic Group in 2014, focused on assessing pedestrian safety along the following roadways:

- Ager Road
- MD 500 – Queens Chapel Road
- Hamilton Street (west of MD 500)
- MD 208 – (Hamilton Street/ 38th Street)

The study provided an overview of the crash history, followed by a breakdown of incidents, and their specific locations. Majority of the recommendations in the study focused on providing adequate signage, sidewalk maintenance and ADA compliance of the roadways.

Some of the major improvements recommended along these corridors included:

- MD 208 – (Hamilton Street/ 38th Street)
 - o Install new sidewalks at 3600 block and 3508 Hamilton Street,
 - o Install adequate sidewalk and ramps on three commercial entrances on the south side of intersection with 35th Avenue.

4. 2015 City of Hyattsville Customer Preference Survey: Shopping and Parking Preferences

This survey, completed by the City in 2015, was conducted to better understand behaviors of residents and visitors to Gateway Arts District in Hyattsville. The survey asked questions related to demographics, reasons for spending time in the District, parking habits, transportation modes, and desired improvements. Relevant findings included:

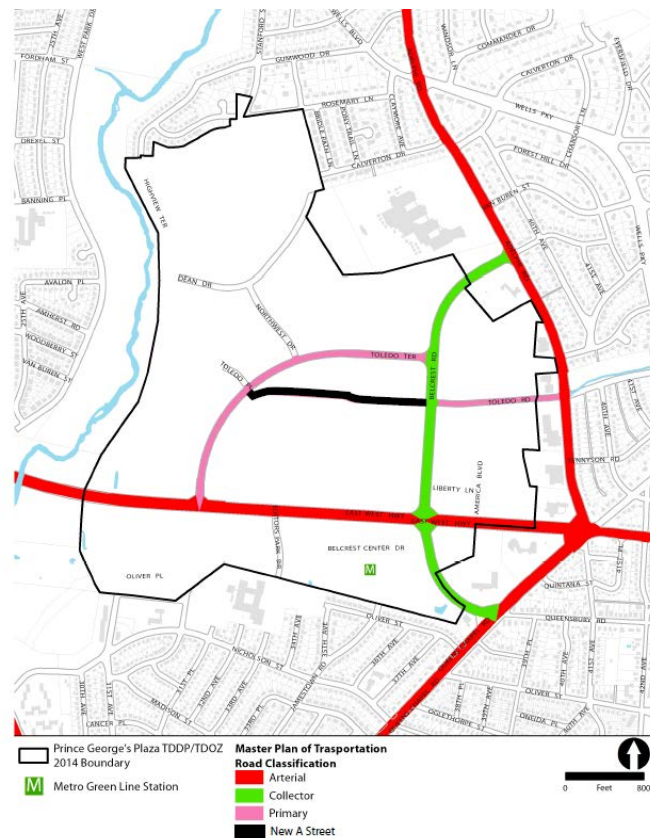
- 36 percent of respondents park their car in the District weekly
- 8.9 percent of respondents desire improved sidewalks and street lighting in the District
- 18 percent of respondents desire more convenient parking in the District
- 3.4 percent of respondents desire more frequent/reliable bus service in the District
- 5.1 percent of respondents desire bikeshare stations
- Proximity of parking to destination is more important than lower parking rates
- “Other” transportation modes used to visit Hyattsville:
 - o Bike/scooter: 16.1 percent
 - o Walking: 10.6 percent
 - o Bus: 32 percent
 - o Metro 12.7 percent
 - o Just car: 22.3 percent
 - o Other: 6.9 percent

5. Prince George's Plaza Transit District Development Plan

This Plan completed by MNCPPC-PG in July 2016, focused on amending and providing updates to the Prince George's Plaza Transit District. This update guides and coordinates development around the existing Prince Georges Plaza Metro station - focusing development under three main themes: 1) Smart Growth; 2) Placemaking; and, 3) Fostering healthy communities. Directly related to transportation, the plan:

- Establishes a policy and regulatory framework that promotes walkable transit-oriented, mixed-use development.
- Transforms the underutilized Prince George's Plaza Metro Station and auto-oriented MD 410 (East West Highway) by integrating and connecting the Metro station with development to the north and transforming the roadway into a pedestrian- and bike-friendly boulevard.
- Recognizes the importance of the natural environment—specifically the Northwest Branch Stream Valley Park and Wells Run—and incorporates best planning and development practices to ensure a comprehensive and sensitive approach to environmental stewardship, neighborhood compatibility, and pedestrian and bicycle connectivity.

Figure 2: Existing and Proposed Streets and Road



Recommendations of importance to the Transportation Study include:

- Restripe MD 410 to implement the road-diet concept.
- Install traffic signal at the MD 410/America Boulevard and MD 410/Editors Park Drive intersections.
- Evaluate and implement (if feasible) a protected bike lane on MD 410.
- Consider the use of bike boxes at all signalized intersections with dedicated bike facility.
- Increase bicycle and pedestrian connections to neighborhoods south of the Transit District.
- Create a formal bicycle and pedestrian connection between multifamily properties on the northern side of the Transit District and Northwestern High School.
- Extend Toledo Road as two-lane street with on-street parking and bicycle accommodation between Belcrest Road and Toledo Terrace.

- Add interim bike lanes on Toledo Terrace. Replace bike lane with on-street parking after Toledo Road is extended to Toledo Terrace.
- Construct a hard surface trail between Adelphi Road/Toledo Road and Northwest Drive/Dean Drive intersections.
- Construct a hard surface trail from Toledo Terrace to the Northwest Branch Trail via Toledo Place.
- Design and construct a bicycle facility on or adjacent to MD 410 between Toledo Terrace and 23rd Avenue, including connection to the Heurich Park and Northwest Branch Trail.
- Construct a series of bicycle facilities along Belcrest Road.
- Evaluation of 30-mph speed limit on MD 410 – pending SHA/DPW&T approval and implementing a 25-mph speed limit on all other local roads.
- Strengthening the pedestrian environment by the widening of sidewalks (where appropriate), installing street furniture, increasing wayfinding, improving lighting, discouraging the use of slip lanes and right-turn only lanes.

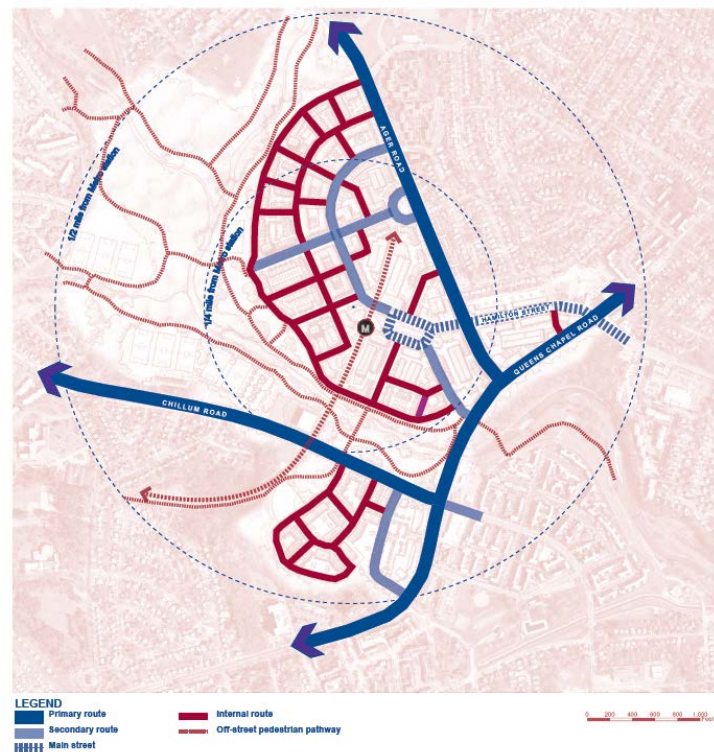
6. West Hyattsville Transit District Development Plan

This Plan, completed by MNCPPC-PG in July 2006, focused on providing updates to the existing West Hyattsville Transit District Overlay Zone. Three main themes guided the development of the plan: 1) maintaining existing neighborhoods; 2) environmental stewardship, and 3) increase transportation options.

The document provides a set of specific streetscape standards, and recommendations related to design and type of parking. It also delineated the character and function of a various roadways throughout the West Hyattsville area (see figure below). Ager Road, Queens Chapel Road and Chillum Road were identified as primary transportation routes.

The Plan also provided conceptual recommendations related to the internal connectivity of the street network within the Transit District.

Figure 3: Proposed Street Typology



7. Gateway Arts District Sector Plan

The plan amended the 1994 *Approved Master Plan and Sectional Map Amendment for Planning Area 68* and the 2002 *Prince George's County Approved General Plan*. The Sector Plan was developed by MNCPPC-PG and designated 'Artway Routes' to help make a number of streets connecting to Route 1 (Baltimore Avenue) corridor more inviting. The Plan also called for the installation of traffic calming throughout the Arts District routes to provide more comfortable facilities for bicyclists and pedestrians. The following three corridors were identified as "Artway Routes" connecting the West Hyattsville Metro Station to the Route 1 (Baltimore Avenue) corridor:

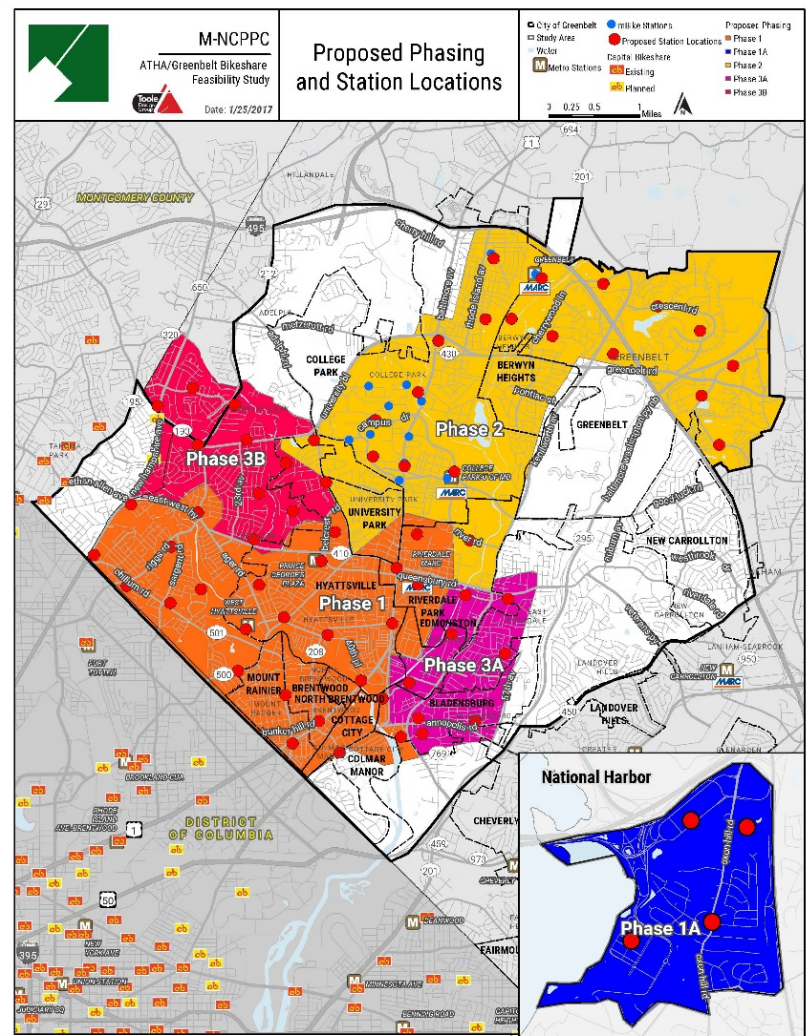
- Artway South – Chillum Road/34th Street
- Artway Central – Northwest Branch Stream Valley Park Trail
- Artway North – Hamilton Street/Gallatin Street

8. ATHA Bikeshare Study

This study, completed by MNCPPC-PG in 2016 considered the feasibility of implementing a bike share program in the Anacostia Trails Heritage Area and National Harbor areas of Prince George's County. Based on the analysis of existing conditions, feedback received from stakeholder input, and, conversations with county officials and agencies, expansion of the existing Capital Bikeshare program (currently in the District of Columbia and Montgomery County) was recommended. The recommended phasing and generalized station locations can be found in the figure on the right.

The report recommended the implementation of eight bike share stations within the city limits as part of Phase I rollout. These locations include:

Figure 4: Proposed Phasing and Bikeshare Station Locations



- West Hyattsville Metro
- Ager / Nicholson
- Jefferson / Baltimore
- Queens Chapel / Hamilton
- PG Plaza Metro
- University Town Center
- Hamilton / 38th
- Melrose Skatepark

9. Hyattsville Elementary School Safe Route to School Plan

The 2011 Hyattsville Elementary School Safe Route to School Plan, completed by Sabra, Wang & Associates, Inc., identifies ways to improve safety and accessibility for pedestrians and bicyclists during arrival and dismissal. The document includes an evaluation of existing conditions near the school and observations, as well as an overview of the current road network, traffic operations, pedestrian and bicycle facilities, and problematic intersections. Surveys were conducted to assess walking and bicycling behaviors. The plan contains recommendations for Safe Routes to School projects, short- and long-term engineering, and strategies for school zone operation improvements.

Specific standards included:

- The Maryland Safe Routes to School Handbook recommends a walking radius of 1-2 miles from the school site location.
- Any students volunteering for crossing guard positions should be given an advanced education course using the Maryland Safe Routes to School brochure from Maryland Highway Safety Office.

Specific recommendations included:

- Installing stop sign controls, crosswalks, ramps, and stop bars along Jefferson Street at both the east and west legs of 43rd avenue
- Installing reduced speed (20 mph) signs along Jefferson Street and 43rd Avenue
- Focusing on making improvements along key walking routes including 42nd Avenue, Longfellow Street, Jefferson Street, Gallatin Street, and 38th Street.

3. Data Collection and Assessment

To develop an understanding of existing conditions throughout the City, various data collection related tasks were executed. This section provides a summary of each data collection task.

Collection of GIS data from the City

Following the project kickoff meeting in June 2017, Study Team requested Geographic Information System (GIS) layers from the City to help with the construction of base maps, traffic and transportation analyses. The City also shared their branding guidelines so that all project materials conform to Hyattsville's standards. Table 1 shows a list of requested data.

Table 1: Requested Data from the City

Transportation	Planning	Other
Road centerline	Recent planning documents	Vector logos
AADT	Approved private developments	Branding guidelines
Functional classification	Land use – existing / future	
Posted speed limits	Parcels	
Number of lanes	Traffic analysis zones (TAZ)	
Presence of on-street parking	Topographic contours	
Pavement width	Major transmission lines/ROW	
Shoulder width	Water features	
Curb and gutter data	City Boundaries	
Bicycle facilities/trails	Regional Attractions	
Transit (bus and rail)		
Crash data		
Traffic modeling data		

In addition to the GIS data described above, cell phone data captured between the months of September 2016 and August 2017 was used to assess local and regional travel behaviors.

Additional traffic modeling, forecast, and operational modelling files were requested by the Study Team. These were derived from the Maryland Department of Transportation State Highway Administration (MDOT SHA) Travel Forecasting and Analysis Division (TFAD) data.

Field Assessment

Field observations with a focus on key roadways and intersections were conducted to record characteristics of the existing transportation network. The main purpose of these observations was to note operational and/or safety deficiencies, as well as to validate the models that will be used to develop recommendations on the future conditions portion of the Study.

Field observations were conducted during the period of October 7 through 16, 2017. Prior to beginning the field assessment, the Study Team worked with city staff to develop the methodology and data inputs. The methodology focused on evaluating a variety of street types and intersections, based on the existing functional classification. The Study Team collected data including photos and geocoded information so that it was easily integrated with the GIS data provided by the City.

To streamline the data collection, TDG developed an online inventory using the publicly-available Fulcrum app on a portable tablet. The table below provides a summary of the data collected:

Table 2: Field Assessment – Proposed Data to be Collected

Intersections (points)	Corridors (lines)
Number of curb extensions	Posted speed
Number and condition of curb ramps	Street width
Existing traffic control device	Traffic flow (ex. one-way, two-way, other)
Number and type of crosswalk	Existence of parking lanes
Lighting type	Existence of traffic calming treatments
	Lighting type
	Presence and width of sidewalks

Concurrent with the development of the methodology, the Study Team collaborated with City staff to prioritize corridors and intersections for field assessment. A map of prioritized corridors and intersections for field work can be found in Figure 5 below. Data was collected for 39 study intersections and over 16 miles of mostly city owned and maintained roadways. Queens Chapel Road, which is a state-owned facility, was included in the assessment due to its prominent location separating major residential neighborhoods in the City.

Summary of Findings

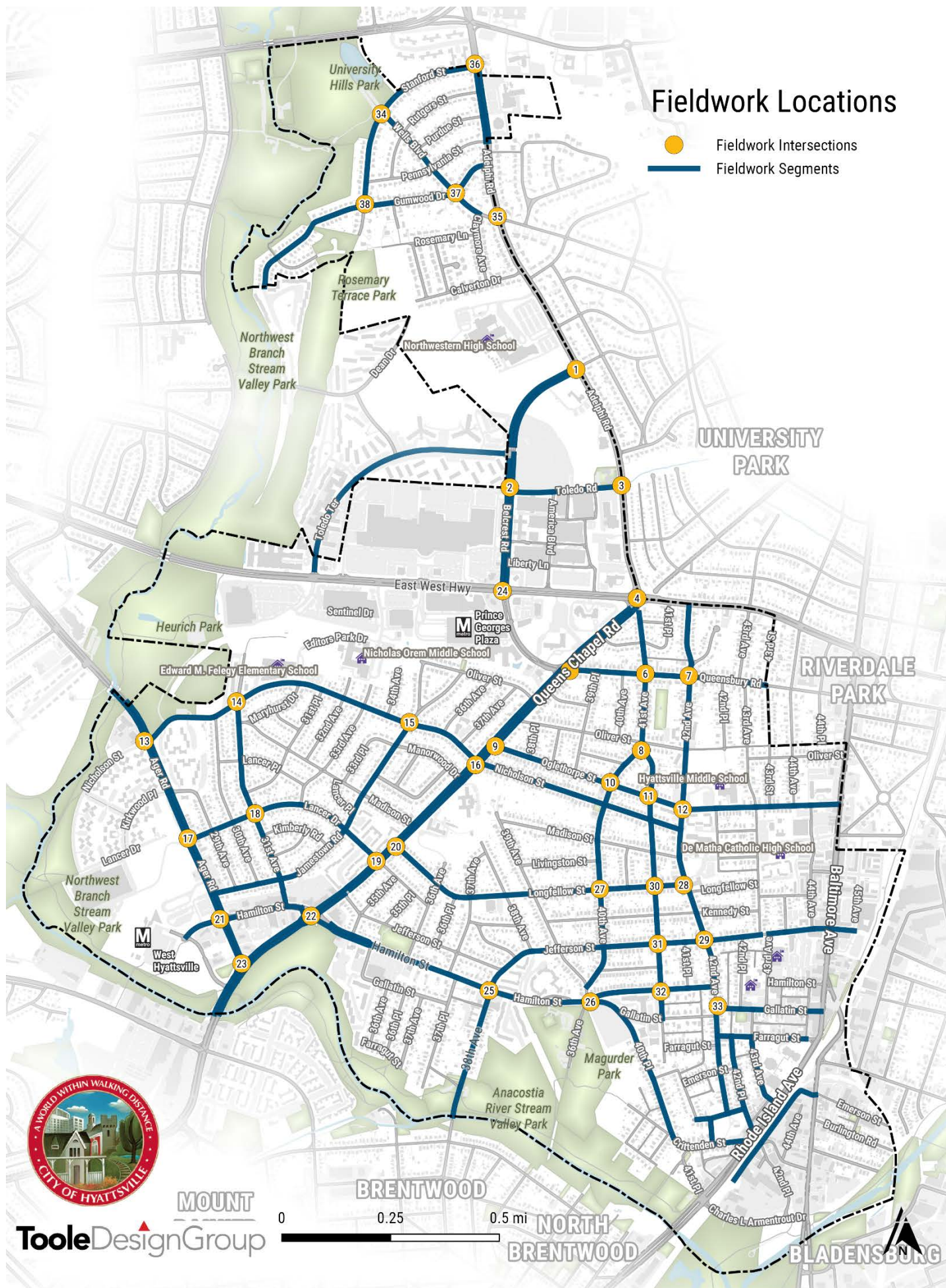
The following section describes the findings and observations from the data collection and provides thematic maps as a reference.

Intersections Assessment – Crosswalk Type

Approximately 38 percent of the studied intersections (15 of 39) did not have any crosswalks. These intersections were:

- Adelphi Road and Stanford Street
- Stanford Street and Wells Road
- Gumwood Drive and Stanford Street
- Gumwood Drive, Wells Boulevard, Wells Parkway and Notre Dame Street
- Oglethorpe and 41st Avenue
- 41st Avenue and Longfellow Street
- 40th Avenue and Longfellow Street
- 41st Avenue and Jefferson Street
- 42nd Avenue and Longfellow Street
- Queens Chapel Road and Oglethorpe Street
- Queens Chapel Road and Nicholson Street
- Queens Chapel Road and Longfellow Street
- Queens chapel Road and Lancer Drive
- Lancer Drive and 31st Avenue
- Lancer Drive and Ager Road

Figure 5: Proposed Fieldwork Locations



Most of the intersections that did not have crosswalks are located along local streets. These include 41st Avenue, 42nd Avenue, and Lancer Drive among others.

High-visibility crosswalks are present in 36 percent (14 of 39) of all intersections studied. Most high visibility crosswalks are in good condition and comply with Manual on Uniform Traffic Control Devices (MUTCD) standards. However, some crosswalks particularly on major roadways including Queens Chapel Road are faded, presenting potential safety issues.

About one-quarter (10 of 39) of all intersections studied include continental (double parallel lines) crosswalks. Figure 7 illustrates crosswalk inventory findings.

Intersections Assessment – Traffic Control Devices

As part of the intersection assessment, the Study Team documented the type of existing traffic control device. As noted in Figure 8 below, 28 percent (11 of 39) of intersections assessed included traffic signals, 44 percent (17 of 39) included four-way stops; 20 percent (8 of 39) were controlled using two-way stops; and only the intersection of Hamilton and 42nd Avenue which does not require a traffic control device because of its traffic patterns (i.e., one way), did not have one.

Intersections with traffic signal controls are concentrated along Adelphi Road, Queens Chapel Road, Ager Road, and Belcrest Road while the majority of four-way stop controlled intersections were found along 40th Avenue, 41st Avenue, and 42nd Avenue. At the time field observations were conducted, Queens Chapel Road was under construction. However, it should be noted that only the only signalized crossings of Queens Chapel Road are at Hamilton Street and Belcrest Road-Queensbury Road. These crossings are located at 0.8 miles apart. The operational analysis of the intersections is presented in Section 6.

Figure 6: Existing High Visibility Crosswalk on Intersection of Oglethorpe Street and 42nd Avenue



Figure 7: Intersections Assessment – Existing Crosswalk Type

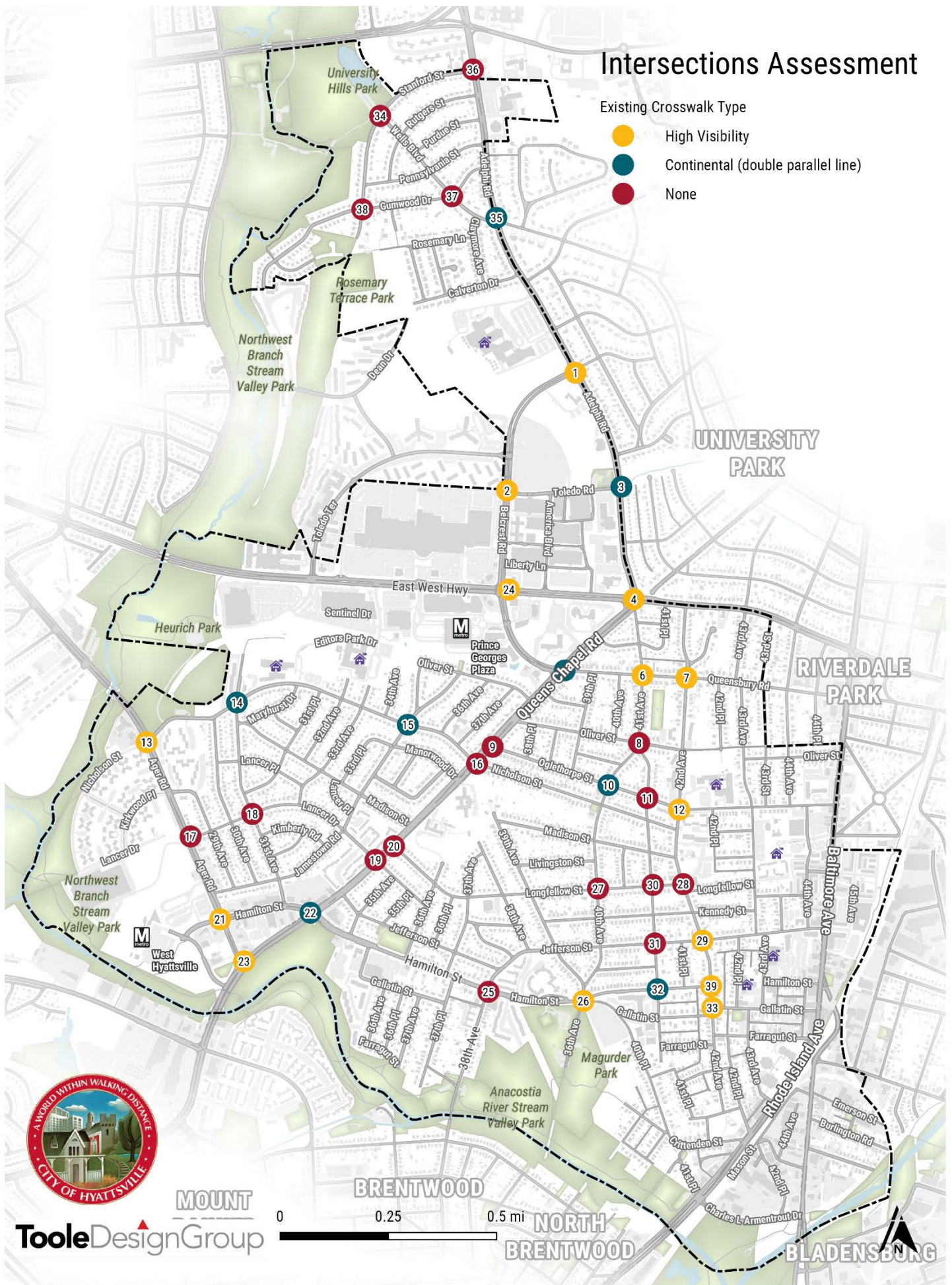
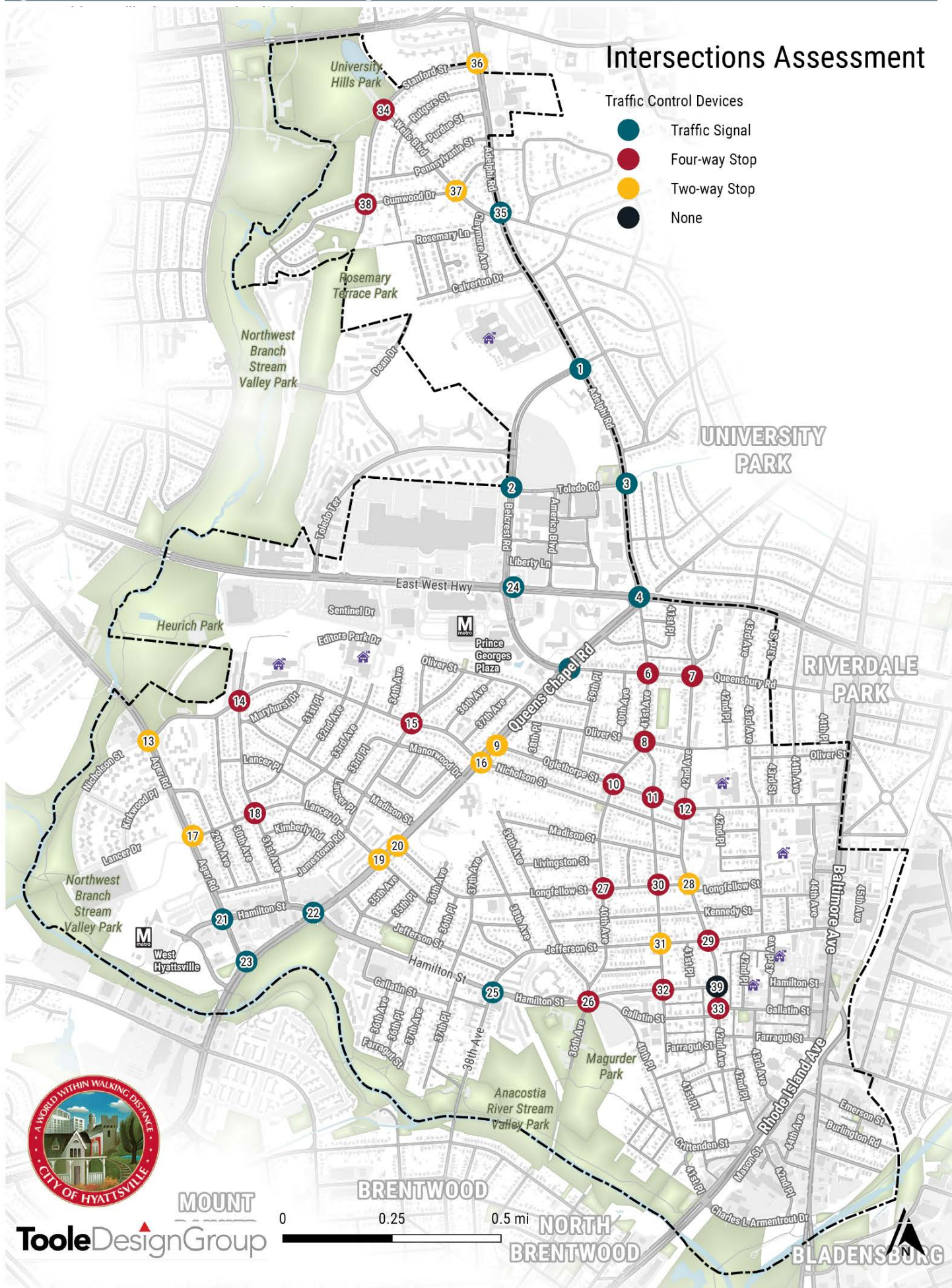


Figure 8: Intersections Assessment - Existing Traffic Control Devices



Segments Assessment – Infrastructure Inventory

During the field assessment, Study Team took inventory of the selected roadway segments. Table 3 provides inventory of the segments. Figure 9 and Figure 10 denote the existing functional classification and right-of-way (ROW) ownership of the study segments. The traffic operation and circulation on these roadways and study intersections is further described in Section 4 of this memorandum.

Table 3: Fieldwork Segment Characteristics

Roadway	Functional Classification	Ownership	Travel lanes	Posted Speed	Bike Facility	Sidewalk	Existing Parking
31ST AVE	Local	City	2	25	None	Yes	No
38TH AVE	Collector	City	2	25	None	Partial	Partial
40TH AVE	Local	City	2	25	Sharrow	Yes	Partial
41ST AVE	Local	City	2	25	None	Partial	No
42ND AVE	Local	City	2	25	None	Yes	Partial
42ND PL	Local	City	2	25	None	Yes	Partial
43RD AVE	Local	City	2	25	None	Yes	Partial
ADELPHI RD	Local	County	2	25	Sharrow	Yes	Yes
AGER RD	Local	County	4	25	None	Partial	No
BELCREST RD	Local	County	4	25	None	Yes	No
CRITTENDEN ST	Local	City	2	25	None	Yes	No
DECATUR ST	Local	City	2	25	None	Partial	Partial
FARRAGUT ST	Local	City	2	25	Sharrow	Yes	Partial
GALLATIN ST	Local	City	2	25	Sharrow	Yes	No
GUMWOOD DR	Local	City	2	25	None	Partial	Yes
HAMILTON ST	Collector	City	4	35	None	Yes	No
HAMILTON ST	Local	City	4	25	Bike Lane (Partial)	Yes	Yes
JAMESTOWN RD	Local	City	2	25	None	Yes	Yes
JEFFERSON ST	Local	City	2	25	None	Yes	No
LANCER DR	Local	City	2	25	None	Yes	No
LONGFELLOW ST	Local	City	2	25	None	Yes	Partial
NICHOLSON ST	Local	City	2	25	Sharrow	Yes	Partial
NICHOLSON ST	Local	City	2	25	Sharrow	Yes	Yes
NOTRE DAME ST	Local	City	2	25	None	Partial	Yes
OGLETHORPE ST	Local	City	2	25	None	Yes	No
QUEENS CHAPEL RD	Arterial	SHA	4	35	Sharrow	Yes	No
QUEENSBURY RD	Local	City	2	25	None	Partial	No
STANFORD ST	Local	City	2	25	None	Partial	Yes
TOLEDO RD	Local	City	2	25	None	No	No
TOLEDO TER	Local	County	2	25	None	Partial	No
WELLS BLVD	Local	City	2	25	None	No	Yes

Functional Classification

- Regional Arterial (Solid Red Line)
- Local Arterial (Dashed Red Line)
- Regional Collector (Solid Blue Line)
- Local Collector (Dashed Blue Line)
- Local (Solid Yellow Line)
- Private (Thin Grey Line)

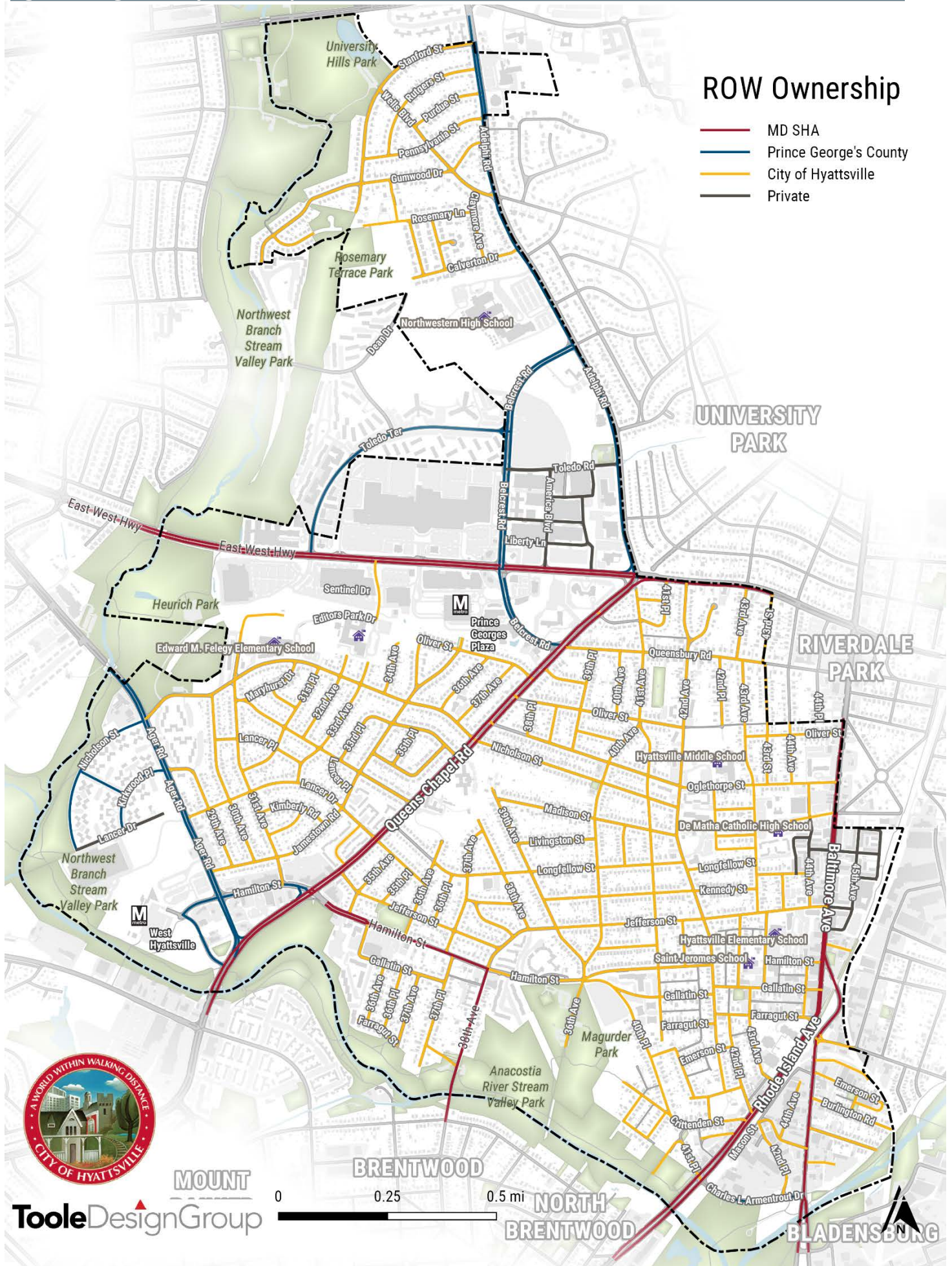
Map Labels: University Hills Park, Northwest Branch Stream Valley Park, Heurich Park, Edward M. Felegy Elementary School, Nicholas Orem Middle School, UNIVERSITY PARK, RIVERDALE PARK, MOUNT BENTWOOD, NORTH BENTWOOD, Anacostia River Stream Valley Park, Charles L. Armentrout Dr.

Scale: 0 to 0.5 miles

Logo: A WORLD WITHIN WALKING DISTANCE CITY OF HYATTSVILLE

Design: TooleDesignGroup

Figure 10: Right of Way Ownership



Segment Assessment - Pedestrian Conditions

The City of Hyattsville has a comprehensive network of sidewalks illustrated in Figure 12. Areas without sidewalk coverage tend to be residential neighborhoods, and while sidewalk coverage is fairly comprehensive throughout the city, some sidewalks have temporary or permanent obstructions that impede pedestrians such as trash cans, utility poles, or other obstacles (see Figure 11).

Throughout the City, there is significant variability in the presence and quality of other pedestrian facilities such as curb ramps, crosswalks, pedestrian signals, accessible bus stops, wayfinding, and regulatory signage. At various intersections, faded crosswalks were noted, particularly across wider roadways. There are also areas of the City where substandard or missing curb ramps create barriers for people with disabilities and people pushing strollers, particularly across or along larger roadways such as Queens Chapel Road, Ager Road, and Baltimore Avenue (Route 1). Similarly, while some traffic signals provide pedestrian countdown signals, many of these feature an older type of signal without a countdown, or none at all.

Figure 11: Existing Sidewalk Obstruction on Local Street



Segments shown in red in Figure 13 represent road segments with no sidewalks and/or segments where the sidewalk width is less than 4 ft. (the minimum allowed width under ADA standards). Of the over 16 miles of roadway assessed, 10 percent did not have any sidewalk. These were:

- Wells Boulevard and Wells Parkway, from Stanford Street to Adelphi Road.
- Gumwood Drive, from Stanford Street to Wells Boulevard
- Notre Dame Street, from Wells Boulevard to Adelphi Road
- 41st Avenue, from Oglethorpe Street to Nicholson Street
- 41st Avenue, from Longfellow Street to Kennedy Street
- 41st Avenue, from Ingraham Street to Farragut Street
- Decatur Street, from 42nd Place to 41st Place
- 42nd Avenue, from Decatur Street to Crittenden Street
- Rhode Island Avenue, from Baltimore Avenue (Route 1) to 42nd Place.

Sidewalk gaps along Queens Chapel Road and Ager Road contribute to particularly problematic pedestrian conditions due to do the free right turn from Ager to Queens Chapel Road. Sidewalk gaps on the historic neighborhood are concentrated along 38th Avenue, 41st Avenue, and 42nd Avenue.

[illegible]

Figure 13 B: Sidewalk Coverage

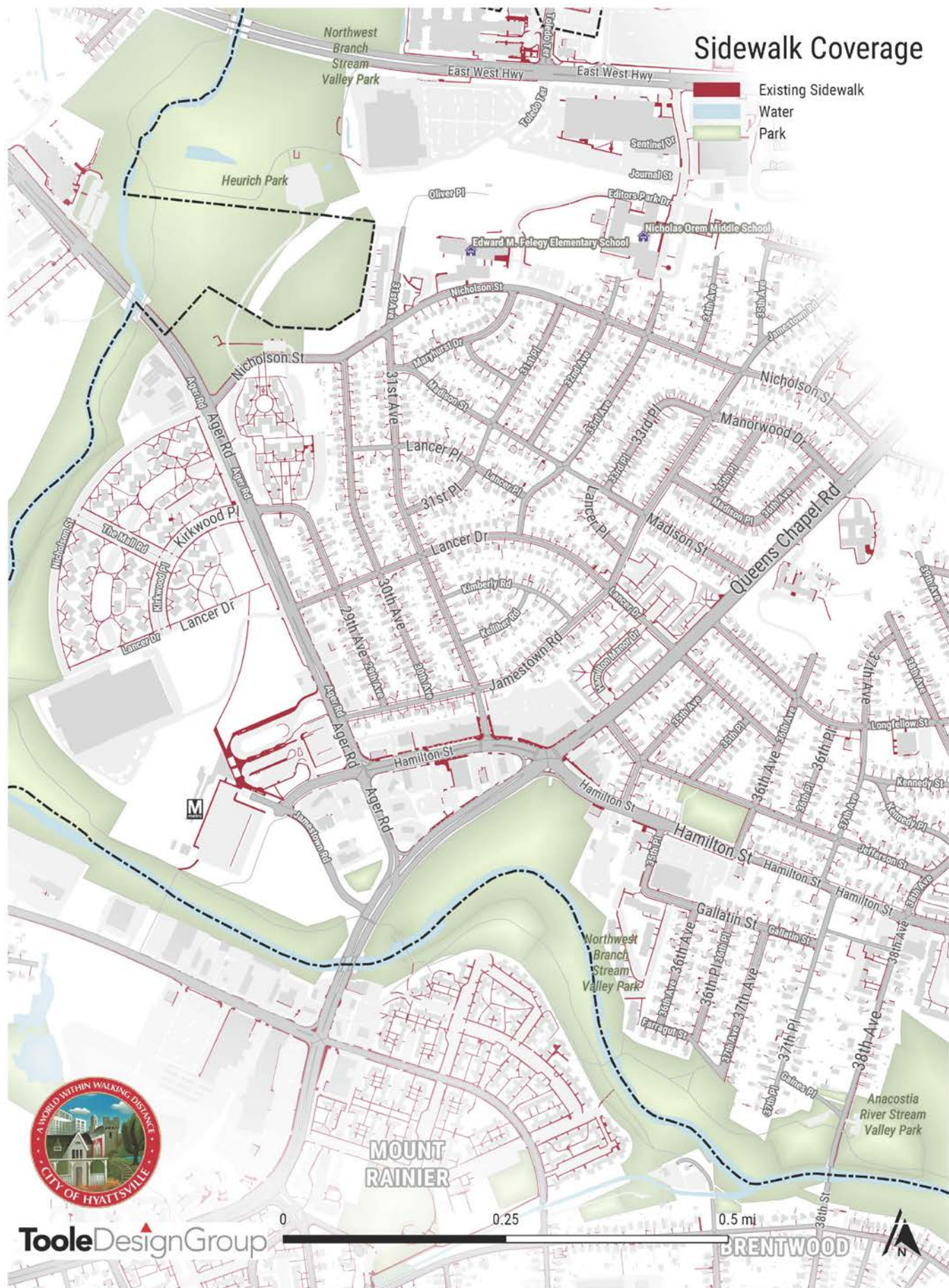


Figure 14 C: Sidewalk Coverage

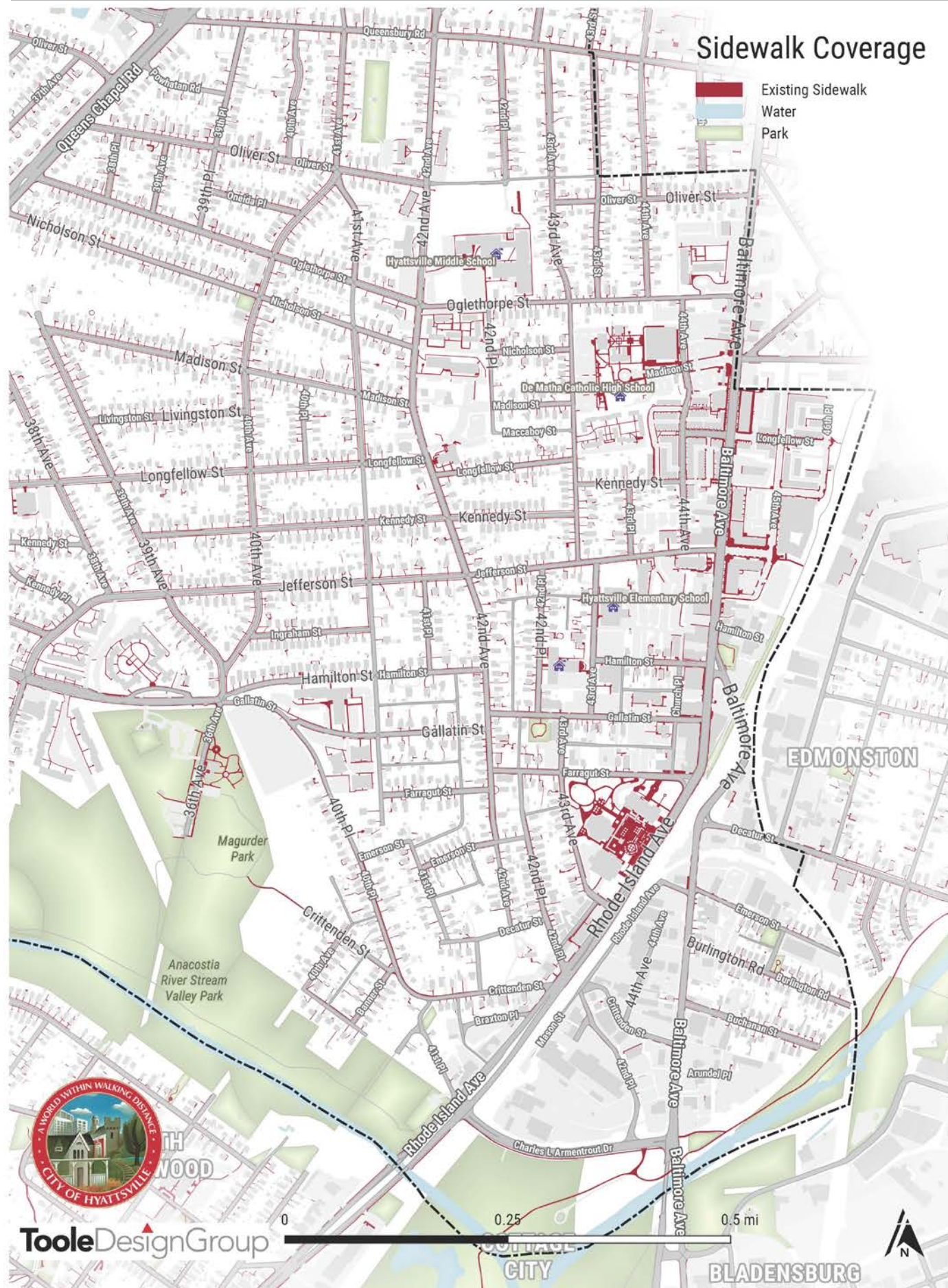
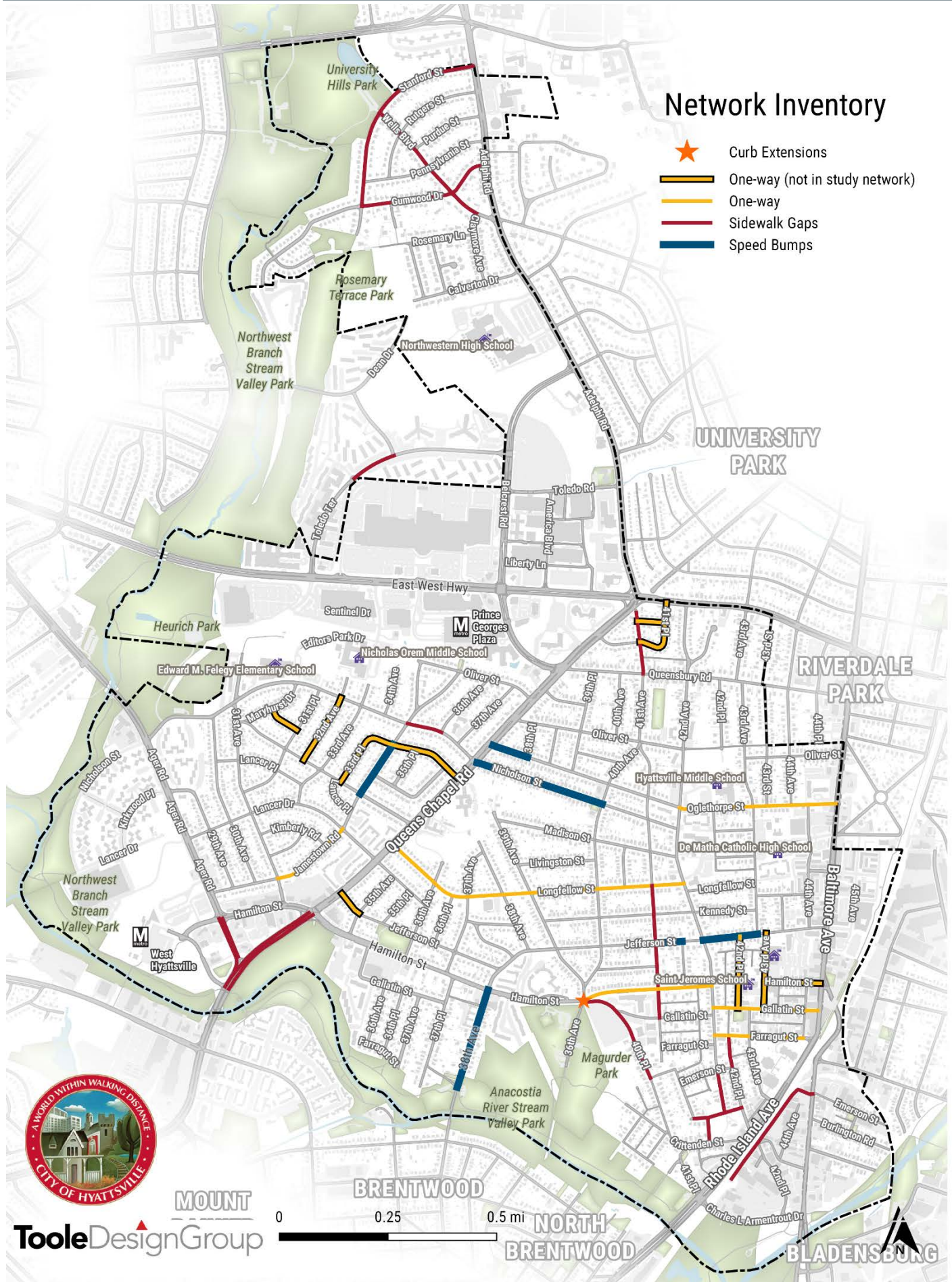


Figure 15: Segment Assessments



Field surveyors also noted that while Baltimore Avenue (Route 1) was not part of the field study network, various sidewalks were adjacent to relatively high speed vehicular traffic (Figure 14). Additionally, inconsistent sidewalk widths, sidewalk buckling, and exposed pipes adjacent to the sidewalk made it difficult for pedestrians to travel along the corridor.

Figure 16: Existing conditions along Baltimore Avenue (Route 1)



Figure 17: Missing Curb Ramps in Front of St. Jerome Academy (left); Faded Crosswalk on Adelphi Road (right)



While a complete field review of all pedestrian facilities was outside the scope of this study, several bus stops along major corridors did not provide accessible landing pads or connections to existing sidewalks. This can make it difficult for residents and visitors with disabilities to use the existing bus service.

Uneven sidewalks and sloping driveways were also found. These represent additional impediments for pedestrians with disabilities and parents using strollers along sidewalks.

Finally, in some areas that experience higher pedestrian volumes (ex. close to elementary and middle schools), existing sidewalk widths were found to be ADA compliant (i.e., more than 4 ft. wide), do not comfortably accommodate bi-directional pedestrian traffic or two strollers walking side by side as noted in the figure below.

Figure 18: Uneven Sidewalk (left) and sloping driveways create access management issues on sidewalks (right)



Figure 19: Existing Sidewalk is too Narrow to Accommodate side-by-side stroller traffic.



Segment Assessment - Bicycle Infrastructure:

The overall conditions of existing bicycle infrastructure throughout the City of Hyattsville is in fairly good condition. The existing bicycle network in the city consists of on-street facilities mostly in the form of shared-lane markings or sharrows, and off-street trails, with both the Northeast and Northwest Branch trails bordering the city. Table 4 and Figure 19 provide a summary of existing and planned bicycle infrastructure in Hyattsville.

Table 4: Existing Bicycle Facilities (miles)

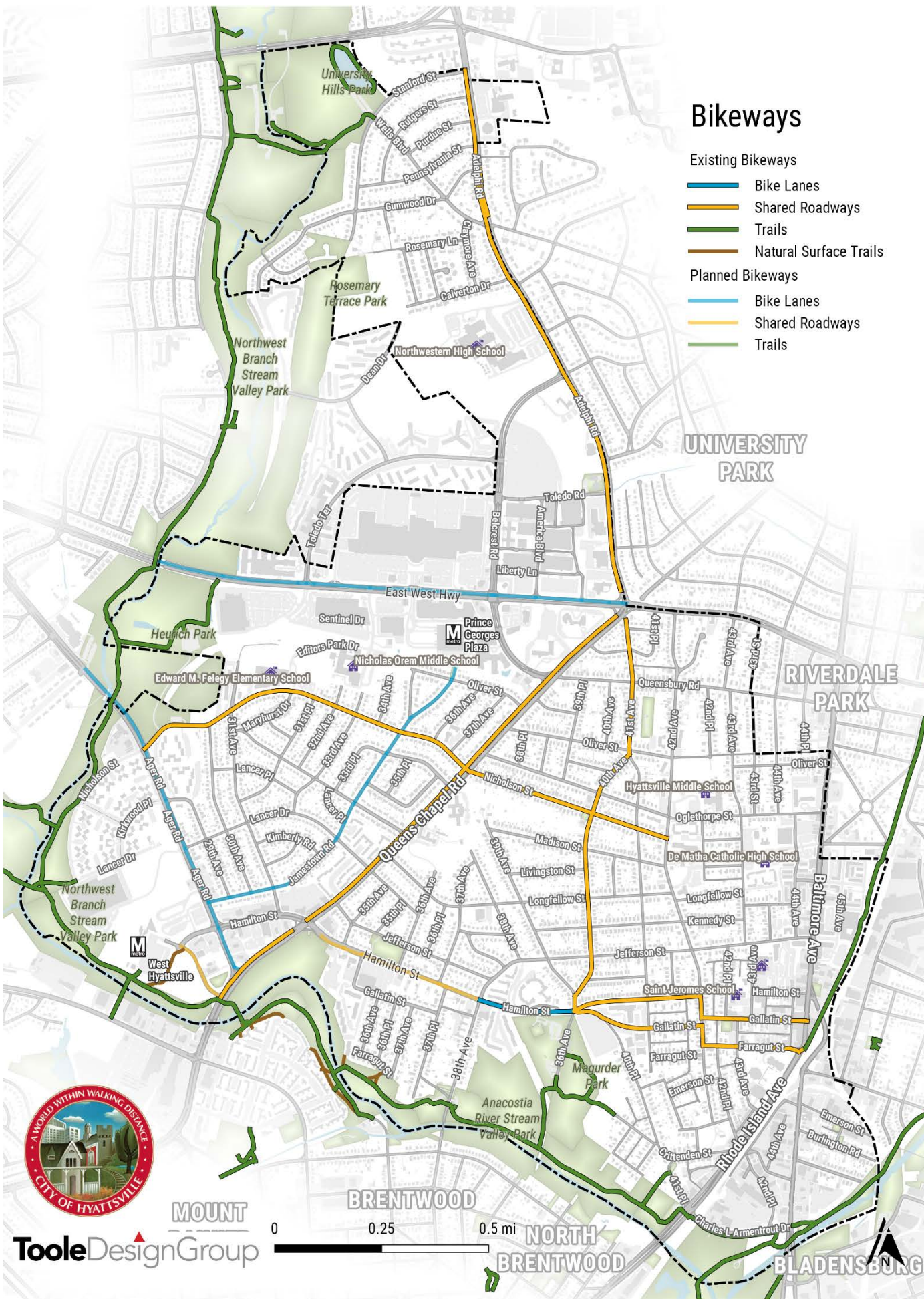
Type of Facility	Miles
Bike Lane	0.22
Trail	24.49
Shared Roadway	6.44
Total	31.15

A network of sharrows, as shown in Figure 18, and wayfinding currently exists on Hamilton Street, Nicholson Street, 40th Avenue, and Gallatin Street. The existing narrow streets in addition to existing 25 mph posted speed limits in most local streets, make it relatively easy for residents and visitors to traverse the City. However, existing one-way street configurations on Longfellow Street, Oglethorpe Street, Hamilton Street, Gallatin Street, and Farragut Street make circulation cumbersome and circuitous for bicyclists, especially throughout Downtown Hyattsville. Further, one-way circulation in some of these corridors provides overly-wide travelways to motorists which may encourage drivers to speed, reducing safety and comfort for people walking and bicycling.

Figure 20: Existing Wayfinding does not comply with current MUTCD Standards



Figure 21: Bikeways



Wayfinding

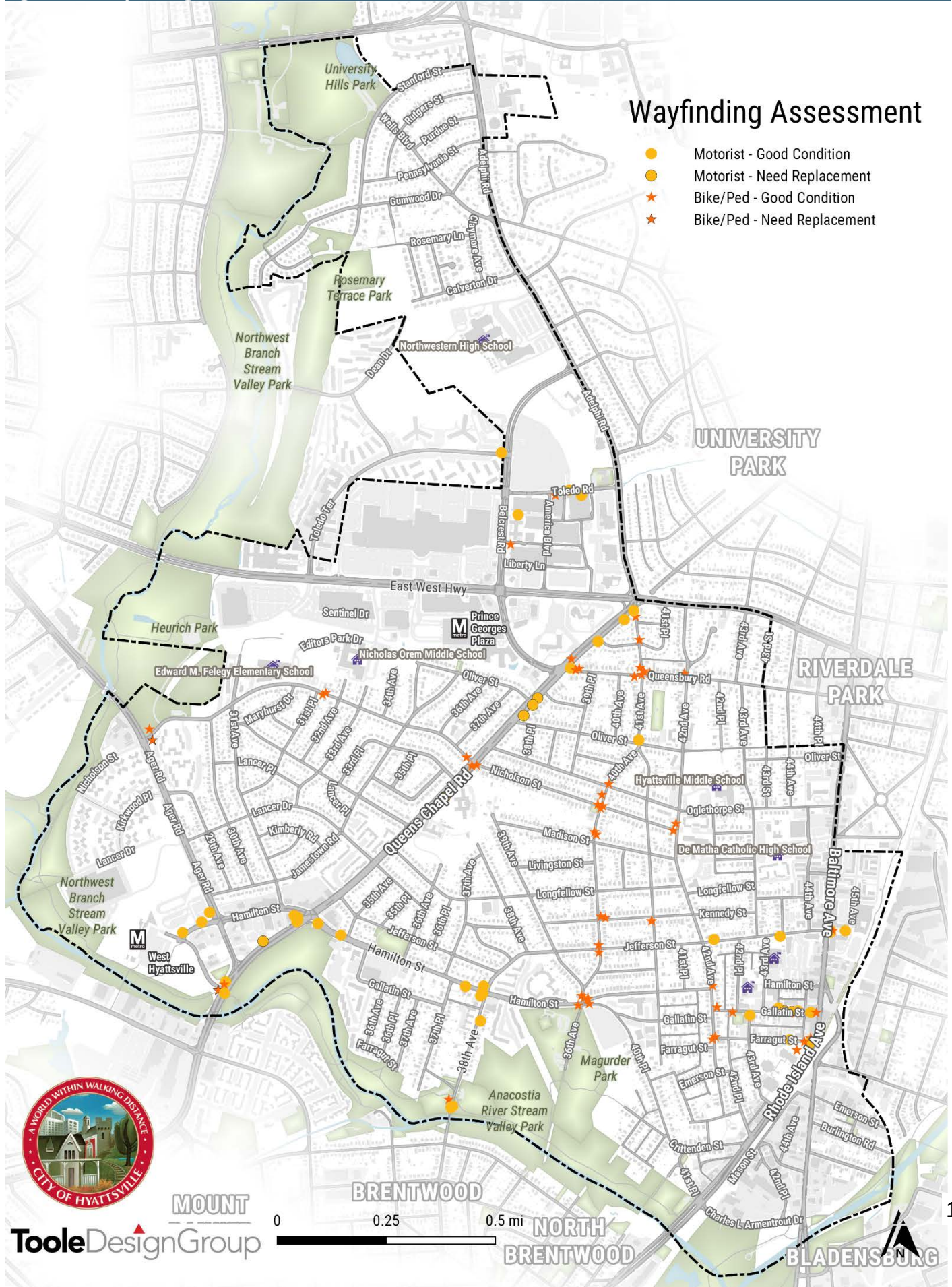
Existing wayfinding signs are generally in good condition and are concentrated along existing bicycle and pedestrian routes. Figure 21 presents the types and conditions of existing wayfinding signs assessed. Many of the signs found throughout the study area, however, do not comply with MUTCD size, color or font standards, and does not have a consistent design that showcases the City's unique character and branding. The Study Team also found that existing signage was not always located in visible places (ex. at 42nd Avenue and Hamilton) and was sometimes difficult to read. Further, while some destinations/routes designated as preferred routes, such as Adelphi Road, are the most direct routes for people walking and biking, they may not provide the most comfortable walking and biking environments. A separate wayfinding report being prepared as part of this study, will provide additional details on existing condition of the signs and recommendations for new design, location and directions.

Figure 22: Disjointed Wayfinding in Study Area



Field surveyors did note signs that should be replaced due to poor condition. These are indicated on the map on Figure 21 in red triangles and circles.

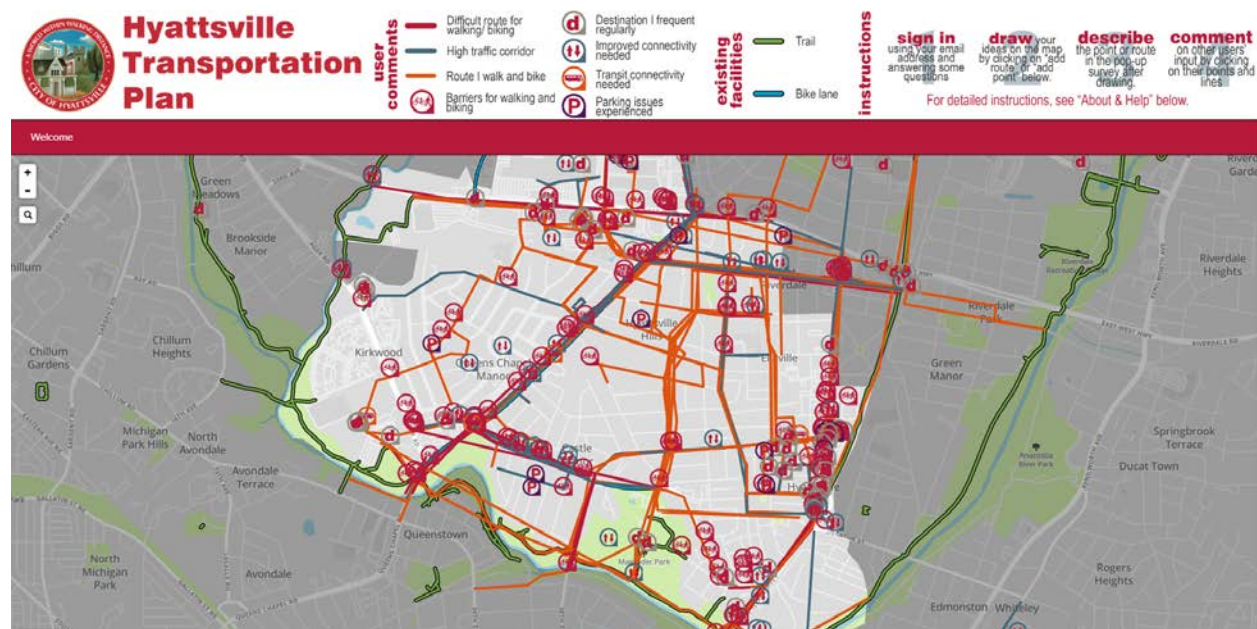
Figure 23: Wayfinding Assessment



4. Wikimap Summary

To complement existing public engagement and gather additional input from the community about specific issues throughout city streets, the Study Team developed two online interactive crowdsourcing maps, or wikimaps. The maps, one in English and one in Spanish, allowed residents to identify barriers and difficult routes for walking and biking as well as provide information about preferred routes, issues with parking and connectivity. The wikimaps were active between July and November 2017. During this time, the maps received 123 line and 242 point comments from 177 users across all five city wards.

Figure 24: Screenshot of Wikimap

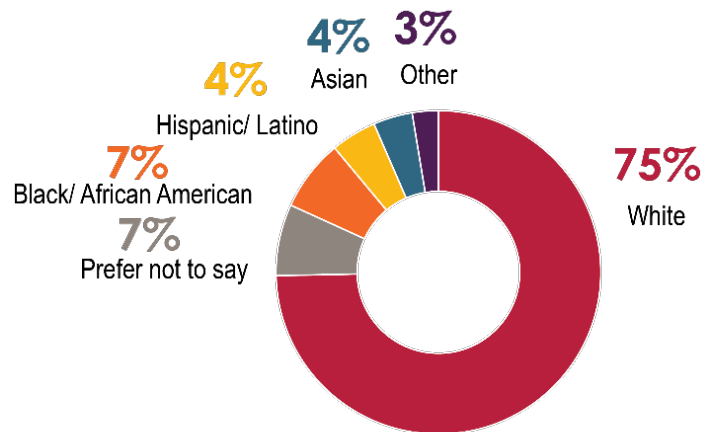


Wikimap users were also asked to complete a short survey to help the Study Team understand their background, mobility habits, and concerns. The following is a summary of demographic characteristics from wikimap respondents:

Race and Ethnicity

Most respondents (75 percent) self-identified as white non-Hispanic, while seven percent noted they are Black/African-American and four percent noted they are Latino/Hispanic and Asian respectively.

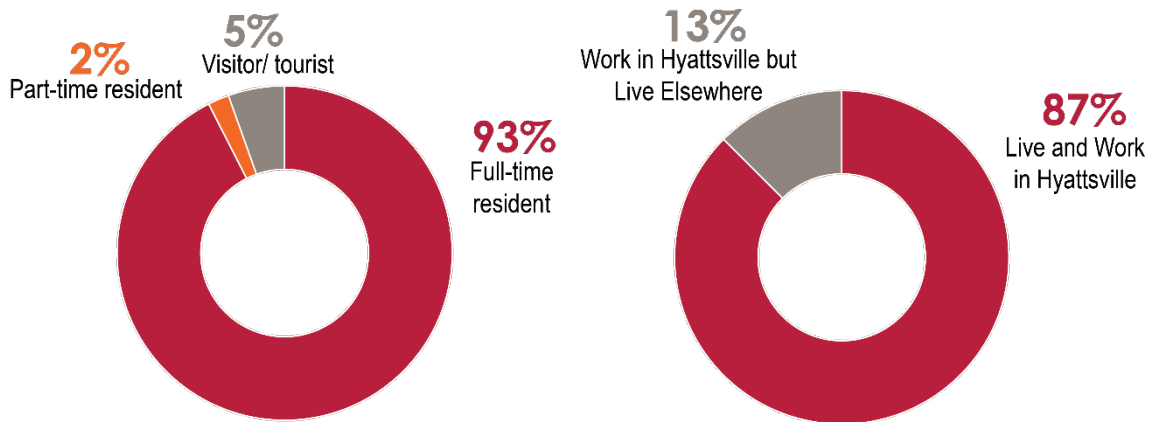
Figure 25: Demographic Distribution of Respondents



Place of Residency and Work

As noted in the figures below, 93 percent of wikimap users reported being full-time residents of Hyattsville while five percent reported being visitor/tourists. Furthermore, 87 percent reported also working in Hyattsville. This figure is not representative of most residents of Hyattsville, according to City staff, as many work outside Hyattsville in the DC metro area.

Figure 26: Residency and Work Status (right: residency; left: work)

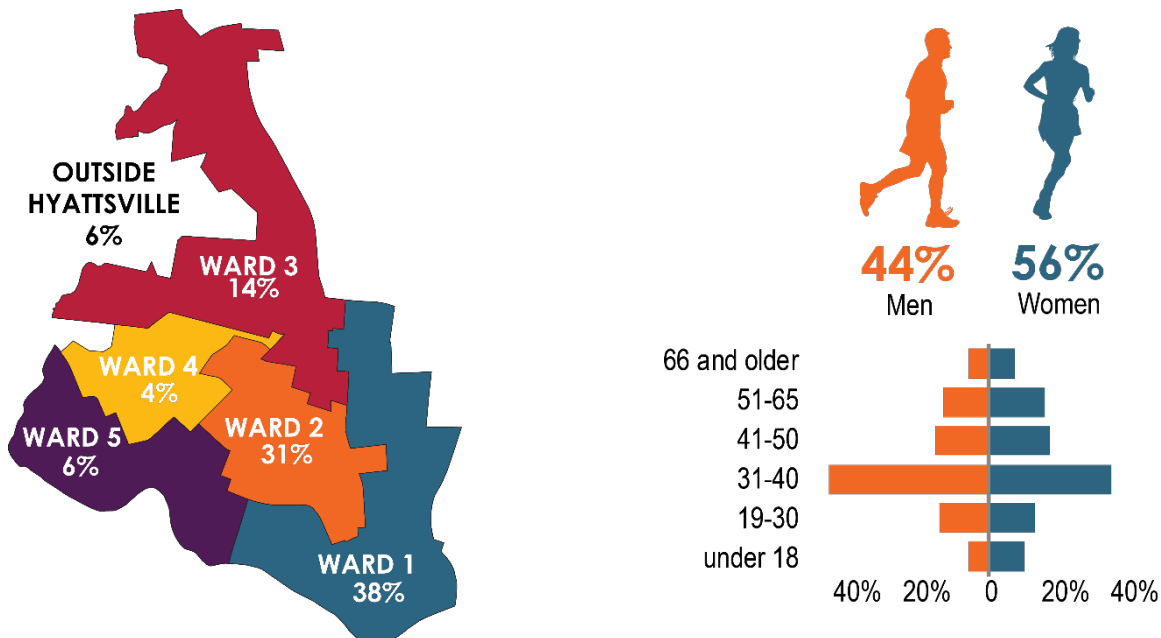


The majority of respondents (69 percent) live in Wards 1 and 2 while only around 10 percent of respondents live in Wards 4 and 5. City Staff are actively working to increase participation from these communities, however have so far been unsuccessful.

Age and Sex

The majority of survey respondents (56 percent) self-identified as women, with a large proportion of them noted being between the ages of 31 and 40 years of age.

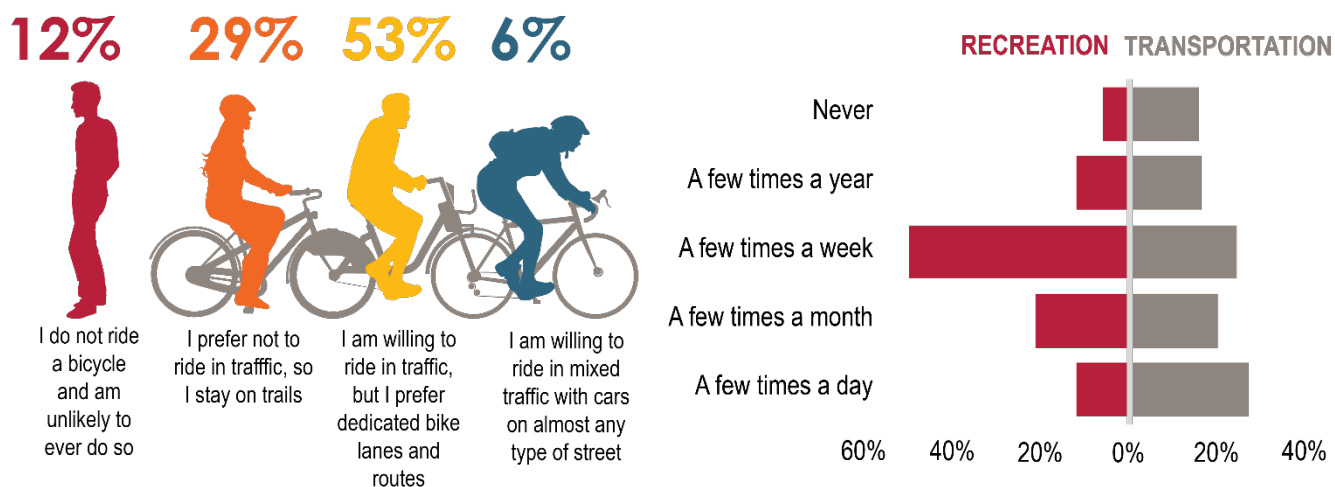
Figure 27: Ward of Residency (Left) - Age and Sex (Right)



Walking and Bicycling Practices

Most users responding to the wikimap (53 percent) would like dedicated bike lanes or routes while 29 percent of residents would prefer more separation in the form of trails. Related to walking, almost 50 percent of wikimap respondents noted walking/running for recreation a few times a week, while around 25 percent of respondents reported walking a few times a day for transportation.

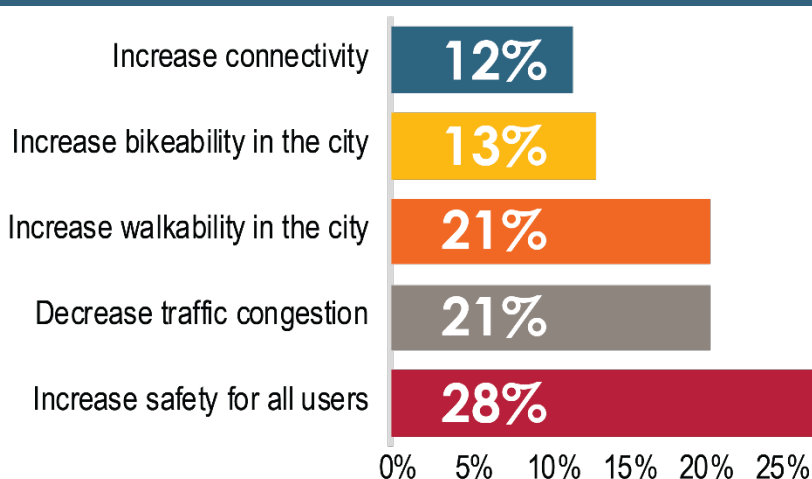
Figure 28: Bicycling Habits (left) and Walking Habits (right)



Priorities for the Study

When asked to select from a set of priorities for the Transportation Study, around 34 percent of respondents noted they would like the Study's recommendation to increase conditions for bicyclists and pedestrians. More than a quarter of all respondents (28 percent) noted that they would like to see increased safety for all users as an outcome as part of the Transportation Study.

Figure 29: Priorities for the Transportation Study



Issue Areas

Wikimap respondents were asked to identify corridors that represent barriers for all modes. More specifically, users were asked to use the wikimaps to note which corridors present difficulties for people walking, and where they experience high vehicular traffic.

Users were also asked to note areas where improved connectivity is needed, areas where specific barriers for walking and biking exist, areas that experience parking issues, and areas that would benefit from additional transit connectivity.

Using the data derived from the wikimaps, the Study Team developed a set of heatmaps to summarize the results. The following sections provide information about the maps. For each of the maps areas in red denote higher concentration of comments.

Parking and Traffic

Wikimap respondents were asked to identify areas and corridors of the city experiencing parking issues and high traffic. Figure 28 shows the heat map of the issues. The wikimap received 31 comments related to existing traffic and 19 related to existing parking issues. The result of the analysis of data mirrors what past studies have concluded. Several corridors were identified as experiencing high traffic:

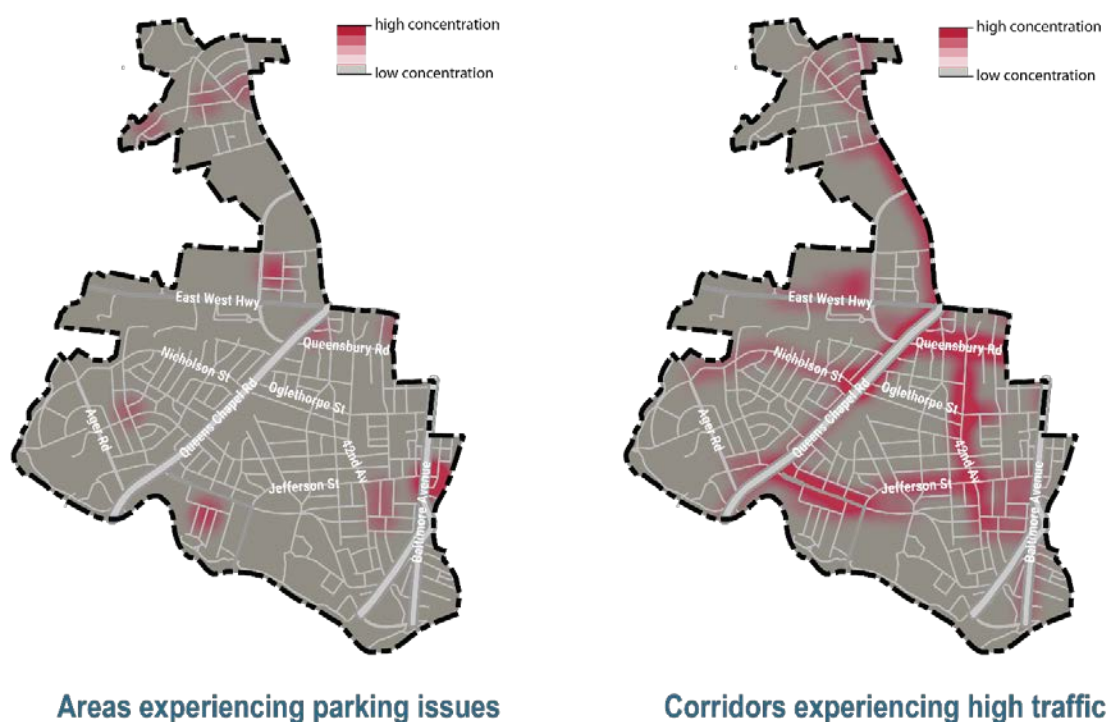
- 42nd Avenue
- Queensbury Road
- Nicholson Street
- Queens Chapel Road
- Jefferson Street
- Hamilton Street

Among the complaints about high traffic areas, many users noted that Jefferson Street and Hamilton Street experience high traffic because they are used as east-west cut-through routes by both visitors and residents. Further, Queensbury Road and Queens Chapel Road were identified as high traffic and high-speed areas that act as barriers for some people.

Areas of the city experiencing highest parking issues include:

- Downtown Hyattsville
- University Town Center

Figure 30: Areas Experiencing Parking Issues (left) and High Traffic (right)



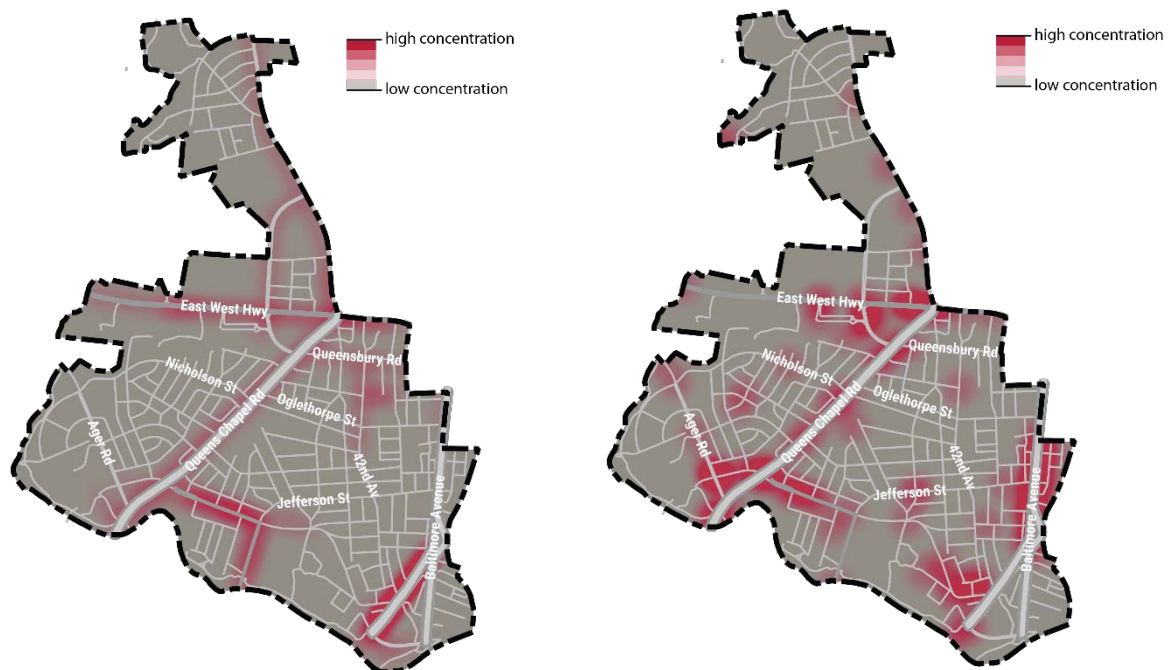
Some of the parking-related comments indicated that roads are too narrow to accommodate two-way traffic as well as parking. Other comments noted that people from other jurisdictions park their cars on local streets (where parking is free) taking away parking spaces from residents.

Difficult Routes and Areas for Walking and Biking

Wikimap respondents were also asked to identify difficult routes for walking and biking. Users placed points and comments on areas/intersections that represent these barriers for biking. Figure 29 shows the heat-map of these issues. The wikimap received 202 comments related to barriers (points) and 40 related to routing (lines). The routes representing the biggest difficulty for people walking and biking include:

- East West Highway
- Queens Chapel Road
- Rhode Island Avenue (Anacostia River to Farragut Street)
- 42nd Avenue (Oglethorpe Street to East-West Highway (MD-410))
- Hamilton Street (from Queens Chapel Road to 38th Street)
- 38th Street (from the Northwest Branch Trail to Hamilton Street)

Figure 31: Difficult Routes for Walking and Biking (left) and Barriers for Walking and Biking (right)



Difficult routes for walking and biking

Barriers for walking and biking

Gaps in the sidewalk network, as well as (perceived) heavy and fast traffic were the most common barriers to walking and biking given by respondents. Areas identified as barriers for people biking and walking included:

- Intersection of Hamilton Street and Queens Chapel Road
- Intersection of Ager Road and Hamilton Street
- Intersection of East-West Highway and Toledo Terrace
- Intersection of Queensbury Road and Baltimore Avenue
- Intersection of Jefferson Street and Baltimore Avenue

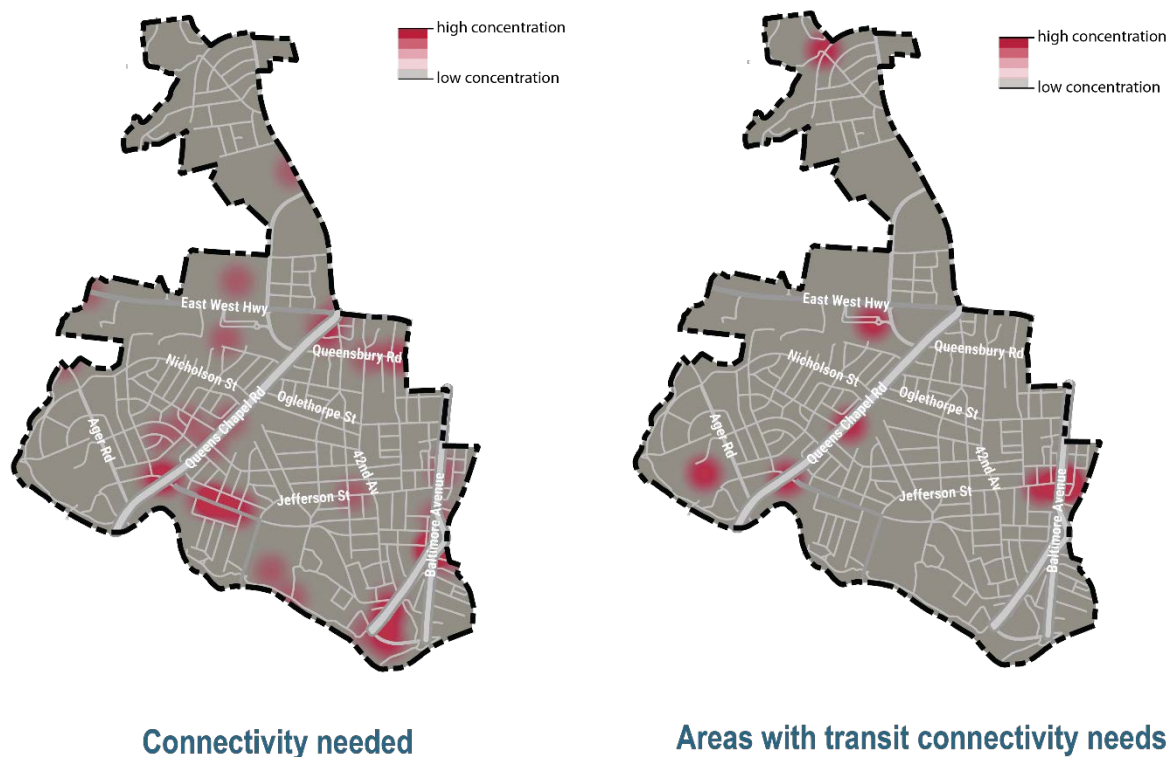
The issues that were most noted included:

- Lack of marked pedestrian crossings
- Heavy and fast traffic
- Wide street encourages motorists to speed
- Long wait at intersections
- Lack of sidewalks

Improved Connectivity and Transit Connectivity Needs

Figure 30 below presents a heatmap of the areas in the city with connectivity needs. The wikimap received eight comments related to transit connectivity needs. Among the comments received, users noted the need for quick, frequent and reliable transit between different parts of Hyattsville and the two Metro stations. Users referenced the need for a circulator type of bus access linking the Metro stations to the Arts District.

Figure 32: Areas Where Improved Connectivity is Needed (left); Transit Connectivity Needed (right)

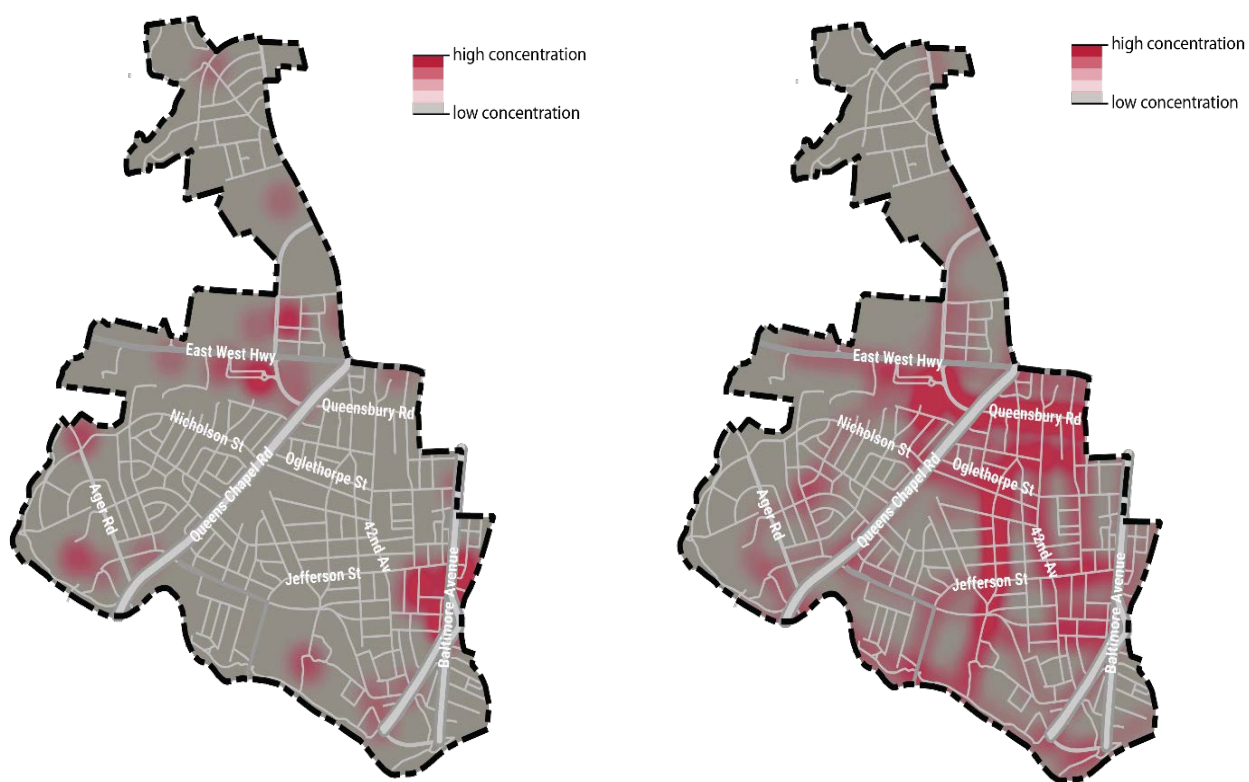


The wikimap received 47 comments related to the need for improved pedestrian and bicycle connectivity. Many of these comments focused on the need to provide better connections to the Northeast and Northwest Branch Trails, as well as the existing Trolley Trail. Other comments noted the need for additional sidewalk coverage, and more comfortable/safe crossings along Baltimore Avenue, Queens Chapel Road, and Rhode Island Avenue.

Destinations and Routes People Walk and Bike

The wikimap receive 117 comments related to destinations and routes people walk and bike to/through. The West Hyattsville and Prince George's Plaza metro stations were among the most popular destinations along with the Arts District, Magruder Park and University Town Center.

Figure 33: Destinations (left); Routes People Walk and Bike (right)



Destinations

Routes people walk and bike

The routes receiving the highest number of comments included those with existing bicycle and pedestrian wayfinding. These include:

- Queensbury Road
- Belcrest Road
- 40th Avenue
- 42nd Avenue
- Oglethorpe Street

5. School Area Circulation Observations

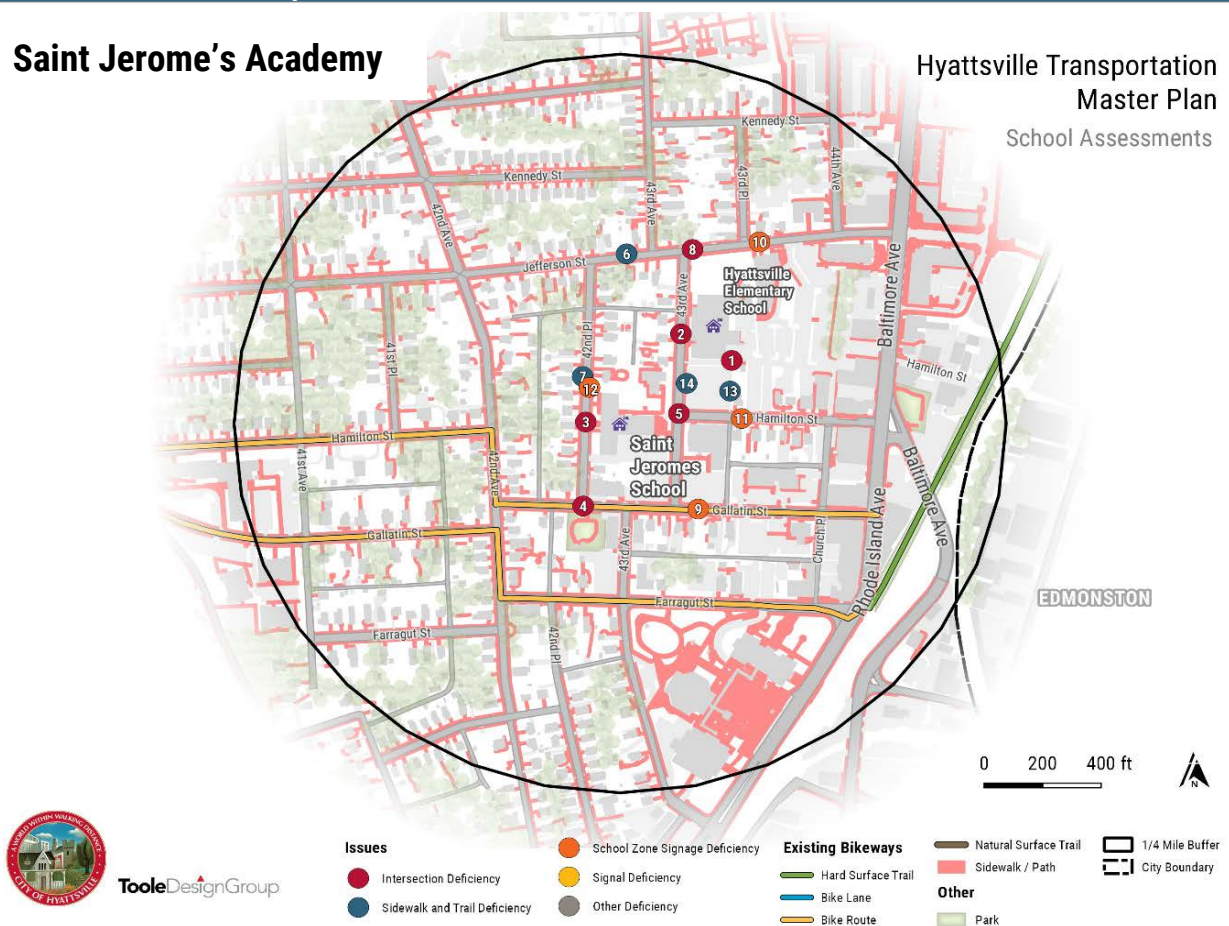
To assess multimodal connectivity and safety for students walking and biking to school, school area circulation observations were conducted between September 13 and 21, 2017. These field observations focused on documenting existing infrastructure within a ¼ mile radius around each of the following schools:

- St. Jerome Academy (5207 42nd Place)
- Hyattsville Elementary School (5311 43rd Avenue)
- Hyattsville Middle School (6001 42nd Avenue)
- Felegy Elementary School (6110 Editors Park Drive)
- Nicholas Orem Middle School (6100 Editors Park Drive)

The Study Team documented the arrival process for each of the schools between 7:00 and 9:30 am. As part of these observations, the Study Team also noted primary walking routes (within ¼ mile of school) as well as existing deficiencies in the street and sidewalk network representing obstacles for bicycling and walking to school. Infrastructure deficiencies maps for each school can be found below. Complete existing conditions reports were developed for each school and can be found in Appendix I-A.

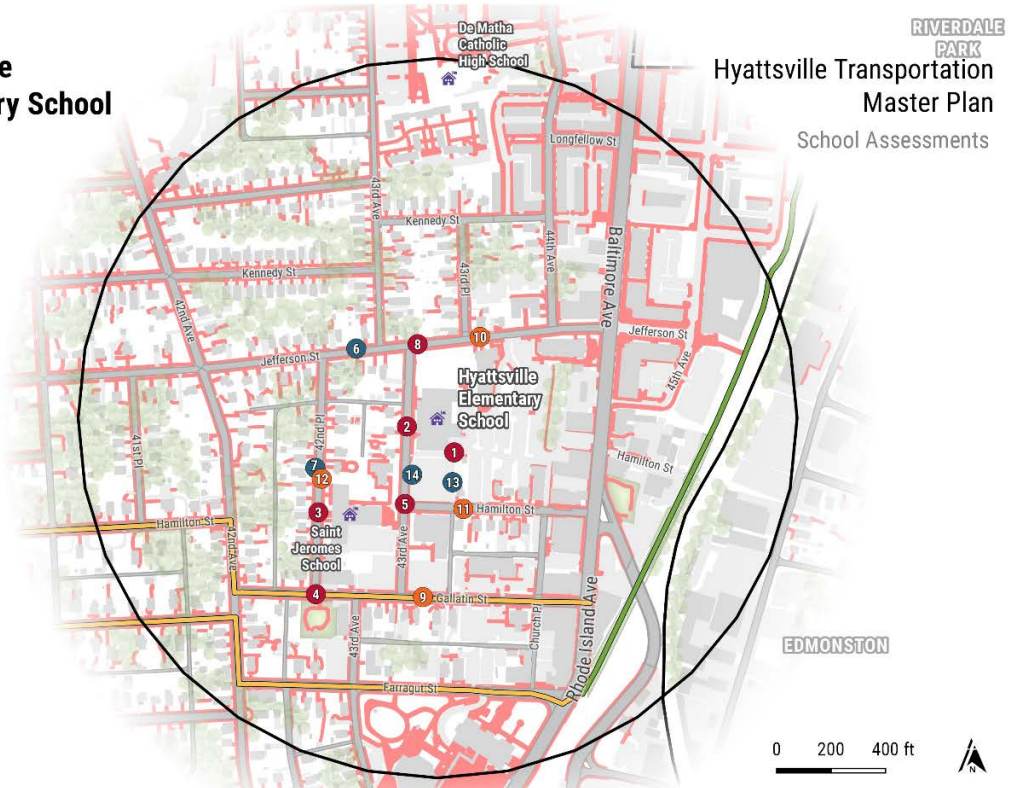
Figure 34: School Area Deficiencies

Saint Jerome's Academy



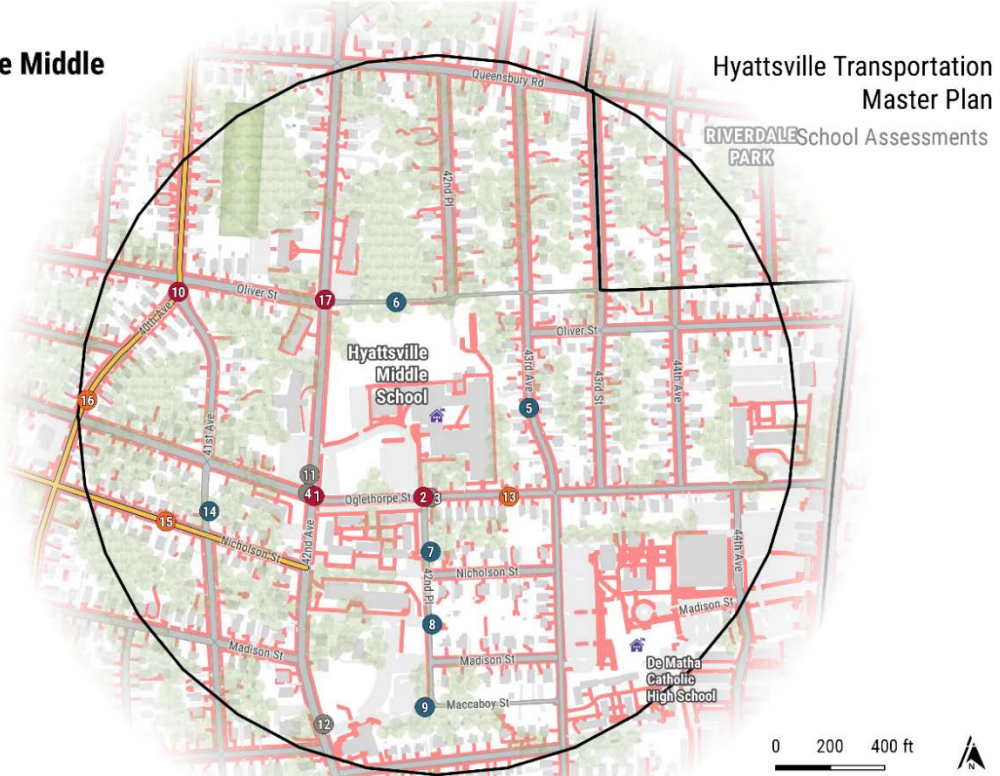
Hyattsville Elementary School

Hyattsville Transportation Master Plan School Assessments



Hyattsville Middle School

Hyattsville Transportation Master Plan School Assessments



TooleDesignGroup

Issues

- Intersection Deficiency
- Sidewalk and Trail Deficiency
- School Zone Signage Deficiency
- Signal Deficiency
- Other Deficiency

Existing Bikeways

- Hard Surface Trail
- Bike Lane
- Bike Route

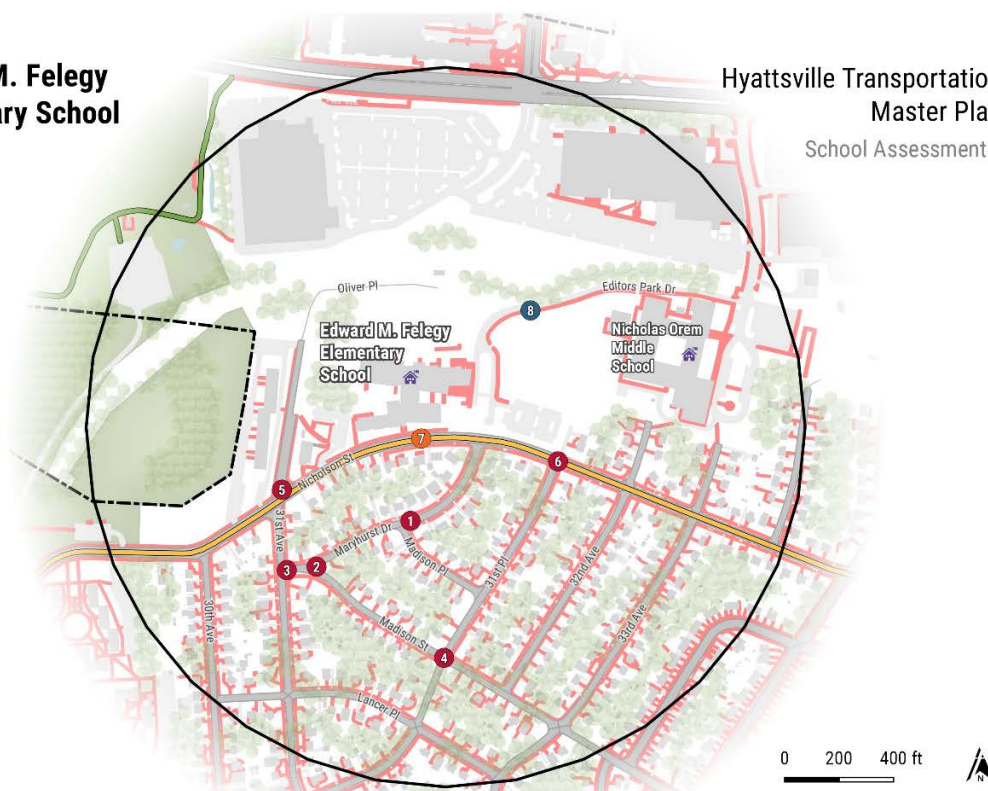
Other

- Natural Surface Trail
- Sidewalk / Path
- Park

- 1/4 Mile Buffer
- City Boundary

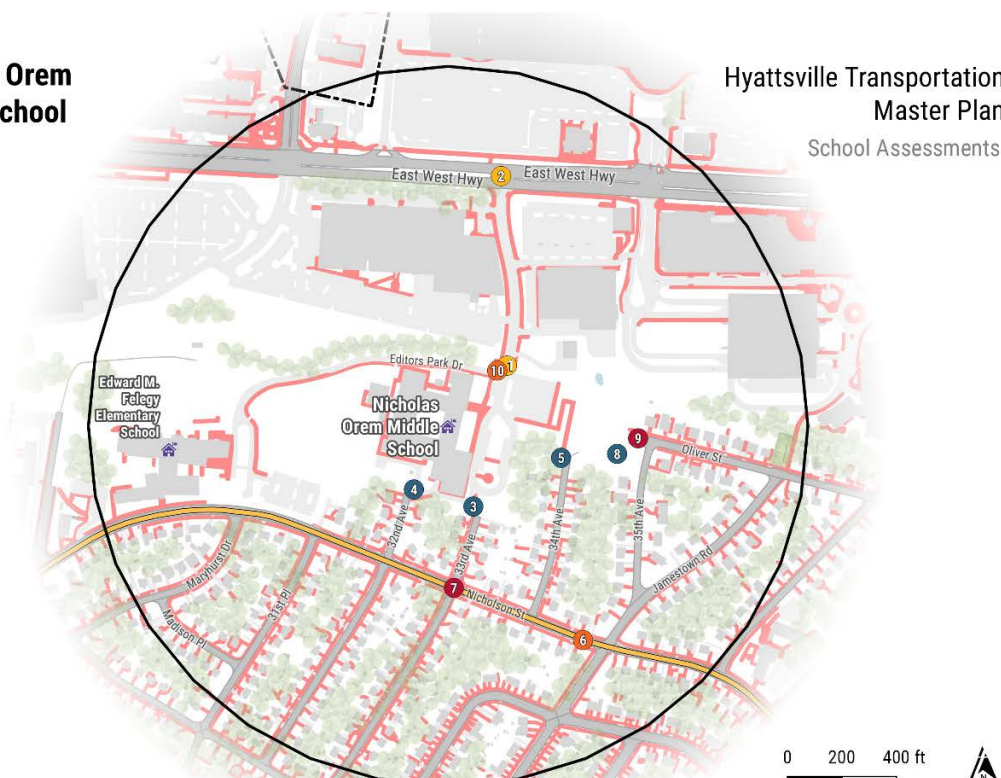
Edward M. Felegy Elementary School

Hyattsville Transportation Master Plan School Assessments



Nicholas Orem Middle School

Hyattsville Transportation Master Plan School Assessments



TooleDesignGroup

- | | | |
|---------------------------------|----------------------------------|-------------------------|
| Issues | Existing Bikeways | Other |
| ● Intersection Deficiency | ● School Zone Signage Deficiency | ● Natural Surface Trail |
| ● Sidewalk and Trail Deficiency | ● Signal Deficiency | ● Sidewalk / Path |
| ● Other Deficiency | ● Hard Surface Trail | ● 1/4 Mile Buffer |
| | ● Bike Lane | ● City Boundary |
| | ● Bike Route | ● Park |

The most common issues found throughout each of the schools included:

- Missing or deficient curb ramps
- Obstructions along sidewalks
- Narrow sidewalks
- Cars parked too close to intersections, decreasing pedestrian visibility
- Relatively high vehicle speeds along major walking/biking routes
- Missing “School Zone” speed restrictions signage
- Existing crosswalks below minimum MUTCD width standards.

As part of this process, the Study Team also developed a list of recommendations addressing specific issues around each of the schools. A list of prioritized projects per school was also developed. A complete report including observations and recommendations per school can be found in Appendix I-A.

6. Existing Motor Vehicle Traffic Conditions

The Study Team assessed the operation of existing traffic conditions related motor vehicle circulation in various corridors throughout the City. The following section provides a summary of conditions.

Historical Traffic Data

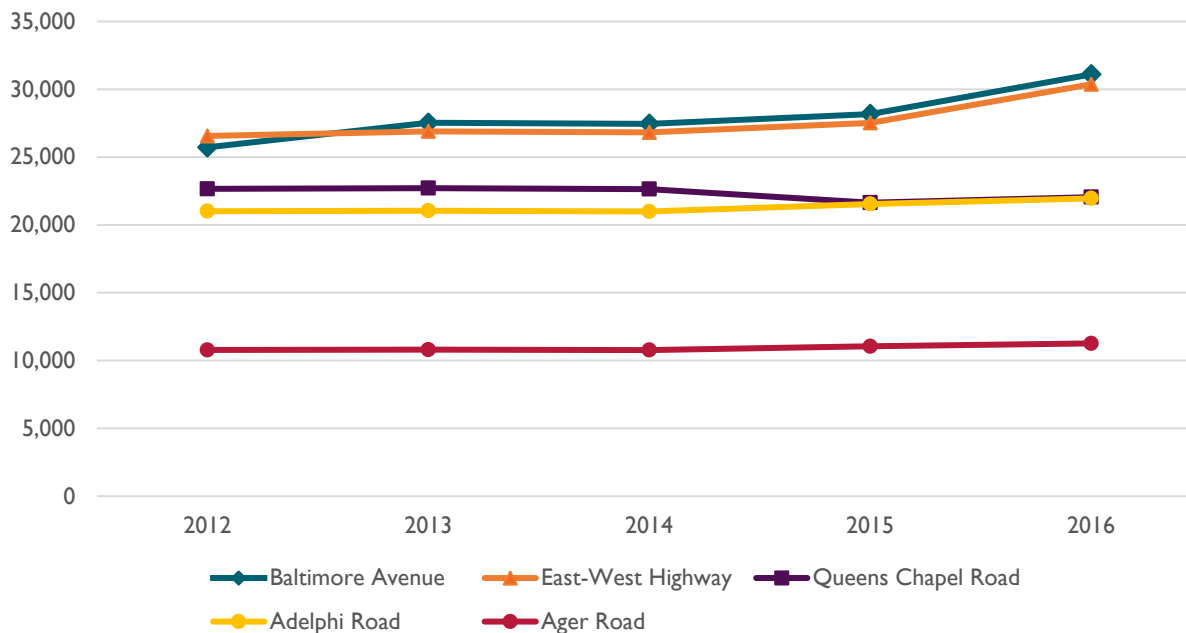
To understand the changes in traffic volumes and patterns over time, annual average daily traffic (AADT) volumes were examined for 2010 through 2016 – the most recent data available. AADTs are determined to provide an estimate of the daily bi-directional volumes at specific locations or along specific roadway corridors. AADT data was obtained from the SHA Statewide AADT Points website. AADT data was not available for Adelphi Road and Ager Road from 2010 to 2011. A summary of the historical AADT volumes is provided in Table 5. The trend of the AADT from 2012 to 2016 is illustrated in Figure 33 below.

Table 5: Historical AADT Data

Road	Location	Annual Average Daily Traffic Volumes						
		2010	2011	2012	2013	2014	2015	2016
Baltimore Avenue (US 1)	North of Hamilton Street	25,830	25,931	25,722	27,530	27,451	28,172	31,100
East-West Highway (MD 410)	West of Queens Chapel Road	26,660	26,771	26,562	26,900	26,821	27,522	30,370
Queens Chapel Road (MD 500)	South of East-West Highway	24,312	21,120	22,660	22,711	22,642	21,640	22,051
Adelphi Road	North of East-West Highway	N/A	N/A	21,010	21,051	20,992	21,543	21,954
Ager Road	Between Hamilton Street and Queens Chapel Road	N/A	N/A	10,780	10,801	10,772	11,053	11,264

The data shows that traffic volumes remained relatively steady between 2010 and 2014. Traffic volumes began to show growth in 2015, with the exception of traffic volumes on Queens Chapel Road, which decreased. Significant growth was observed from 2015 to 2016 on Baltimore Avenue (Route 1) and East-West Highway (MD 401). The historical AADT volumes will be used to help develop future traffic growth rates for the study area network.

Figure 35: Historical Annual Average Daily Traffic Volumes



Traffic Data Collection

The following sections describe the traffic data collected for the purposes of conducting a traffic analysis as part of this study.

Traffic Counts and Volumes

The following traffic data were acquired for 33 study intersections featured in Figure 34:

- Intersection turning movement count (TMC) data, including passenger vehicle, heavy vehicle, pedestrian, and bicycle counts
- Multiuse trail volume data

The TMCs for the 33 study intersections were acquired from two sources, including SHA and TMC data that was collected as a part of this study. TMCs were collected for this study for intersections where either the previous counts were not available, or the previous counts were conducted prior to 2015. As such, 23 of the 33 intersection TMCs were collected on October 11, 2017. A summary of TMC data is shown in Table 6.

The AM and PM peak hours for each study intersections are noted in Table 6. Based on the collected traffic data, the AM and PM peak periods were identified as 7:00 AM to 9:00 AM and 4:30 PM to 6:30 PM. This was determined by combining the traffic volumes for all intersections encompassing a majority of the individual intersection peak hours. Different corridors have slightly different peak hours. As such, the peak hour volumes at each intersection were analyzed to represent the highest through-put volumes. The existing 2017 peak hour volumes at the study intersections are provided in Appendix I-B.

Figure 36: Study Intersections



Table 6: Intersection Traffic Count Summary

ID	Intersection	Date Collected	AM Peak Hour	PM Peak Hour	Source
1	MD 500/Ager Rd	9/14/2016	7:45-8:45	5:15-6:15	SHA
2	MD 500/Hamilton St	10/11/2017	7:15-8:15	4:30-5:30	Collected
3	MD 500/Nicholson St	10/11/2017	7:15-8:15	4:30-5:30	Collected
4	MD 500/Belcrest Rd/Queensbury Rd	10/11/2017	8:00-9:00	4:45-5:45	Collected
5	MD 208(Hamilton St)/38th Ave	10/11/2017	7:30-8:30	4:45-5:45	Collected
6	US 1/MD 410	3/8/2016	7:15-8:15	5:15-6:15	SHA
7	US 1/Queensbury Rd	10/11/2017	7:45-8:45	4:30-5:30	Collected
8	US 1/Oglethorpe Rd	10/11/2017	7:30-8:30	5:00-6:00	Collected
9	US 1/Madison St	10/11/2017	7:30-8:30	5:00-6:00	Collected
10	US 1/Jefferson St	10/11/2017	7:30-8:30	5:00-6:00	Collected
11	US 1/Hamilton St (North)	10/11/2017	7:30-8:30	5:00-6:00	Collected
12	US 1/Hamilton St (South)/US 1 Alt	8/18/2015	7:45-8:45	5:30-6:30	SHA
13	US 1 Alt/Decatur St	10/11/2017	7:30-8:30	4:45-5:45	Collected
14	US 1 Alt/Charles Armentrout St	10/11/2017	7:30-8:30	4:45-5:45	Collected
15	US 1/Gallatin St	10/11/2017	7:30-8:30	4:45-5:45	Collected
16	US 1/Farragut St	10/11/2017	7:15-8:15	4:45-5:45	Collected
17	US 1/43rd Ave	10/11/2017	7:30-8:30	4:45-5:45	Collected
18	US 1/42nd Place/Crittenden St	10/11/2017	7:30-8:30	4:45-5:45	Collected
19	US 1/41st Place/Charles Armentrout Dr	8/18/2015	7:15-8:15	5:30-6:30	SHA
20	MD 410/Toledo Terrace	2/25/2016	7:15-8:15	5:15-6:15	SHA
21	MD 410/Editors Park Dr	10/5/2016	7:00-8:00	5:45-6:45	SHA
22	MD 410/Prince George's Plaza	10/4/2016	8:45-9:45	5:00-6:00	SHA
23	MD 410/Belcrest Rd	7/7/2015	8:15-9:15	5:15-6:15	SHA
24	MD 410/MD 500/Adelphi Rd	3/23/2016	8:00-9:00	6:00-7:00	SHA
25	Ager Rd/23rd Ave	10/11/2017	7:00-8:00	5:00-6:00	Collected
26	Ager Rd/Oglethorpe St/School	10/11/2017	7:00-8:00	5:00-6:00	Collected
27	Ager Rd/Nicholson St	10/11/2017	7:00-8:00	5:00-6:00	Collected
28	Ager Rd/Hamilton St	10/11/2017	7:30-8:30	5:00-6:00	Collected
29	Toledo Rd/Belcrest Rd	10/11/2017	8:00-9:00	5:00-6:00	Collected
30	Adelphi Rd/Belcrest Rd	10/11/2017	7:45-8:45	4:45-5:45	Collected
31	Adelphi Rd/Campus Dr	4/5/2016	7:30-8:30	4:30-5:30	SHA
32	Adelphi Rd/Toledo Rd	10/11/2017	7:30-8:30	5:00-6:00	Collected
33	Hamilton St/40th Pl/39th Ave	10/11/2017	7:30-8:30	5:00-6:00	Collected

Volume Balancing

As the TMC data were obtained from different sources, the traffic volumes were evaluated so that there are no irrational discrepancies between close-by intersections. The potential

imbalance of peak hour traffic volumes between intersections was assessed for all the study intersections. The following section summarizes the volume balancing strategies.

- In general, volumes are consistent for intersections where data were collected at the same time or where there are no mid-block driveways.
- Where counts were collected at different times, volume balancing was conducted to match the newly counted traffic data if applicable.
- If there were multiple driveways between adjacent study intersections, the magnitude of the imbalance was assessed to determine if the imbalance could be attributed to the driveways.

The list of intersection volumes that were balanced are shown in Table 7 below.

Table 7: Intersection Volumes Balanced		
Intersections	AM	PM
US 1/MD 410	x	x
US 1/Jefferson St		x
US 1/Hamilton St (South)/US 1 Alt	x	x
US 1 Alt/Decatur St		x
US 1/Farragut St	x	
US 1/41st Place/Charles Armentrout Dr	x	x
MD 410/Editors Park Dr	x	x
MD 410/Prince George's Plaza	x	x
MD 410/Belcrest Rd	x	x
MD 410/MD 500/Adelphi Rd	x	x
Ager Rd/23rd Ave	x	x

Intersection Traffic Control and Lane Configurations

The existing traffic controls are described in Table 8 and detailed intersection lane configurations are provided in Appendix I-C. Intersection lane configurations were verified using 2017 Google Maps.

Traffic Signal Timings

Existing signal timings for most of the study intersections were obtained either from the 2010 Hyattsville Transportation Study (within the Synchro models prepared for that study) or from SHA in PDF format. Signal timing data for the remaining intersections under Prince George's County jurisdiction were obtained from recent traffic studies in the area. PDF files were compared against the Synchro models to verify the correct intersection coding and operations. The Synchro files were used to import signal timing parameters into the Vistro models.

Table 8: Study Intersections and Existing Traffic Control

ID	Intersection	Traffic Control
1	MD 500/Ager Rd	SHA Signalized
2	MD 500/Hamilton St	SHA Signalized
3	MD 500/Nicholson St	SHA Unsignalized
4	MD 500/Belcrest Rd/Queensbury Rd	SHA Signalized
5	MD 208(Hamilton St)/38th Ave	SHA Signalized
6	US 1/MD 410	SHA Signalized
7	US 1/Queensbury Rd	SHA Signalized
8	US 1/Oglethorpe Rd	SHA Signalized
9	US 1/Madison St	SHA Signalized
10	US 1/Jefferson St	SHA Signalized
11	US 1/Hamilton St (North)	SHA Signalized
12	US 1/Hamilton St (South)/US 1 Alt	SHA Signalized
13	US 1 Alt/Decatur St	SHA Signalized
14	US 1 Alt/Charles Armentrout St	SHA Unsignalized
15	US 1/Gallatin St	SHA Signalized
16	US 1/Farragut St	SHA Signalized
17	US 1/43rd Ave	SHA Unsignalized
18	US 1/42nd Place/Crittenden St	SHA Signalized
19	US 1/41st Place/Charles Armentrout Dr	SHA Signalized
20	MD 410/Toledo Terrace	SHA Signalized
21	MD 410/Editors Park Dr	SHA Unsignalized
22	MD 410/Prince George's Plaza	SHA Signalized
23	MD 410/Belcrest Rd	SHA Signalized
24	MD 410/MD 500/Adelphi Rd	SHA Signalized
25	Ager Rd/23rd Ave	County Signalized
26	Ager Rd/Oglethorpe St/School	County Signalized
27	Ager Rd/Nicholson St	County Unsignalized
28	Ager Rd/Hamilton St	County Signalized
29	Toledo Rd/Belcrest Rd	County Signalized
30	Adelphi Rd/Belcrest Rd	County Signalized
31	Adelphi Rd/Campus Dr	County Signalized
32	Adelphi Rd/Toledo Rd	County Signalized
33	Hamilton St/40th Pl/39th Ave	County Unsignalized

Measures of Effectiveness

Traffic analysis was performed using PTV Vistro, a macroscopic analysis tool that uses Highway Capacity Manual (HCM) methodologies to calculate operational performance at signalized and unsignalized intersections. Because Vistro is deterministic program, it is not capable of capturing queue spillover and impact to adjacent intersections. As a result, operational results for some of the closely-spaced intersections do not represent field observed operations. This section documents such conditions. The following measures of effectiveness (MOE) were considered for this study:

- Movement/approach/overall intersection delay;
- Movement/approach/overall intersection Level of Service (LOS); and
- 95th-percentile movement/approach queues, based on Vistro HCM outputs

The Highway Capacity Manual (HCM) defines LOS for signalized and unsignalized intersections as a function of average vehicle control delay. LOS may be calculated per movement or per approach for any intersection configuration, but overall intersection LOS is defined for signalized and all-way stop-controlled intersections only. Overall intersection LOS is not reported for two-way stop-controlled intersections. Table 9 and Table 10 summarize the different LOS designations for both signalized and unsignalized intersections, respectively, based on vehicle delay and volume to capacity ratio. The existing conditions LOS, delay, and queuing analyses for the AM and PM peak hours are discussed in the following sections.

Table 9: LOS and Delay Thresholds, Signalized Intersections

Level of Service (LOS)	Average Control Delay (seconds)	General Description
A	≤10	Free flow
B	>10-20	Stable flow (slight delays)
C	>20-35	Stable flow (acceptable delays)
D	>35-55	Approaching unstable flow (tolerable delay, occasionally wait through more than one signal cycle before proceeding)
E	>55-80	Unstable flow (intolerable delay)
F	>80	Forced flow (congested and queues fail to clear)

Table 10: LOS and Delay Thresholds, Unsignalized Intersections

Level of Service (LOS)	Average Control Delay (seconds)
A	0-10
B	>10-15
C	>15-25
D	>25-35
E	>35-50
F	>50

In addition to the LOS and delay MOEs, 95th-percentile queues per movement were also evaluated. The 95th percentile queues are particularly useful for traffic operations evaluation, as they represent the maximum queue lengths that are anticipated for 95 percent of the peak hour period at each location while removing potential outliers that may skew the analysis results.

Traffic Operational Results

The existing conditions overall intersection delay and LOS outputs are summarized in Table I I. Figure 35 and Figure 36 provide a summary of existing LOS for AM and PM peak hours at the various study intersections. It should be noted that in vibrant urban environments, it is relatively rare for intersections to operate at LOS B or better during the peak hours. Generally, intersections operating at LOS D or better are considered acceptable, while intersections operating at LOS E and F are cause for concern. The existing conditions volume, delay, and LOS by movement is provided in Appendix I-D. Degraded (LOS E/F) operations for overall intersections and individual movements are highlighted in red. Vistro HCM reports are provided in Appendix I-E.

As shown in Table I I and Appendix I-D more than half of the study intersections currently operate at an overall LOS C or better and with moderate delays for individual movements. However, several intersections experience significant delay due to congestion related to commuting traffic. For intersections that generally operate at acceptable LOS, certain movements (such as left turns) may operate poorly. The 95th percentile queue length for each movement at the intersections were compared with available storage for turn lanes and between adjacent intersections. The results of 95th percentile queues were reported in Appendix I-F. The following section describes the existing traffic operational deficiencies based on delay and 95th-percentile queue results.

Several arterial corridors in the study area serve as regional commuting corridors to destinations beyond the City of Hyattsville. This section describes the traffic operational issues at the study intersections along these major arterial corridors.

Baltimore Avenue (US I) and US I Alternate

Baltimore Avenue serves as a commuter route for drivers traveling between Washington D.C. and points north such as the University of Maryland and suburban Maryland. The right-of-way is constrained on Baltimore Avenue in the study area and some intersections do not contain dedicated left-turn lanes. The intersection spacing and access also impact operations on the corridor, with side streets movements affecting arterial traffic flow. A small number of intersections on Baltimore Avenue or Route I Alternate operate at degraded conditions (LOS E or worse) as described below.

- Baltimore Avenue (Route I)/East-West Highway
- Baltimore Avenue/Route I Alternate/Hamilton Street South
- Route I Alternate/Charles Armentrout Street

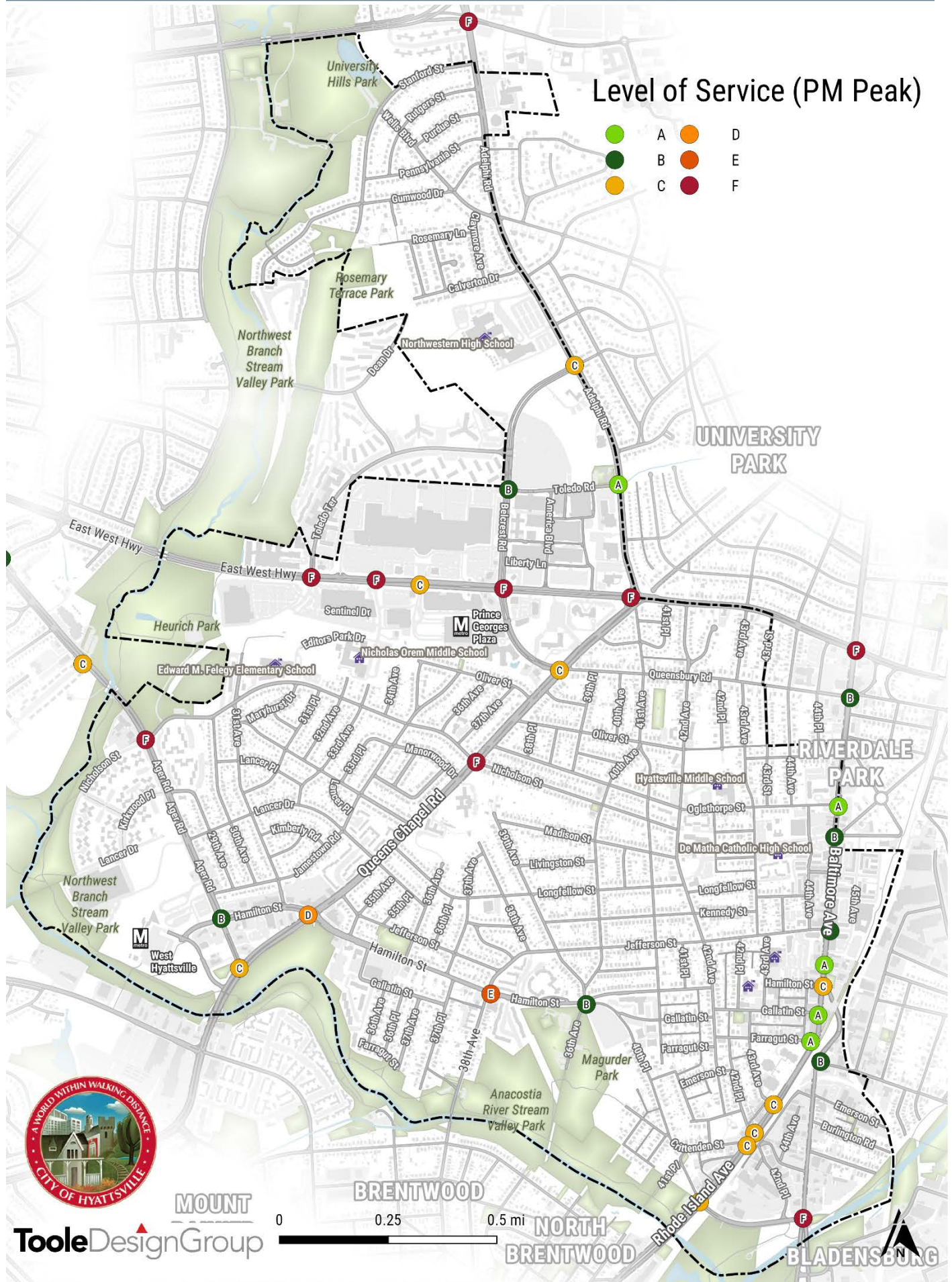
Table I I: Existing (2017) Intersection Delay and LOS

ID	Intersection	Traffic Control	AM Peak Hour Delay	AM Peak Hour LOS	PM Peak Hour Delay	PM Peak Hour LOS
1	MD 500/Ager Rd	SHA Signalized	25.8	C	22.2	C
2	MD 500/Hamilton St	SHA Signalized	28.6	C	40.9	D
3	MD 500/Nicholson St	SHA Unsignalized	Significant	F	Significant	F
4	MD 500/Belcrest Rd/Queensbury Rd	SHA Signalized	18.7	B	25.9	C
5	MD 208(Hamilton St)/38th Ave	SHA Signalized	26.3	C	29.4	C
6	US 1/MD 410	SHA Signalized	72.7	E	112.6	F
7	US 1/Queensbury Rd	SHA Signalized	16.4	B	19.0	B
8	US 1/Oglethorpe Rd	SHA Signalized	10.4	B	5.1	A
9	US 1/Madison St	SHA Signalized	16.2	B	10.2	B
10	US 1/Jefferson St	SHA Signalized	16.7	B	11.4	B
11	US 1/Hamilton St (North)	SHA Signalized	1.4	A	2.0	A
12	US 1/Hamilton St (South)/US 1 Alt	SHA Signalized	234.7	F	53.9	D
13	US 1 Alt/Decatur St	SHA Signalized	20.1	C	12.0	B
14	US 1 Alt/Charles Armentrout St	SHA Unsignalized	Significant	F	Significant	F
15	US 1/Gallatin St	SHA Signalized	3.6	A	1.4	A
16	US 1/Farragut St	SHA Signalized	9.7	A	9.7	A
17	US 1/43rd Ave	SHA unsignalized	32.0	D	20.1	C
18	US 1/42nd Place/Crittenden St	SHA Signalized	20.8	C	30.9	C
19	US 1/41st Place/Charles Armentrout Dr	SHA Signalized	31.8	C	20.1	C
20	MD 410/Toledo Terrace	SHA Signalized	128.0	F	96.8	F
21	MD 410/Editors Park Dr	SHA Unsignalized	95.9	F	Significant	F
22	MD 410/Prince George's Plaza	SHA Signalized	12.2	B	21.8	C
23	MD 410/Belcrest Rd	SHA Signalized	48.7	D	91.0	F
24	MD 410/MD 500/Adelphi Rd	SHA Signalized	85.9	F	155.4	F
25	Ager Rd/23rd Ave	County Signalized	26.7	C	17.1	B
26	Ager Rd/Oglethorpe St/School	County Signalized	28.7	C	34.9	C
27	Ager Rd/Nicholson St	County Unsignalized	260.0	F	Significant	F
28	Ager Rd/Hamilton St	County Signalized	11.4	B	17.1	B
29	Toledo Rd/Belcrest Rd	County Signalized	8.7	A	13.9	B
30	Adelphi Rd/Belcrest Rd	County Signalized	17.7	B	51.3	D
31	Adelphi Rd/Campus Dr	County Signalized	28.8	C	105.5	F
32	Adelphi Rd/Toledo Rd	County Signalized	5.9	A	9.2	A
33	Hamilton St/40th Pl/39th Ave	County Unsignalized	10.3	B	12.3	B

Figure 37: Level of Service (AM Peak)



Figure 38: Level of Service (PM Peak)



Despite operating at acceptable LOS, the following intersections experience significant queue lengths.

- Baltimore Avenue (Route 1)/Madison Street (southbound queue spills back to Oglethorpe Street during AM peak hour)
- Rhode Island Avenue (Route 1)/Crittenden Street (both peak hours)

The intersection of Baltimore Avenue (Route 1) and East-West Highway (MD 410) is among the worst-performing intersections in the study area for both peak hours. The oversaturated conditions on all four approaches were attributable to significant through/right-turn volumes and high left-turn volumes opposing the through volumes. The northbound 95th-percentile queue spillover impacts Queensbury Road intersection during both AM and PM peak hours. The eastbound 95th-percentile queue extends close to the Queens Chapel Road intersection during PM peak hour.

The lack of dedicated southbound left-turn lane on Baltimore Avenue at US 1 Alternate caused significant delay and queuing during both AM and PM peak hour. The heavy use of Route 1 Alternate as a bypass route resulted in large turning volumes between Baltimore Avenue (north) at Route 1 Alternate. During both peaks, the northbound and southbound queue on Baltimore Avenue spills back to adjacent intersections constantly and northbound right-turn queue from Route 1 Alternate extends as far as Decatur Street.

The unsignalized intersection of Route 1 Alternate and Charles Armentrout Street has significant operational and safety issues. Large eastbound right-turn and northbound left-turn volumes travel through this intersection during both the AM and PM peaks; the eastbound left-turn on Charles Armentrout Street is stop-controlled and does not have sufficient gap time to cross the intersection due to large volumes of opposing movements and sight distance which is constrained by the adjacent bridge structure.

The 95th percentile queues on eastbound Crittenden Street at Baltimore Avenue were significant due to large volume of turning traffic under the skewed intersection. The Crittenden Street approach operates as split phases with the 42nd Place approach, which reduces the green-time allowed for both approaches, resulting in longer queues.

Queens Chapel Road and Adelphi Road

Queens Chapel Road serves as a commuter route for traffic heading in and out of Washington, D.C. and Adelphi Road serves as a major route to and from I-495 and the University of Maryland. As such, high demand corresponds to increased congestion. As shown in Table 8, the three intersections listed below experience significant delays in the AM and/or PM peak hour.

- Campus Drive/Adelphi Road
- East-West Highway (MD 410)/Queens Chapel Road (MD 500)/Adelphi Road
- Queens Chapel Road (MD 410)/Nicholson Street

The following intersections, despite operating at acceptable LOS, experience extensive queues.

- Belcrest Road/ Adelphi Road
- Queens Chapel Road/Hamilton Street

At the Campus Drive/Adelphi Road intersection, the southbound 95th-percentile queue on Adelphi Road spills back to University Boulevard; the other three approaches also have extensive queues and significant delay (LOS E/F) during the PM peak hour. The signal operates a reservice for the southbound approach phase (served twice in one signal cycle) to help clear queues in the short block on Adelphi Road between Campus Drive and University Boulevard, which adversely impacts other approaches during PM peak.

At Belcrest Road/Adelphi Road intersection, eastbound left-turn and southbound right-turn carry significant amount of traffic and the 95th-percentile queue on eastbound Belcrest Road was extensive during the PM peak hour. This could potentially be due to Belcrest Road being used to avoid the East-West Highway (MD 410) and Adelphi Road intersection.

East-West Highway (MD 410)/Queens Chapel Road (MD 500)/Adelphi Road intersection is among the most congested intersections in the study area, particularly during the PM peak hours. The Adelphi Road and Queens Chapel Road (MD 500) approaches experience significant delays (LOS F in both peaks). The eastbound approach operates at LOS F during the PM peak hours. The northbound approach does not have dedicated left-turn lane and the split phasing results in high delay on Adelphi Road. The skewed roadway geometry on Adelphi Road and Queens Chapel Road (MD 500) creates safety and operational challenges. Southbound left-turn and westbound left-turn movements and opposing through movements carry significant volumes. As such, the northbound and eastbound 95th-percentile queues extend close to the adjacent intersections during the PM peak hour.

Queens Chapel Road (MD 500)/Nicholson Street intersection is currently unsignalized and Nicholson Street experienced significant delay due to stop control and lack of adequate gap in the north-south traffic stream.

The eastbound and westbound approach 95th-percentile queues on Hamilton Street at Queens Chapel Road (MD 500) spill back to adjacent intersection in both the AM and PM peak hours.

East-West Highway (MD 410)

East-West Highway serves a major east-west corridor for commuters heading to and from Silver Spring and for non-work related trips to the Mall at Prince George's. The majority of the intersections in the study area on East-West Highway operate at congested conditions, either on the mainline or on the side streets due to long cycle length and high volumes.

When crossing other major roadways, such as Queens Chapel Road (MD 500) and Baltimore Avenue (Route 1), East-West Highway experiences high delay. As previously described, the eastbound and westbound approaches operate at congested traffic conditions (LOS E/F) in both peak hours. The queues that are not cleared in one signal cycle adversely affect signal progression under oversaturated conditions.

At minor streets, such as at Toledo Terrace and Editors Park Drive, East-West Highway occupies a significant amount of green time, and side streets delays are significant. Toledo Terrace has permissive phasing for left-turn movements while Editors Park Drive is stop-controlled. The intersection of Belcrest Road and East-West Highway operates at oversaturated conditions due to high volumes on all four approaches and split phasing on Belcrest Road. The operation of the intersection may be improved by removing the split phase for the minor street approaches.

During PM peak hour, 95th percentile queues on East-West Highway at most of the study intersections extend close to adjacent intersections. During both peaks, side street queues are significant, particularly on Toledo Terrace and southbound Belcrest Road, which extend beyond Freedom Way.

Ager Road

Ager Road/Nicholson Street intersection may warrant a signal due to high delay and significant queues on the stop-controlled side street. Nicholson Street provides access to Edward M. Felegy Elementary School and Nicholas Orem Middle School which results in high traffic peaks during pick-up and drop-off times. The 95th-percentile queue at the eastbound right-turn lane of the Ager Road and Queens Chapel Road (MD 500) extends close to Hamilton Street during the AM peak hour due to heavy commuting traffic into D.C.

Exceptions in Operational Results

Field observations contradict the operational performance of the following three intersections derived from Vistro:

- Baltimore Avenue/Hamilton Street (north) (both peak hours)
- East-West Highway/Editors Park Drive (both peak hours)
- East-West Highway/Prince George's Mall (PM peak hour)

Significant congestion was observed in the field, with vehicles experiencing signal delay over multiple cycles, even though the VISTRO analysis showed that the intersection was operating at LOS D or better. This can be attributed to several factors:

- Vistro analyses are based upon TMC data, which only captures vehicles passing through the intersection during the peak hour. When demand is much higher in the field and the intersection is not able to process the actual vehicular demand during the peak hour, the TMC data collected can reflect lower traffic volume than the demand at the intersection.
- Vistro cannot accurately capture lane utilization or lane changing behavior. In the field, there was much higher utilization of lanes at certain intersections due to upstream and/or downstream lane configuration, which can result in longer delays and queues.
- Vistro analyses do not account for downstream congestion of adjacent intersections. Queue spillback from these adjacent facilities reduces actual throughput, increasing delay.

7. Origin-Destination Analysis

To understand traffic patterns throughout the city based on the number of local and regional destinations and trip generators, the Study Team conducted an origin-destination analysis using data collected by StreetLight Data, a company that aggregates cell-phone data for specific use in transportation planning. The company uses the anonymized location and time stamp of data to calculate origin and destination of the cell-phone user. The company produces an index based on normalized traffic volumes that can be used to compare traffic volumes across different areas (or zones) in a city. It should be noted that the index is not actual traffic count and does not represent the actual number of trips. The analysis helped answer the following questions:

- In general, what percent of trips originate in Hyattsville and end outside the City?
- For travel within the City, which origin-destination (OD) pair has the highest trips? Are these short distance trips, and, therefore, could they potentially be converted to walking or bicycling trips?
- For local streets with high traffic volumes (as identified by Wikimap respondents), which OD pair has the most impact on these specific roadways?

The following section describes the methodology used and the findings from this research.

Methodology:

To begin with the analysis, the Study Team worked with city staff to define context-sensitive origin-destination zones that considered land use and roadway functional classification. A total of 16 zones, as shown in Figure 37, were identified. Two additional zones were added to capture trips traveling to/from Maryland and the DC/Virginia areas. In addition to these zones, a set of filters were created to distill traffic data along following corridors:

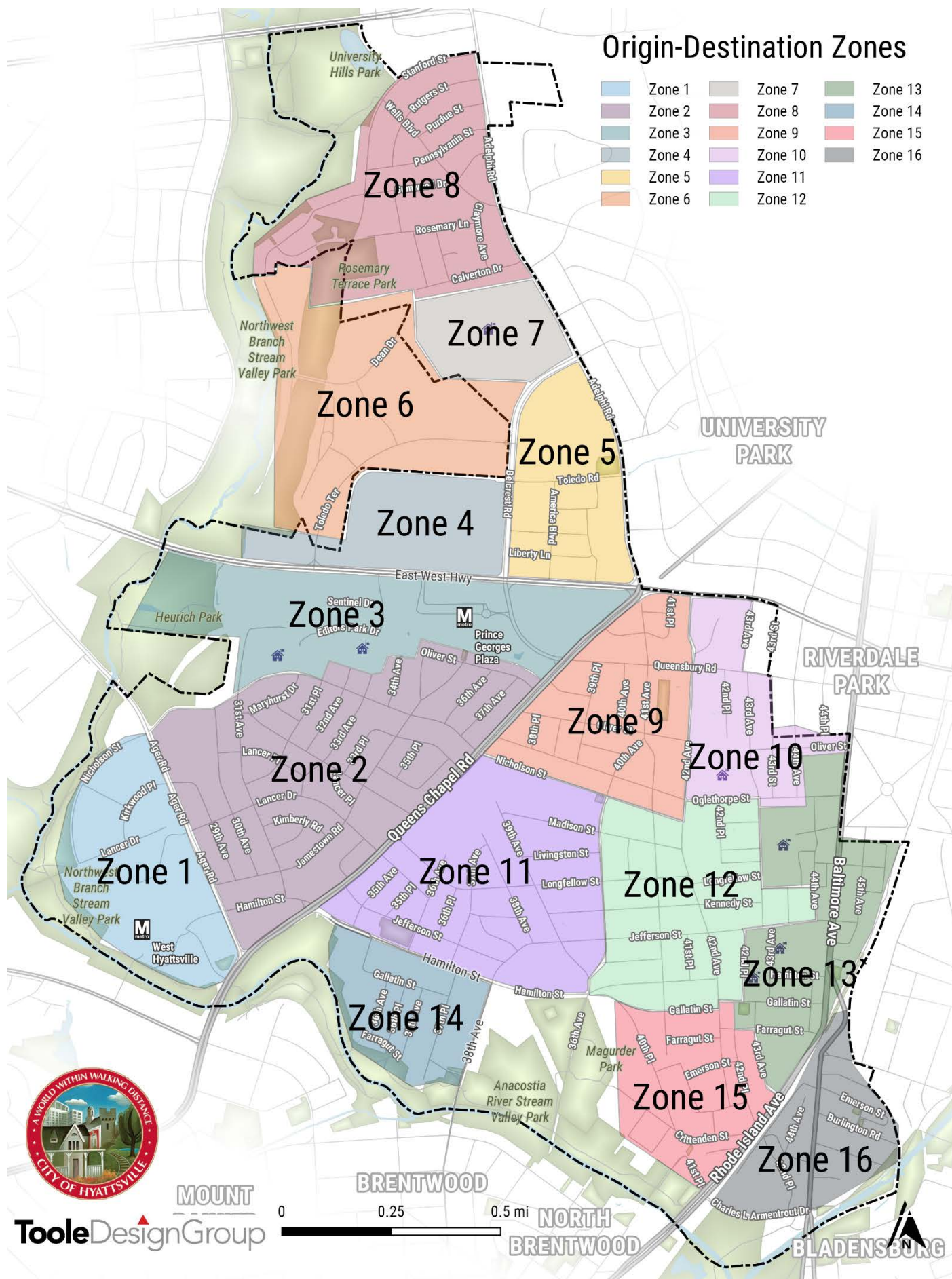
- | | |
|--|-------------------------------|
| • Ager Road (2 filters) | • Queensbury Road (2 filters) |
| • Nicholson Street, west of Queens Chapel Road (2 filters) | • Hamilton Street (2 filters) |
| • Nicholson Street, east of Queens Chapel Road | • Jefferson Street |
| • Belcrest Road, north of Hwy 410 | • Hamilton Street |
| • Belcrest Road, south of Hwy 410 | • 40 th Place |
| | • 42 nd Avenue |
| | • 43 rd Avenue |

StreetLight data were obtained for 12-month period, from September 2016 to August 2017. To assess the travel pattern during a regular work-day, average daily data from Monday to Friday were analyzed. Furthermore, in an effort to understand after-work travel pattern, data between the hours of 6:00 and 9:00 pm were also analyzed.

Results

To better understand the travel patterns within the City, the results have been organized in to two area-based groups: regional and local.

Figure 39: Origin-Destination Zones for Analysis



Regional Results

Regional travel patterns were obtained by averaging the OD rates for each of the 16 internal zones in the City with the two external zones that represented D.C./Virginia and Maryland. The average rates were used to understand the aggregated regional travel pattern of residents and visitors of Hyattsville. Figure 38 shows an example regional travel pattern of one of the internal zones (shown in Blue) showing high (Red) origin rate for Maryland and low (Green) origin rate for DC/Virginia. Table 12 shows the average origin rate showing percentage of trips from Hyattsville to the two external zones, as well as to other zones within Hyattsville.

Figure 40: Example Regional Travel Pattern of One of the Internal Zones (Blue)

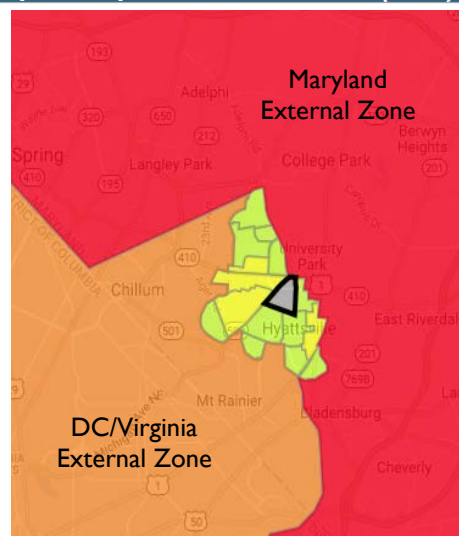


Table 12: Average Origin Rates

	To Hyattsville	To DC + Virginia	To Maryland
From Hyattsville, daily avg.	15.1%	32.9%	52.0%
From Hyattsville, 6-9pm, M-F	16.2%	30.6%	53.3%

The results of the regional trip analysis showed that during an average weekday approximately 15 percent of all trips originating within the city, end within the city. During the after-work hours (6:00 to 9:00 p.m.) the trend continued with only approximately 16 percent of traffic traveling inside Hyattsville. Conversely, most trips originating in Hyattsville were going to Washington, DC or Virginia (32.9 percent) or other destinations in Maryland (52 percent).

Table 13 below lists the destination rates, by percent, of trips ending in Hyattsville. The table shows that during an average weekday, of all traffic travelling to Hyattsville, approximately 16 percent comes from within Hyattsville. In the evening (6:00 to 9:00 pm) hours during the weekday, approximately 19 percent of traffic comes from within Hyattsville.

The result of the regional travel pattern analysis indicates that even during the after-work hours, vast majority of Hyattsville residents and visitors do not spend time in the City.

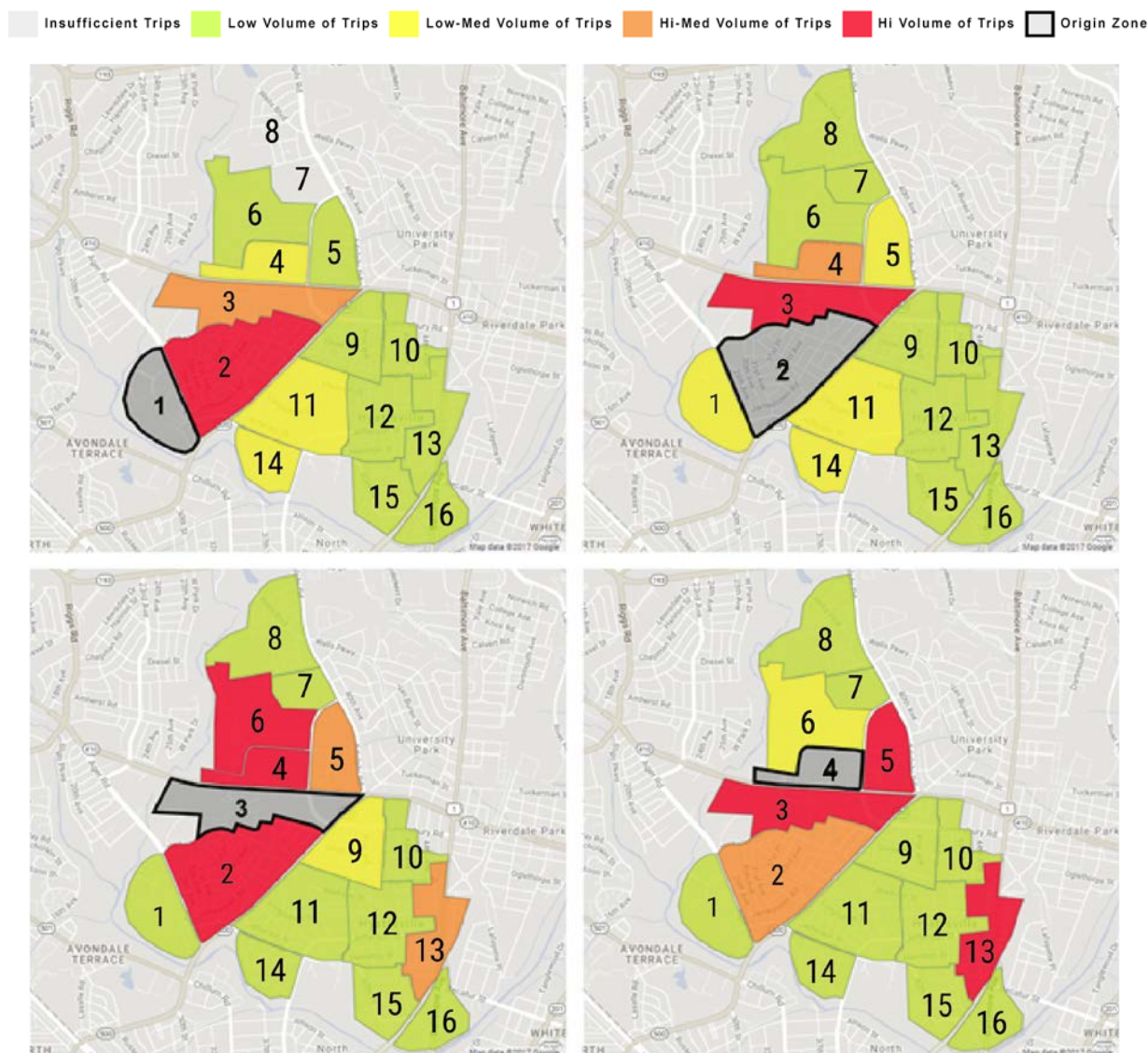
Table 13: Average Destination Rates

	From Hyattsville	From DC + Virginia	From Maryland
To Hyattsville, daily avg.	16.2%	33.5%	50.9%
To Hyattsville, 6-9pm, M-F	18.6%	33.5%	47.9%

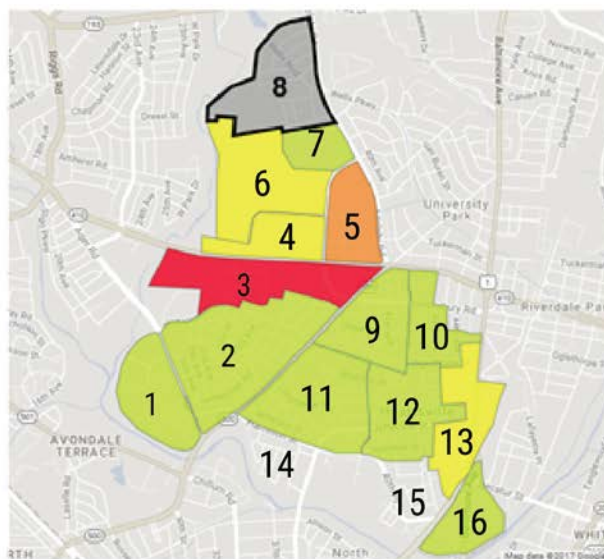
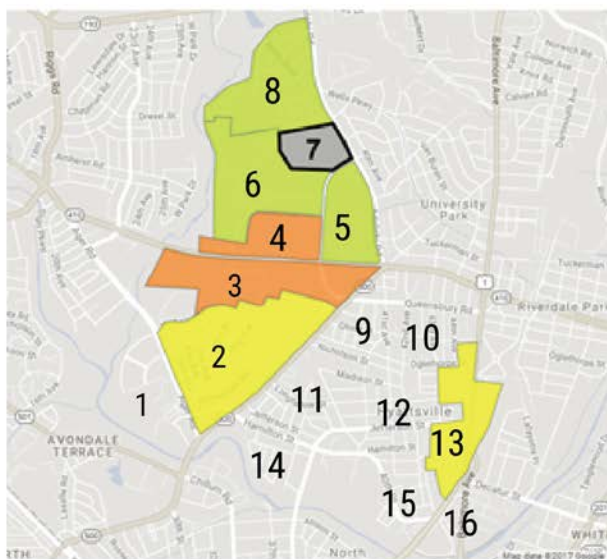
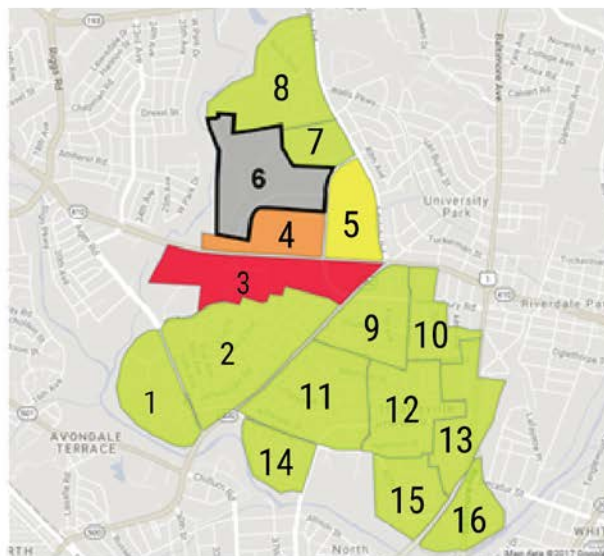
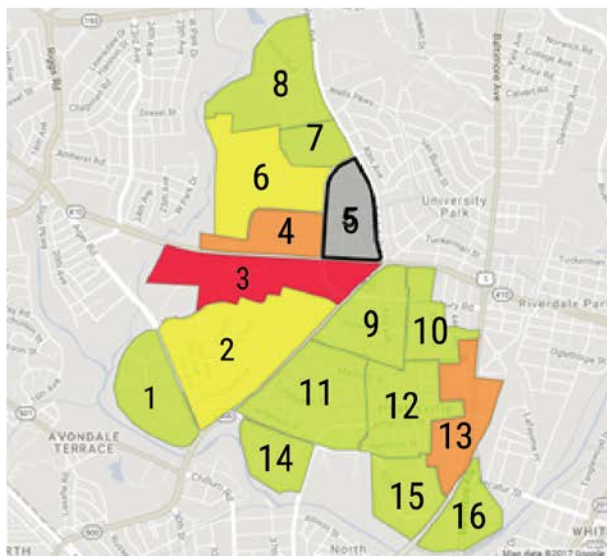
Local Results:

The following maps show the proportion of trips originating in a defined zone in the City and ending in others. In the maps, the grey areas represent the origin zones and the colored areas show the proportion of trips ending in the other areas. Areas with the highest proportion of trips are noted in red. For instance, the first map indicates that, of the traffic originates in Zone 1 and travels within Hyattsville, the highest volume of trips end in Zone 2.

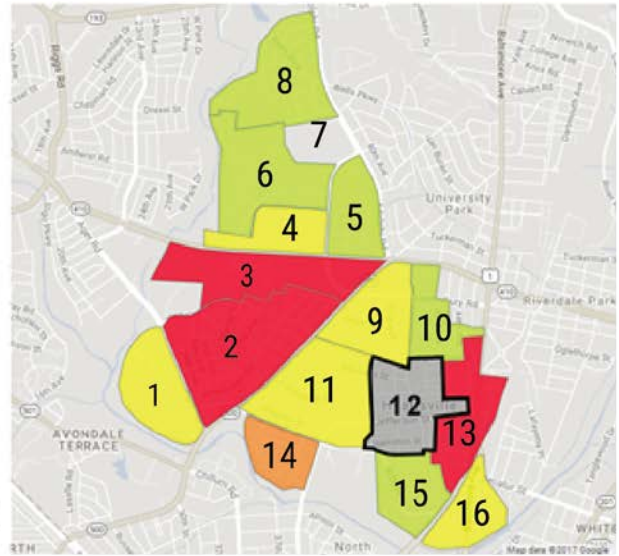
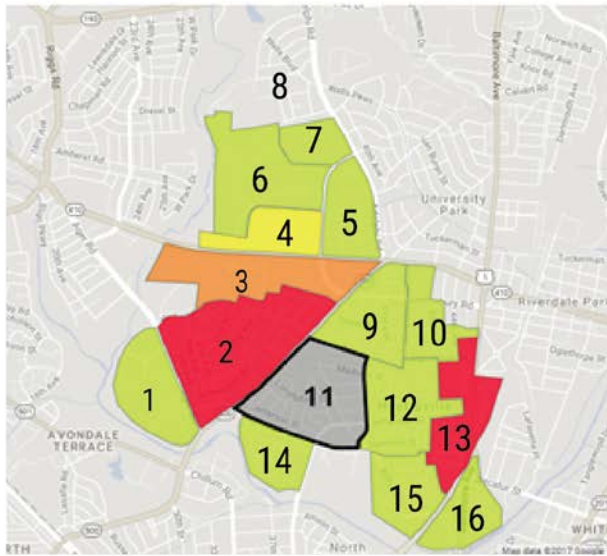
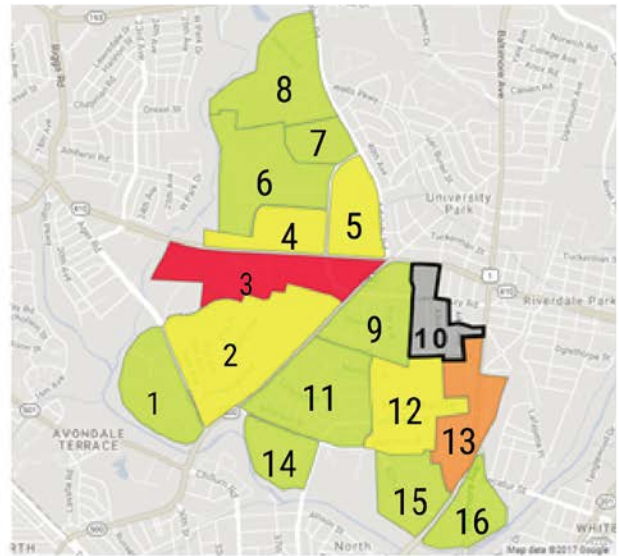
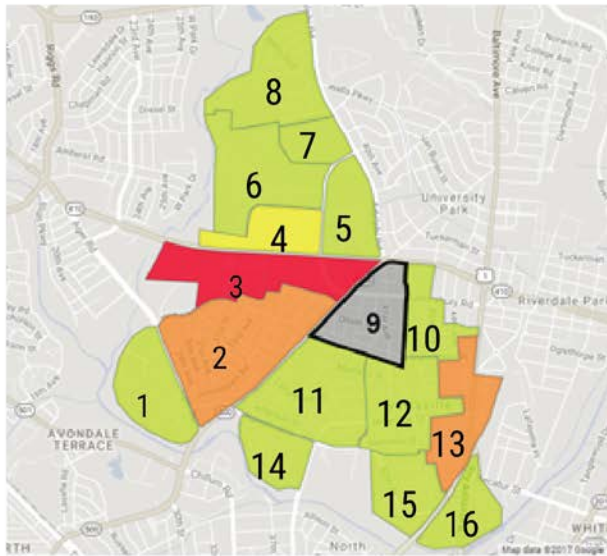
Figure 41: Proportion of Trips Originating in a Zone (bold) that Ended in Another Zone

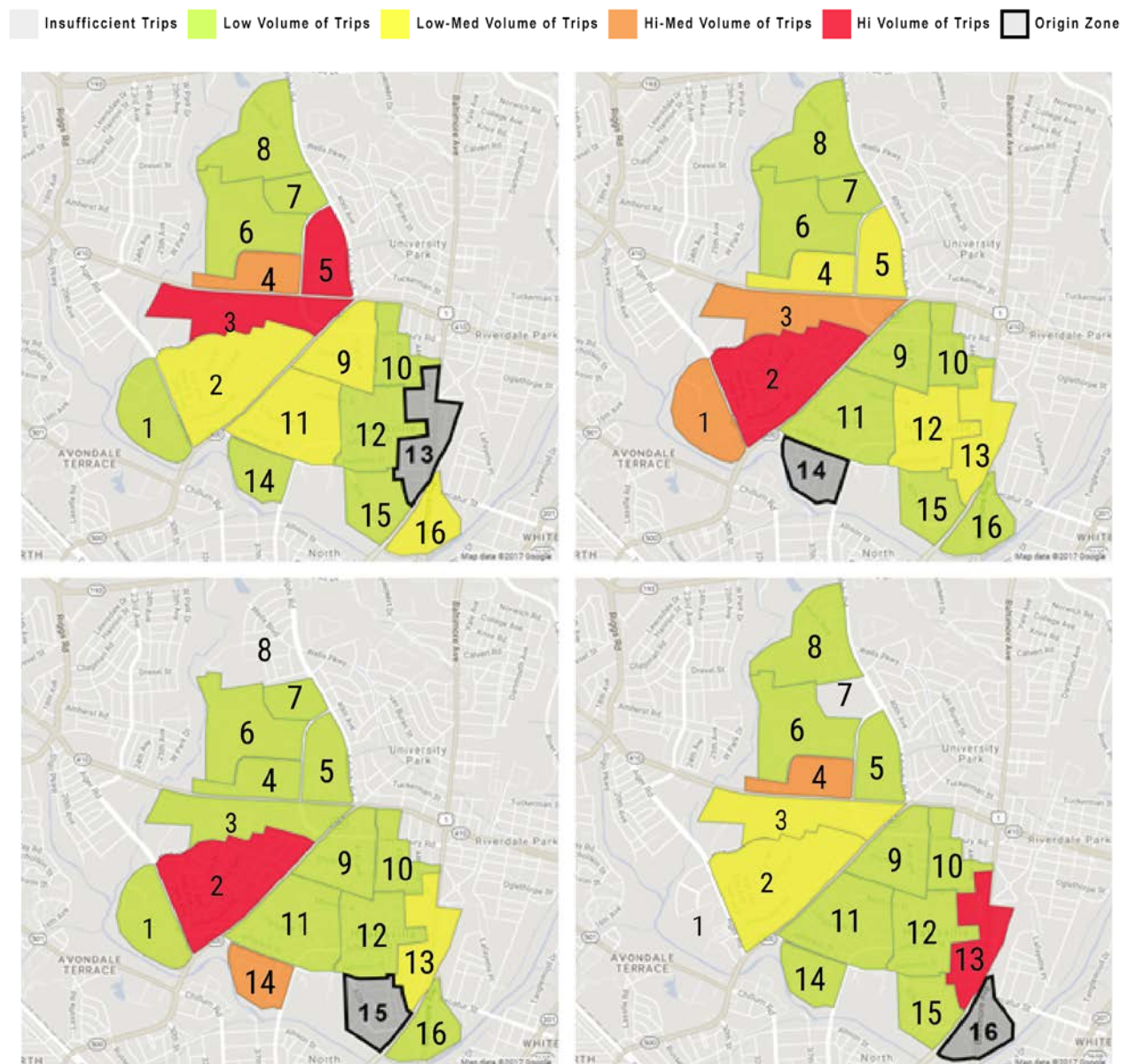


Insufficient Trips
 Low Volume of Trips
 Low-Med Volume of Trips
 Hi-Med Volume of Trips
 Hi Volume of Trips
 Origin Zone



Insufficient Trips
 Low Volume of Trips
 Low-Med Volume of Trips
 Hi-Med Volume of Trips
 Hi Volume of Trips
 Origin Zone





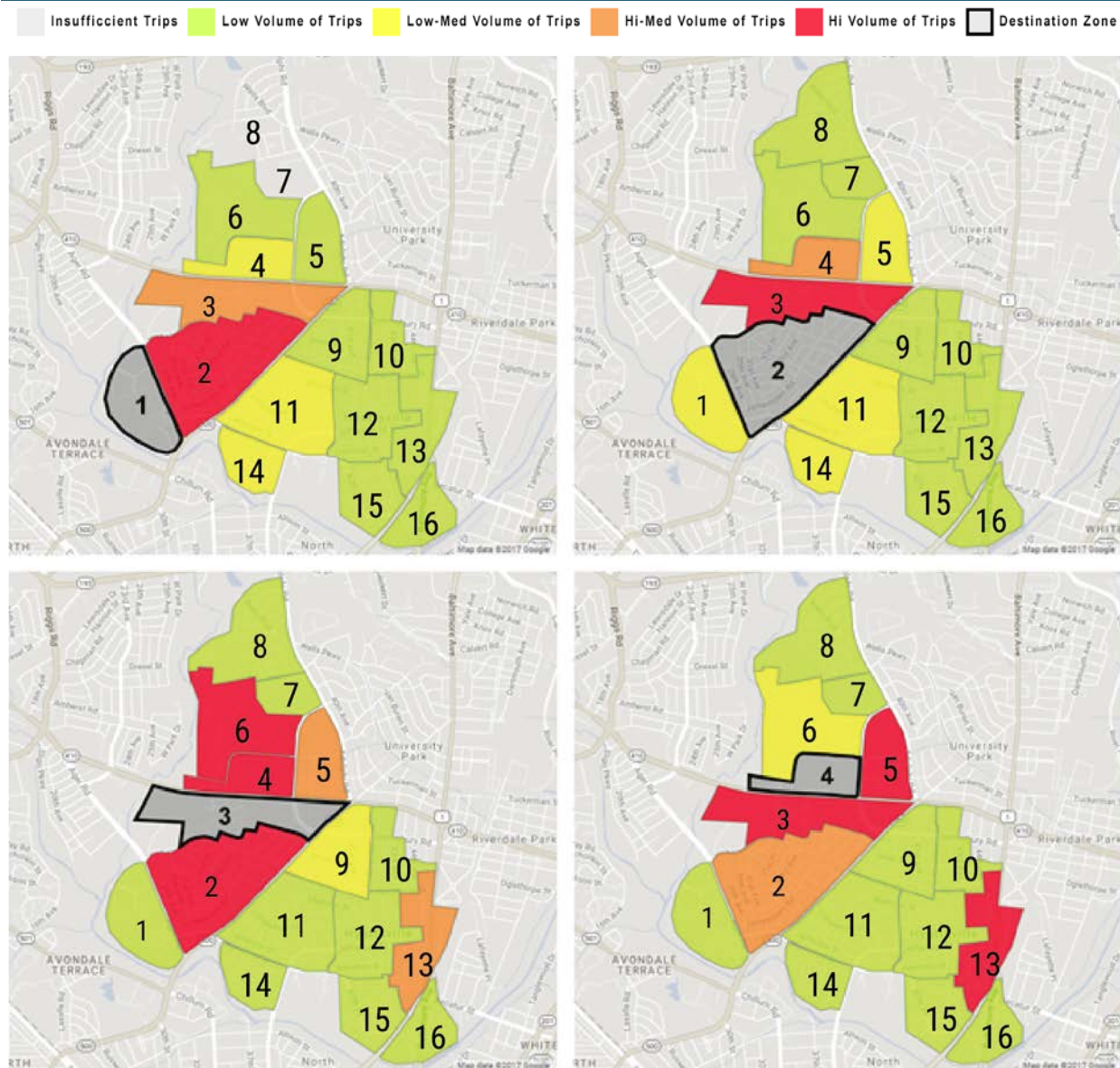
The data shows that a vast number of contiguous zones within the city receive the highest proportion of trips between each other. These are short trips that can potentially be made by walking or biking. The data also indicates that the most common destinations in the City are Zones 2, 3, 4, 5, and 13. These zones include the following local and regional destinations:

- Prince George's Plaza and Hyattsville Metro stations (Zone 1 and 3);
- Downtown Hyattsville/Arts District (Zone 13);
- The Mall at Prince George's (Zone 4)
- University Town Center (Zone 5)

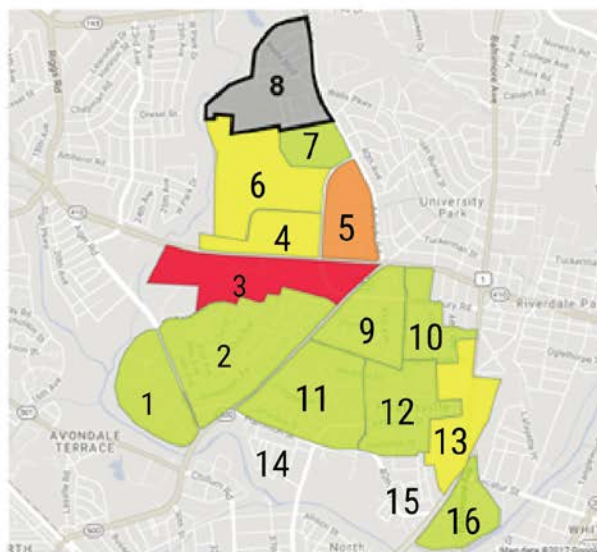
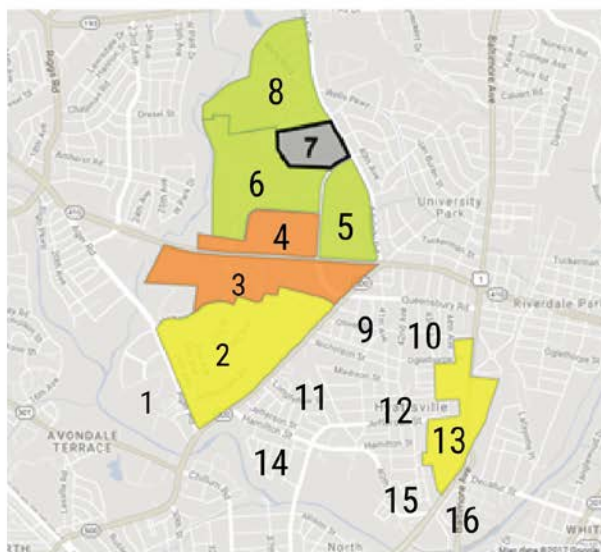
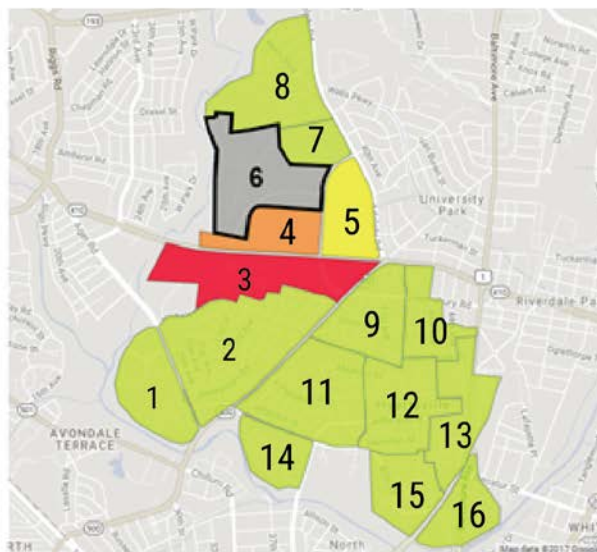
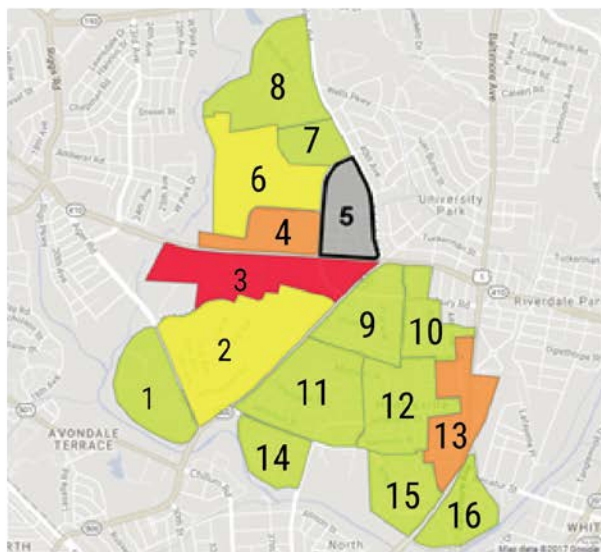
Destination Maps

The following maps show the proportion of trips ending in a defined zone in the City and originating in others. In the maps, the grey areas represent the destinations zones and the colored areas show the proportion of trips originating from n the other areas. Areas with the highest proportion of trips are noted in red.

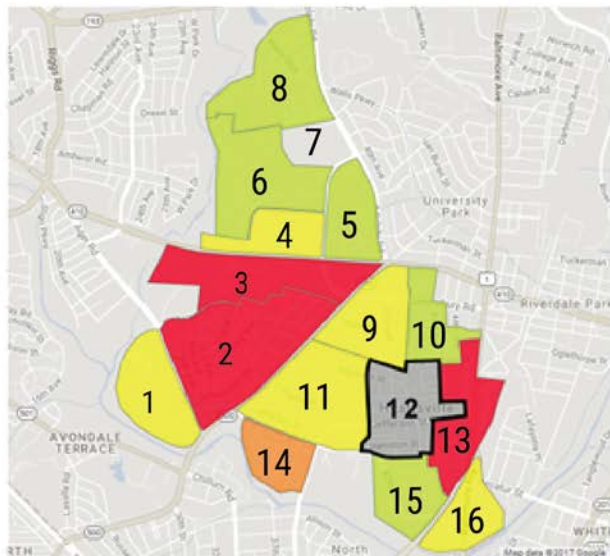
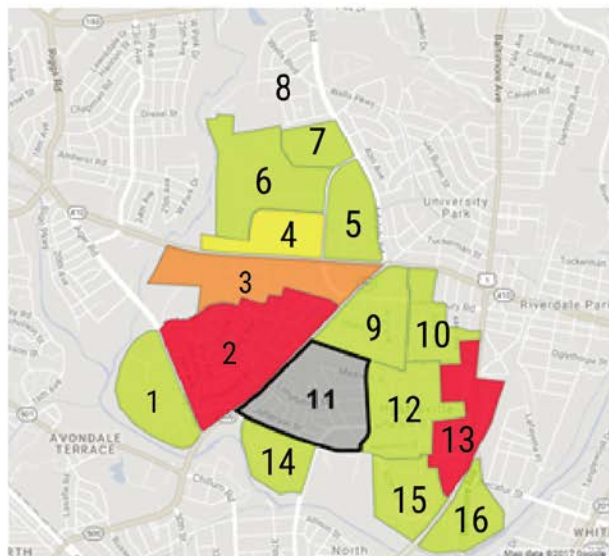
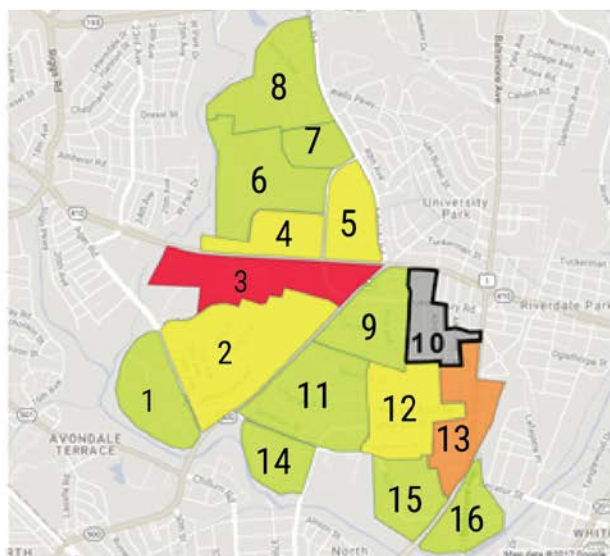
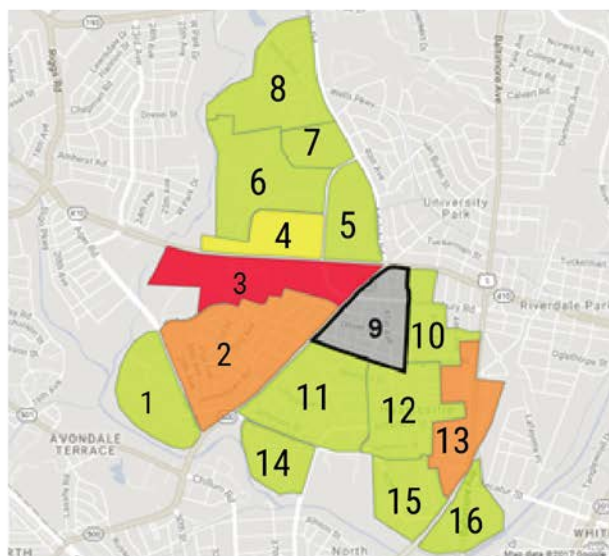
Figure 42: Proportion of Trips Ending in a Zone (bold) that Originated in Another Zone (colored)



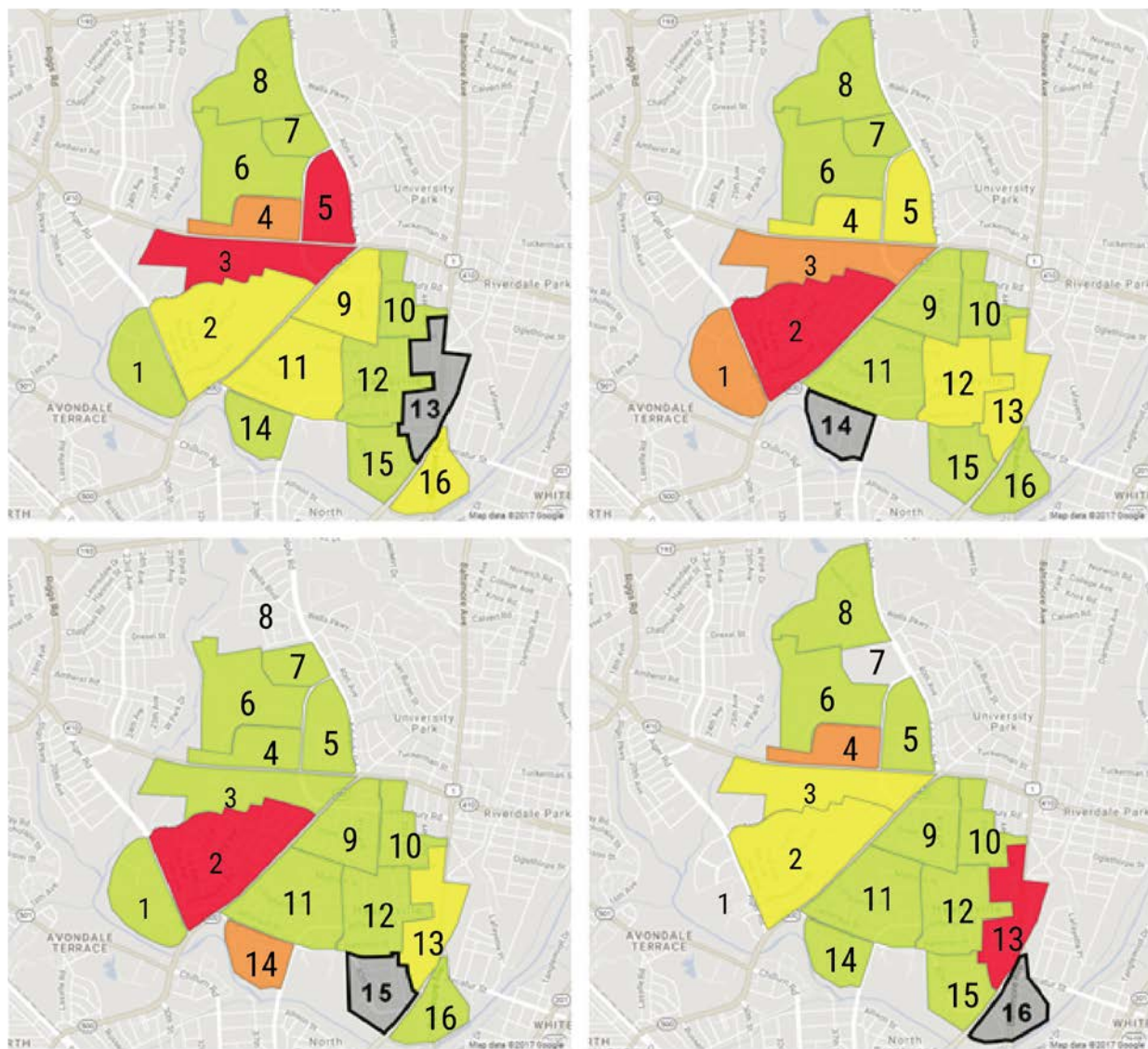
Insufficient Trips
 Low Volume of Trips
 Low-Med Volume of Trips
 Hi-Med Volume of Trips
 Hi Volume of Trips
 Destination Zone



Insufficient Trips
 Low Volume of Trips
 Low-Med Volume of Trips
 Hi-Med Volume of Trips
 Hi Volume of Trips
 Destination Zone



Insufficient Trips
 Low Volume of Trips
 Low-Med Volume of Trips
 Hi-Med Volume of Trips
 Hi Volume of Trips
 Destination Zone



Similar to the origin data, the destination data shows that contiguous zones within the city are often the starting point for trips. Often, destination traffic originates from Zones 2, 3 and 13. Interestingly, these zones are also the most common destinations.

Local Street Travel Pattern Assessment

The StreetLight data was used to assess the travel pattern of local streets in Hyattsville that were identified by Wikimap survey respondents as being a barrier to travel. The assessment identified the OD zone pairs that contributed the most amount of traffic to the local street segment. The information, in conjunction with other data, will be used to determine potential mitigation measures to improve mobility between the OD zone pair. Among other specific local street segments, the assessment identified Belcrest Road, south of East-West Highway, and Queensbury Road as having the greatest volume of traffic from different zones within the City. The following is a summary of specific corridors:

Belcrest Road

Belcrest Road, south of the East-West Highway (MD 410), experiences the highest traffic volumes than any other local street from traffic within Hyattsville. Most of the traffic volume originates in Zone 3, with high traffic volume on Belcrest ending in Zone 2 and Zone 13. Zone 2 is located just south of Zone 3 where enhanced bicycle and pedestrian connection can potentially reduce traffic on Belcrest Road. Zone 13 is located along US 1 and would require extended multimodal connection to help reduce traffic on Belcrest Road.

Hamilton Street

Zone 14 produces high traffic volumes on Hamilton Street. Trips originating in Zone 14 and traveling to Zone 2, or originating in Zone 2 and traveling to Zone 14, produce the highest volumes of traffic on the street. Queens Chapel Road acts as a barrier to bicycling and pedestrian connection between Zone 14 and Zone 2.

Jefferson Street

Trips originating in Zone 2 and ending in Zone 13, or trips originating in Zone 13 and ending in Zone 11 have a higher traffic volume that uses Jefferson streets, than other origin-destination trips. Hence, potential enhanced multimodal connection between Zone 13 and Zone 11 would likely reduce traffic volume on Jefferson St.

Nicholson Street - East of Queens Chapel Road

Nicholson Street, east of Queens Chapel Road, has high traffic volume from trips originating in Zone 2. However, most of the traffic that leaves Zone 2 and passes through Queens Chapel Road either ends in Zone 9 or Zone 13.

Nicholson Street - West of Queens Chapel Road

Nicholson Street, west of Queens Chapel Road, has high traffic volume from trips originating in Zone 2. Vehicles use this segment of Nicholson Street to either travel within Zone 2, or to travel to Zone 3.

Queensbury Road

Queensbury Road experiences its highest traffic volumes from trips originating in Zone 3 and ending in Zone 13 and for trips originating in Zone 13 and ending in Zone 4. This data suggests that providing enhanced multimodal connection between Zone 13 and Zone 3 and 4, would likely reduce traffic volume on Queensbury Road.

Appendix I-A

School Infrastructure Assessment Reports

Appendix I-B

Existing Traffic Volume Figures

Appendix I-C

Existing Lane Configuration

Appendix I-D
Existing LOS by Movement

Appendix I-E

Existing Intersection Operational Results VISTRO HCM Report

Appendix I-F

Existing 95th-Pecentile Queue and Storage

Hyattsville Transportation Plan

Vistro File: K:\...\2037 AM Build.vistro
Report File: K:\...\2037 AM_Build.pdf

Scenario: Base Scenario
8/1/2018

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	MD 500/Ager Rd	Signalized	HCM 2010	NEB Left	0.892	35.1	D
2	MD 500/Hamilton St	Signalized	HCM 2010	SEB Thru	0.844	59.2	E
3	MD 500/Nicholson St	Signalized	HCM 2010	SEB Left	0.526	9.1	A
4	MD 500/Belcrest Rd/Queensbury Rd	Signalized	HCM 2010	EB Right	0.801	28.8	C
5	MD 208(Hamilton St)/38th Ave	Signalized	HCM 2010	SWB Right	0.861	38.7	D
6	US 1/MD 410	Signalized	HCM 2010	SB Right	0.929	80.1	F
7	US 1/Queensbury Rd	Signalized	HCM 2010	WB Left	0.532	17.7	B
8	US 1/Oglethorpe Rd	Signalized	HCM 2010	EB Left	0.524	11.9	B
9	US 1/Madison St	Signalized	HCM 2010	EB Right	0.639	16.9	B
10	US 1/Jefferson St	Signalized	HCM 2010	EB Right	0.757	19.9	B
11	US 1/Hamilton St (North)	Two-way stop	HCM 2010	WB Right	0.003	14.1	B
12	US 1/Hamilton St (South)/US 1 Alt	Signalized	HCM 2010	NWB Right	0.893	58.7	E
13	US 1 Alt/Decatur St	Signalized	HCM 2010	WB Right	0.746	44.4	D
14	US 1 Alt/Charles Armentrout St	Signalized	HCM 2010	NB Left	0.730	32.8	C
15	US 1/Gallatin St	Signalized	HCM 2010	EB Left	0.339	3.9	A
16	US 1/Farragut St	Signalized	HCM 2010	EB Left	0.347	10.0	A
17	US 1/43rd Avenue	Two-way stop	HCM 6th Edition	SEB Left	0.047	35.6	E
18	US 1/42nd Place/Crittendon St	Signalized	HCM 2010	NEBL2	0.879	33.6	C
19	US 1/41st Place/Charles Armentrout Drive	Signalized	HCM 2010	NEB Left	0.946	42.9	D
20	MD 410/Toledo Terrace	Signalized	HCM 2010	NB Left	0.612	31.8	C
21	MD 410/Editors Park Dr	Signalized	HCM 2010	NB Right	0.418	5.2	A
22	MD 410/Prince George's Plaza	Signalized	HCM 2010	NB Right	0.388	13.3	B
23	MD 410/Belcrest Rd	Signalized	HCM 2010	EB Left	0.686	41.4	D
24	MD 410/MD 500/Adelphi Rd	Signalized	HCM 2010	NB Right	0.850	46.4	D
25	Ager Rd/23rd Ave	Signalized	HCM 6th Edition	SWB Left	0.579	35.9	D
26	Ager Rd/Oglethorpe St/School	Signalized	HCM 6th Edition	NWB Right	0.420	39.2	D

27	Ager Rd/Nicholson St	Signalized	HCM 2010	NEB Left	0.465	16.3	B
28	Ager Rd/Hamilton St	Signalized	HCM 2010	EB Left	0.841	19.7	B
29	Toledo Rd/Belcrest Rd	Signalized	HCM 2010	EB Left	0.375	8.6	A
30	Adelphi Rd/Belcrest Rd	Signalized	HCM 2010	SWB Thru	0.783	23.7	C
31	Adelphi Rd/Campus Dr	Signalized	HCM 2010	WB Left	0.473	31.8	C
32	Adelphi Rd/Toledo Rd	Signalized	HCM 2010	EB Right	0.424	6.3	A
33	Hamilton St/40th Pl/39th Ave	Roundabout	HCM 2010	NWB Thru		8.1	A
4281	New Intersection	Two-way stop	HCM 6th Edition	NB Thru	0.000	12.6	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report

Intersection 1: MD 500/Ager Rd

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 35.1
 Level Of Service: D
 Volume to Capacity (v/c): 0.892

Intersection Setup

Name	Ager Rd.		MD 500		MD 500	
Approach	Southbound		Northeastbound		Southwestbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	400.00	100.00	100.00	300.00
Speed [mph]	35.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		No	

Volumes

Name	Ager Rd.		MD 500		MD 500	
Base Volume Input [veh/h]	0	386	303	827	1353	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	2.00	2.00	3.85
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	58	17	21	85	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	444	320	848	1438	12
Peak Hour Factor	1.0000	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	121	87	230	391	3
Total Analysis Volume [veh/h]	0	483	348	922	1563	13
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	9		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Split	Split
Signal group	0	4	1	0	2	0
Auxiliary Signal Groups		1,4				
Lead / Lag	-	-	Lead	-	-	-
Minimum Green [s]	0	5	5	0	20	0
Maximum Green [s]	0	30	43	0	66	0
Amber [s]	0.0	3.0	4.0	0.0	5.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	0	20	45	0	55	0
Vehicle Extension [s]	0.0	3.0	3.0	0.0	5.0	0.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Rest In Walk		No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.0	0.0	4.0	0.0
Minimum Recall		No	No		No	
Maximum Recall		No	No		Yes	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	230.0	0.0
Detector Length [ft]	0.0	30.0	30.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	R	L	C	R
C, Cycle Length [s]	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	4.00	4.00
g_i, Effective Green Time [s]	47	28	62	62
g / C, Green / Cycle	0.40	0.23	0.51	0.51
(v / s)_i Volume / Saturation Flow Rate	0.31	0.20	0.44	0.01
s, saturation flow rate [veh/h]	1583	1774	3547	1547
c, Capacity [veh/h]	627	408	1818	793
d1, Uniform Delay [s]	31.55	44.32	25.51	14.39
k, delay calibration	0.34	0.12	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.20	5.58	5.58	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.85	0.86	0.02
d, Delay for Lane Group [s/veh]	37.75	49.90	31.09	14.43
Lane Group LOS	D	D	C	B
Critical Lane Group	Yes	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	12.93	10.31	19.45	0.18
50th-Percentile Queue Length [ft/ln]	323.23	257.81	486.16	4.44
95th-Percentile Queue Length [veh/ln]	18.83	15.58	26.68	0.32
95th-Percentile Queue Length [ft/ln]	470.65	389.48	666.96	7.99

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	37.75	49.90	0.00	31.09	14.43
Movement LOS		D	D		C	B
d_A, Approach Delay [s/veh]	37.75		49.90		30.95	
Approach LOS	D		D		C	
d_I, Intersection Delay [s/veh]	35.06					
Intersection LOS	D					
Intersection V/C	0.892					

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 2: MD 500/Hamilton St

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 59.2
 Level Of Service: E
 Volume to Capacity (v/c): 0.844

Intersection Setup

Name	MD 500				MD 500			Hamilton St			Hamilton St		
Approach	Northeastbound				Southwestbound			Northwestbound			Southeastbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	1	0	1	1	0	0	0	0	1
Pocket Length [ft]	200.0	100.0	100.0	200.0	220.00	100.00	200.00	200.00	100.00	100.00	100.00	100.00	50.00
Speed [mph]	40.00				40.00			35.00			35.00		
Grade [%]	0.00				0.00			0.00			0.00		
Crosswalk	Yes				Yes			Yes			Yes		

Volumes

Name	MD 500				MD 500			Hamilton St			Hamilton St		
Base Volume Input [veh/h]	2	23	608	128	95	949	89	302	420	89	110	378	31
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.63	2.00	2.00	2.63	2.27	2.11	2.00	2.00	2.27	3.85
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	21	0	22	85	3	0	10	5	12	35	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	23	629	128	117	1034	92	302	430	94	122	413	31
Peak Hour Factor	0.920	0.920	0.920	0.920	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	6	171	35	32	281	25	82	117	26	33	112	8
Total Analysis Volume [veh/h]	2	25	684	139	127	1124	100	328	467	102	133	449	34
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	1	1	6	6	5	2	2	3	8	8	7	4	4
Auxiliary Signal Groups													
Lead / Lag	Lead	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	20	20	5	20	20	5	5	5	5	5	5
Maximum Green [s]	13	13	42	42	30	42	42	19	25	25	19	25	25
Amber [s]	4.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	4.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	18	18	48	48	18	48	48	24	30	30	24	30	30
Vehicle Extension [s]	3.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk			No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall		No	No		No	No		No	No		No	No	
Maximum Recall		No	Yes		No	Yes		No	No		No	No	
Pedestrian Recall		No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	30.0	30.0	5.0	5.0	5.0	5.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.00	4.00	0.00	4.00	4.00	0.00	3.00	0.00	3.00
g_i, Effective Green Time [s]	60	48	48	60	52	52	49	36	49	26
g / C, Green / Cycle	0.50	0.40	0.40	0.50	0.43	0.43	0.41	0.30	0.41	0.21
(v / s)_i Volume / Saturation Flow Rate	0.04	0.19	0.09	0.14	0.32	0.06	0.26	0.32	0.13	0.26
s, saturation flow rate [veh/h]	639	3547	1574	922	3547	1574	1284	1804	1049	1835
c, Capacity [veh/h]	277	1428	634	443	1543	685	420	539	267	389
d1, Uniform Delay [s]	19.50	26.54	23.49	17.56	28.05	20.46	29.03	42.09	28.70	47.31
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.50	0.50	0.48	0.13	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.15	1.15	0.80	1.62	3.05	0.45	13.39	53.46	1.78	129.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.10	0.48	0.22	0.29	0.73	0.15	0.78	1.06	0.50	1.24
d, Delay for Lane Group [s/veh]	19.66	27.69	24.29	19.18	31.11	20.91	42.43	95.55	30.48	176.33
Lane Group LOS	B	C	C	B	C	C	D	F	C	F
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.38	7.26	2.67	2.02	13.42	1.74	8.27	23.56	2.53	25.35
50th-Percentile Queue Length [ft/ln]	9.40	181.40	66.72	50.46	335.44	43.55	206.76	589.01	63.18	633.80
95th-Percentile Queue Length [veh/ln]	0.68	11.67	4.80	3.63	19.42	3.14	12.99	32.65	4.55	37.56
95th-Percentile Queue Length [ft/ln]	16.92	291.85	120.10	90.82	485.62	78.39	324.68	816.24	113.72	938.88

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	19.66	19.66	27.69	24.29	19.18	31.11	20.91	42.43	95.55	95.55	30.48	176.33	176.33
Movement LOS	B	B	C	C	B	C	C	D	F	F	C	F	F
d_A, Approach Delay [s/veh]	26.88				29.23			76.13			144.84		
Approach LOS	C				C			E			F		
d_I, Intersection Delay [s/veh]	59.19												
Intersection LOS	E												
Intersection V/C	0.844												

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 3: MD 500/Nicholson St

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 9.1
 Level Of Service: A
 Volume to Capacity (v/c): 0.526

Intersection Setup

Name	Nicholson St			MD 500			MD 500				Nicholson St		
Approach	Westbound			Northeastbound			Southwestbound				Southeastbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	1	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	150.00	100.00	100.00	150.0	100.0	100.0	100.0	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Crosswalk	Yes			Yes			Yes				Yes		

Volumes

Name	Nicholson St			MD 500			MD 500				Nicholson St		
Base Volume Input [veh/h]	15	59	26	48	912	10	1	11	1111	84	100	10	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	0.00	2.27	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	38	0	0	0	110	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	59	26	48	950	10	1	11	1221	84	100	10	18
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.900	0.900	0.900	0.900	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	16	7	13	264	3	0	3	339	23	28	3	5
Total Analysis Volume [veh/h]	17	66	29	53	1056	11	1	12	1357	93	111	11	20
Presence of On-Street Parking	No		No	No		No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0				0		
Bicycle Volume [bicycles/h]	0			0			0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss
Signal group	0	4	0	5	2	0	0	1	6	0	0	8	0
Auxiliary Signal Groups													
Lead / Lag	-	-	-	Lead	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	5	0	0	5	0
Maximum Green [s]	0	30	0	30	30	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	25	0	10	85	0	0	10	85	0	0	25	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	10	0	0	10	0
Rest In Walk		No			No				No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No		No	No			No	No			No	
Maximum Recall		No		No	No			No	No			No	
Pedestrian Recall		No		No	No			No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	L	C	C	L	C	C	C
C, Cycle Length [s]	38	38	38	38	38	38	38	38
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00
l2, Clearance Lost Time [s]	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	25	20	20	25	19	19	5
g / C, Green / Cycle	0.14	0.65	0.53	0.53	0.65	0.49	0.49	0.14
(v / s)_i Volume / Saturation Flow Rate	0.06	0.09	0.29	0.29	0.02	0.39	0.39	0.12
s, saturation flow rate [veh/h]	1836	614	1863	1856	673	1863	1821	1203
c, Capacity [veh/h]	367	557	987	984	620	913	893	337
d1, Uniform Delay [s]	15.15	4.86	5.98	5.98	3.03	8.26	8.29	16.20
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.46	0.07	0.46	0.47	0.01	1.68	1.77	0.84
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.30	0.10	0.54	0.54	0.02	0.80	0.81	0.42
d, Delay for Lane Group [s/veh]	15.61	4.93	6.44	6.44	3.04	9.94	10.05	17.04
Lane Group LOS	B	A	A	A	A	A	B	B
Critical Lane Group	No	Yes	No	No	No	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.80	0.06	1.73	1.73	0.01	3.52	3.49	1.10
50th-Percentile Queue Length [ft/ln]	19.94	1.44	43.36	43.22	0.34	87.95	87.23	27.43
95th-Percentile Queue Length [veh/ln]	1.44	0.10	3.12	3.11	0.02	6.33	6.28	1.97
95th-Percentile Queue Length [ft/ln]	35.89	2.60	78.06	77.80	0.60	158.31	157.02	49.37

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	15.61	15.61	15.61	4.93	6.44	6.44	3.04	3.04	9.99	10.05	17.04	17.04	17.04
Movement LOS	B	B	B	A	A	A	A	A	A	B	B	B	B
d_A, Approach Delay [s/veh]	15.61			6.37			9.93			17.04			
Approach LOS	B			A			A			B			
d_I, Intersection Delay [s/veh]	9.11												
Intersection LOS	A												
Intersection V/C	0.526												

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: MD 500/Belcrest Rd/Queensbury Rd

Control Type:	Signalized	Delay (sec / veh):	28.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.801

Intersection Setup

Name	Belcrest Road			Queensbury Road			MD 500			MD 500		
Approach	Eastbound			Westbound			Northeastbound			Southwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	150.00	100.00	100.00	100.00	375.00	100.00	100.00	200.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Belcrest Road			Queensbury Road			MD 500			MD 500		
Base Volume Input [veh/h]	61	121	416	38	184	35	349	697	39	27	738	64
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.85	2.38	2.21	3.85	2.38	3.85	2.21	2.08	2.78	3.70	1.97	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	107	0	0	0	18	20	0	0	3	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	61	121	523	38	184	35	367	717	39	27	741	64
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	34	145	11	51	10	102	199	11	8	206	18
Total Analysis Volume [veh/h]	68	134	581	42	204	39	408	797	43	30	823	71
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	6			18			1			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	37.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	4	4	0	8	8	8	1	6	6	5	2	2
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	20	20	0	20	20	20	5	20	20	10	20	20
Maximum Green [s]	40	40	0	40	40	40	40	53	53	40	53	53
Amber [s]	4.0	4.0	0.0	4.0	4.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	2.0	2.0	1.0	2.0	2.0
Split [s]	45	45	0	45	45	45	45	60	60	45	60	60
Vehicle Extension [s]	6.0	6.0	0.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
Minimum Recall		Yes			Yes		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	30.0	30.0	30.0	0.0	0.0	0.0	30.0	30.0	30.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	L	C	C	L	C	C
C, Cycle Length [s]	89	89	89	89	89	89	89	89	89
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	7.00	7.00	7.00	7.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	0.00	5.00	5.00	0.00	5.00	5.00
g_i, Effective Green Time [s]	37	37	37	40	30	30	40	26	26
g / C, Green / Cycle	0.41	0.41	0.41	0.45	0.34	0.34	0.45	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.15	0.37	0.17	0.21	0.23	0.23	0.03	0.24	0.24
s, saturation flow rate [veh/h]	1369	1580	1672	1908	1861	1828	867	1863	1812
c, Capacity [veh/h]	617	650	734	750	631	620	389	537	523
d1, Uniform Delay [s]	17.75	24.48	18.38	18.51	25.26	25.27	15.30	29.89	29.89
k, delay calibration	0.39	0.45	0.15	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.11	15.78	0.48	0.62	1.25	1.27	0.08	3.70	3.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.33	0.89	0.39	0.54	0.67	0.67	0.08	0.84	0.84
d, Delay for Lane Group [s/veh]	18.86	40.26	18.86	19.13	26.50	26.54	15.39	33.60	33.70
Lane Group LOS	B	D	B	B	C	C	B	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.93	13.59	4.05	2.52	7.61	7.49	0.31	8.97	8.74
50th-Percentile Queue Length [ft/ln]	73.25	339.79	101.29	63.12	190.28	187.33	7.82	224.35	218.54
95th-Percentile Queue Length [veh/ln]	5.27	19.64	7.29	4.54	12.14	11.98	0.56	13.89	13.59
95th-Percentile Queue Length [ft/ln]	131.86	490.95	182.32	113.62	303.39	299.56	14.07	347.18	339.76

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	18.86	18.86	40.26	18.86	18.86	18.86	19.13	26.52	26.54	15.39	33.64	33.70
Movement LOS	B	B	D	B	B	B	B	C	C	B	C	C
d_A, Approach Delay [s/veh]	34.74			18.86			24.11			33.05		
Approach LOS	C			B			C			C		
d_I, Intersection Delay [s/veh]	28.77											
Intersection LOS	C											
Intersection V/C	0.801											

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: MD 208(Hamilton St)/38th Ave

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 38.7
 Level Of Service: D
 Volume to Capacity (v/c): 0.861

Intersection Setup

Name				Hamilton St			38th Ave			Hamilton St		
Approach	Northbound			Westbound			Southwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	125.00	100.00	100.00
Speed [mph]	30.00			35.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name				Hamilton St			38th Ave			Hamilton St		
Base Volume Input [veh/h]	167	61	23	46	355	11	23	118	269	96	335	158
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.27	3.33	0.00	3.70	2.00	0.00	0.00	2.22	1.89	1.69	1.88	1.65
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	12	0	0	0	3	0	0	0	0	0	12	45
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	179	61	23	46	358	11	23	118	269	96	347	203
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	50	17	6	13	99	3	6	33	75	27	96	56
Total Analysis Volume [veh/h]	199	68	26	51	398	12	26	131	299	107	386	226
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	5			4			5			6		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	2	8	8	8	6	6	6	4	4	4
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	15	15	20	20	20	15	15	15	20	20	20
Maximum Green [s]	15	45	45	35	35	35	20	20	20	35	35	35
Amber [s]	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	25	50	50	40	40	40	25	25	25	40	40	40
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall	Yes	No			No			No			No	
Maximum Recall	Yes	Yes			Yes			Yes			Yes	
Pedestrian Recall	No	No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	L	C	C	L	C
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	2.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	45	35	35	25	35	35
g / C, Green / Cycle	0.50	0.39	0.39	0.28	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.31	0.06	0.22	0.28	0.11	0.35
s, saturation flow rate [veh/h]	959	793	1853	1639	973	1746
c, Capacity [veh/h]	585	111	721	495	268	679
d1, Uniform Delay [s]	13.51	43.90	21.58	32.61	32.92	25.87
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.04	12.96	3.24	25.06	4.40	17.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.50	0.46	0.57	0.92	0.40	0.90
d, Delay for Lane Group [s/veh]	16.55	56.86	24.83	57.67	37.32	43.25
Lane Group LOS	B	E	C	E	D	D
Critical Lane Group	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	3.88	1.52	7.06	13.03	2.38	14.74
50th-Percentile Queue Length [ft/ln]	96.94	37.93	176.39	325.84	59.46	368.54
95th-Percentile Queue Length [veh/ln]	6.98	2.73	11.41	18.95	4.28	21.04
95th-Percentile Queue Length [ft/ln]	174.49	68.28	285.29	473.86	107.03	525.96

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	16.55	16.55	16.55	56.86	24.83	24.83	57.67	57.67	57.67	37.32	43.25	43.25
Movement LOS	B	B	B	E	C	C	E	E	E	D	D	D
d_A, Approach Delay [s/veh]	16.55			28.37			57.67			42.37		
Approach LOS	B			C			E			D		
d_I, Intersection Delay [s/veh]	38.72											
Intersection LOS	D											
Intersection V/C	0.861											

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 6: US 1/MD 410

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 80.1
 Level Of Service: F
 Volume to Capacity (v/c): 0.929

Intersection Setup

Name	US 1			US 1			MD 410			MD 410		
Approach	Northbound			Southbound			Westbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	200.00	100.00	100.00	225.00	100.00	100.00	700.00	100.00	450.00	600.00	100.00	100.00
Speed [mph]	45.00			45.00			40.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	US 1			US 1			MD 410			MD 410		
Base Volume Input [veh/h]	426	527	53	168	704	122	292	1751	147	179	948	284
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.15	2.00	2.38	2.07	2.00	2.00	2.00	2.03	1.67	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	426	527	53	168	704	122	292	1751	147	179	948	284
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	118	146	15	47	196	34	81	486	41	50	263	79
Total Analysis Volume [veh/h]	473	586	59	187	782	136	324	1946	163	199	1053	316
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			6			3		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	180
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	1	6	6	5	2	0	3	8	8	7	4	4
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	15	15	5	25	0	5	25	25	5	15	15
Maximum Green [s]	25	42	42	25	42	0	25	66	66	25	66	66
Amber [s]	4.0	4.5	4.5	4.0	4.5	0.0	4.0	4.5	4.5	4.0	4.5	4.5
All red [s]	1.0	2.0	2.0	1.0	2.0	0.0	1.0	2.0	2.0	1.0	2.0	2.0
Split [s]	30	48	48	30	48	0	30	72	72	30	72	72
Vehicle Extension [s]	3.0	5.0	5.0	3.0	5.0	0.0	3.0	5.0	5.0	3.0	5.0	5.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	4.5	4.5	3.0	4.5	0.0	3.0	4.5	4.5	3.0	4.5	4.5
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	Yes		No	Yes		No	Yes		No	Yes	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.0	5.0	5.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	180	180	180	180	180	180	180	180	180	180	180	180
L, Total Lost Time per Cycle [s]	6.50	6.50	6.50	6.50	6.50	6.50	5.00	6.50	6.50	5.00	6.50	6.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.50	4.50	0.00	4.50	4.50	3.00	4.50	4.50	3.00	4.50	4.50
g_i, Effective Green Time [s]	72	51	51	72	45	45	19	68	68	22	71	71
g / C, Green / Cycle	0.40	0.28	0.28	0.40	0.25	0.25	0.11	0.38	0.38	0.12	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.24	0.18	0.18	0.18	0.25	0.25	0.09	0.39	0.40	0.11	0.30	0.20
s, saturation flow rate [veh/h]	1956	1863	1801	1038	1863	1766	3445	3546	1790	1774	3547	1583
c, Capacity [veh/h]	562	529	511	352	465	441	368	1346	679	218	1403	626
d1, Uniform Delay [s]	52.21	56.01	56.04	39.29	67.55	67.55	79.27	55.84	55.84	78.00	46.75	41.07
k, delay calibration	0.33	0.50	0.50	0.50	0.50	0.50	0.11	0.50	0.50	0.28	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.74	5.38	5.58	5.62	45.05	46.76	6.94	34.15	49.45	28.33	3.73	2.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

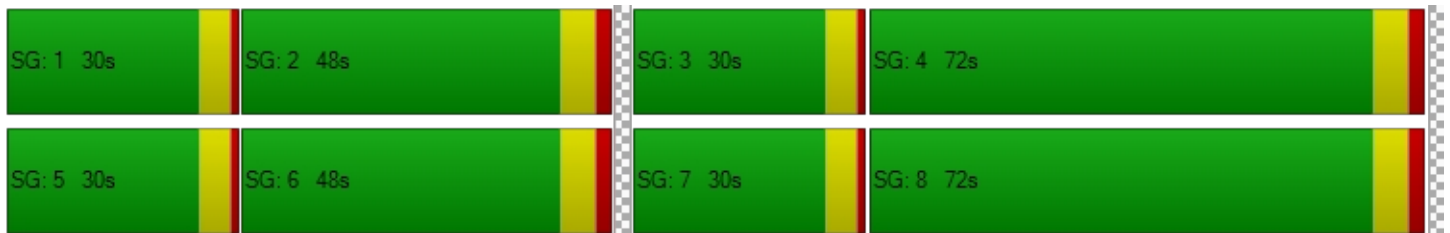
X, volume / capacity	0.84	0.62	0.62	0.53	1.01	1.02	0.88	1.04	1.05	0.91	0.75	0.50
d, Delay for Lane Group [s/veh]	61.95	61.39	61.62	44.91	112.59	114.31	86.21	89.99	105.29	106.32	50.49	43.96
Lane Group LOS	E	E	E	D	F	F	F	F	F	F	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	8.04	13.61	13.22	6.10	26.86	25.67	7.74	36.39	39.64	10.70	20.51	10.93
50th-Percentile Queue Length [ft/ln]	201.10	340.24	330.50	152.59	671.40	641.67	193.61	909.86	991.00	267.39	512.68	273.27
95th-Percentile Queue Length [veh/ln]	12.70	19.66	19.18	10.16	35.65	34.30	12.31	47.51	51.94	16.06	27.93	16.35
95th-Percentile Queue Length [ft/ln]	317.38	491.50	479.58	253.88	891.24	857.59	307.71	1187.68	1298.44	401.47	698.35	408.82

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	61.95	61.49	61.62	44.91	113.28	114.31	86.21	94.34	105.29	106.32	50.49	43.96
Movement LOS	E	E	E	D	F	F	F	F	F	F	D	D
d_A, Approach Delay [s/veh]	61.69			101.83			93.99			56.26		
Approach LOS	E			F			F			E		
d_I, Intersection Delay [s/veh]	80.08											
Intersection LOS	F											
Intersection V/C	0.929											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 7: US 1/Queensbury Rd

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 17.7
 Level Of Service: B
 Volume to Capacity (v/c): 0.532

Intersection Setup

Name	US 1			US 1			Queensbury			Queensbury		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	250.00	100.00	100.00	150.00	100.00	100.00	350.00	100.00	100.00	200.00	100.00	200.00
Speed [mph]	45.00			45.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	US 1			US 1			Queensbury			Queensbury		
Base Volume Input [veh/h]	66	781	117	46	1010	34	67	115	76	137	123	168
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	1.89	3.85	2.00	3.85	1.96	2.30	1.85	1.69	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	66	781	117	46	1010	34	67	115	76	137	123	168
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	217	33	13	281	9	19	32	21	38	34	47
Total Analysis Volume [veh/h]	73	868	130	51	1122	38	74	128	84	152	137	187
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			11			11			4		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	6.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	2	6	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	15	15	15	15	15	8	8	8	8	8	8
Maximum Green [s]	8	60	60	46	46	46	20	20	20	20	20	20
Amber [s]	3.5	4.5	4.5	4.5	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	13	65	65	52	52	52	25	25	25	25	25	25
Vehicle Extension [s]	3.0	5.0	5.0	5.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	3.5	3.5	3.5	3.5	3.5	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall	No	No			No			No			No	
Maximum Recall	No	Yes			Yes			No			No	
Pedestrian Recall	No	No			No			No			No	
Detector Location [ft]	0.0	294.0	294.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	30.0	6.0	6.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	5.50	5.50	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.50	3.50	3.50	3.50	3.50	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	60	60	60	51	51	51	20	20	20	20	20
g / C, Green / Cycle	0.66	0.66	0.66	0.56	0.56	0.56	0.22	0.22	0.22	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.12	0.27	0.27	0.09	0.31	0.31	0.06	0.12	0.13	0.07	0.12
s, saturation flow rate [veh/h]	630	1863	1777	552	1863	1840	1238	1736	1168	1863	1560
c, Capacity [veh/h]	437	1232	1175	306	1049	1036	251	386	188	414	347
d1, Uniform Delay [s]	7.63	7.12	7.12	17.26	12.50	12.51	35.55	31.02	42.05	29.39	30.94
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.12	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.82	1.03	1.08	1.17	2.12	2.16	0.65	1.22	8.47	0.46	1.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.17	0.41	0.41	0.17	0.56	0.56	0.29	0.55	0.81	0.33	0.54
d, Delay for Lane Group [s/veh]	8.46	8.15	8.20	18.43	14.62	14.66	36.20	32.24	50.52	29.86	32.25
Lane Group LOS	A	A	A	B	B	B	D	C	D	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.47	3.80	3.65	0.73	6.85	6.79	1.51	4.13	3.80	2.50	3.64
50th-Percentile Queue Length [ft/ln]	11.84	95.05	91.27	18.18	171.23	169.69	37.85	103.27	95.11	62.56	91.12
95th-Percentile Queue Length [veh/ln]	0.85	6.84	6.57	1.31	11.14	11.06	2.72	7.44	6.85	4.50	6.56
95th-Percentile Queue Length [ft/ln]	21.32	171.08	164.29	32.73	278.53	276.51	68.12	185.88	171.20	112.61	164.02

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	8.46	8.17	8.20	18.43	14.64	14.66	36.20	32.24	32.24	50.52	29.86	32.25
Movement LOS	A	A	A	B	B	B	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	8.19			14.80			33.27			37.39		
Approach LOS	A			B			C			D		
d_I, Intersection Delay [s/veh]	17.74											
Intersection LOS	B											
Intersection V/C	0.532											

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 8: US 1/Oglethorpe Rd

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 11.9
 Level Of Service: B
 Volume to Capacity (v/c): 0.524

Intersection Setup

Name	US 1		US 1		Oglethorpe	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00		40.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	US 1		US 1		Oglethorpe	
Base Volume Input [veh/h]	21	973	1208	40	117	54
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.04	1.97	0.00	1.67	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	973	1208	40	117	54
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	270	336	11	33	15
Total Analysis Volume [veh/h]	23	1081	1342	44	130	60
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	66.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Split	Split
Signal group	2	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lag	-
Minimum Green [s]	15	15	15	15	15	15
Maximum Green [s]	85	85	85	85	25	25
Amber [s]	4.0	4.0	4.0	4.0	4.0	4.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	90	90	90	90	30	30
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	7	7
Pedestrian Clearance [s]	0	0	0	0	10	10
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall		No	No		No	
Maximum Recall		Yes	Yes		Yes	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	50.0	50.0	50.0	50.0	50.0	50.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	85	85	85	85	25
g / C, Green / Cycle	0.71	0.71	0.71	0.71	0.21
(v / s)_i Volume / Saturation Flow Rate	0.32	0.32	0.37	0.38	0.11
s, saturation flow rate [veh/h]	1725	1694	1863	1843	1743
c, Capacity [veh/h]	1253	1200	1320	1305	363
d1, Uniform Delay [s]	7.28	7.54	8.13	8.18	42.20
k, delay calibration	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.15	1.25	1.50	1.55	5.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.44	0.46	0.53	0.53	0.52
d, Delay for Lane Group [s/veh]	8.43	8.78	9.62	9.73	47.51
Lane Group LOS	A	A	A	A	D
Critical Lane Group	No	No	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	5.66	5.75	7.59	7.65	5.60
50th-Percentile Queue Length [ft/ln]	141.41	143.83	189.84	191.33	139.89
95th-Percentile Queue Length [veh/ln]	9.56	9.69	12.11	12.19	9.48
95th-Percentile Queue Length [ft/ln]	238.92	242.17	302.82	304.76	236.88

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	8.43	8.61	9.68	9.73	47.51	47.51
Movement LOS	A	A	A	A	D	D
d_A, Approach Delay [s/veh]	8.61		9.68		47.51	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	11.92					
Intersection LOS	B					
Intersection V/C	0.524					

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SG: 2 90s

SG: 4 30s

SG: 104 17s

SG: 6 90s

Intersection Level Of Service Report

Intersection 9: US 1/Madison St

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 16.9
 Level Of Service: B
 Volume to Capacity (v/c): 0.639

Intersection Setup

Name	US 1			US 1			Madison			Madison		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	US 1			US 1			Madison			Madison		
Base Volume Input [veh/h]	72	925	12	7	1159	91	109	20	114	68	61	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	72	925	12	7	1159	91	109	20	114	68	61	22
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	257	3	2	322	25	30	6	32	19	17	6
Total Analysis Volume [veh/h]	80	1028	13	8	1288	101	121	22	127	76	68	24
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			2			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	74.0
Offset Reference	LagEnd
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	2	2	2	6	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	20	20	20	20	20	20	15	15	15	15	15	15
Maximum Green [s]	85	85	85	85	85	85	25	25	25	25	25	25
Amber [s]	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	90	90	90	90	90	90	30	30	30	30	30	30
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	0	0
Pedestrian Clearance [s]	13	13	13	13	13	13	10	10	10	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall		No			No			No			No	
Maximum Recall		Yes			Yes			Yes			Yes	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	85	85	85	85	85	85	25	25
g / C, Green / Cycle	0.71	0.71	0.71	0.71	0.71	0.71	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.20	0.28	0.28	0.01	0.38	0.38	0.20	0.13
s, saturation flow rate [veh/h]	395	1863	1855	551	1863	1815	1375	1312
c, Capacity [veh/h]	264	1319	1314	379	1319	1286	330	317
d1, Uniform Delay [s]	17.54	7.09	7.09	10.80	8.19	8.21	47.14	42.60
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.92	0.89	0.89	0.10	1.54	1.60	19.82	6.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.30	0.40	0.40	0.02	0.53	0.53	0.82	0.53
d, Delay for Lane Group [s/veh]	20.46	7.98	7.98	10.90	9.73	9.81	66.96	48.82
Lane Group LOS	C	A	A	B	A	A	E	D
Critical Lane Group	No	No	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	1.52	5.12	5.10	0.10	8.01	7.88	9.82	5.10
50th-Percentile Queue Length [ft/ln]	37.93	127.90	127.39	2.49	200.18	197.06	245.44	127.56
95th-Percentile Queue Length [veh/ln]	2.73	8.83	8.80	0.18	12.65	12.49	14.96	8.81
95th-Percentile Queue Length [ft/ln]	68.27	220.63	219.94	4.48	316.20	312.17	373.90	220.18

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	20.46	7.98	7.98	10.90	9.76	9.81	66.96	66.96	66.96	48.82	48.82	48.82
Movement LOS	C	A	A	B	A	A	E	E	E	D	D	D
d_A, Approach Delay [s/veh]	8.87			9.77			66.96			48.82		
Approach LOS	A			A			E			D		
d_I, Intersection Delay [s/veh]	16.87											
Intersection LOS	B											
Intersection V/C	0.639											

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SG: 2 90s

SG: 4 30s

SG: 102 20s

SG: 104 17s

SG: 6 90s

SG: 8 30s

SG: 106 20s

Intersection Level Of Service Report

Intersection 10: US 1/Jefferson St

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 19.9
 Level Of Service: B
 Volume to Capacity (v/c): 0.757

Intersection Setup

Name	US 1			US 1			Jefferson St					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	150.00	100.00	100.00	175.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	US 1			US 1			Jefferson St					
Base Volume Input [veh/h]	301	950	1	7	1257	103	57	7	105	40	24	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.82	2.00	2.00	2.00	2.00	2.22	1.43	2.00	1.82	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	301	950	1	7	1257	103	57	7	105	40	24	8
Peak Hour Factor	0.9000	0.9000	1.0000	1.0000	0.9000	0.9000	0.9000	1.0000	0.9000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	84	264	0	2	349	29	16	2	29	10	6	2
Total Analysis Volume [veh/h]	334	1056	1	7	1397	114	63	7	117	40	24	8
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	90.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	6	4	4	4	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lag	-	-	-	-	-
Minimum Green [s]	8	20	0	0	20	20	20	20	20	0	20	0
Maximum Green [s]	15	90	0	0	70	70	20	20	20	0	20	0
Amber [s]	4.0	4.0	0.0	0.0	4.0	4.0	4.0	4.0	4.0	0.0	4.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	20	95	0	0	75	75	25	25	25	0	25	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	0	0	0	13	13	13	13	13	0	13	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	0.0
Minimum Recall	No	No			No			No			No	
Maximum Recall	Yes	Yes			Yes			No			No	
Pedestrian Recall	No	No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	90	90	90	70	70	70	20	20
g / C, Green / Cycle	0.75	0.75	0.75	0.58	0.58	0.58	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.53	0.28	0.28	0.01	0.41	0.41	0.12	0.06
s, saturation flow rate [veh/h]	632	1863	1862	532	1863	1814	1553	1150
c, Capacity [veh/h]	464	1397	1397	309	1087	1058	299	238
d1, Uniform Delay [s]	23.91	5.23	5.23	17.23	17.63	17.73	47.16	44.03
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.21	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.28	0.78	0.78	0.14	3.79	3.99	4.09	0.71
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.72	0.38	0.38	0.02	0.70	0.71	0.63	0.30
d, Delay for Lane Group [s/veh]	33.19	6.02	6.02	17.37	21.42	21.73	51.25	44.73
Lane Group LOS	C	A	A	B	C	C	D	D
Critical Lane Group	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.34	4.16	4.16	0.12	15.05	14.91	5.67	1.95
50th-Percentile Queue Length [ft/ln]	83.60	103.92	103.90	2.89	376.33	372.75	141.70	48.87
95th-Percentile Queue Length [veh/ln]	6.02	7.48	7.48	0.21	21.42	21.24	9.57	3.52
95th-Percentile Queue Length [ft/ln]	150.48	187.06	187.02	5.19	535.40	531.07	239.31	87.97

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	33.19	6.02	6.02	17.37	21.56	21.73	51.25	51.25	51.25	44.73	44.73	44.73
Movement LOS	C	A	A	B	C	C	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	12.54			21.55			51.25			44.73		
Approach LOS	B			C			D			D		
d_I, Intersection Delay [s/veh]	19.88											
Intersection LOS	B											
Intersection V/C	0.757											

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 11: US 1/Hamilton St (North)

Control Type: Two-way stop
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 14.1
 Level Of Service: B
 Volume to Capacity (v/c): 0.003

Intersection Setup

Name	US 1		US 1		Hamilton St (North)	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	150.00	100.00	100.00	100.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	US 1		US 1		Hamilton St (North)	
Base Volume Input [veh/h]	1228	4	2	1370	0	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	2.04	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1228	4	2	1370	0	1
Peak Hour Factor	0.9000	1.0000	1.0000	0.9000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	341	1	1	381	0	0
Total Analysis Volume [veh/h]	1364	4	2	1522	0	1
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.02	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	14.12
Movement LOS	A	A		A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.01
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.19
d_A, Approach Delay [s/veh]	0.00		0.00		14.12	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	B					

Intersection Level Of Service Report

Intersection 12: US 1/Hamilton St (South)/US 1 Alt

Control Type:	Signalized	Delay (sec / veh):	58.7
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.893

Intersection Setup

Name	US 1			US 1			Hamilton			US 1 ALT		
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	250.00
Speed [mph]	30.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	US 1			US 1			Hamilton			US 1 ALT		
Base Volume Input [veh/h]	0	328	20	466	901	0	7	7	10	95	76	902
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.17	0.00	2.00	2.06	0.00	0.00	0.00	0.00	2.63	0.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	328	20	466	901	0	7	7	10	95	76	902
Peak Hour Factor	1.0000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	91	6	129	250	0	2	2	3	26	19	251
Total Analysis Volume [veh/h]	0	364	22	518	1001	0	8	8	11	106	76	1002
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			3			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	18.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Split	Split	Permiss	Permiss	Overlap
Signal group	0	6	6	5	2	0	3	3	3	8	8	8
Auxiliary Signal Groups												5,8
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lag	-	-
Minimum Green [s]	0	20	20	4	20	0	0	0	0	5	5	5
Maximum Green [s]	0	55	55	20	63	0	0	0	0	30	30	30
Amber [s]	0.0	4.0	4.0	4.0	4.0	0.0	0.0	0.0	0.0	3.0	3.0	3.0
All red [s]	0.0	1.0	1.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0
Split [s]	0	50	50	15	65	0	0	0	0	55	55	55
Vehicle Extension [s]	0.0	3.0	3.0	3.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	0	0	0	0	0	5	5	5
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	10	10	10
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	3.0	3.0	2.0	3.0	0.0	0.0	0.0	0.0	2.0	2.0	2.0
Minimum Recall		No		Yes	No						No	No
Maximum Recall		Yes		No	Yes						No	No
Pedestrian Recall		No		No	No						No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	50.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C		C	R
C, Cycle Length [s]	120	120	120	120	120		120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	3.00		2.00	0.00
g_i, Effective Green Time [s]	45	45	60	60	60		51	66
g / C, Green / Cycle	0.38	0.38	0.50	0.50	0.50		0.43	0.55
(v / s)_i Volume / Saturation Flow Rate	0.10	0.11	0.48	0.34	0.34		0.10	0.63
s, saturation flow rate [veh/h]	1860	1823	1082	1470	1470		1846	1583
c, Capacity [veh/h]	697	684	549	735	735		785	871
d1, Uniform Delay [s]	26.15	26.21	32.85	22.75	22.75		22.01	27.00
k, delay calibration	0.50	0.50	0.50	0.50	0.50		0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.98	1.03	26.75	5.05	5.05		0.15	80.99
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.28	0.28	0.94	0.68	0.68		0.23	1.15
d, Delay for Lane Group [s/veh]	27.14	27.24	59.60	27.80	27.80		22.16	107.99
Lane Group LOS	C	C	E	C	C		C	F
Critical Lane Group	No	No	Yes	No	No		No	Yes
50th-Percentile Queue Length [veh/ln]	4.06	4.07	15.41	11.49	11.49		3.37	43.48
50th-Percentile Queue Length [ft/ln]	101.40	101.76	385.21	287.29	287.29		84.14	1086.90
95th-Percentile Queue Length [veh/ln]	7.30	7.33	21.85	17.05	17.05		6.06	60.56
95th-Percentile Queue Length [ft/ln]	182.52	183.17	546.15	426.28	426.28		151.46	1514.04

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	27.19	27.24	59.60	27.80	27.80	0.00	0.00	0.00	22.16	22.16	107.99
Movement LOS		C	C	E	C	C				C	C	F
d_A, Approach Delay [s/veh]	27.19			38.64			0.00			94.80		
Approach LOS	C			D			A			F		
d_I, Intersection Delay [s/veh]	58.74											
Intersection LOS	E											
Intersection V/C	0.893											

Sequence

Ring 1	-	2	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 13: US 1 Alt/Decatur St

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 44.4
 Level Of Service: D
 Volume to Capacity (v/c): 0.746

Intersection Setup

Name	US 1 ALT		Decatur St		US 1 ALT	
Approach	Northbound		Westbound		Southwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	0	1	1	0
Pocket Length [ft]	100.00	100.00	100.00	75.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		No	

Volumes

Name	US 1 ALT		Decatur St		US 1 ALT	
Base Volume Input [veh/h]	667	49	139	332	119	432
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.13	2.13	1.97	2.00	2.63	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	667	49	139	332	119	432
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	185	14	39	92	33	120
Total Analysis Volume [veh/h]	741	54	154	369	132	480
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	15.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	Unsignalized	Split	Split	ProtectedPermissi	Permissive
Signal group	6	0	4	0	5	2
Auxiliary Signal Groups						
Lead / Lag	-	-	Lag	-	Lead	-
Minimum Green [s]	10	0	5	0	4	10
Maximum Green [s]	39	0	15	0	10	54
Amber [s]	5.0	0.0	4.0	0.0	4.0	5.0
All red [s]	1.0	0.0	1.0	0.0	1.0	1.0
Split [s]	30	0	30	0	30	30
Vehicle Extension [s]	0.2	0.0	3.0	0.0	3.0	0.2
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	4.0	0.0	3.0	0.0	3.0	4.0
Minimum Recall	No		No		No	No
Maximum Recall	Yes		No		No	Yes
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	30.0	0.0	30.0	0.0	30.0	30.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	L	R	L	C
C, Cycle Length [s]	80	80	80	80	80
L, Total Lost Time per Cycle [s]	6.00	5.00	5.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	3.00	3.00	0.00	4.00
g_i, Effective Green Time [s]	45	15	15	54	54
g / C, Green / Cycle	0.56	0.19	0.19	0.68	0.68
(v / s)_i Volume / Saturation Flow Rate	0.40	0.09	0.23	0.16	0.26
s, saturation flow rate [veh/h]	1860	1775	1583	849	1863
c, Capacity [veh/h]	1045	333	297	491	1257
d1, Uniform Delay [s]	12.79	28.92	32.50	9.11	5.69
k, delay calibration	0.50	0.11	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.08	1.00	134.53	1.34	0.88
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.71	0.46	1.24	0.27	0.38
d, Delay for Lane Group [s/veh]	16.86	29.92	167.03	10.46	6.57
Lane Group LOS	B	C	F	B	A
Critical Lane Group	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	9.60	2.65	16.64	0.80	3.11
50th-Percentile Queue Length [ft/ln]	240.02	66.28	415.94	20.05	77.82
95th-Percentile Queue Length [veh/ln]	14.68	4.77	25.82	1.44	5.60
95th-Percentile Queue Length [ft/ln]	367.05	119.30	645.43	36.10	140.08

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	16.86	0.00	29.92	167.03	10.46	6.57
Movement LOS	B		C	F	B	A
d_A, Approach Delay [s/veh]	16.86		126.66		7.41	
Approach LOS	B		F		A	
d_I, Intersection Delay [s/veh]	44.39					
Intersection LOS	D					
Intersection V/C	0.746					

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 14: US 1 Alt/Charles Armentrout St

Control Type:	Signalized	Delay (sec / veh):	32.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.730

Intersection Setup

Name	US 1 Alt		US 1 ALT		Charles L Armentrout	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	US 1 Alt		US 1 ALT		Charles L Armentrout	
Base Volume Input [veh/h]	1070	786	481	146	18	572
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.08	2.00	2.00	2.00	3.85	2.17
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	0	0	0	0	12
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1073	786	481	146	18	584
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	298	218	134	41	5	162
Total Analysis Volume [veh/h]	1192	873	534	162	20	649
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtectedPermissi	Permissive	Permissive	Permissive	Permissive	Unsignalized
Signal group	5	2	6	0	3	3
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	5
Maximum Green [s]	30	30	30	0	30	30
Amber [s]	3.0	3.0	3.0	0.0	3.0	3.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0
Split [s]	49	81	32	0	39	39
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	3.0
Walk [s]	0	5	5	0	5	5
Pedestrian Clearance [s]	0	10	10	0	10	10
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	0.0	2.0	2.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L
C, Cycle Length [s]	63	63	63	63	63
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	54	54	21	21	2
g / C, Green / Cycle	0.85	0.85	0.33	0.33	0.02
(v / s)_i Volume / Saturation Flow Rate	0.86	0.47	0.29	0.10	0.01
s, saturation flow rate [veh/h]	1390	1863	1863	1583	1743
c, Capacity [veh/h]	1117	1582	610	518	42
d1, Uniform Delay [s]	13.52	1.35	20.05	15.93	30.45
k, delay calibration	0.50	0.44	0.16	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	46.59	1.23	6.03	0.34	8.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.07	0.55	0.88	0.31	0.48
d, Delay for Lane Group [s/veh]	60.12	2.58	26.08	16.28	38.59
Lane Group LOS	F	A	C	B	D
Critical Lane Group	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	14.46	0.54	7.70	1.66	0.39
50th-Percentile Queue Length [ft/ln]	361.59	13.51	192.49	41.48	9.69
95th-Percentile Queue Length [veh/ln]	21.86	0.97	12.25	2.99	0.70
95th-Percentile Queue Length [ft/ln]	546.42	24.33	306.25	74.66	17.44

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	60.12	2.58	26.08	16.28	38.59	0.00
Movement LOS	F	A	C	B	D	
d_A, Approach Delay [s/veh]	35.79		23.80		38.59	
Approach LOS	D		C		D	
d_I, Intersection Delay [s/veh]	32.81					
Intersection LOS	C					
Intersection V/C	0.730					

Sequence

Ring 1	2	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SG: 2 81s

SG: 3 39s

SG: 103 15s

SG: 5 49s

SG: 6 32s

SG: 106 15s

Intersection Level Of Service Report

Intersection 15: US 1/Gallatin St

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 3.9
 Level Of Service: A
 Volume to Capacity (v/c): 0.339

Intersection Setup

Name	US 1		US 1		Gallatin St.	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		0.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		No	

Volumes

Name	US 1		US 1		Gallatin St.	
Base Volume Input [veh/h]	18	341	952	65	10	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.11	2.05	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	341	952	65	10	10
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	95	264	18	3	3
Total Analysis Volume [veh/h]	20	379	1058	72	10	10
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	2.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	6	6	2	2	4	0
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	4	4	4	4	5	0
Maximum Green [s]	86	86	86	86	30	0
Amber [s]	4.0	4.0	4.0	4.0	3.0	0.0
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	75	75	75	75	15	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	5	0
Pedestrian Clearance [s]	0	0	0	0	10	0
Rest In Walk						
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall		No	No		No	
Maximum Recall		Yes	Yes		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	50.0	50.0	50.0	50.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	8
Pedestrian Walk [s]	20
Pedestrian Clearance [s]	10

Lane Group Calculations

Lane Group	C	C	C	C	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	100	100	100	100	2
g / C, Green / Cycle	0.83	0.83	0.83	0.83	0.02
(v / s)_i Volume / Saturation Flow Rate	0.13	0.12	0.30	0.31	0.01
s, saturation flow rate [veh/h]	1519	1693	1862	1821	1707
c, Capacity [veh/h]	1292	1403	1543	1509	35
d1, Uniform Delay [s]	1.96	2.00	2.52	2.55	58.24
k, delay calibration	0.50	0.50	0.50	0.50	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.25	0.22	0.67	0.71	13.73
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.15	0.15	0.37	0.37	0.57
d, Delay for Lane Group [s/veh]	2.21	2.22	3.20	3.26	71.97
Lane Group LOS	A	A	A	A	E
Critical Lane Group	No	No	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.70	0.74	2.57	2.60	0.76
50th-Percentile Queue Length [ft/ln]	17.50	18.41	64.13	64.95	19.08
95th-Percentile Queue Length [veh/ln]	1.26	1.33	4.62	4.68	1.37
95th-Percentile Queue Length [ft/ln]	31.50	33.13	115.44	116.91	34.35

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	2.21	2.22	3.23	3.26	71.97	71.97
Movement LOS	A	A	A	A	E	E
d_A, Approach Delay [s/veh]	2.22		3.23		71.97	
Approach LOS	A		A		E	
d_I, Intersection Delay [s/veh]	3.86					
Intersection LOS	A					
Intersection V/C	0.339					

Sequence

Ring 1	-	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SG: 2 75s

SG: 4 15s

SG: 8 30s

SG: 6 75s

Intersection Level Of Service Report Intersection 16: US 1/Farragut St

Control Type: Signalized
Analysis Method: HCM 2010
Analysis Period: 15 minutes

Delay (sec / veh): 10.0
Level Of Service: A
Volume to Capacity (v/c): 0.347

Intersection Setup

Name	US 1		Farragut		US 1	
Approach	Southbound		Eastbound		Northeastbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		25.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	US 1		Farragut		US 1	
Base Volume Input [veh/h]	942	3	35	25	10	301
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.97	0.00	0.00	0.00	0.00	2.11
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	942	3	35	25	10	301
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	262	1	10	7	3	84
Total Analysis Volume [veh/h]	1047	3	39	28	11	334
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	96.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	Permissive	Split	Split	Permissive	Permissive
Signal group	6	6	4	4	2	2
Auxiliary Signal Groups						
Lead / Lag	-	-	Lag	-	Lag	-
Minimum Green [s]	20	20	20	20	20	20
Maximum Green [s]	83	83	26	26	83	83
Amber [s]	5.0	5.0	4.0	4.0	5.0	5.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	89	89	31	31	89	89
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	7	7	0	0
Pedestrian Clearance [s]	0	0	13	13	0	0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	4.0	4.0	3.0	3.0	4.0	4.0
Minimum Recall	No		No			No
Maximum Recall	Yes		Yes			Yes
Pedestrian Recall	No		No			No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	50.0	50.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C
C, Cycle Length [s]	120	120	120	120
L, Total Lost Time per Cycle [s]	6.00	6.00	5.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00
l2, Clearance Lost Time [s]	4.00	4.00	3.00	4.00
g_i, Effective Green Time [s]	83	83	26	83
g / C, Green / Cycle	0.69	0.69	0.22	0.69
(v / s)_i Volume / Saturation Flow Rate	0.28	0.28	0.04	0.19
s, saturation flow rate [veh/h]	1863	1862	1723	1798
c, Capacity [veh/h]	1289	1288	373	1275
d1, Uniform Delay [s]	7.94	7.94	38.31	7.00
k, delay calibration	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.96	0.96	1.05	0.52
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.41	0.41	0.18	0.27
d, Delay for Lane Group [s/veh]	8.90	8.90	39.36	7.53
Lane Group LOS	A	A	D	A
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	5.75	5.75	1.74	3.22
50th-Percentile Queue Length [ft/ln]	143.67	143.74	43.60	80.52
95th-Percentile Queue Length [veh/ln]	9.68	9.68	3.14	5.80
95th-Percentile Queue Length [ft/ln]	241.95	242.04	78.48	144.93

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	8.90	8.90	39.36	39.36	7.53	7.53
Movement LOS	A	A	D	D	A	A
d_A, Approach Delay [s/veh]	8.90		39.36		7.53	
Approach LOS	A		D		A	
d_I, Intersection Delay [s/veh]	9.97					
Intersection LOS	A					
Intersection V/C	0.347					

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 17: US 1/43rd Avenue

Control Type: Two-way stop
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 35.6
 Level Of Service: E
 Volume to Capacity (v/c): 0.047

Intersection Setup

Name	US 1		US 1			
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0
Pocket Length [ft]	150.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	US 1		US 1			
Base Volume Input [veh/h]	112	331	895	57	6	85
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	112	331	895	57	6	85
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	83	224	14	2	21
Total Analysis Volume [veh/h]	112	331	895	57	6	85
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.16	0.00	0.01	0.00	0.05	0.16
d_M, Delay for Movement [s/veh]	10.94	0.00	0.00	0.00	35.58	13.84
Movement LOS	B	A	A	A	E	B
95th-Percentile Queue Length [veh/ln]	0.55	0.00	0.00	0.00	0.77	0.77
95th-Percentile Queue Length [ft/ln]	13.78	0.00	0.00	0.00	19.16	19.16
d_A, Approach Delay [s/veh]	2.77		0.00		15.27	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	1.76					
Intersection LOS	E					

Intersection Level Of Service Report

Intersection 18: US 1/42nd Place/Crittenden St

Control Type:	Signalized	Delay (sec / veh):	33.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.879

Intersection Setup

Name	42nd Pl			Crittenden St			US 1			US 1		
Approach	Southbound			Eastbound			Northeastbound			Southwestbound		
Lane Configuration												
Turning Movement	Left	Right	Right2	Left	Thru	Right	Left2	Left	Thru	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			25.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	42nd Pl			Crittenden St			US 1			US 1		
Base Volume Input [veh/h]	1	14	0	0	23	257	286	14	426	940	20	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	2.00	2.14	0.00	2.17	2.05	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	12	3	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	14	0	0	23	269	289	14	426	940	20	5
Peak Hour Factor	0.9000	0.9000	0.9000	1.0000	0.9000	0.9000	1.0000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	4	0	0	6	75	72	4	118	261	6	1
Total Analysis Volume [veh/h]	1	16	0	0	26	299	289	16	473	1044	22	6
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	12.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal group	4	4	4	0	3	3	0	6	6	2	6	6
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	-	-	-	-	Lag	-	-	-	-
Minimum Green [s]	5	5	5	0	5	5	0	20	20	5	20	20
Maximum Green [s]	19	19	19	0	25	25	0	60	60	30	60	60
Amber [s]	4.0	4.0	4.0	0.0	4.0	4.0	0.0	5.0	5.0	3.0	5.0	5.0
All red [s]	1.0	1.0	1.0	0.0	1.0	1.0	0.0	4.0	4.0	1.0	4.0	4.0
Split [s]	24	24	24	0	30	30	0	66	66	66	66	66
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk	No				No				No	No		
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	0.0	3.0	3.0	0.0	7.0	7.0	2.0	7.0	7.0
Minimum Recall	No				No				No	No		
Maximum Recall	No				No				Yes	No		
Pedestrian Recall	No				No				No	No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	50.0	50.0	50.0	0.0	50.0	50.0	0.0	50.0	50.0	50.0	50.0	50.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	9.00	9.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	7.00	7.00	2.00	2.00
g_i, Effective Green Time [s]	2	25	74	74	79	79
g / C, Green / Cycle	0.02	0.21	0.62	0.62	0.66	0.66
(v / s)_i Volume / Saturation Flow Rate	0.01	0.20	0.58	0.13	0.29	0.29
s, saturation flow rate [veh/h]	1625	1635	524	3541	1862	1845
c, Capacity [veh/h]	30	341	298	2177	1222	1211
d1, Uniform Delay [s]	58.41	46.94	38.27	10.28	9.95	9.98
k, delay calibration	0.11	0.38	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.39	32.75	58.54	0.23	1.15	1.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.56	0.95	1.02	0.22	0.44	0.44
d, Delay for Lane Group [s/veh]	73.79	79.70	96.81	10.51	11.09	11.16
Lane Group LOS	E	E	F	B	B	B
Critical Lane Group	Yes	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.65	12.73	13.84	2.72	6.66	6.69
50th-Percentile Queue Length [ft/ln]	16.14	318.13	346.04	68.08	166.52	167.27
95th-Percentile Queue Length [veh/ln]	1.16	18.58	20.32	4.90	10.89	10.93
95th-Percentile Queue Length [ft/ln]	29.05	464.39	508.03	122.54	272.34	273.32

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	73.79	73.79	73.79	0.00	79.70	79.70	96.81	96.81	10.51	11.12	11.16	11.16
Movement LOS	E	E	E		E	E	F	F	B	B	B	B
d_A, Approach Delay [s/veh]	73.79			79.70			44.34			11.12		
Approach LOS	E			E			D			B		
d_I, Intersection Delay [s/veh]	33.57											
Intersection LOS	C											
Intersection V/C	0.879											

Sequence

Ring 1	-	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 19: US 1/41st Place/Charles Armentrout Drive

Control Type:	Signalized	Delay (sec / veh):	42.9
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.946

Intersection Setup

Name	US 1			US 1			Charles L Armentrout			41st		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	43.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	US 1			US 1			Charles L Armentrout			41st		
Base Volume Input [veh/h]	3	233	207	409	825	1	644	4	505	2	2	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.38	2.14	2.00	0.00	2.00	0.00	2.21	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	12	0	0	0	0	3	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	233	207	421	825	1	644	4	508	2	2	3
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	65	58	117	229	0	179	1	141	1	1	1
Total Analysis Volume [veh/h]	3	259	230	468	917	1	716	4	564	2	2	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	4			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	42.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss
Signal group	6	6	6	5	2	2	8	8	2	4	4	4
Auxiliary Signal Groups									2,5			
Lead / Lag	Lag	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	20	20	20	5	20	20	8	8	20	8	8	8
Maximum Green [s]	25	25	25	18	48	48	60	60	48	60	60	60
Amber [s]	5.0	5.0	5.0	4.0	5.0	5.0	4.0	4.0	5.0	4.0	4.0	4.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	2.0	2.0	1.0	2.0	2.0	2.0
Split [s]	31	31	31	23	54	54	66	66	54	66	66	66
Vehicle Extension [s]	6.0	6.0	6.0	3.0	6.0	6.0	3.0	3.0	6.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Recall		No		No	No			No	No		No	
Maximum Recall		Yes		No	Yes			No	Yes		No	
Pedestrian Recall		No		No	No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	0.0	50.0	50.0	50.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	C	R	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	5.50	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	0.00	4.00	4.00	4.00	0.00	4.00
g_i, Effective Green Time [s]	25	25	25	48	48	48	60	48	60
g / C, Green / Cycle	0.21	0.21	0.21	0.40	0.40	0.40	0.50	0.40	0.50
(v / s)_i Volume / Saturation Flow Rate	0.00	0.07	0.15	0.33	0.25	0.25	0.50	0.36	0.00
s, saturation flow rate [veh/h]	618	3547	1577	1402	1863	1862	1443	1580	1874
c, Capacity [veh/h]	60	739	329	581	745	745	782	632	975
d1, Uniform Delay [s]	60.00	40.57	44.02	31.47	28.66	28.66	29.70	33.59	15.06
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.45	0.50	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.57	1.31	11.75	11.34	3.79	3.80	16.51	17.38	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

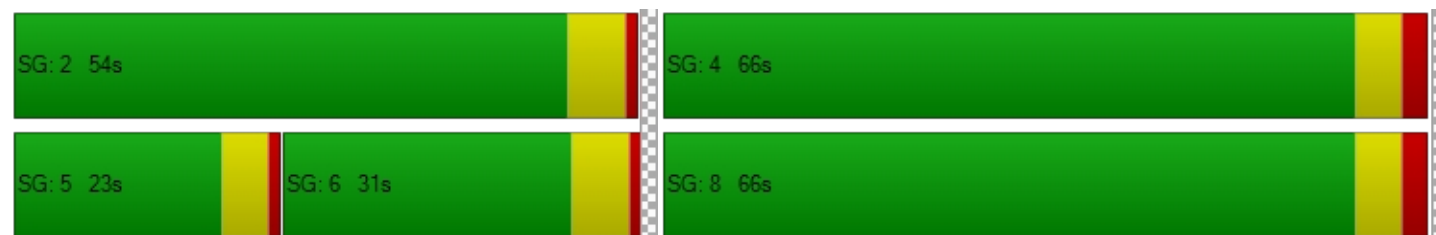
X, volume / capacity	0.05	0.35	0.70	0.81	0.62	0.62	0.92	0.89	0.01
d, Delay for Lane Group [s/veh]	61.57	41.88	55.77	42.81	32.46	32.46	46.22	50.97	15.06
Lane Group LOS	E	D	E	D	C	C	D	D	B
Critical Lane Group	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.12	3.34	7.24	12.57	11.07	11.07	23.68	18.26	0.10
50th-Percentile Queue Length [ft/ln]	2.89	83.39	181.07	314.30	276.86	276.79	591.96	456.51	2.48
95th-Percentile Queue Length [veh/ln]	0.21	6.00	11.66	18.39	16.53	16.53	31.66	25.27	0.18
95th-Percentile Queue Length [ft/ln]	5.21	150.10	291.41	459.68	413.30	413.21	791.47	631.72	4.47

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	61.57	41.88	55.77	42.81	32.46	32.46	46.22	46.22	50.97	15.06	15.06	15.06
Movement LOS	E	D	E	D	C	C	D	D	D	B	B	B
d_A, Approach Delay [s/veh]	48.49			35.95			48.30			15.06		
Approach LOS	D			D			D			B		
d_I, Intersection Delay [s/veh]	42.86											
Intersection LOS	D											
Intersection V/C	0.946											

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 20: MD 410/Toledo Terrace

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 31.8
 Level Of Service: C
 Volume to Capacity (v/c): 0.612

Intersection Setup

Name				Toledo Terrace			MD 410			MD 410		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	500.00	100.00	900.00	175.00	100.00	175.00
Speed [mph]	30.00			30.00			50.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name				Toledo Terrace			MD 410			MD 410		
Base Volume Input [veh/h]	93	5	80	167	22	235	135	683	153	71	1109	89
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.44	0.00	2.50	2.38	0.00	1.96	2.07	2.00	1.92	2.00	2.05	3.85
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	43	0	0	0	0	0	0	6	11	0	26	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	136	5	80	167	22	235	135	689	164	71	1135	89
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	1	22	46	6	65	38	191	46	20	315	25
Total Analysis Volume [veh/h]	151	6	89	186	24	261	150	766	182	79	1261	99
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	4			2			1			5		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	9.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	8	8	8	4	4	4	1	6	6	2	2	2
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	8	8	8	8	8	8	5	20	20	20	20	20
Maximum Green [s]	36	36	36	36	36	36	25	102	102	72	72	72
Amber [s]	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5
All red [s]	2.0	2.0	2.0	2.0	2.0	2.0	1.0	1.5	1.5	1.5	1.5	1.5
Split [s]	42	42	42	42	42	42	30	108	108	78	78	78
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	5.0	5.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0
Minimum Recall		No			No		No	No			No	
Maximum Recall		No			No		No	Yes			Yes	
Pedestrian Recall		No			No		No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	0.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	36	36	36	36	102	102	102	90	90	90
g / C, Green / Cycle	0.24	0.24	0.24	0.24	0.68	0.68	0.68	0.60	0.60	0.60
(v / s)_i Volume / Saturation Flow Rate	0.14	0.06	0.14	0.17	0.26	0.22	0.12	0.11	0.36	0.06
s, saturation flow rate [veh/h]	1085	1621	1285	1634	567	3547	1580	698	3545	1553
c, Capacity [veh/h]	120	389	279	392	357	2412	1074	394	2131	933
d1, Uniform Delay [s]	72.02	46.02	59.05	52.47	14.28	9.80	8.68	21.46	18.52	12.75
k, delay calibration	0.13	0.11	0.14	0.23	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	133.01	0.32	3.59	5.36	3.59	0.35	0.34	1.14	1.22	0.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.26	0.24	0.67	0.73	0.42	0.32	0.17	0.20	0.59	0.11
d, Delay for Lane Group [s/veh]	205.03	46.34	62.64	57.83	17.87	10.14	9.02	22.60	19.74	12.98
Lane Group LOS	F	D	E	E	B	B	A	C	B	B
Critical Lane Group	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	9.08	2.94	7.09	10.52	1.92	4.78	2.06	1.68	13.12	1.44
50th-Percentile Queue Length [ft/ln]	226.90	73.49	177.17	263.00	48.00	119.42	51.61	41.88	327.93	35.95
95th-Percentile Queue Length [veh/ln]	15.57	5.29	11.45	15.84	3.46	8.36	3.72	3.02	19.06	2.59
95th-Percentile Queue Length [ft/ln]	389.23	132.28	286.31	395.98	86.40	209.03	92.90	75.38	476.43	64.70

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	205.03	46.34	46.34	62.64	57.83	57.83	17.87	10.14	9.02	22.60	19.74	12.98
Movement LOS	F	D	D	E	E	E	B	B	A	C	B	B
d_A, Approach Delay [s/veh]	143.75			59.73			11.01			19.43		
Approach LOS	F			E			B			B		
d_I, Intersection Delay [s/veh]	31.82											
Intersection LOS	C											
Intersection V/C	0.612											

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 21: MD 410/Editors Park Dr

Control Type:	Signalized	Delay (sec / veh):	5.2
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.418

Intersection Setup

Name	Editors Park Dr		MD 410		MD 410		
Approach	Northbound		Eastbound		Westbound		
Lane Configuration							
Turning Movement	Left	Right	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	200.00	150.00	100.00	100.00
Speed [mph]	30.00		45.00		45.00		
Grade [%]	0.00		0.00		0.00		
Crosswalk	Yes		Yes		Yes		

Volumes

Name	Editors Park Dr		MD 410		MD 410		
Base Volume Input [veh/h]	58	54	821	102	1	65	1280
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.85	0.00	2.00	1.64	0.00	1.89	2.05
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	86	6	0	0	21	26
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	140	827	102	1	86	1306
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	39	230	28	0	24	363
Total Analysis Volume [veh/h]	64	156	919	113	1	96	1451
Presence of On-Street Parking	No	No	No	No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0		
Bicycle Volume [bicycles/h]	0		0		0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	5	0	6	0	0	0	2
Auxiliary Signal Groups							
Lead / Lag	Lead	-	-	-	-	-	-
Minimum Green [s]	5	0	5	0	0	0	5
Maximum Green [s]	30	0	30	0	0	0	30
Amber [s]	3.0	0.0	3.0	0.0	0.0	0.0	3.0
All red [s]	1.0	0.0	1.0	0.0	0.0	0.0	1.0
Split [s]	74	0	46	0	0	0	46
Vehicle Extension [s]	3.0	0.0	3.0	0.0	0.0	0.0	3.0
Walk [s]	5	0	5	0	0	0	5
Pedestrian Clearance [s]	10	0	10	0	0	0	10
Rest In Walk	No		No				No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	0.0	0.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	0.0	0.0	0.0	2.0
Minimum Recall	No		No				No
Maximum Recall	No		No				No
Pedestrian Recall	No		No				No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R	L	C
C, Cycle Length [s]	34	34	34	34	34
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	20	20	20	20
g / C, Green / Cycle	0.18	0.59	0.59	0.59	0.59
(v / s)_i Volume / Saturation Flow Rate	0.13	0.26	0.07	0.16	0.29
s, saturation flow rate [veh/h]	1667	3547	1589	606	5072
c, Capacity [veh/h]	299	2070	927	446	2960
d1, Uniform Delay [s]	13.09	3.95	3.15	7.63	4.10
k, delay calibration	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.52	0.15	0.06	0.24	0.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.74	0.44	0.12	0.22	0.49
d, Delay for Lane Group [s/veh]	16.61	4.10	3.21	7.87	4.22
Lane Group LOS	B	A	A	A	A
Critical Lane Group	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.51	0.24	0.05	0.28	0.25
50th-Percentile Queue Length [ft/ln]	37.83	5.97	1.33	7.07	6.21
95th-Percentile Queue Length [veh/ln]	2.72	0.43	0.10	0.51	0.45
95th-Percentile Queue Length [ft/ln]	68.10	10.75	2.40	12.73	11.18

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	16.61	16.61	4.10	3.21	7.87	7.87	4.22
Movement LOS	B	B	A	A	A	A	A
d_A, Approach Delay [s/veh]	16.61		4.00		4.45		
Approach LOS	B		A		A		
d_I, Intersection Delay [s/veh]	5.24						
Intersection LOS	A						
Intersection V/C	0.418						

Sequence

Ring 1	2	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SG: 2 46s

SG: 5 74s

SG: 105 15s

SG: 6 46s

SG: 106 15s

Intersection Level Of Service Report

Intersection 22: MD 410/Prince George's Plaza

Control Type:	Signalized	Delay (sec / veh):	13.3
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.388

Intersection Setup

Name	Metro			PG Plaza			MD 410			MD 410		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	2	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	250.00	100.00	250.00	225.00	100.00	100.00	325.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Metro			PG Plaza			MD 410			MD 410		
Base Volume Input [veh/h]	76	11	66	30	16	18	98	790	59	57	1244	39
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.54	3.85	2.22	0.00	0.00	3.85	2.22	2.07	1.74	2.21	2.00	3.85
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	92	0	0	47	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	76	11	66	30	16	18	98	882	59	57	1291	39
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	3	18	8	4	5	27	245	16	16	359	11
Total Analysis Volume [veh/h]	84	12	73	33	18	20	109	980	66	63	1434	43
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	39.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	3	3	3	4	4	4	1	6	6	5	2	2
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	20	20	5	20	20
Maximum Green [s]	24	24	24	24	24	24	25	54	54	25	54	54
Amber [s]	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.5	4.5	4.0	4.5	4.5
All red [s]	1.5	1.5	1.5	1.5	1.5	1.5	1.0	1.5	1.5	1.0	1.5	1.5
Split [s]	30	30	30	30	30	30	30	60	60	30	60	60
Vehicle Extension [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	5.0	5.0	2.5	5.0	5.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.0	4.0	4.0	3.0	4.0	4.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	294.0	294.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	30.0	30.0	30.0	30.0	6.0	6.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	5.50	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.50	3.50	3.50	3.50	3.50	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	10	10	5	5	5	118	108	108	118	108	108
g / C, Green / Cycle	0.07	0.07	0.03	0.03	0.03	0.79	0.72	0.72	0.79	0.72	0.72
(v / s)_i Volume / Saturation Flow Rate	0.02	0.05	0.01	0.01	0.01	0.24	0.20	0.20	0.10	0.27	0.27
s, saturation flow rate [veh/h]	3461	1589	3514	1900	1555	451	3544	1802	616	3547	1835
c, Capacity [veh/h]	234	108	112	61	50	387	2561	1302	518	2555	1322
d1, Uniform Delay [s]	66.80	68.87	70.96	70.97	71.21	4.96	7.18	7.18	3.97	8.08	8.08
k, delay calibration	0.08	0.08	0.08	0.08	0.08	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.69	9.18	1.07	2.01	3.89	1.81	0.26	0.51	0.48	0.43	0.84
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.36	0.79	0.29	0.30	0.40	0.28	0.27	0.27	0.12	0.38	0.38
d, Delay for Lane Group [s/veh]	67.49	78.05	72.04	72.98	75.10	6.77	7.44	7.69	4.45	8.51	8.91
Lane Group LOS	E	E	E	E	E	A	A	A	A	A	A
Critical Lane Group	No	Yes	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.57	3.50	0.64	0.71	0.81	0.81	3.53	3.69	0.42	5.57	5.91
50th-Percentile Queue Length [ft/ln]	39.26	87.60	16.02	17.86	20.31	20.26	88.28	92.21	10.38	139.14	147.69
95th-Percentile Queue Length [veh/ln]	2.83	6.31	1.15	1.29	1.46	1.46	6.36	6.64	0.75	9.43	9.89
95th-Percentile Queue Length [ft/ln]	70.66	157.68	28.83	32.15	36.56	36.46	158.91	165.97	18.69	235.86	247.34

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	67.49	78.05	78.05	72.04	72.98	75.10	6.77	7.51	7.69	4.45	8.64	8.91
Movement LOS	E	E	E	E	E	E	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	72.80			73.14			7.45			8.48		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	13.34											
Intersection LOS	B											
Intersection V/C	0.388											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 23: MD 410/Belcrest Rd

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 41.4
 Level Of Service: D
 Volume to Capacity (v/c): 0.686

Intersection Setup

Name	Belcrest Road			Belcrest Rd			MD 410			MD 410		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	250.00	100.00	100.00	250.00	100.00	100.00	225.00	100.00	100.00	225.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Belcrest Road			Belcrest Rd			MD 410			MD 410		
Base Volume Input [veh/h]	232	270	11	95	409	93	112	684	122	194	1021	62
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.21	2.00	3.85	2.00	2.21	2.63	2.00	2.00	2.38	2.63	2.00	2.63
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	18	0	0	0	0	3	17	0	75	32	26	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	250	270	11	95	409	96	129	684	197	226	1047	62
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	69	75	3	26	114	27	36	190	55	63	291	17
Total Analysis Volume [veh/h]	278	300	12	106	454	107	143	760	219	251	1163	69
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	26			10			91			71		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	144.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal group	7	4	4	3	8	3	1	6	6	5	2	2
Auxiliary Signal Groups									6,7			2,3
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	20	20	5	20	20
Maximum Green [s]	30	21	21	30	30	30	30	50	50	30	50	50
Amber [s]	3.0	4.0	4.0	3.0	3.0	3.0	3.0	4.5	4.5	3.0	4.5	4.5
All red [s]	1.0	2.0	2.0	1.0	1.0	1.0	1.0	2.0	2.0	1.0	2.0	2.0
Split [s]	30	36	36	20	46	20	26	34	34	50	58	58
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
Walk [s]	0	0	0	0	5	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	10	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	4.0	4.0	2.0	2.0	2.0	2.0	4.5	4.5	2.0	4.5	4.5
Minimum Recall	No	No		No	No		No	No	No	No	No	No
Maximum Recall	No	No		No	No		No	Yes	Yes	No	Yes	Yes
Pedestrian Recall	No	No		No	No		No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	30.0	30.0	30.0	5.0	5.0	5.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	5.00	6.00	6.00	4.00	4.00	4.00	4.00	6.50	4.00	4.00	6.50	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.00	4.00	0.00	2.00	2.00	2.00	4.50	0.00	2.00	4.50	0.00
g_i, Effective Green Time [s]	40	22	22	42	28	28	14	70	90	24	79	96
g / C, Green / Cycle	0.27	0.15	0.15	0.28	0.19	0.19	0.09	0.46	0.60	0.16	0.53	0.64
(v / s)_i Volume / Saturation Flow Rate	0.13	0.08	0.09	0.07	0.16	0.17	0.08	0.21	0.14	0.14	0.33	0.04
s, saturation flow rate [veh/h]	2183	1863	1813	1538	1859	1619	1774	3547	1557	1763	3547	1566
c, Capacity [veh/h]	416	278	270	435	350	305	168	1642	935	277	1865	998
d1, Uniform Delay [s]	45.90	59.32	59.41	41.42	58.55	59.43	66.91	27.54	13.95	62.13	25.11	10.33
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.86	1.80	1.92	0.29	4.97	9.39	11.42	0.94	0.59	10.68	1.59	0.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.67	0.56	0.57	0.24	0.83	0.89	0.85	0.46	0.23	0.90	0.62	0.07
d, Delay for Lane Group [s/veh]	47.76	61.13	61.33	41.71	63.52	68.82	78.33	28.48	14.54	72.80	26.70	10.46
Lane Group LOS	D	E	E	D	E	E	E	C	B	E	C	B
Critical Lane Group	No	No	No	Yes	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.28	5.72	5.67	3.11	11.08	10.91	5.85	9.30	3.49	10.06	14.40	0.87
50th-Percentile Queue Length [ft/ln]	106.91	142.99	141.73	77.75	276.88	272.83	146.22	232.59	87.24	251.48	360.02	21.74
95th-Percentile Queue Length [veh/ln]	7.67	9.64	9.57	5.60	16.53	16.33	9.82	14.31	6.28	15.26	20.62	1.57
95th-Percentile Queue Length [ft/ln]	191.70	241.05	239.35	139.95	413.32	408.27	245.38	357.64	157.03	381.51	515.61	39.14

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	47.76	61.22	61.33	41.71	65.45	68.82	78.33	28.48	14.54	72.80	26.70	10.46
Movement LOS	D	E	E	D	E	E	E	C	B	E	C	B
d_A, Approach Delay [s/veh]	54.88			62.22			32.11			33.75		
Approach LOS	D			E			C			C		
d_I, Intersection Delay [s/veh]	41.42											
Intersection LOS	D											
Intersection V/C	0.686											

Sequence

Ring 1	1	2	3	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 24: MD 410/MD 500/Adelphi Rd

Control Type:	Signalized	Delay (sec / veh):	46.4
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.850

Intersection Setup

Name	MD 500			Adelphi Rd			MD 410			MD 410		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	350.00	100.00	150.00	300.00	100.00	100.00	350.00	100.00	150.00
Speed [mph]	45.00			45.00			45.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	MD 500			Adelphi Rd			MD 410			MD 410		
Base Volume Input [veh/h]	6	468	376	352	541	30	43	779	13	582	1233	526
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.85	2.13	2.15	2.00	2.00	1.56	2.63	2.00	0.00	2.00	2.04	2.09
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	8	12	0	0	3	2	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	480	376	352	544	32	43	779	13	582	1233	526
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	133	104	98	151	9	12	216	4	162	343	146
Total Analysis Volume [veh/h]	16	533	418	391	604	36	48	866	14	647	1370	584
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	3			6			5			9		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna	Protecte	Permiss	Overlap
Signal group	3	8	0	7	4	0	1	6	0	5	2	2
Auxiliary Signal Groups												2,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	7	0	5	25	0	5	5	5
Maximum Green [s]	30	30	0	30	23	0	9	30	0	44	30	30
Amber [s]	3.0	3.0	0.0	3.0	5.0	0.0	4.0	5.0	0.0	4.0	5.0	5.0
All red [s]	1.0	1.0	0.0	1.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Split [s]	10	33	0	30	53	0	15	37	0	50	72	72
Vehicle Extension [s]	3.0	3.0	0.0	3.0	2.5	0.0	3.0	5.0	0.0	6.0	3.0	3.0
Walk [s]	0	5	0	0	0	0	0	0	0	0	5	5
Pedestrian Clearance [s]	0	10	0	0	0	0	0	0	0	0	10	10
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	5.0	0.0	4.0	5.0	0.0	4.0	5.0	5.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	Yes		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	294.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	30.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	5.00	5.00	0.00	5.00	0.00	5.00	0.00
g_i, Effective Green Time [s]	2	36	36	19	50	50	80	54	80	70	133
g / C, Green / Cycle	0.02	0.24	0.24	0.13	0.33	0.33	0.53	0.36	0.53	0.46	0.88
(v / s)_i Volume / Saturation Flow Rate	0.01	0.15	0.27	0.11	0.17	0.02	0.09	0.24	0.34	0.39	0.37
s, saturation flow rate [veh/h]	1743	3542	1563	3445	3547	1583	535	3547	1899	3545	1579
c, Capacity [veh/h]	28	839	370	446	1170	522	226	1278	854	1648	1396
d1, Uniform Delay [s]	73.25	51.43	57.24	64.11	40.59	34.46	26.35	40.61	26.46	34.99	1.59
k, delay calibration	0.11	0.11	0.50	0.11	0.08	0.08	0.50	0.50	0.29	0.37	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	16.28	0.80	86.81	5.62	0.26	0.04	2.14	2.91	3.67	3.74	0.92
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

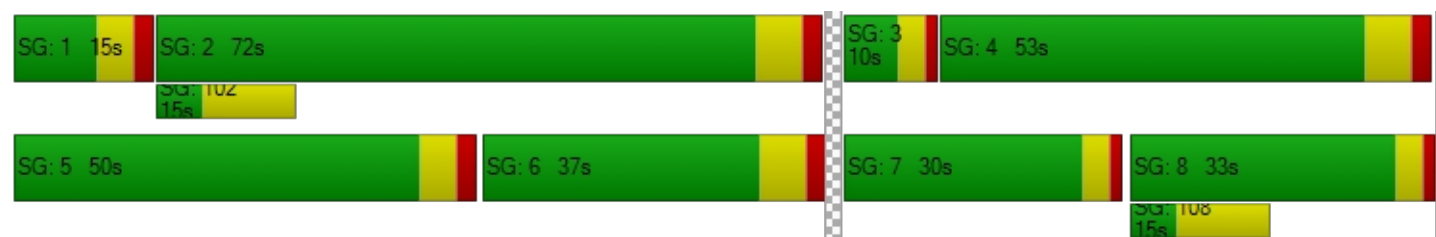
X, volume / capacity	0.56	0.64	1.13	0.88	0.52	0.07	0.21	0.68	0.76	0.83	0.42
d, Delay for Lane Group [s/veh]	89.53	52.24	144.05	69.74	40.85	34.50	28.49	43.52	30.13	38.74	2.51
Lane Group LOS	F	D	F	E	D	C	C	D	C	D	A
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.73	8.95	22.61	7.56	8.90	0.90	0.92	13.75	6.67	21.52	1.30
50th-Percentile Queue Length [ft/ln]	18.32	223.72	565.21	189.03	222.60	22.57	22.93	343.85	166.64	538.05	32.58
95th-Percentile Queue Length [veh/ln]	1.32	13.86	32.58	12.07	13.80	1.62	1.65	19.84	10.90	29.13	2.35
95th-Percentile Queue Length [ft/ln]	32.98	346.38	814.38	301.77	344.94	40.62	41.28	495.90	272.49	728.25	58.65

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	89.53	52.24	144.05	69.74	40.85	34.50	28.49	43.52	0.00	30.13	38.74	2.51
Movement LOS	F	D	F	E	D	C	C	D		C	D	A
d_A, Approach Delay [s/veh]	92.54			51.59			42.73			28.46		
Approach LOS	F			D			D			C		
d_I, Intersection Delay [s/veh]	46.39											
Intersection LOS	D											
Intersection V/C	0.850											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 25: Ager Rd/23rd Ave

Control Type: Signalized
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 35.9
 Level Of Service: D
 Volume to Capacity (v/c): 0.579

Intersection Setup

Name	Rittenhouse St			23rd Ave			Ager Rd.			Ager Rd.		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	200.00	100.00	100.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Rittenhouse St			23rd Ave			Ager Rd.			Ager Rd.		
Base Volume Input [veh/h]	14	18	22	267	13	75	19	875	164	11	465	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	47	0	0	14	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	18	22	267	13	75	19	922	164	11	479	3
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	5	6	67	3	19	5	231	41	3	120	1
Total Analysis Volume [veh/h]	14	18	22	267	13	75	19	922	164	11	479	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	35	0	0	35	0
Maximum Green [s]	0	20	0	0	30	0	0	35	0	0	35	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	25	0	0	30	0	0	39	0	0	39	0
Vehicle Extension [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	21	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	20	25	35	35	35	35	35	35
g / C, Green / Cycle	0.22	0.28	0.39	0.39	0.39	0.39	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.03	0.25	0.02	0.33	0.33	0.02	0.14	0.14
s, saturation flow rate [veh/h]	1557	1392	822	1683	1596	467	1683	1679
c, Capacity [veh/h]	396	422	297	654	621	110	654	653
d1, Uniform Delay [s]	28.19	31.02	24.93	25.12	25.14	40.39	19.62	19.62
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.71	18.04	0.41	13.16	13.84	1.82	1.60	1.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.14	0.84	0.06	0.85	0.85	0.10	0.37	0.37
d, Delay for Lane Group [s/veh]	28.91	49.06	25.34	38.29	38.98	42.21	21.21	21.22
Lane Group LOS	C	D	C	D	D	D	C	C
Critical Lane Group	No	Yes	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	1.00	9.08	0.33	12.53	12.01	0.28	3.72	3.71
50th-Percentile Queue Length [ft/ln]	25.12	226.98	8.28	313.20	300.22	7.10	92.90	92.77
95th-Percentile Queue Length [veh/ln]	1.81	14.02	0.60	18.33	17.69	0.51	6.69	6.68
95th-Percentile Queue Length [ft/ln]	45.22	350.52	14.91	458.32	442.30	12.78	167.21	166.98

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	28.91	28.91	28.91	49.06	49.06	49.06	25.34	38.56	38.98	42.21	21.22	21.22
Movement LOS	C	C	C	D	D	D	C	D	D	D	C	C
d_A, Approach Delay [s/veh]	28.91			49.06			38.39			21.68		
Approach LOS	C			D			D			C		
d_I, Intersection Delay [s/veh]	35.92											
Intersection LOS	D											
Intersection V/C	0.579											

Other Modes

g_Walk,mi, Effective Walk Time [s]	34.0			34.0			20.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	17.42			17.42			27.22			34.67		
I_p,int, Pedestrian LOS Score for Intersection	1.757			1.970			3.181			2.661		
Crosswalk LOS	A			A			C			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	444			556			778			778		
d_b, Bicycle Delay [s]	27.22			23.47			16.81			16.81		
I_b,int, Bicycle LOS Score for Intersection	1.649			2.145			2.471			1.966		
Bicycle LOS	A			B			B			A		

Sequence

Ring 1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 26: Ager Rd/Oglethorpe St/School

Control Type:	Signalized	Delay (sec / veh):	39.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.420

Intersection Setup

Name	Oglethorpe St			School			Ager Rd.			Ager Rd.		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	1200.00	350.00	100.00	100.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Oglethorpe St			School			Ager Rd.			Ager Rd.		
Base Volume Input [veh/h]	27	12	36	14	0	4	25	936	80	122	718	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	47	0	0	14	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	27	12	36	14	0	4	25	983	80	122	732	12
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	3	9	4	0	1	6	246	20	31	183	3
Total Analysis Volume [veh/h]	27	12	36	14	0	4	25	983	80	122	732	12
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	4	0	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	10	0	5	10	0
Maximum Green [s]	0	20	0	0	20	0	20	30	0	20	30	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	30	0	0	30	0	30	45	0	30	45	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	6.0	0.0	3.0	6.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	27	0	0	11	0	0	12	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	L	C	C
C, Cycle Length [s]	109	109	109	109	109	109	109	109
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	3.00	0.00	3.00	3.00
g_i, Effective Green Time [s]	25	25	70	40	40	70	40	40
g / C, Green / Cycle	0.23	0.23	0.64	0.37	0.37	0.64	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.05	0.01	0.02	0.32	0.32	0.13	0.22	0.22
s, saturation flow rate [veh/h]	1422	1272	1028	1683	1639	928	1683	1673
c, Capacity [veh/h]	371	350	639	618	601	549	618	614
d1, Uniform Delay [s]	34.02	32.75	8.93	32.11	32.12	14.02	28.06	28.06
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.22	0.28	0.11	15.61	15.98	0.93	4.34	4.36
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.20	0.05	0.04	0.87	0.87	0.22	0.60	0.60
d, Delay for Lane Group [s/veh]	35.24	33.02	9.05	47.72	48.10	14.95	32.40	32.42
Lane Group LOS	D	C	A	D	D	B	C	C
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.74	0.40	0.22	15.39	15.06	1.16	8.44	8.40
50th-Percentile Queue Length [ft/ln]	43.46	9.99	5.41	384.75	376.40	29.06	211.00	209.92
95th-Percentile Queue Length [veh/ln]	3.13	0.72	0.39	21.82	21.42	2.09	13.20	13.15
95th-Percentile Queue Length [ft/ln]	78.22	17.98	9.74	545.60	535.49	52.30	330.11	328.73

Movement, Approach, & Intersection Results

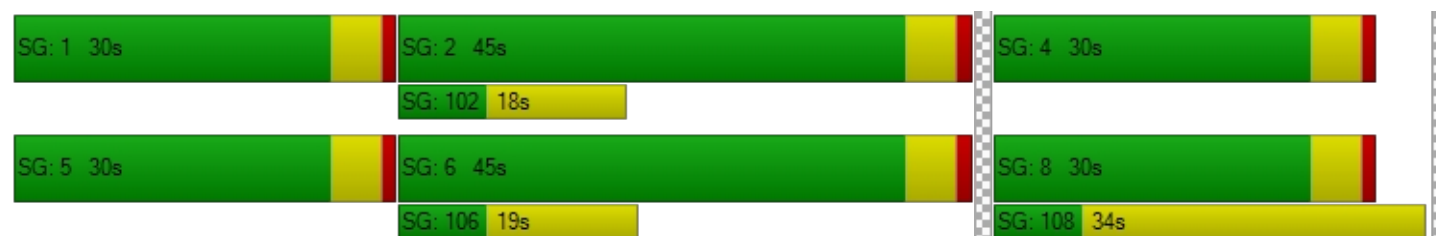
d_M, Delay for Movement [s/veh]	35.24	35.24	35.24	33.02	33.02	33.02	9.05	47.89	48.10	14.95	32.41	32.42
Movement LOS	D	D	D	C	C	C	A	D	D	B	C	C
d_A, Approach Delay [s/veh]	35.24			33.02			47.01			29.95		
Approach LOS	D			C			D			C		
d_I, Intersection Delay [s/veh]	39.24											
Intersection LOS	D											
Intersection V/C	0.420											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			25.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			23.47			34.67		
I_p,int, Pedestrian LOS Score for Intersection	1.783			1.894			2.729			2.765		
Crosswalk LOS	A			A			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	556			556			889			889		
d_b, Bicycle Delay [s]	23.47			23.47			13.89			13.89		
I_b,int, Bicycle LOS Score for Intersection	1.683			1.589			2.457			2.274		
Bicycle LOS	A			A			B			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report Intersection 27: Ager Rd/Nicholson St

Control Type: Signalized
Analysis Method: HCM 2010
Analysis Period: 15 minutes

Delay (sec / veh): 16.3
Level Of Service: B
Volume to Capacity (v/c): 0.465

Intersection Setup

Name	Ager Rd.				Nicholson St			Nicholson St			Ager Rd.			
Approach	Northbound				Northeastbound			Southwestbound			Southeastbound			
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	0	0	1	0	0	0
Pocket Length [ft]	225.0	100.0	100.0	150.0	100.00	100.00	100.00	100.00	100.00	100.00	200.0	100.0	100.0	100.0
Speed [mph]	35.00				30.00			30.00			35.00			
Grade [%]	0.00				0.00			0.00			0.00			
Crosswalk	Yes				Yes			Yes			Yes			

Volumes

Name	Ager Rd.				Nicholson St			Nicholson St			Ager Rd.			
Base Volume Input [veh/h]	1	39	741	25	98	17	82	60	18	239	6	51	713	82
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	2.00	0.00	1.82	0.00	0.00	1.74	0.00	2.44	2.00	3.57
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	47	0	0	0	0	0	0	0	0	0	14	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	39	788	25	98	17	82	60	18	239	6	51	727	82
Peak Hour Factor	0.900	0.900	0.900	0.900	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.900	0.900	0.900	0.900
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	11	219	7	27	5	23	17	5	66	2	14	202	23
Total Analysis Volume [veh/h]	1	43	876	28	109	19	91	67	20	266	7	57	808	91
Presence of On-Street Parking	No			No	No		No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0				0			0			0			
Bicycle Volume [bicycles/h]	0				0			0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permi	Permi	Permi	Permi
Signal group	0	0	2	0	0	8	0	0	4	0	0	0	6	0
Auxiliary Signal Groups														
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	5	0	0	5	0	0	0	5	0
Maximum Green [s]	0	0	30	0	0	30	0	0	30	0	0	0	30	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0
Split [s]	0	0	57	0	0	33	0	0	33	0	0	0	57	0
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	5	0	0	5	0	0	5	0	0	0	5	0
Pedestrian Clearance [s]	0	0	10	0	0	10	0	0	10	0	0	0	10	0
Rest In Walk			No			No			No				No	
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall			No			No			No				No	
Maximum Recall			No			No			No				No	
Pedestrian Recall			No			No			No				No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	53	53	53	29	29	53	53	53
g / C, Green / Cycle	0.59	0.59	0.59	0.32	0.32	0.59	0.59	0.59
(v / s)_i Volume / Saturation Flow Rate	0.07	0.24	0.24	0.22	0.22	0.10	0.25	0.25
s, saturation flow rate [veh/h]	629	1863	1842	1000	1607	613	1863	1797
c, Capacity [veh/h]	352	1097	1085	382	565	346	1097	1058
d1, Uniform Delay [s]	15.56	10.06	10.06	27.18	26.30	16.10	10.08	10.08
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.73	1.16	1.17	6.12	5.13	1.18	1.17	1.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.12	0.41	0.41	0.57	0.62	0.18	0.42	0.42
d, Delay for Lane Group [s/veh]	16.29	11.22	11.23	33.31	31.44	17.27	11.25	11.29
Lane Group LOS	B	B	B	C	C	B	B	B
Critical Lane Group	No	No	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.59	4.66	4.61	4.84	7.14	0.90	4.70	4.55
50th-Percentile Queue Length [ft/ln]	14.87	116.51	115.34	120.99	178.38	22.55	117.57	113.76
95th-Percentile Queue Length [veh/ln]	1.07	8.20	8.14	8.45	11.52	1.62	8.26	8.05
95th-Percentile Queue Length [ft/ln]	26.77	205.02	203.41	211.19	287.90	40.59	206.49	201.22

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	16.29	16.29	11.22	11.23	33.31	33.31	33.31	31.44	31.44	31.44	17.27	17.27	11.27	11.29
Movement LOS	B	B	B	B	C	C	C	C	C	C	B	B	B	B
d_A, Approach Delay [s/veh]	11.46				33.31			31.44			11.67			
Approach LOS	B				C			C			B			
d_I, Intersection Delay [s/veh]	16.31													
Intersection LOS	B													
Intersection V/C	0.465													

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SG: 2 57s

SG: 102 15s

SG: 6 57s

SG: 106 15s

SG: 4 33s

SG: 104 15s

SG: 8 33s

SG: 108 15s

Intersection Level Of Service Report

Intersection 28: Ager Rd/Hamilton St

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 19.7
 Level Of Service: B
 Volume to Capacity (v/c): 0.841

Intersection Setup

Name	Hamilton St			Hamilton St			Ager Rd.			Ager Rd.		
Approach	Eastbound			Westbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1	1	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	1500.00
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Hamilton St			Hamilton St			Ager Rd.			Ager Rd.		
Base Volume Input [veh/h]	28	74	10	45	220	330	79	180	55	388	347	115
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.33	1.72	0.00	3.85	2.08	1.91	2.06	1.84	3.33	2.21	2.00	2.63
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	47	47	58	0	13	0	17	0	0	0	0	14
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	75	121	68	45	233	330	96	180	55	388	347	129
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	34	19	13	65	92	27	50	15	108	96	36
Total Analysis Volume [veh/h]	83	134	76	50	259	367	107	200	61	431	386	143
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	4	0	0	8	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	10	0	5	10	0
Maximum Green [s]	0	26	0	0	26	0	0	30	0	10	45	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	4.0	0.0	3.0	4.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	30	0	0	30	0	0	35	0	15	50	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	3.0	0.0	2.0	3.0	0.0
Minimum Recall		No			No			Yes		Yes	Yes	
Maximum Recall		No			No			No		No	No	
Pedestrian Recall		No			No			No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C	L	C	C	L	C
C, Cycle Length [s]	77	77	77	77	77	77	77	77	77
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	3.00	3.00	3.00	0.00	3.00
g_i, Effective Green Time [s]	26	26	26	26	28	28	28	42	42
g / C, Green / Cycle	0.34	0.34	0.34	0.34	0.37	0.37	0.37	0.55	0.55
(v / s)_i Volume / Saturation Flow Rate	0.41	0.13	0.18	0.25	0.12	0.07	0.07	0.33	0.30
s, saturation flow rate [veh/h]	201	1598	1676	1440	870	1866	1720	1298	1778
c, Capacity [veh/h]	160	536	617	483	221	685	631	791	974
d1, Uniform Delay [s]	36.05	19.66	20.65	22.92	32.09	16.70	16.74	10.63	11.26
k, delay calibration	0.50	0.11	0.12	0.27	0.11	0.11	0.11	0.50	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.43	0.47	0.68	5.98	1.64	0.14	0.16	2.69	0.47
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.52	0.39	0.50	0.76	0.48	0.20	0.20	0.55	0.54
d, Delay for Lane Group [s/veh]	47.48	20.13	21.33	28.90	33.73	16.84	16.90	13.33	11.73
Lane Group LOS	D	C	C	C	C	B	B	B	B
Critical Lane Group	Yes	No	No	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.04	2.77	4.26	6.31	1.96	1.54	1.47	4.36	5.11
50th-Percentile Queue Length [ft/ln]	50.92	69.33	106.48	157.77	48.96	38.49	36.74	108.94	127.66
95th-Percentile Queue Length [veh/ln]	3.67	4.99	7.64	10.43	3.53	2.77	2.64	7.78	8.81
95th-Percentile Queue Length [ft/ln]	91.65	124.79	191.09	260.76	88.13	69.28	66.12	194.52	220.31

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	47.48	20.13	20.13	21.33	21.33	28.90	33.73	16.86	16.90	13.33	11.73	11.73
Movement LOS	D	C	C	C	C	C	C	B	B	B	B	B
d_A, Approach Delay [s/veh]	27.88			25.44			21.77			12.45		
Approach LOS	C			C			C			B		
d_I, Intersection Delay [s/veh]	19.73											
Intersection LOS	B											
Intersection V/C	0.841											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 29: Toledo Rd/Belcrest Rd

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 8.6
 Level Of Service: A
 Volume to Capacity (v/c): 0.375

Intersection Setup

Name	Belcrest Rd				Belcrest Rd				Toledo Rd			Toledo Rd		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	1	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	400.0	100.0	100.0	100.0	200.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00				30.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Crosswalk	Yes				No				Yes			Yes		

Volumes

Name	Belcrest Rd				Belcrest Rd				Toledo Rd			Toledo Rd		
Base Volume Input [veh/h]	15	96	258	53	2	78	497	73	28	18	28	57	23	90
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.03	1.83	1.37	0.00	2.00	2.02	0.00	0.00	2.86	0.00	2.86	3.45	2.13
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	18	0	0	0	3	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	96	276	53	2	78	500	73	28	18	28	57	23	90
Peak Hour Factor	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	27	77	15	1	22	139	20	8	5	8	16	6	25
Total Analysis Volume [veh/h]	17	107	307	59	2	87	556	81	31	20	31	63	26	100
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	8				0				20			15		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	2	2	2	2	6	6	6	6	4	4	4	8	8	8
Auxiliary Signal Groups														
Lead / Lag	Lag	Lag	-	-	Lag	Lag	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Maximum Green [s]	40	40	40	40	40	40	40	40	30	30	30	30	30	30
Amber [s]	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	45	45	45	45	45	45	45	45	35	35	35	35	35	35
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	15	15	15	15	15	15	15	15	21	21	21	21	21	21
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall			No				No			No			No	
Maximum Recall			Yes				Yes			No			No	
Pedestrian Recall			No				No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	30.0	30.0	30.0	30.0	0.0	0.0	0.0	0.0	30.0	30.0	30.0	30.0	30.0	30.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	C
C, Cycle Length [s]	61	61	61	61	61	61	61	61	61	61
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	40	40	40	40	40	40	11	11	11	11
g / C, Green / Cycle	0.66	0.66	0.66	0.66	0.66	0.66	0.18	0.18	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.16	0.10	0.10	0.09	0.17	0.18	0.02	0.01	0.02	0.13
s, saturation flow rate [veh/h]	780	1866	1756	1007	1862	1773	1285	1847	1593	1508
c, Capacity [veh/h]	551	1231	1158	711	1228	1169	145	324	280	344
d1, Uniform Delay [s]	7.15	3.91	3.92	5.64	4.26	4.27	29.79	20.84	21.02	23.53
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.94	0.26	0.28	0.36	0.53	0.56	0.72	0.08	0.17	1.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.22	0.15	0.15	0.13	0.26	0.27	0.21	0.06	0.11	0.55
d, Delay for Lane Group [s/veh]	8.10	4.17	4.20	6.00	4.79	4.83	30.51	20.91	21.19	24.90
Lane Group LOS	A	A	A	A	A	A	C	C	C	C
Critical Lane Group	No	No	No	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.83	0.69	0.67	0.47	1.31	1.27	0.46	0.23	0.36	2.51
50th-Percentile Queue Length [ft/ln]	20.74	17.18	16.63	11.74	32.84	31.76	11.54	5.74	9.03	62.74
95th-Percentile Queue Length [veh/ln]	1.49	1.24	1.20	0.85	2.36	2.29	0.83	0.41	0.65	4.52
95th-Percentile Queue Length [ft/ln]	37.32	30.93	29.93	21.13	59.11	57.16	20.78	10.33	16.26	112.94

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	8.10	8.10	4.18	4.20	6.00	6.00	4.80	4.83	30.51	20.91	21.19	24.90	24.90	24.90
Movement LOS	A	A	A	A	A	A	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	5.17				4.95				24.65			24.90		
Approach LOS	A				A				C			C		
d_I, Intersection Delay [s/veh]	8.65													
Intersection LOS	A													
Intersection V/C	0.375													

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SG: 2 45s

SG: 102 22s

SG: 6 45s

SG: 106 22s

SG: 4 35s

SG: 104 28s

SG: 8 35s

Intersection Level Of Service Report

Intersection 30: Adelphi Rd/Belcrest Rd

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 23.7
 Level Of Service: C
 Volume to Capacity (v/c): 0.783

Intersection Setup

Name	Belcrest Rd			Underwood St			Adelphi Rd				Adelphi Rd		
Approach	Northeastbound			Southwestbound			Northwestbound				Southeastbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	150.0	100.0	100.0	100.0	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Crosswalk	No			Yes			Yes				Yes		

Volumes

Name	Belcrest Rd			Underwood St			Adelphi Rd				Adelphi Rd		
Base Volume Input [veh/h]	376	0	31	18	42	6	2	37	1013	0	0	735	680
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.98	0.00	0.00	1.99	1.94
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	18	0	0	0	0	0	0	0	12	0	0	5	3
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	394	0	31	18	42	6	2	37	1025	0	0	740	683
Peak Hour Factor	0.9000	1.0000	1.0000	0.9000	0.9000	0.9000	0.900	0.900	0.900	1.000	1.0000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	109	0	8	5	12	2	1	10	285	0	0	206	190
Total Analysis Volume [veh/h]	438	0	31	20	47	7	2	41	1139	0	0	822	759
Presence of On-Street Parking	No		No	No		No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			1				5		
Bicycle Volume [bicycles/h]	0			0			0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	15.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss
Signal group	4	0	0	8	8	8	5	5	2	0	0	6	6
Auxiliary Signal Groups													
Lead / Lag	Lead	-	-	Lag	-	-	Lead	Lead	-	-	-	-	-
Minimum Green [s]	4	0	0	4	4	4	4	4	4	0	0	4	4
Maximum Green [s]	30	0	0	16	16	16	11	11	60	0	0	45	45
Amber [s]	4.0	0.0	0.0	3.0	3.0	3.0	3.5	3.5	3.5	0.0	0.0	4.0	4.0
All red [s]	1.0	0.0	0.0	1.0	1.0	1.0	0.5	0.5	1.0	0.0	0.0	1.0	1.0
Split [s]	30	0	0	30	30	30	30	30	30	0	0	30	30
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	0.0	3.0	3.0
Walk [s]	4	0	0	4	4	4	0	0	3	0	0	3	3
Pedestrian Clearance [s]	13	0	0	13	13	13	0	0	8	0	0	8	8
Rest In Walk	No				No				No			No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	0.0	0.0	2.0	2.0	2.0	2.0	2.0	2.5	0.0	0.0	3.0	3.0
Minimum Recall	No				No			No	No			No	
Maximum Recall	No				No			No	Yes			Yes	
Pedestrian Recall	No				No			No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	30.0	30.0	30.0	0.0	0.0	30.0	30.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C
C, Cycle Length [s]	94	94	94	94	94	94	94
L, Total Lost Time per Cycle [s]	5.00	5.00	4.00	4.25	4.50	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	2.00	0.00	2.50	3.00	3.00
g_i, Effective Green Time [s]	15	15	6	60	60	53	53
g / C, Green / Cycle	0.16	0.16	0.06	0.64	0.64	0.56	0.56
(v / s)_i Volume / Saturation Flow Rate	0.13	0.13	0.04	0.02	0.32	0.42	0.50
s, saturation flow rate [veh/h]	1772	1781	1844	1810	3547	1863	1593
c, Capacity [veh/h]	285	287	113	453	2251	1039	889
d1, Uniform Delay [s]	38.33	38.33	43.38	19.23	9.30	16.05	18.34
k, delay calibration	0.11	0.11	0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.77	5.75	6.19	0.42	0.82	5.25	12.93
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.82	0.65	0.10	0.51	0.76	0.89
d, Delay for Lane Group [s/veh]	44.10	44.08	49.56	19.64	10.11	21.30	31.27
Lane Group LOS	D	D	D	B	B	C	C
Critical Lane Group	No	Yes	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.61	5.64	1.87	0.35	5.86	13.45	16.83
50th-Percentile Queue Length [ft/ln]	140.36	141.04	46.79	8.67	146.55	336.28	420.83
95th-Percentile Queue Length [veh/ln]	9.50	9.54	3.37	0.62	9.83	19.47	23.56
95th-Percentile Queue Length [ft/ln]	237.51	238.42	84.22	15.61	245.82	486.65	589.05

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	44.09	0.00	44.08	49.56	49.56	49.56	19.64	19.64	10.11	0.00	0.00	21.68	31.27
Movement LOS	D		D	D	D	D	B	B	B			C	C
d_A, Approach Delay [s/veh]	44.09			49.56			10.46			26.29			
Approach LOS	D			D			B			C			
d_I, Intersection Delay [s/veh]	23.67												
Intersection LOS	C												
Intersection V/C	0.783												

Sequence

Ring 1	-	2	-	4	-	8	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 31: Adelphi Rd/Campus Dr

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 31.8
 Level Of Service: C
 Volume to Capacity (v/c): 0.473

Intersection Setup

Name	Adelphi Rd.			Adelphi Rd.			Campus Dr.			Campus Dr.		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	0	0	1	0	0	0
Pocket Length [ft]	350.00	100.00	500.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Adelphi Rd.			Adelphi Rd.			Campus Dr.			Campus Dr.		
Base Volume Input [veh/h]	230	953	80	209	1338	0	0	140	206	73	127	66
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.27	2.08	2.27	2.00	2.05	0.00	0.00	2.00	2.21	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	30	0	0	8	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	230	983	80	209	1346	0	0	140	206	73	127	66
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	1.0000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	64	273	22	58	374	0	0	39	57	20	35	18
Total Analysis Volume [veh/h]	256	1092	89	232	1496	0	0	156	229	81	141	73
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	248
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	45.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Overlap	Overlap	Permiss	Permiss	Permiss	Permiss	Split	Split	Split
Signal group	3	8	8	1	1	0	0	2	2	6	6	6
Auxiliary Signal Groups				1,7	1,4							
Lead / Lag	Lag	-	-	Lag	-	-	-	-	-	Lag	-	-
Minimum Green [s]	5	8	8	15	15	0	0	25	25	5	5	5
Maximum Green [s]	30	60	60	40	40	0	0	60	60	30	30	30
Amber [s]	4.0	4.0	4.0	4.0	4.0	0.0	0.0	4.5	4.5	4.5	4.5	4.5
All red [s]	1.0	2.0	2.0	1.0	1.0	0.0	0.0	1.5	1.5	1.5	1.5	1.5
Split [s]	30	30	30	30	30	0	0	30	30	30	30	30
Vehicle Extension [s]	3.0	3.5	3.5	3.0	3.0	0.0	0.0	4.0	4.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	4.0	4.0	3.0	3.0	0.0	0.0	4.0	4.0	4.0	4.0	4.0
Minimum Recall	Yes	Yes		Yes	Yes			Yes			Yes	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	30.0	30.0	30.0	30.0	30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	R	C	C	R
C, Cycle Length [s]	118	118	118	118	118	118	118	118	118	118
L, Total Lost Time per Cycle [s]	5.00	6.00	6.00	5.00	5.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	4.00	4.00	0.00	0.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	19	34	34	57	73	25	25	10	10	10
g / C, Green / Cycle	0.16	0.28	0.28	0.49	0.62	0.21	0.21	0.09	0.09	0.09
(v / s)_i Volume / Saturation Flow Rate	0.14	0.22	0.06	0.07	0.42	0.04	0.14	0.06	0.06	0.05
s, saturation flow rate [veh/h]	1769	5070	1579	3445	3545	3547	1580	1800	1695	1583
c, Capacity [veh/h]	291	1447	451	1672	2179	751	335	154	145	135
d1, Uniform Delay [s]	48.22	38.46	31.98	16.78	15.18	38.40	42.93	52.79	52.73	51.80
k, delay calibration	0.12	0.13	0.13	0.11	0.17	0.15	0.15	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.40	0.99	0.26	0.04	0.62	0.19	3.51	7.10	7.08	3.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

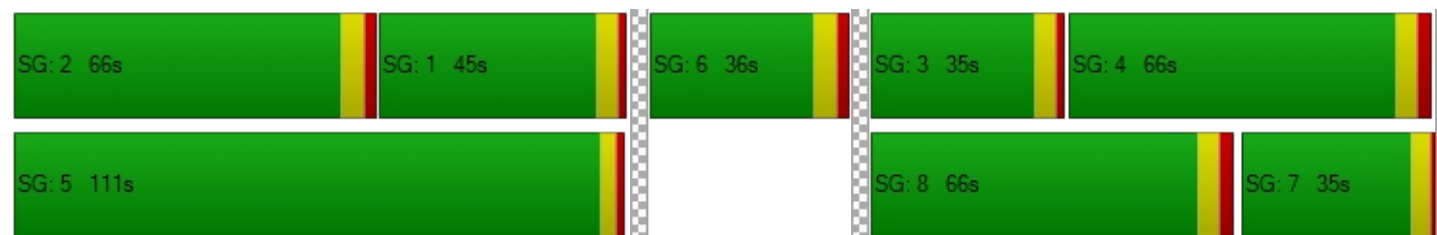
X, volume / capacity	0.88	0.75	0.20	0.14	0.69	0.21	0.68	0.75	0.74	0.54
d, Delay for Lane Group [s/veh]	57.61	39.45	32.24	16.82	15.80	38.59	46.44	59.89	59.82	55.11
Lane Group LOS	E	D	C	B	B	D	D	E	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.96	9.46	1.93	1.69	12.20	1.87	6.41	3.61	3.35	2.18
50th-Percentile Queue Length [ft/ln]	199.07	236.50	48.21	42.25	304.89	46.85	160.29	90.31	83.69	54.53
95th-Percentile Queue Length [veh/ln]	12.59	14.50	3.47	3.04	17.92	3.37	10.56	6.50	6.03	3.93
95th-Percentile Queue Length [ft/ln]	314.76	362.61	86.78	76.05	448.08	84.34	264.11	162.56	150.64	98.16

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	57.61	39.45	32.24	16.82	15.80	0.00	0.00	38.59	46.44	59.89	59.84	55.11
Movement LOS	E	D	C	B	B			D	D	E	E	E
d_A, Approach Delay [s/veh]	42.24			15.94			43.26			58.68		
Approach LOS	D			B			D			E		
d_I, Intersection Delay [s/veh]	31.78											
Intersection LOS	C											
Intersection V/C	0.473											

Sequence

Ring 1	1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	-	-	8	7	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 32: Adelphi Rd/Toledo Rd

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 6.3
 Level Of Service: A
 Volume to Capacity (v/c): 0.424

Intersection Setup

Name	Adelphi Rd			Adelphi Rd		Toledo Rd	
Approach	Northbound			Southbound		Eastbound	
Lane Configuration							
Turning Movement	U-turn	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	1	0	1
Pocket Length [ft]	150.00	100.00	100.00	100.00	100.00	100.00	200.00
Speed [mph]	45.00			30.00		30.00	
Grade [%]	0.00			0.00		0.00	
Crosswalk	Yes			No		Yes	

Volumes

Name	Adelphi Rd			Adelphi Rd		Toledo Rd	
Base Volume Input [veh/h]	6	156	1022	667	104	51	75
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.97	2.01	2.05	1.88	2.38	1.96
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	12	5	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	156	1034	672	104	51	75
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	43	287	187	29	14	21
Total Analysis Volume [veh/h]	7	173	1149	747	116	57	83
Presence of On-Street Parking	No		No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	6			0		6	
Bicycle Volume [bicycles/h]	0			0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	ProtectedP	Permissive	Permissive	Permissive	Split	Split
Signal group	5	5	2	6	6	4	4
Auxiliary Signal Groups							
Lead / Lag	Lead	Lead	-	-	-	Lag	-
Minimum Green [s]	4	4	4	4	4	4	4
Maximum Green [s]	15	15	65	45	45	25	25
Amber [s]	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	20	20	70	50	50	30	30
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	7	7	7	7	7
Pedestrian Clearance [s]	0	0	6	6	6	13	13
Rest In Walk			No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall		No	No	No		No	
Maximum Recall		No	Yes	Yes		No	
Pedestrian Recall		No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	30.0	30.0	30.0	30.0	30.0	30.0	30.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	82	82	82	82	82	82
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	65	65	56	56	7	7
g / C, Green / Cycle	0.79	0.79	0.68	0.68	0.09	0.09
(v / s)_i Volume / Saturation Flow Rate	0.22	0.32	0.21	0.07	0.03	0.05
s, saturation flow rate [veh/h]	834	3546	3545	1578	1767	1552
c, Capacity [veh/h]	718	2796	2390	1064	159	140
d1, Uniform Delay [s]	2.58	2.73	5.55	4.73	35.26	36.05
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.84	0.45	0.34	0.21	1.35	3.96
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.25	0.41	0.31	0.11	0.36	0.59
d, Delay for Lane Group [s/veh]	3.41	3.17	5.89	4.93	36.61	40.01
Lane Group LOS	A	A	A	A	D	D
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.42	1.24	2.26	0.63	1.12	1.73
50th-Percentile Queue Length [ft/ln]	10.46	31.04	56.47	15.72	27.93	43.20
95th-Percentile Queue Length [veh/ln]	0.75	2.24	4.07	1.13	2.01	3.11
95th-Percentile Queue Length [ft/ln]	18.83	55.88	101.65	28.29	50.27	77.76

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	3.41	3.41	3.17	5.89	4.93	36.61	40.01
Movement LOS	A	A	A	A	A	D	D
d_A, Approach Delay [s/veh]	3.21			5.76		38.63	
Approach LOS	A			A		D	
d_I, Intersection Delay [s/veh]	6.28						
Intersection LOS	A						
Intersection V/C	0.424						

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 33: Hamilton St/40th Pl/39th Ave

Control Type: Roundabout
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 8.1
 Level Of Service: A

Intersection Setup

Name	Magruder Park Ent				39th Ave				Hamilton St			
Approach	Northbound				Southbound				Eastbound			
Lane Configuration												
Turning Movement	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Left2	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00				30.00				35.00			
Grade [%]	0.00				0.00				0.00			
Crosswalk	Yes				Yes				Yes			

Volumes

Name	Magruder Park Ent				39th Ave				Hamilton St			
Base Volume Input [veh/h]	4	1	0	2	0	6	2	29	62	0	335	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.85	0.00	2.15	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	12	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	1	0	2	0	6	2	29	62	0	347	8
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	0	0	1	0	2	1	8	17	0	96	2
Total Analysis Volume [veh/h]	4	1	0	2	0	7	2	32	69	0	386	9
Pedestrian Volume [ped/h]	0				0				0			

Intersection Settings

Number of Conflicting Circulating Lanes	1				1				1			
Circulating Flow Rate [veh/h]	480				587				36			
Exiting Flow Rate [veh/h]	31				77				592			
Demand Flow Rate [veh/h]	4	1	0	2	0	6	2	29	62	0	347	8
Adjusted Demand Flow Rate [veh/h]	4	1	0	2	0	7	2	32	69	0	386	9

Lanes

Override Calculated Critical Headway	No				No				No			
User-Defined Critical Headway [s]	4.00				4.00				4.00			
Override Calculated Follow-Up Time	No				No				No			
User-Defined Follow-Up Time [s]	3.00				3.00				3.00			
A (intercept)	1130.00				1130.00				1130.00			
B (coefficient)	0.00100				0.00100				0.00100			
HV Adjustment Factor	1.00				1.00				0.98			
Entry Flow Rate [veh/h]	7				41				475			
Capacity of Entry and Bypass Lanes [veh/h]	700				629				1091			
Pedestrian Impedance	1.00				1.00				1.00			
Capacity per Entry Lane [veh/h]	700				629				1065			
X, volume / capacity	0.01				0.07				0.44			

Movement, Approach, & Intersection Results

Lane LOS	A				A				A			
95th-Percentile Queue Length [veh]	0.03				0.21				2.25			
95th-Percentile Queue Length [ft]	0.76				5.22				56.23			
Approach Delay [s/veh]	5.25				6.46				8.14			
Approach LOS	A				A				A			
Intersection Delay [s/veh]					8.06							
Intersection LOS					A							

Intersection Setup

Name	Hamilton St				Gallatin St			
Approach	Westbound				Northwestbound			
Lane Configuration								
Turning Movement	Left2	Left	Thru	Right	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00				35.00			
Grade [%]	0.00				0.00			
Crosswalk	Yes				Yes			

Volumes

Name	Hamilton St				Gallatin St			
Base Volume Input [veh/h]	6	6	112	2	12	375	2	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.20	0.00	0.00	2.18	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	3	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	6	112	2	12	378	2	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	2	31	1	3	105	1	0
Total Analysis Volume [veh/h]	7	7	124	2	13	420	2	0
Pedestrian Volume [ped/h]	0				0			

Intersection Settings

Number of Conflicting Circulating Lanes	1				1			
Circulating Flow Rate [veh/h]	521				77			
Exiting Flow Rate [veh/h]	0				410			
Demand Flow Rate [veh/h]	6	6	112	2	12	378	2	0
Adjusted Demand Flow Rate [veh/h]	7	7	124	2	13	420	2	0

Lanes

Overwrite Calculated Critical Headway	No				No			
User-Defined Critical Headway [s]	4.00				4.00			
Overwrite Calculated Follow-Up Time	No				No			
User-Defined Follow-Up Time [s]	3.00				3.00			
A (intercept)	1130.00				1130.00			
B (coefficient)	0.00100				0.00100			
HV Adjustment Factor	0.98				0.98			
Entry Flow Rate [veh/h]	143				445			
Capacity of Entry and Bypass Lanes [veh/h]	672				1047			
Pedestrian Impedance	1.00				1.00			
Capacity per Entry Lane [veh/h]	659				1026			
X, volume / capacity	0.21				0.42			

Movement, Approach, & Intersection Results

Lane LOS	A				A			
95th-Percentile Queue Length [veh]	0.80				2.15			
95th-Percentile Queue Length [ft]	20.01				53.73			
Approach Delay [s/veh]	8.00				8.20			
Approach LOS	A				A			
Intersection Delay [s/veh]	8.06							
Intersection LOS	A							

Intersection Level Of Service Report

Intersection 4281: New Intersection

Control Type: Two-way stop
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 12.6
 Level Of Service: B
 Volume to Capacity (v/c): 0.000

Intersection Setup

Name							Queensbury			Queensbury		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name							Queensbury			Queensbury		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	267	0	0	218	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	272	0	0	222	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	68	0	0	56	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	272	0	0	222	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

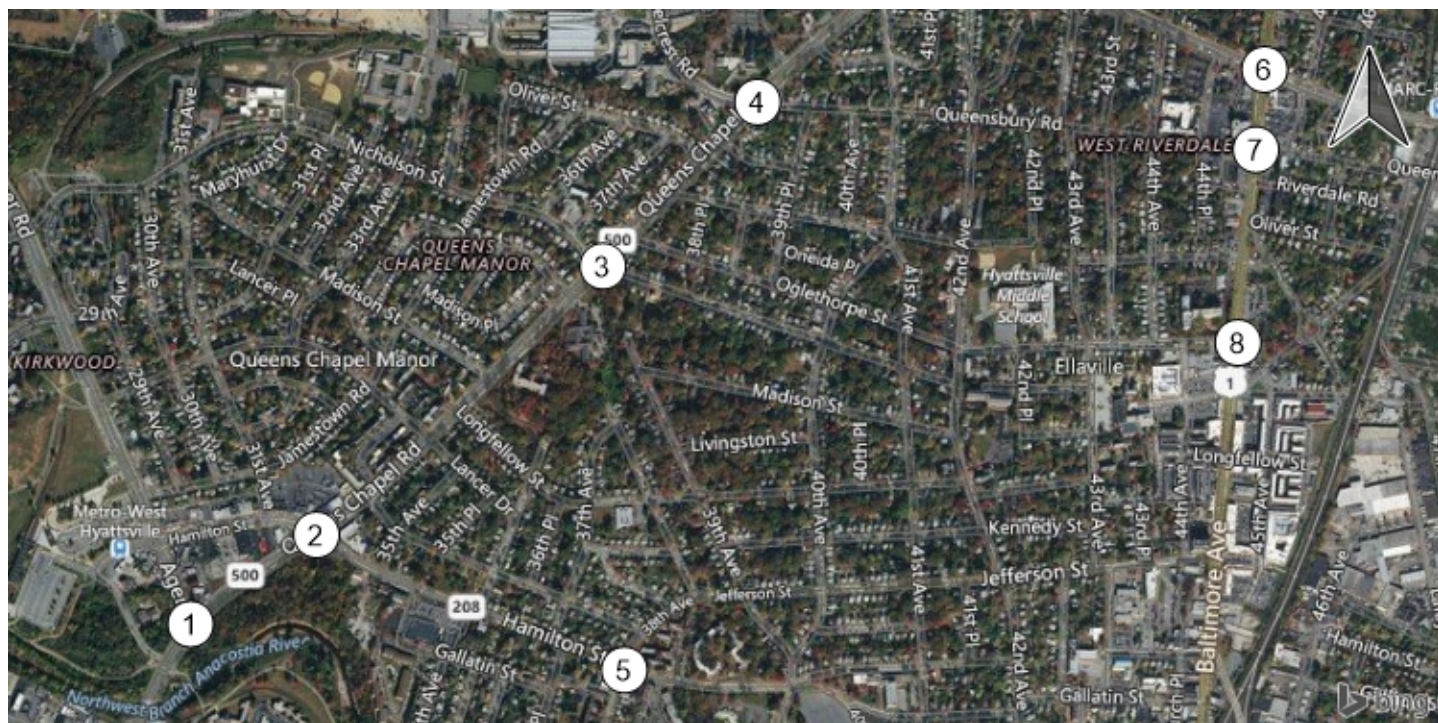
Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

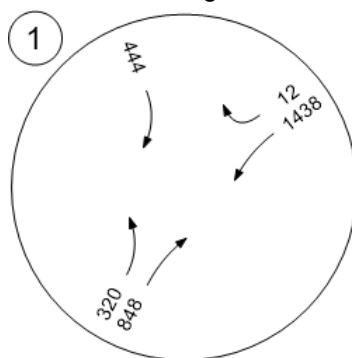
V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	12.41	12.56	9.70	12.41	12.56	9.40	7.67	0.00	0.00	7.79	0.00	0.00
Movement LOS	B	B	A	B	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	11.56			11.46			0.00			0.00		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	0.00											
Intersection LOS	B											

Version 6.00-00

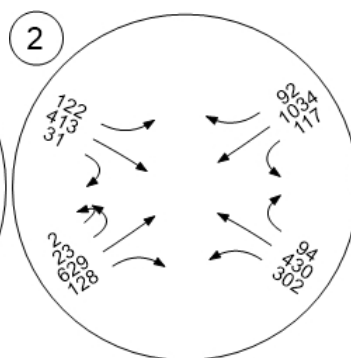
Traffic Volume - Future Total Volume



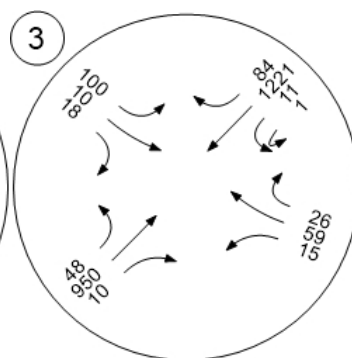
MD 500/Ager Rd



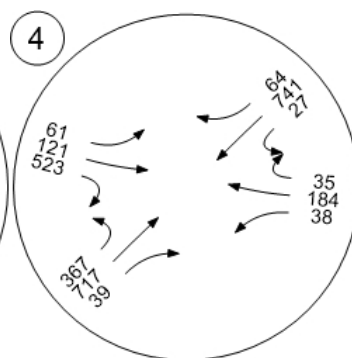
MD 500/Hamilton St



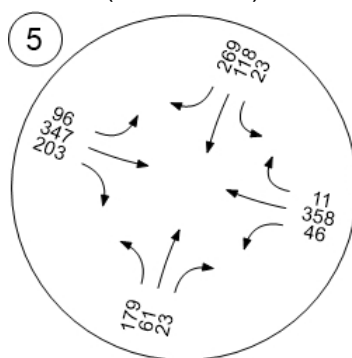
MD 500/Nicholson St



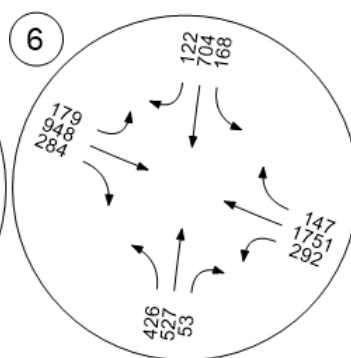
MD 500/Belcrest Rd/Queens



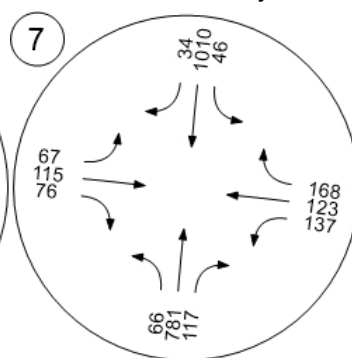
MD 208(Hamilton St)/38th Av



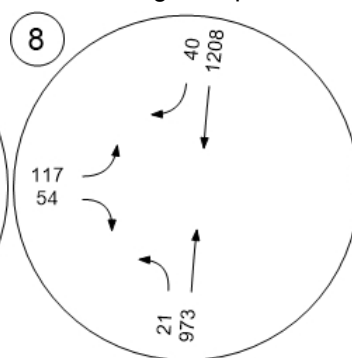
US 1/MD 410



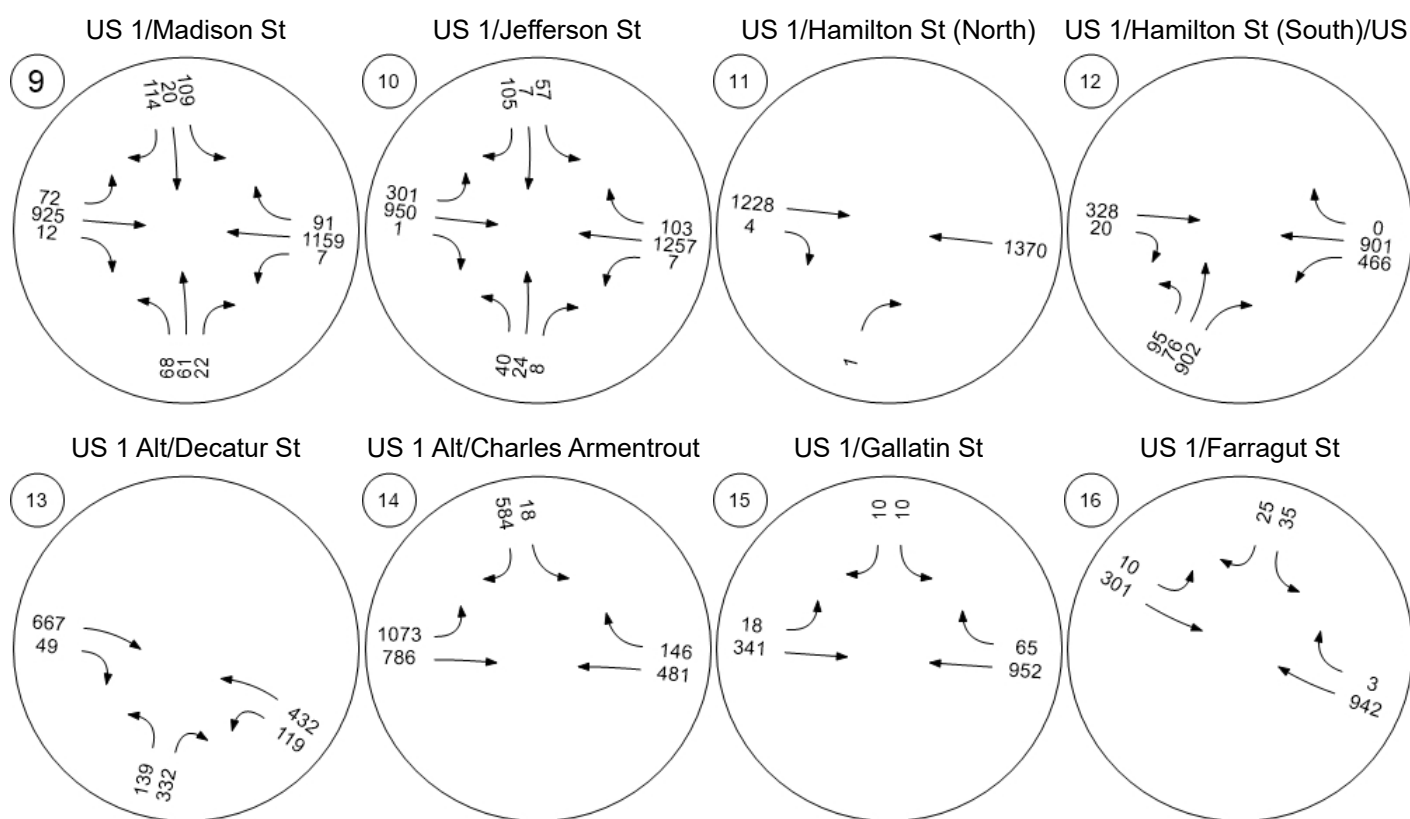
US 1/Queensbury Rd



US 1/Oglethorpe Rd

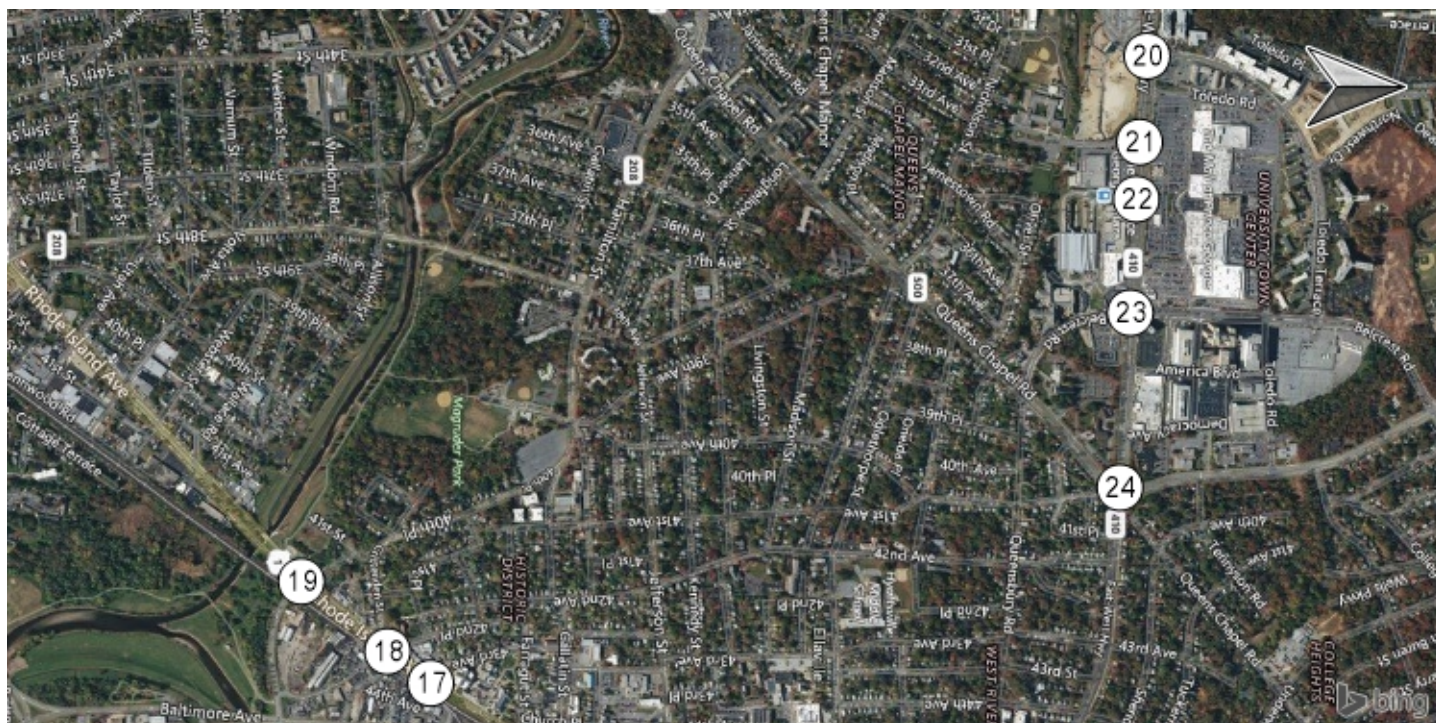


Traffic Volume - Future Total Volume

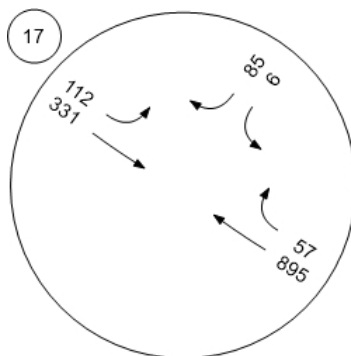


Version 6.00-00

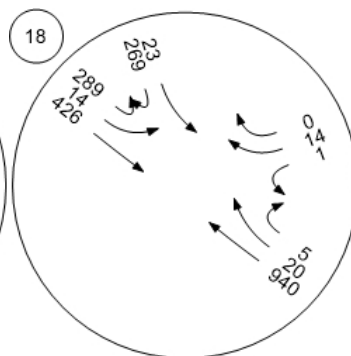
Traffic Volume - Future Total Volume



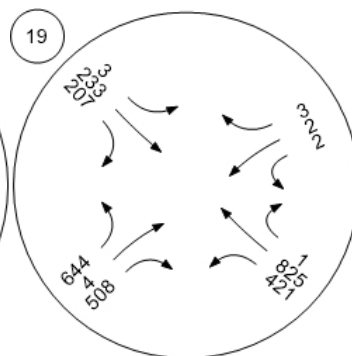
US 1/43rd Avenue



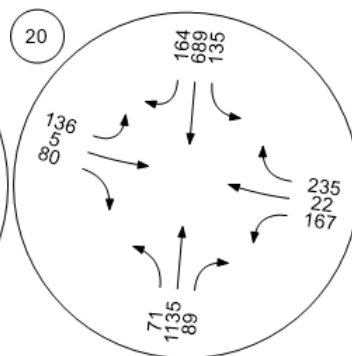
US 1/42nd Place/Crittendon



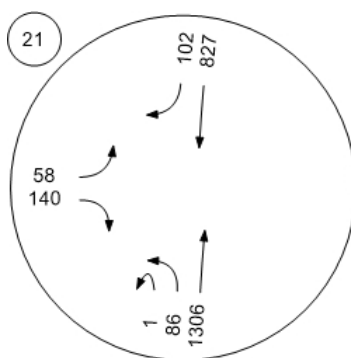
US 1/41st Place/Charles Arm



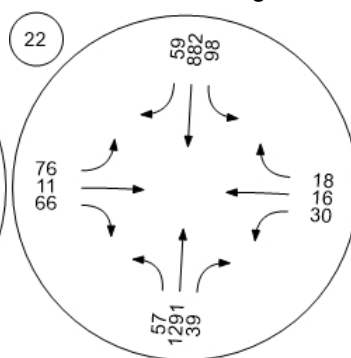
MD 410/Toledo Terrace



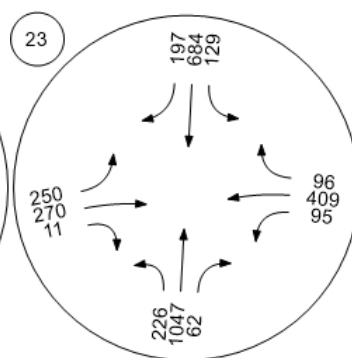
MD 410/Editors Park Dr



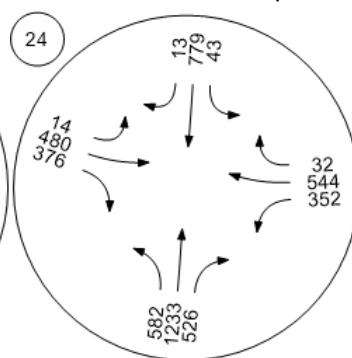
MD 410/Prince George's Plaza



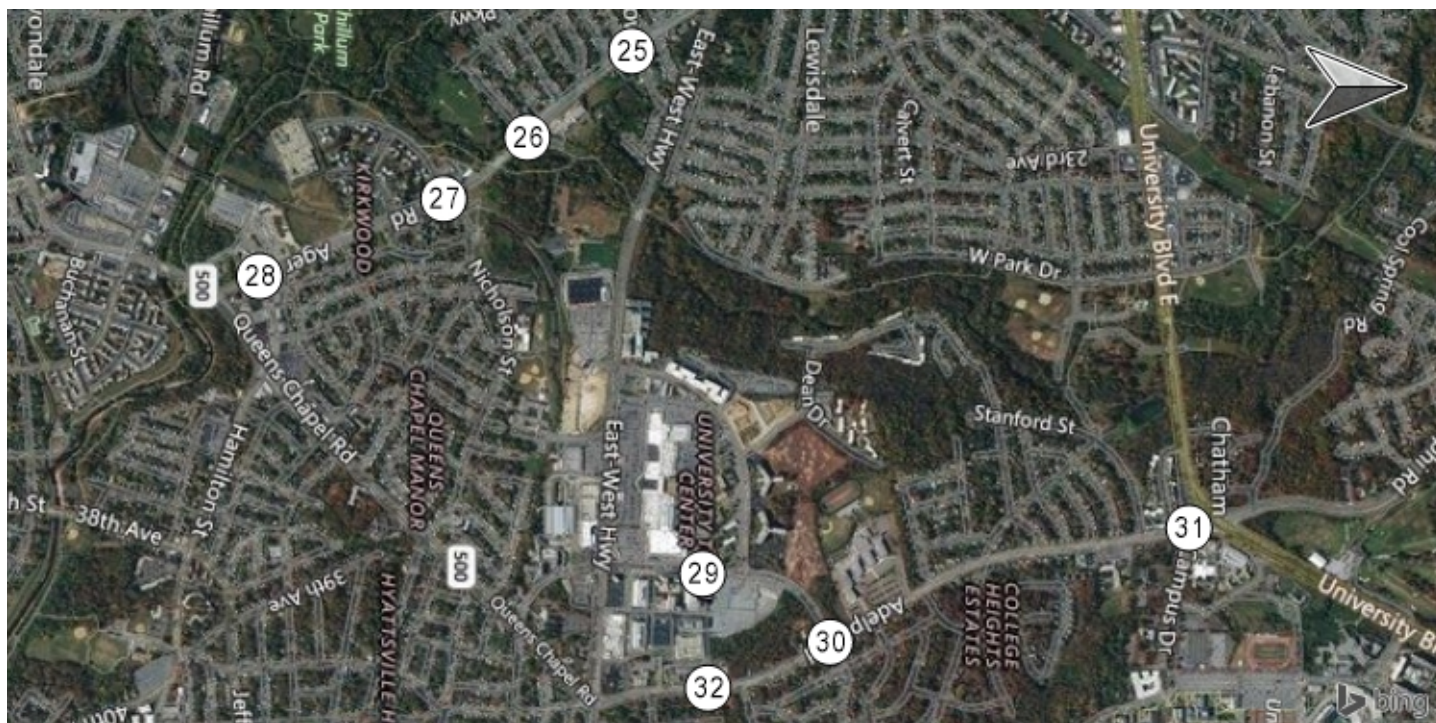
MD 410/Belcrest Rd



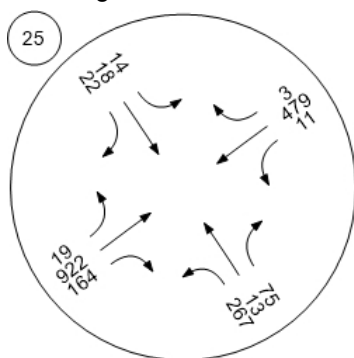
MD 410/MD 500/Adelphi Rd



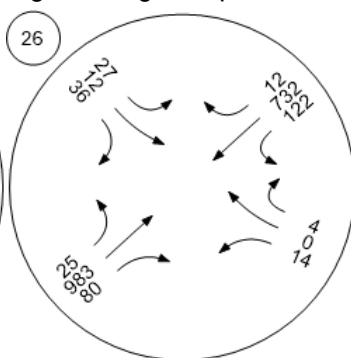
Traffic Volume - Future Total Volume



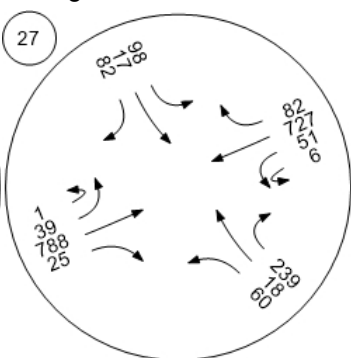
Ager Rd/23rd Ave



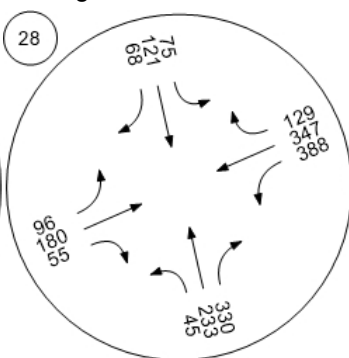
Ager Rd/Oglethorpe St/Scho



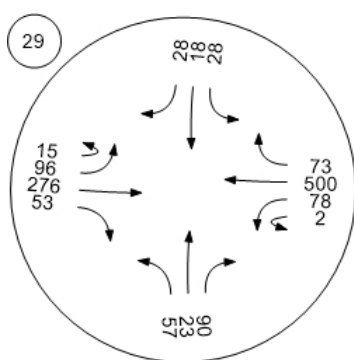
Ager Rd/Nicholson St



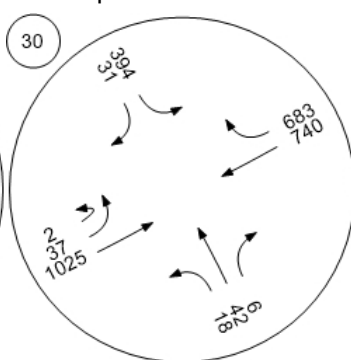
Ager Rd/Hamilton St



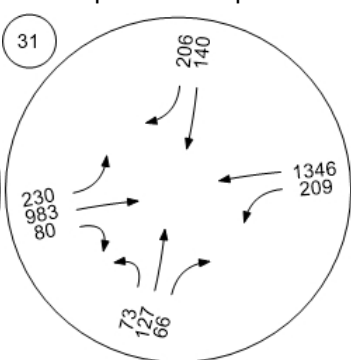
Toledo Rd/Belcrest Rd



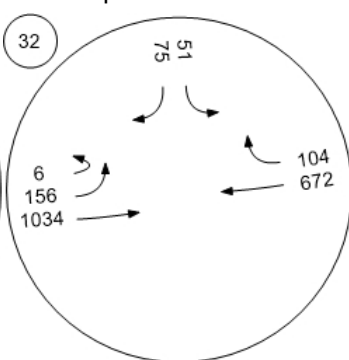
Adelphi Rd/Belcrest Rd



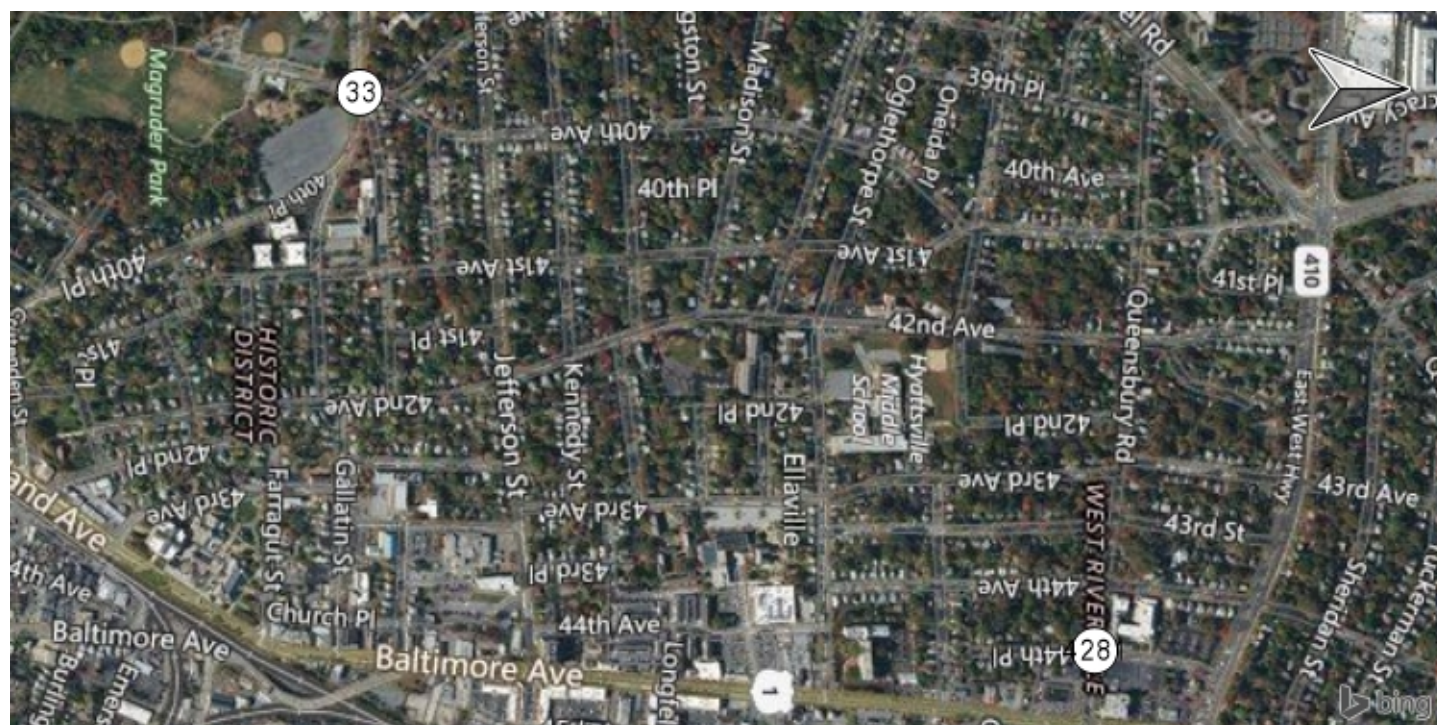
Adelphi Rd/Campus Dr



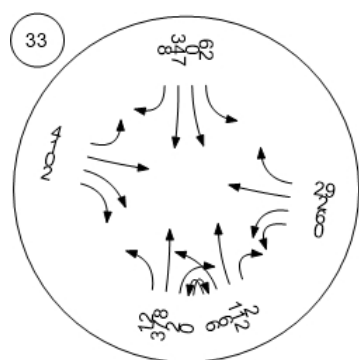
Adelphi Rd/Toledo Rd



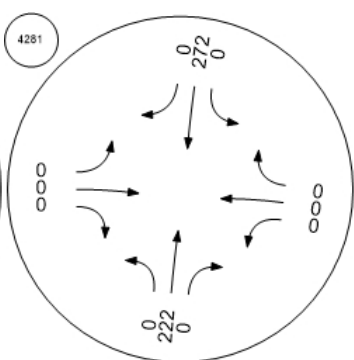
Traffic Volume - Future Total Volume



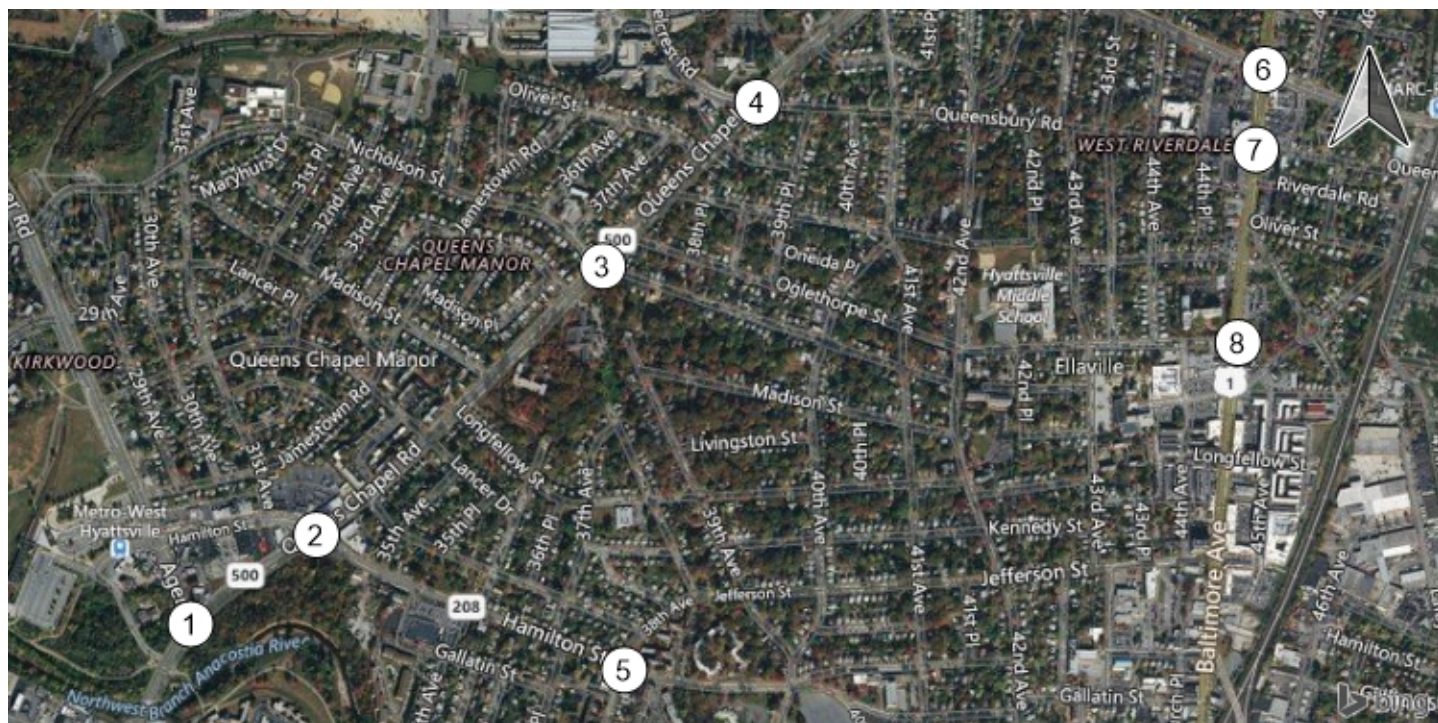
Hamilton St/40th Pl/39th Ave



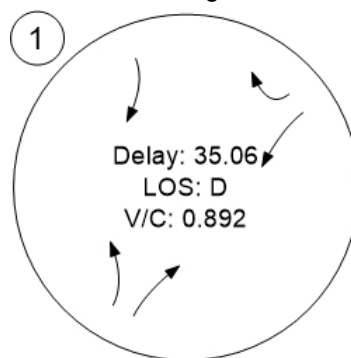
New Intersection



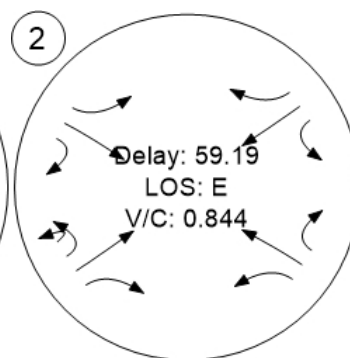
Traffic Conditions



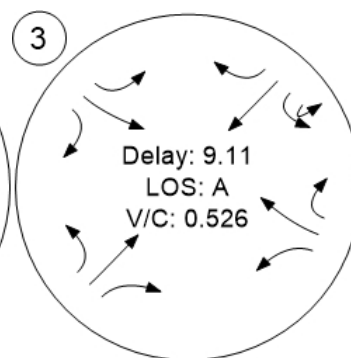
MD 500/Ager Rd



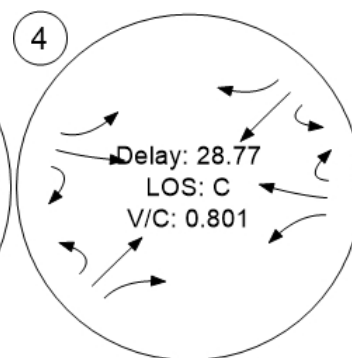
MD 500/Hamilton St



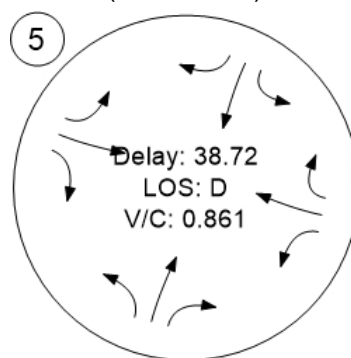
MD 500/Nicholson St



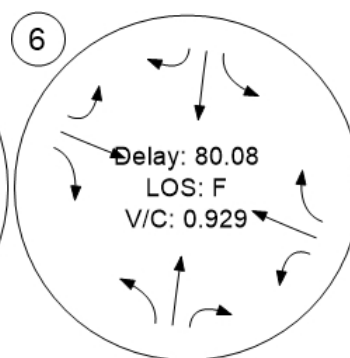
MD 500/Belcrest Rd/Queens



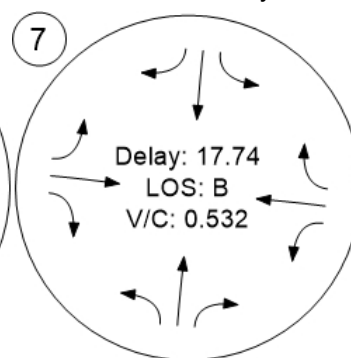
MD 208(Hamilton St)/38th Av



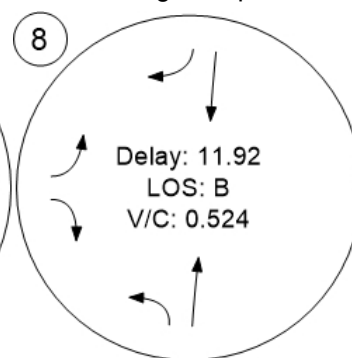
US 1/MD 410



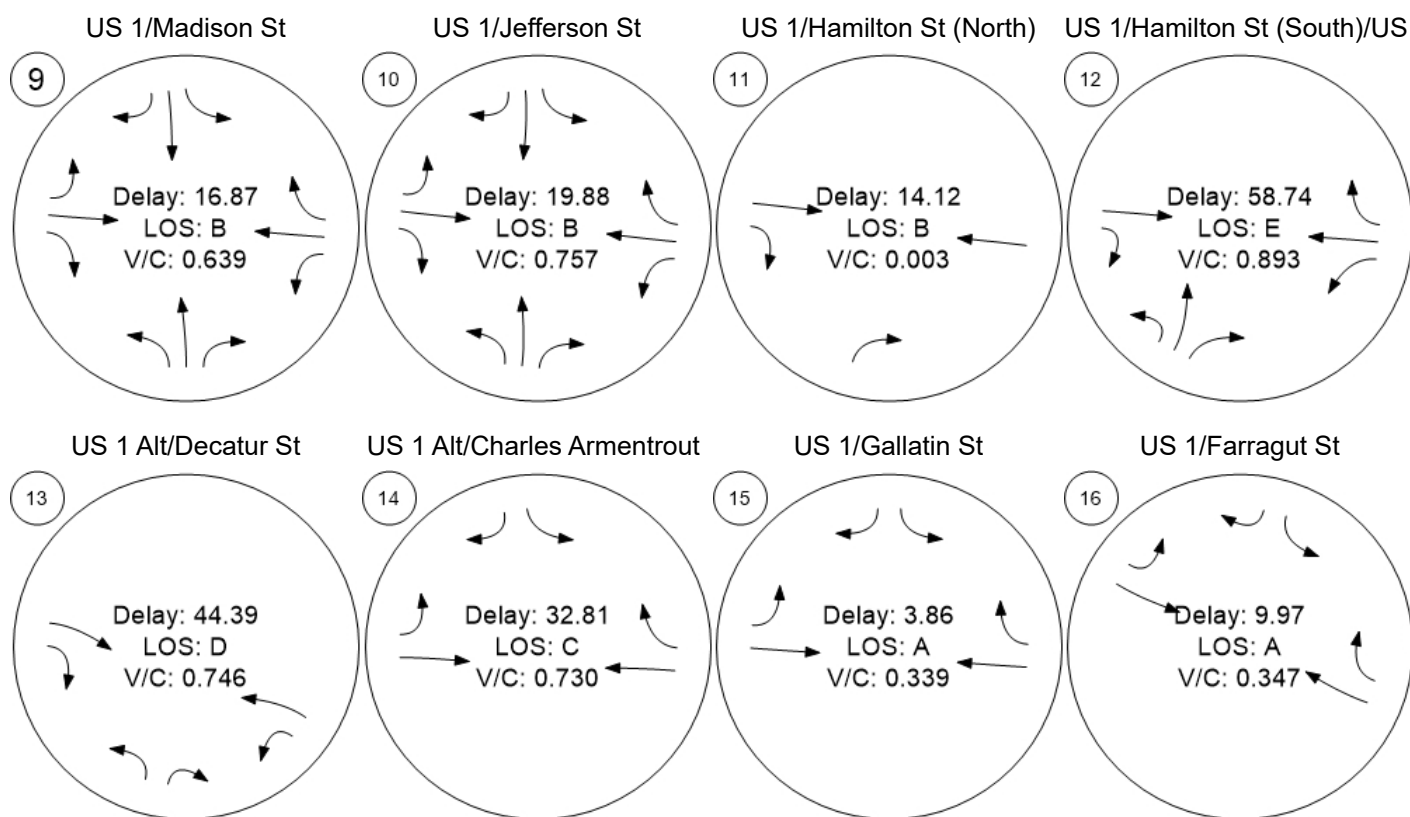
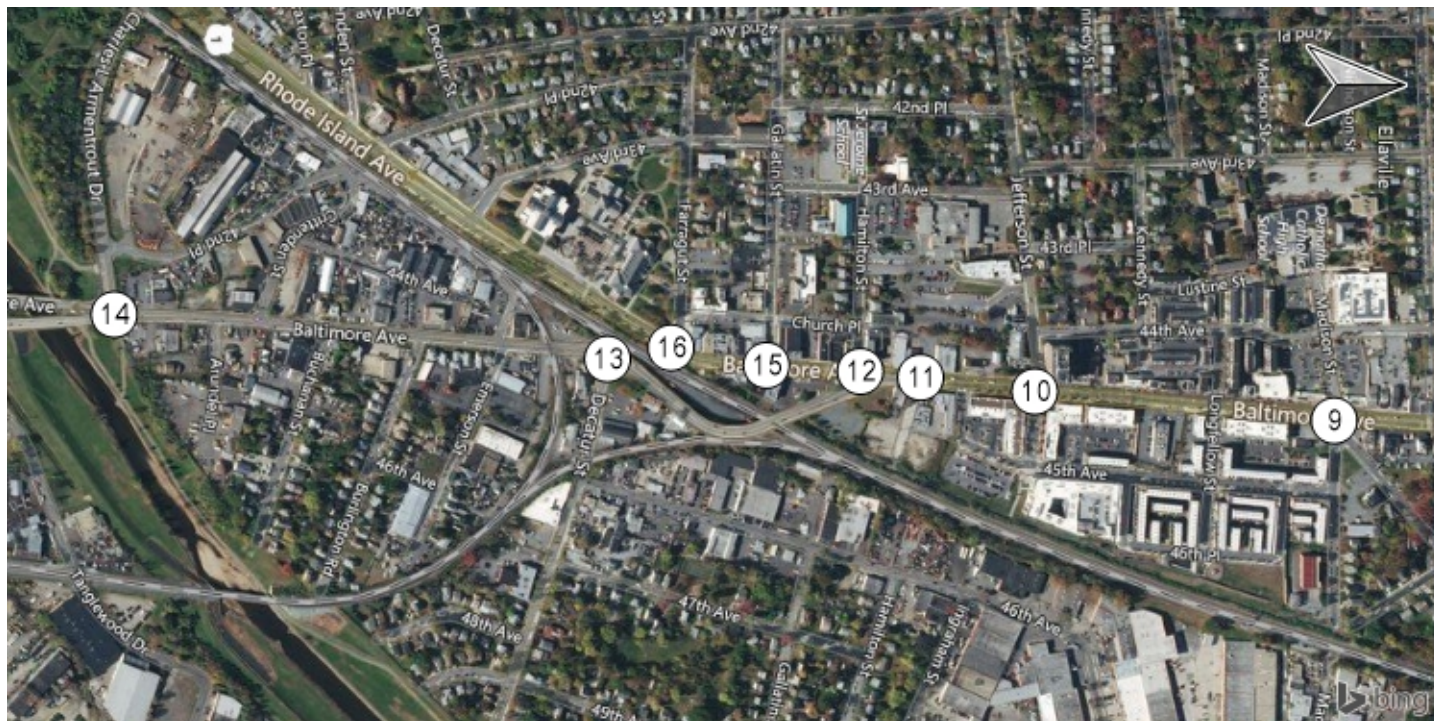
US 1/Queensbury Rd



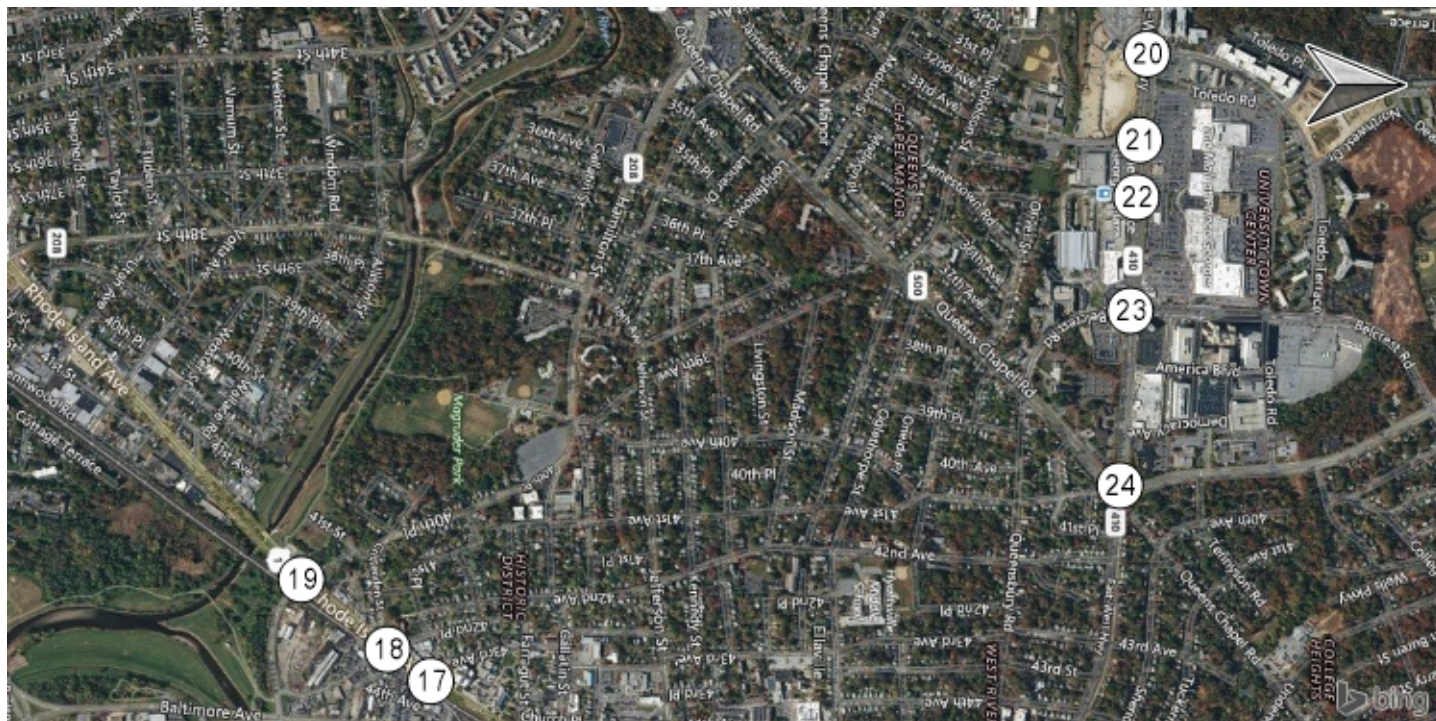
US 1/Oglethorpe Rd



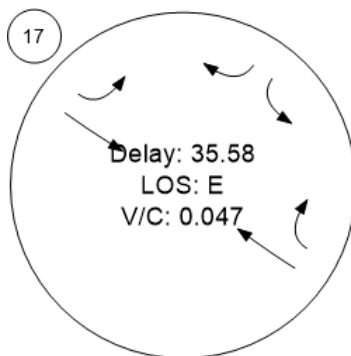
Traffic Conditions



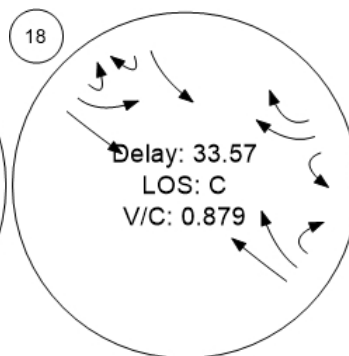
Traffic Conditions



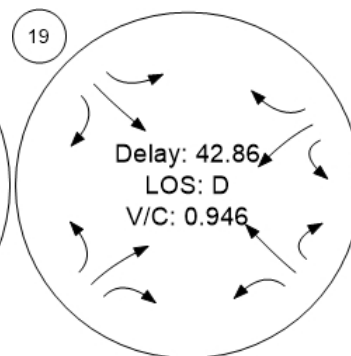
US 1/43rd Avenue



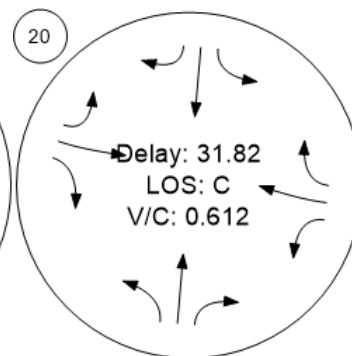
US 1/42nd Place/Crittendon



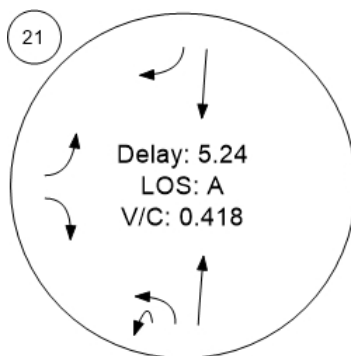
US 1/41st Place/Charles Arm



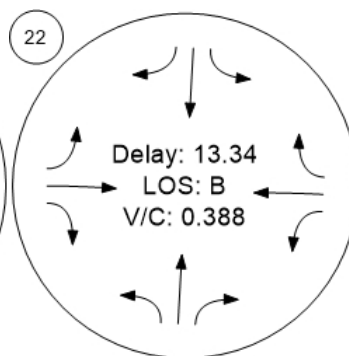
MD 410/Toledo Terrace



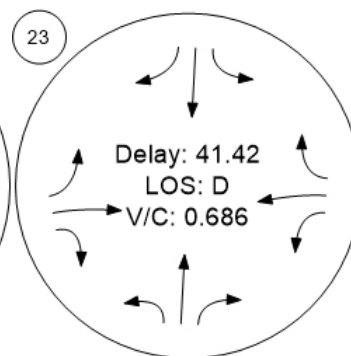
MD 410/Editors Park Dr



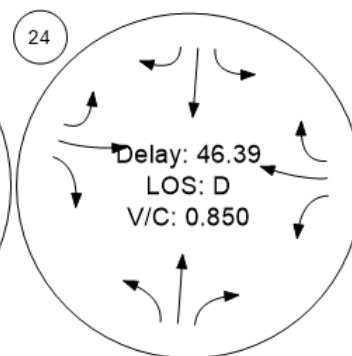
MD 410/Prince George's Plaz



MD 410/Belcrest Rd

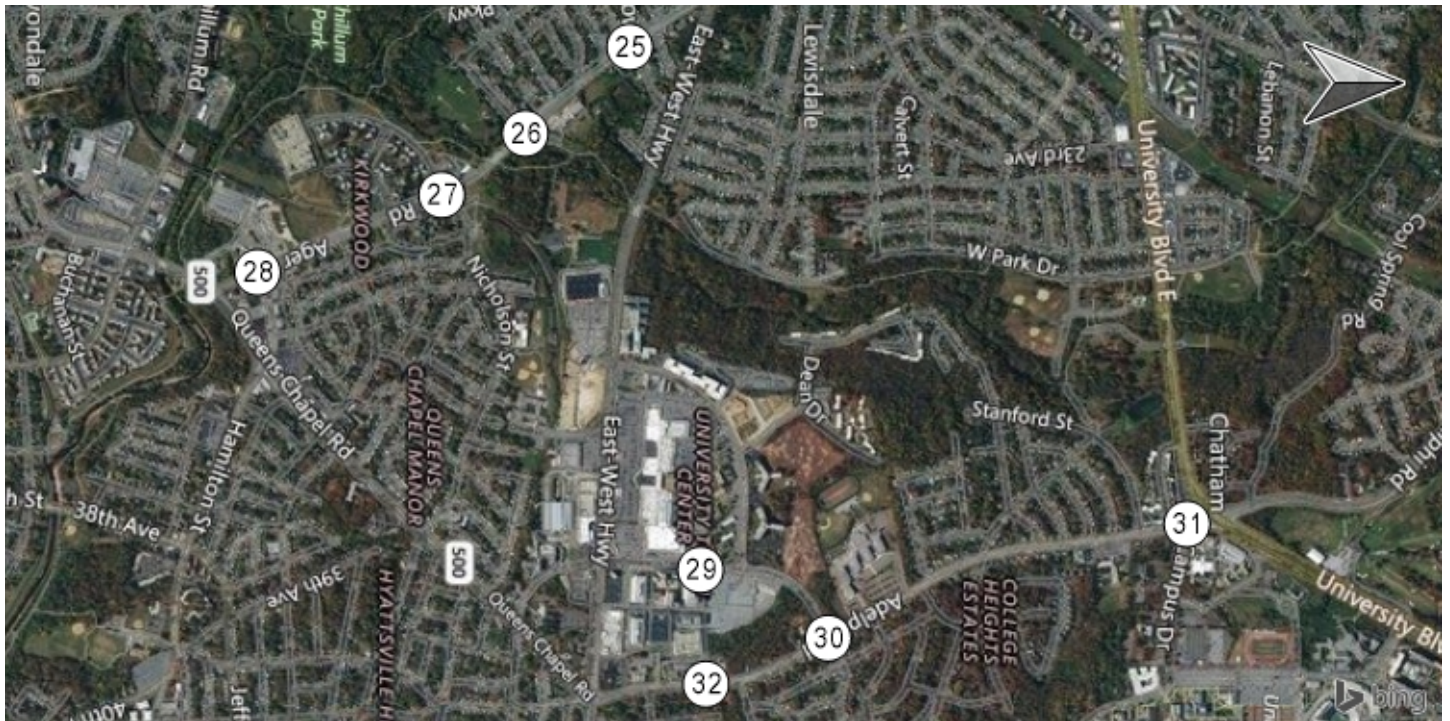


MD 410/MD 500/Adelphi Rd

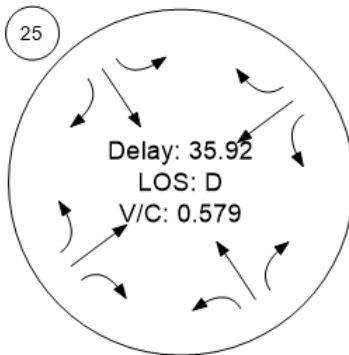


Version 6.00-00

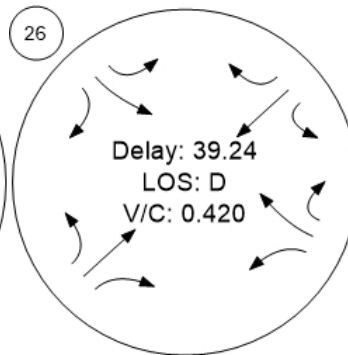
Traffic Conditions



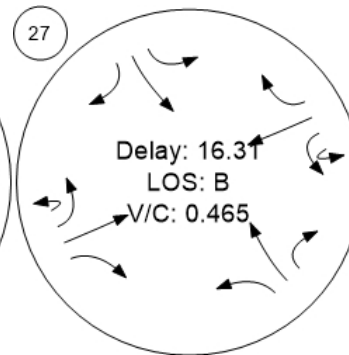
Ager Rd/23rd Ave



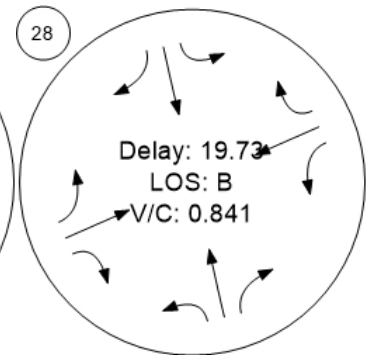
Ager Rd/Oglethorpe St/Scho



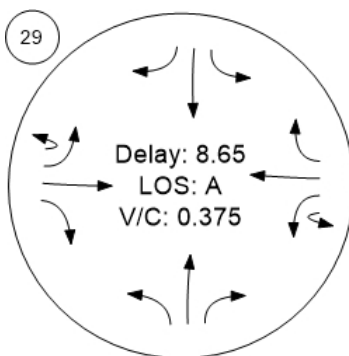
Ager Rd/Nicholson St



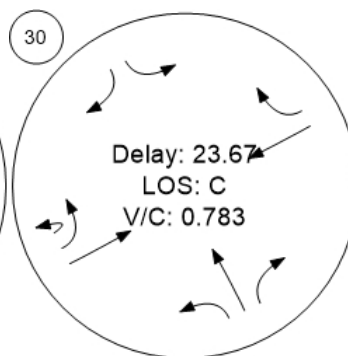
Ager Rd/Hamilton St



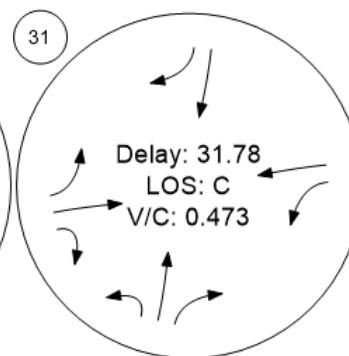
Toledo Rd/Belcrest Rd



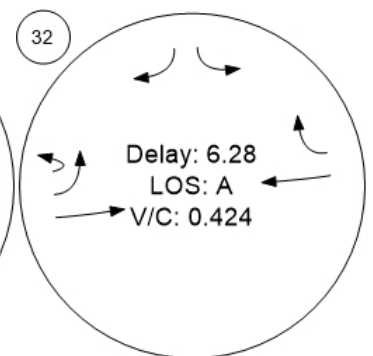
Adelphi Rd/Belcrest Rd



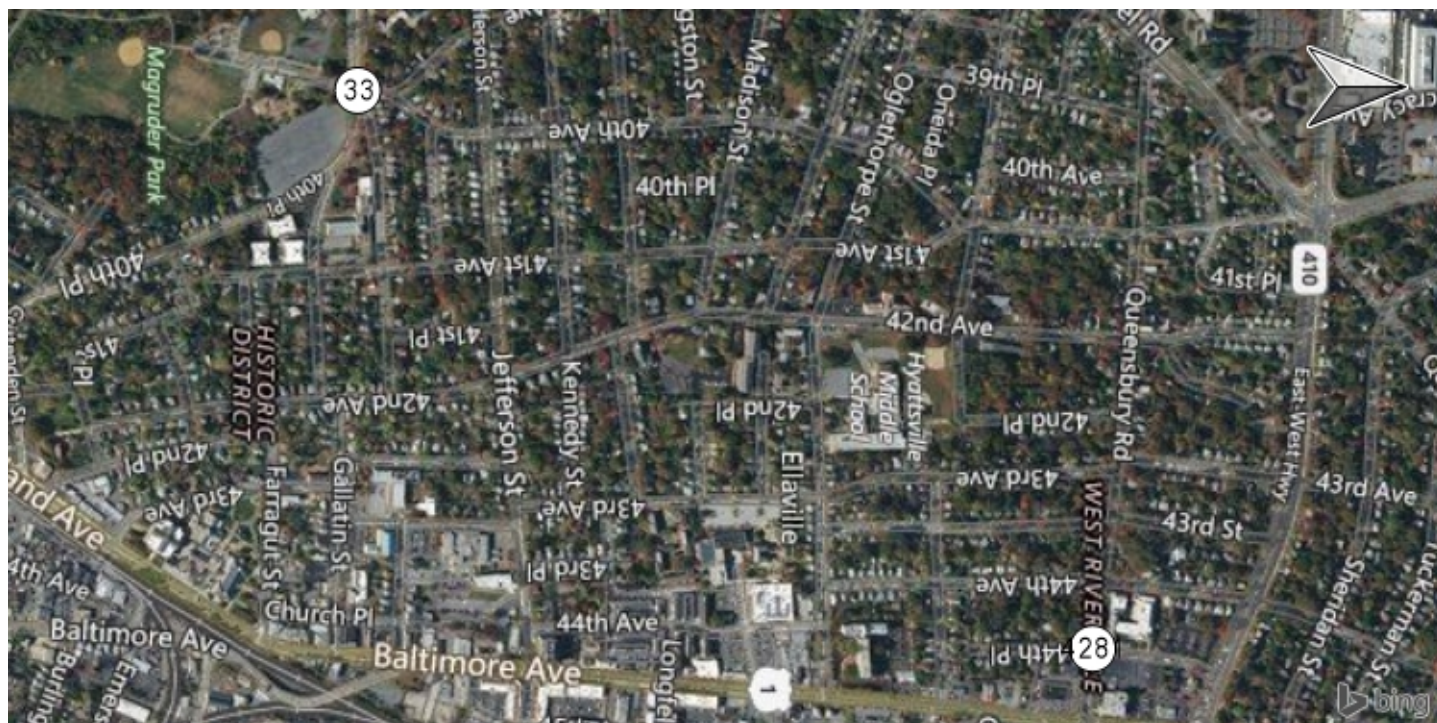
Adelphi Rd/Campus Dr



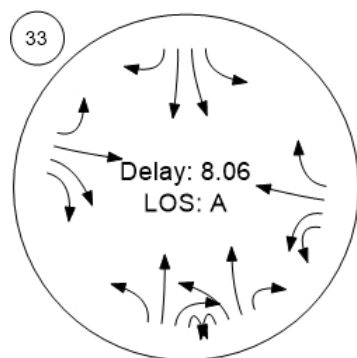
Adelphi Rd/Toledo Rd



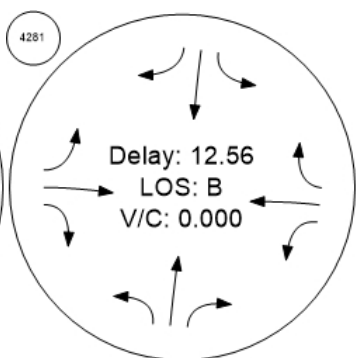
Traffic Conditions



Hamilton St/40th Pl/39th Ave



New Intersection



Hyattsville Transportation Plan

Vistro File: K:\...\2037 AM No Build.vistro

Scenario: Base Scenario

Report File: K:\...\2037 AM_No Build.pdf

6/21/2018

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	MD 500/Ager Rd	Signalized	HCM 2010	SB Right	0.829	30.8	C
2	MD 500/Hamilton St	Signalized	HCM 2010	SEB Thru	0.698	32.0	C
3	MD 500/Nicholson St	Signalized	HCM 2010	SEB Left	0.529	9.1	A
4	MD 500/Belcrest Rd/Queensbury Rd	Signalized	HCM 2010	EB Left	0.564	21.2	C
5	MD 208(Hamilton St)/38th Ave	Signalized	HCM 2010	SWB Right	0.861	38.7	D
6	US 1/MD 410	Signalized	HCM 2010	WB Left	0.960	98.9	F
7	US 1/Queensbury Rd	Signalized	HCM 2010	WB Left	0.542	17.8	B
8	US 1/Oglethorpe Rd	Signalized	HCM 2010	EB Left	0.535	12.0	B
9	US 1/Madison St	Signalized	HCM 2010	EB Right	0.649	16.9	B
10	US 1/Jefferson St	Signalized	HCM 2010	EB Right	0.778	20.4	C
11	US 1/Hamilton St (North)	Signalized	HCM 2010	WB Right	0.475	1.6	A
12	US 1/Hamilton St (South)/US 1 Alt	Signalized	HCM 2010	NWB Right	0.941	312.1	F
13	US 1 Alt/Decatur St	Signalized	HCM 2010	WB Right	0.750	44.0	D
14	US 1 Alt/Charles Armentrout St	Two-way stop	HCM 2010	EB Left	0.000	10,000.0	F
15	US 1/Gallatin St	Signalized	HCM 2010	SB Right	0.331	3.7	A
16	US 1/Farragut St	Signalized	HCM 2010	EB Left	0.332	9.9	A
17	US 1/43rd Avenue	Two-way stop	HCM 6th Edition	SEB Left	0.049	36.3	E
18	US 1/42nd Place/Crittendon St	Signalized	HCM 2010	NEBL2	0.888	33.3	C
19	US 1/41st Place/Charles Armentrout Drive	Signalized	HCM 2010	NEB Left	0.946	42.9	D
20	MD 410/Toledo Terrace	Signalized	HCM 2010	SB Left	32.667	180.1	F
21	MD 410/Editors Park Dr	Two-way stop	HCM 2010	NB Left	1.214	383.9	F
22	MD 410/Prince George's Plaza	Signalized	HCM 2010	NB Right	0.400	13.2	B
23	MD 410/Belcrest Rd	Signalized	HCM 2010	WB Left	0.774	58.7	E
24	MD 410/MD 500/Adelphi Rd	Signalized	HCM 2010	NEB Right	1.058	110.7	F
25	Ager Rd/23rd Ave	Signalized	HCM 6th Edition	SWB Left	0.579	35.9	D
	Ager Rd/Oglethorpe		HCM 6th				

Version 6.00-00

26	Ager Rd/Greentree St/School	Signalized	HCM 2010 Edition	NWB Right	0.420	39.2	D
27	Ager Rd/Nicholson St	Two-way stop	HCM 2010	NEB Left	4.241	1,934.8	F
28	Ager Rd/Hamilton St	Signalized	HCM 2010	WB Right	0.651	16.3	B
29	Toledo Rd/Belcrest Rd	Signalized	HCM 2010	EB Left	0.375	8.6	A
30	Adelphi Rd/Belcrest Rd	Signalized	HCM 2010	SWB Thru	0.783	23.7	C
31	Adelphi Rd/Campus Dr	Signalized	HCM 2010	WB Left	0.473	31.8	C
32	Adelphi Rd/Toledo Rd	Signalized	HCM 2010	EB Right	0.424	6.3	A
33	Hamilton St/40th Pl/39th Ave	All-way stop	HCM 2010	EB Thru	0.658	15.7	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report

Intersection 1: MD 500/Ager Rd

Control Type:	Signalized	Delay (sec / veh):	30.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.829

Intersection Setup

Name	Ager Rd.		MD 500		MD 500	
Approach	Southbound		Northeastbound		Southwestbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	400.00	100.00	100.00	300.00
Speed [mph]	35.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		No	

Volumes

Name	Ager Rd.		MD 500		MD 500	
Base Volume Input [veh/h]	0	386	303	827	1353	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	2.00	2.00	3.85
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	58	17	21	85	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	444	320	848	1438	12
Peak Hour Factor	1.0000	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	121	87	230	391	3
Total Analysis Volume [veh/h]	0	483	348	922	1563	13
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	9		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Split	Split
Signal group	0	1	1	0	2	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	-	-
Minimum Green [s]	0	5	5	0	20	0
Maximum Green [s]	0	43	43	0	66	0
Amber [s]	0.0	4.0	4.0	0.0	5.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	0	48	48	0	72	0
Vehicle Extension [s]	0.0	3.0	3.0	0.0	5.0	0.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Rest In Walk		No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	3.0	0.0	4.0	0.0
Minimum Recall		No	No		No	
Maximum Recall		No	No		Yes	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	230.0	0.0
Detector Length [ft]	0.0	30.0	30.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	R	L	C	R
C, Cycle Length [s]	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	4.00	4.00
g_i, Effective Green Time [s]	39	39	70	70
g / C, Green / Cycle	0.33	0.33	0.58	0.58
(v / s)_i Volume / Saturation Flow Rate	0.31	0.20	0.44	0.01
s, saturation flow rate [veh/h]	1583	1774	3547	1548
c, Capacity [veh/h]	519	581	2060	899
d1, Uniform Delay [s]	39.03	33.74	18.86	10.64
k, delay calibration	0.34	0.12	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	19.55	1.08	2.68	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.93	0.60	0.76	0.01
d, Delay for Lane Group [s/veh]	58.58	34.82	21.55	10.67
Lane Group LOS	E	C	C	B
Critical Lane Group	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	16.25	8.44	15.60	0.15
50th-Percentile Queue Length [ft/ln]	406.21	211.06	389.98	3.66
95th-Percentile Queue Length [veh/ln]	22.86	13.21	22.08	0.26
95th-Percentile Queue Length [ft/ln]	571.48	330.18	551.92	6.59

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	58.58	34.82	0.00	21.55	10.67
Movement LOS		E	C		C	B
d_A, Approach Delay [s/veh]	58.58		34.82		21.46	
Approach LOS	E		C		C	
d_I, Intersection Delay [s/veh]	30.84					
Intersection LOS	C					
Intersection V/C	0.829					

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SG: 1 48s

SG: 2 72s

Intersection Level Of Service Report

Intersection 2: MD 500/Hamilton St

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 32.0
 Level Of Service: C
 Volume to Capacity (v/c): 0.698

Intersection Setup

Name	MD 500				MD 500			Hamilton St			Hamilton St		
Approach	Northeastbound				Southwestbound			Northwestbound			Southeastbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	200.0	100.0	100.0	200.0	220.00	100.00	200.00	200.00	100.00	100.00	180.00	100.00	50.00
Speed [mph]	40.00				40.00			35.00			35.00		
Grade [%]	0.00				0.00			0.00			0.00		
Crosswalk	Yes				Yes			Yes			Yes		

Volumes

Name	MD 500				MD 500			Hamilton St			Hamilton St		
Base Volume Input [veh/h]	2	23	608	128	95	949	89	302	420	89	110	378	31
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.63	2.00	2.00	2.63	2.27	2.11	2.00	2.00	2.27	3.85
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	21	0	22	85	13	0	10	5	47	35	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	23	629	128	117	1034	102	302	430	94	157	413	31
Peak Hour Factor	0.920	0.920	0.920	0.920	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	6	171	35	32	281	28	82	117	26	43	112	8
Total Analysis Volume [veh/h]	2	25	684	139	127	1124	111	328	467	102	171	449	34
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	1	1	6	6	5	2	2	3	8	8	7	4	4
Auxiliary Signal Groups													
Lead / Lag	Lead	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	20	20	5	20	20	5	5	5	5	5	5
Maximum Green [s]	13	13	42	42	30	42	42	19	25	25	19	25	25
Amber [s]	4.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	4.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	18	18	48	48	18	48	48	24	30	30	24	30	30
Vehicle Extension [s]	3.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk			No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall		No	No		No	No		No	No		No	No	
Maximum Recall		No	Yes		No	Yes		No	No		No	No	
Pedestrian Recall		No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	30.0	30.0	5.0	5.0	5.0	5.0	5.0	30.0	30.0	30.0	30.0	30.0	30.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.00	4.00	0.00	4.00	4.00	0.00	3.00	3.00	0.00	3.00	3.00
g_i, Effective Green Time [s]	67	55	55	67	59	59	42	27	27	42	18	18
g / C, Green / Cycle	0.56	0.46	0.46	0.56	0.49	0.49	0.35	0.22	0.22	0.35	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.04	0.19	0.09	0.14	0.32	0.07	0.24	0.16	0.16	0.15	0.13	0.02
s, saturation flow rate [veh/h]	626	3547	1574	899	3547	1574	1369	1861	1747	1140	3537	1555
c, Capacity [veh/h]	316	1633	725	489	1735	770	458	414	389	368	540	237
d1, Uniform Delay [s]	15.67	21.64	19.16	14.03	22.94	16.86	32.24	43.08	43.09	29.47	49.37	44.06
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.50	0.50	0.12	0.12	0.22	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.11	0.79	0.59	1.29	1.89	0.39	9.28	2.59	2.76	1.85	3.40	0.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.09	0.42	0.19	0.26	0.65	0.14	0.72	0.71	0.71	0.46	0.83	0.14
d, Delay for Lane Group [s/veh]	15.79	22.44	19.75	15.32	24.83	17.25	41.51	45.67	45.84	31.32	52.77	44.34
Lane Group LOS	B	C	B	B	C	B	D	D	D	C	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.32	6.38	2.35	1.74	11.72	1.72	8.62	8.24	7.76	3.69	6.72	0.89
50th-Percentile Queue Length [ft/ln]	8.11	159.49	58.74	43.59	292.93	42.97	215.51	206.10	194.01	92.17	168.03	22.30
95th-Percentile Queue Length [veh/ln]	0.58	10.52	4.23	3.14	17.33	3.09	13.44	12.95	12.33	6.64	10.97	1.61
95th-Percentile Queue Length [ft/ln]	14.60	263.05	105.72	78.47	433.27	77.35	335.89	323.82	308.23	165.90	274.32	40.15

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	15.79	15.79	22.44	19.75	15.32	24.83	17.25	41.51	45.73	45.84	31.32	52.77	44.34
Movement LOS	B	B	C	B	B	C	B	D	D	D	C	D	D
d_A, Approach Delay [s/veh]	21.79				23.32			44.20			46.72		
Approach LOS	C				C			D			D		
d_I, Intersection Delay [s/veh]	32.02												
Intersection LOS	C												
Intersection V/C	0.698												

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 3: MD 500/Nicholson St

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 9.1
 Level Of Service: A
 Volume to Capacity (v/c): 0.529

Intersection Setup

Name	Nicholson St			MD 500			MD 500				Nicholson St		
Approach	Westbound			Northeastbound			Southwestbound				Southeastbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	1	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	150.00	100.00	100.00	150.0	100.0	100.0	100.0	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Crosswalk	Yes			Yes			Yes				Yes		

Volumes

Name	Nicholson St			MD 500			MD 500				Nicholson St		
Base Volume Input [veh/h]	15	59	26	48	912	10	1	11	1111	84	100	10	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	0.00	2.27	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	73	0	0	0	120	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	59	26	48	985	10	1	11	1231	84	100	10	18
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.900	0.900	0.900	0.900	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	16	7	13	274	3	0	3	342	23	28	3	5
Total Analysis Volume [veh/h]	17	66	29	53	1094	11	1	12	1368	93	111	11	20
Presence of On-Street Parking	No		No	No		No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0				0		
Bicycle Volume [bicycles/h]	0			0			0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss
Signal group	0	4	0	5	2	0	0	1	6	0	0	8	0
Auxiliary Signal Groups													
Lead / Lag	-	-	-	Lead	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	5	0	0	5	0
Maximum Green [s]	0	30	0	30	30	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	25	0	10	85	0	0	10	85	0	0	25	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	10	0	0	10	0
Rest In Walk		No			No				No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No		No	No			No	No			No	
Maximum Recall		No		No	No			No	No			No	
Pedestrian Recall		No		No	No			No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	L	C	C	L	C	C	C
C, Cycle Length [s]	39	39	39	39	39	39	39	39
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00
l2, Clearance Lost Time [s]	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	25	21	21	25	19	19	5
g / C, Green / Cycle	0.14	0.65	0.53	0.53	0.65	0.49	0.49	0.14
(v / s)_i Volume / Saturation Flow Rate	0.06	0.09	0.30	0.30	0.02	0.40	0.40	0.12
s, saturation flow rate [veh/h]	1836	609	1863	1856	655	1863	1821	1203
c, Capacity [veh/h]	367	553	991	988	606	917	897	335
d1, Uniform Delay [s]	15.26	4.92	6.05	6.05	3.09	8.28	8.31	16.31
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.47	0.07	0.49	0.50	0.01	1.70	1.79	0.85
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.31	0.10	0.56	0.56	0.02	0.80	0.81	0.42
d, Delay for Lane Group [s/veh]	15.72	4.99	6.55	6.55	3.11	9.98	10.10	17.16
Lane Group LOS	B	A	A	A	A	A	B	B
Critical Lane Group	No	Yes	No	No	No	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.81	0.06	1.83	1.83	0.01	3.58	3.55	1.11
50th-Percentile Queue Length [ft/ln]	20.14	1.46	45.87	45.73	0.34	89.49	88.82	27.70
95th-Percentile Queue Length [veh/ln]	1.45	0.11	3.30	3.29	0.02	6.44	6.39	1.99
95th-Percentile Queue Length [ft/ln]	36.25	2.63	82.57	82.31	0.61	161.08	159.87	49.86

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	15.72	15.72	15.72	4.99	6.55	6.55	3.11	3.11	10.03	10.10	17.16	17.16	17.16
Movement LOS	B	B	B	A	A	A	A	A	B	B	B	B	B
d_A, Approach Delay [s/veh]	15.72			6.47			9.98			17.16			
Approach LOS	B			A			A			B			
d_I, Intersection Delay [s/veh]	9.15												
Intersection LOS	A												
Intersection V/C	0.529												

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: MD 500/Belcrest Rd/Queensbury Rd

Control Type:	Signalized	Delay (sec / veh):	21.2
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.564

Intersection Setup

Name	Belcrest Road			Queensbury Road			MD 500			MD 500		
Approach	Eastbound			Westbound			Northeastbound			Southwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	375.00	100.00	100.00	200.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Belcrest Road			Queensbury Road			MD 500			MD 500		
Base Volume Input [veh/h]	61	121	416	38	184	35	349	697	39	27	738	64
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.85	2.38	2.21	3.85	2.38	3.85	2.21	2.08	2.78	3.70	1.97	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	107	0	0	0	18	55	0	0	13	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	61	121	523	38	184	35	367	752	39	27	751	64
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	34	145	11	51	10	102	209	11	8	209	18
Total Analysis Volume [veh/h]	68	134	581	42	204	39	408	836	43	30	834	71
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	6			18			1			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	37.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	4	3	0	8	4	8	1	6	6	5	2	2
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	8	8	0	0	8	0	8	25	25	8	25	25
Maximum Green [s]	30	30	0	0	30	0	40	53	53	40	53	53
Amber [s]	4.0	4.0	0.0	0.0	4.0	0.0	4.0	5.0	5.0	4.0	5.0	5.0
All red [s]	3.0	3.0	0.0	0.0	3.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0
Split [s]	38	38	0	0	38	0	52	96	96	16	60	60
Vehicle Extension [s]	4.0	4.0	0.0	0.0	4.0	0.0	5.0	6.0	6.0	3.5	6.0	6.0
Walk [s]	7	7	0	0	7	0	0	7	7	0	7	7
Pedestrian Clearance [s]	24	24	0	0	24	0	0	24	24	0	24	24
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	5.0	5.0	0.0	0.0	5.0	0.0	4.0	5.0	5.0	4.0	5.0	5.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	30.0	30.0	0.0	0.0	30.0	0.0	0.0	0.0	0.0	30.0	30.0	30.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	82	82	82	82	82	82	82	82	82
L, Total Lost Time per Cycle [s]	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	5.00	5.00	5.00	0.00	5.00	5.00	0.00	5.00	5.00
g_i, Effective Green Time [s]	21	21	21	47	37	37	47	31	31
g / C, Green / Cycle	0.26	0.26	0.26	0.57	0.45	0.45	0.57	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.06	0.07	0.16	0.22	0.24	0.24	0.04	0.25	0.25
s, saturation flow rate [veh/h]	1112	1856	1733	1854	1861	1825	810	1863	1811
c, Capacity [veh/h]	187	477	495	993	839	823	489	706	686
d1, Uniform Delay [s]	36.25	24.44	26.95	11.06	16.25	16.27	8.88	21.02	21.02
k, delay calibration	0.15	0.15	0.15	0.23	0.39	0.39	0.39	0.39	0.39
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.68	0.45	1.50	0.58	1.87	1.92	0.19	3.64	3.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

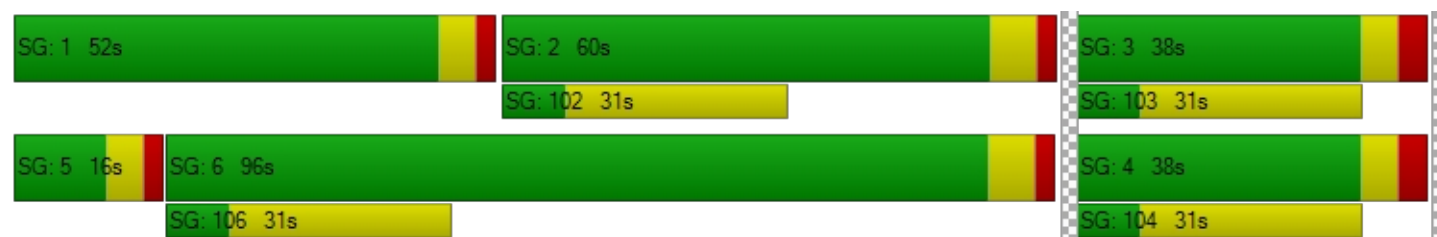
X, volume / capacity	0.36	0.28	0.58	0.41	0.53	0.53	0.06	0.65	0.65
d, Delay for Lane Group [s/veh]	37.93	24.89	28.46	11.64	18.12	18.19	9.07	24.65	24.77
Lane Group LOS	D	C	C	B	B	B	A	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.38	2.09	4.97	1.67	6.04	5.97	0.21	7.17	7.00
50th-Percentile Queue Length [ft/ln]	34.52	52.20	124.27	41.79	151.06	149.18	5.37	179.23	174.91
95th-Percentile Queue Length [veh/ln]	2.49	3.76	8.63	3.01	10.07	9.97	0.39	11.56	11.33
95th-Percentile Queue Length [ft/ln]	62.13	93.96	215.68	75.22	251.84	249.33	9.66	289.00	283.35

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	37.93	24.89	0.00	28.46	28.46	28.46	11.64	18.15	18.19	9.07	24.71	24.77
Movement LOS	D	C		C	C	C	B	B	B	A	C	C
d_A, Approach Delay [s/veh]	29.28			28.46			16.09			24.21		
Approach LOS	C			C			B			C		
d_I, Intersection Delay [s/veh]	21.18											
Intersection LOS	C											
Intersection V/C	0.564											

Sequence

Ring 1	1	2	-	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: MD 208(Hamilton St)/38th Ave

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 38.7
 Level Of Service: D
 Volume to Capacity (v/c): 0.861

Intersection Setup

Name				Hamilton St			38th Ave			Hamilton St		
Approach	Northbound			Westbound			Southwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	125.00	100.00	100.00
Speed [mph]	30.00			35.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name				Hamilton St			38th Ave			Hamilton St		
Base Volume Input [veh/h]	167	61	23	46	355	11	23	118	269	96	335	158
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.27	3.33	0.00	3.70	2.00	0.00	0.00	2.22	1.89	1.69	1.88	1.65
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	12	0	0	0	3	0	0	0	0	0	12	45
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	179	61	23	46	358	11	23	118	269	96	347	203
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	50	17	6	13	99	3	6	33	75	27	96	56
Total Analysis Volume [veh/h]	199	68	26	51	398	12	26	131	299	107	386	226
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	5			4			5			6		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	2	8	8	8	6	6	6	4	4	4
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	15	15	20	20	20	15	15	15	20	20	20
Maximum Green [s]	15	45	45	35	35	35	20	20	20	35	35	35
Amber [s]	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	25	50	50	40	40	40	25	25	25	40	40	40
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall	Yes	No			No			No			No	
Maximum Recall	Yes	Yes			Yes			Yes			Yes	
Pedestrian Recall	No	No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	L	C	C	L	C
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	2.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	45	35	35	25	35	35
g / C, Green / Cycle	0.50	0.39	0.39	0.28	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.31	0.06	0.22	0.28	0.11	0.35
s, saturation flow rate [veh/h]	959	793	1853	1639	973	1746
c, Capacity [veh/h]	585	111	721	495	268	679
d1, Uniform Delay [s]	13.51	43.90	21.58	32.61	32.92	25.87
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.04	12.96	3.24	25.06	4.40	17.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.50	0.46	0.57	0.92	0.40	0.90
d, Delay for Lane Group [s/veh]	16.55	56.86	24.83	57.67	37.32	43.25
Lane Group LOS	B	E	C	E	D	D
Critical Lane Group	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	3.88	1.52	7.06	13.03	2.38	14.74
50th-Percentile Queue Length [ft/ln]	96.94	37.93	176.39	325.84	59.46	368.54
95th-Percentile Queue Length [veh/ln]	6.98	2.73	11.41	18.95	4.28	21.04
95th-Percentile Queue Length [ft/ln]	174.49	68.28	285.29	473.86	107.03	525.96

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	16.55	16.55	16.55	56.86	24.83	24.83	57.67	57.67	57.67	37.32	43.25	43.25
Movement LOS	B	B	B	E	C	C	E	E	E	D	D	D
d_A, Approach Delay [s/veh]	16.55			28.37			57.67			42.37		
Approach LOS	B			C			E			D		
d_I, Intersection Delay [s/veh]	38.72											
Intersection LOS	D											
Intersection V/C	0.861											

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 6: US 1/MD 410

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 98.9
 Level Of Service: F
 Volume to Capacity (v/c): 0.960

Intersection Setup

Name	US 1			US 1			MD 410			MD 410		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	200.00	100.00	100.00	225.00	100.00	100.00	600.00	100.00	100.00	700.00	100.00	450.00
Speed [mph]	45.00			45.00			50.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	US 1			US 1			MD 410			MD 410		
Base Volume Input [veh/h]	426	527	53	168	704	122	183	1009	252	292	1751	147
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.15	2.00	2.38	2.07	2.00	2.00	2.00	2.00	2.00	2.00	2.03	1.67
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	8	0	0	0	0	8	30	58	31	0	15	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	434	527	53	168	704	130	213	1067	283	292	1766	147
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	121	146	15	47	196	36	59	296	79	81	491	41
Total Analysis Volume [veh/h]	482	586	59	187	782	144	237	1186	314	324	1962	163
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			3			6		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	180
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	1	6	6	5	2	0	7	4	4	3	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	15	15	5	25	0	5	15	15	5	25	25
Maximum Green [s]	25	42	42	25	42	0	25	66	66	25	66	66
Amber [s]	4.0	4.5	4.5	4.0	4.5	0.0	4.0	4.5	4.5	4.0	4.5	4.5
All red [s]	1.0	2.0	2.0	1.0	2.0	0.0	1.0	2.0	2.0	1.0	2.0	2.0
Split [s]	30	48	48	30	48	0	30	72	72	30	72	72
Vehicle Extension [s]	3.0	5.0	5.0	3.0	5.0	0.0	3.0	5.0	5.0	3.0	5.0	5.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	4.5	4.5	3.0	4.5	0.0	3.0	4.5	4.5	3.0	4.5	4.5
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	Yes		No	Yes		No	Yes		No	Yes	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	294.0	294.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	30.0	5.0	5.0	30.0	6.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	180	180	180	180	180	180	180	180	180	180	180	180
L, Total Lost Time per Cycle [s]	6.50	6.50	6.50	6.50	6.50	6.50	5.00	6.50	6.50	5.00	6.50	6.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.50	4.50	0.00	4.50	4.50	3.00	4.50	4.50	3.00	4.50	4.50
g_i, Effective Green Time [s]	72	51	51	72	44	44	25	66	66	25	66	66
g / C, Green / Cycle	0.40	0.28	0.28	0.40	0.25	0.25	0.14	0.36	0.36	0.14	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.25	0.18	0.18	0.18	0.26	0.26	0.13	0.33	0.20	0.18	0.40	0.40
s, saturation flow rate [veh/h]	1963	1863	1801	1040	1863	1761	1774	3547	1583	1774	3546	1791
c, Capacity [veh/h]	570	526	509	350	460	435	246	1291	576	246	1290	652
d1, Uniform Delay [s]	52.22	56.21	56.23	39.47	67.77	67.77	77.04	54.72	45.43	77.51	57.25	57.25
k, delay calibration	0.33	0.50	0.50	0.50	0.50	0.50	0.39	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.11	5.46	5.67	5.73	50.77	52.68	41.80	11.92	3.68	167.58	52.48	68.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

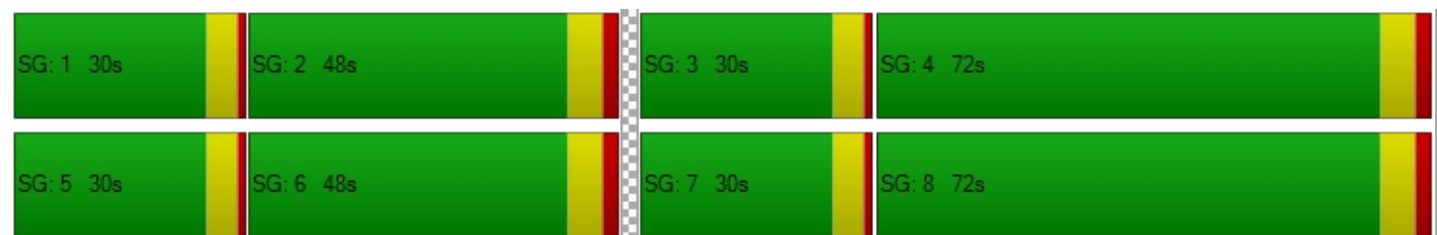
X, volume / capacity	0.85	0.62	0.62	0.53	1.03	1.04	0.96	0.92	0.54	1.32	1.09	1.11
d, Delay for Lane Group [s/veh]	62.33	61.66	61.90	45.20	118.54	120.45	118.84	66.63	49.10	245.09	109.73	125.63
Lane Group LOS	E	E	E	D	F	F	F	E	D	F	F	F
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	8.25	13.63	13.24	6.11	27.33	26.06	13.60	27.09	11.56	22.83	38.28	41.54
50th-Percentile Queue Length [ft/ln]	206.22	340.77	331.06	152.83	683.17	651.61	340.03	677.36	289.02	570.83	956.94	1038.60
95th-Percentile Queue Length [veh/ln]	12.96	19.69	19.21	10.17	36.65	35.20	19.65	35.63	17.14	34.43	51.40	56.00
95th-Percentile Queue Length [ft/ln]	323.98	492.14	480.26	254.20	916.19	880.06	491.24	890.77	428.42	860.73	1285.12	1399.88

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	62.33	61.77	61.90	45.20	119.29	120.45	118.84	66.63	49.10	245.09	114.26	125.63
Movement LOS	E	E	E	D	F	F	F	E	D	F	F	F
d_A, Approach Delay [s/veh]	62.02			106.99			70.59			132.32		
Approach LOS	E			F			E			F		
d_I, Intersection Delay [s/veh]	98.92											
Intersection LOS	F											
Intersection V/C	0.960											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 7: US 1/Queensbury Rd

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 17.8
 Level Of Service: B
 Volume to Capacity (v/c): 0.542

Intersection Setup

Name	US 1			US 1			Queensbury			Queensbury		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	250.00	100.00	100.00	150.00	100.00	100.00	350.00	100.00	100.00	200.00	100.00	200.00
Speed [mph]	45.00			45.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	US 1			US 1			Queensbury			Queensbury		
Base Volume Input [veh/h]	66	781	117	46	1010	34	67	115	76	137	123	168
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	1.89	3.85	2.00	3.85	1.96	2.30	1.85	1.69	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	8	0	0	31	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	66	789	117	46	1041	34	67	115	76	137	123	168
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	219	33	13	289	9	19	32	21	38	34	47
Total Analysis Volume [veh/h]	73	877	130	51	1157	38	74	128	84	152	137	187
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			11			11			4		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	6.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	2	6	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	15	15	15	15	15	8	8	8	8	8	8
Maximum Green [s]	8	60	60	46	46	46	20	20	20	20	20	20
Amber [s]	3.5	4.5	4.5	4.5	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	13	65	65	52	52	52	25	25	25	25	25	25
Vehicle Extension [s]	3.0	5.0	5.0	5.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	3.5	3.5	3.5	3.5	3.5	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall	No	No			No			No			No	
Maximum Recall	No	Yes			Yes			No			No	
Pedestrian Recall	No	No			No			No			No	
Detector Location [ft]	0.0	294.0	294.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	30.0	6.0	6.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	5.50	5.50	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.50	3.50	3.50	3.50	3.50	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	60	60	60	51	51	51	20	20	20	20	20
g / C, Green / Cycle	0.66	0.66	0.66	0.56	0.56	0.56	0.22	0.22	0.22	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.12	0.28	0.28	0.09	0.32	0.32	0.06	0.12	0.13	0.07	0.12
s, saturation flow rate [veh/h]	616	1863	1778	547	1863	1841	1238	1736	1168	1863	1560
c, Capacity [veh/h]	427	1232	1176	303	1049	1037	251	386	188	414	347
d1, Uniform Delay [s]	7.85	7.14	7.14	17.37	12.67	12.68	35.55	31.02	42.05	29.39	30.94
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.12	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.87	1.05	1.10	1.19	2.27	2.31	0.65	1.22	8.47	0.46	1.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.17	0.42	0.42	0.17	0.57	0.57	0.29	0.55	0.81	0.33	0.54
d, Delay for Lane Group [s/veh]	8.72	8.19	8.24	18.56	14.94	14.99	36.20	32.24	50.52	29.86	32.25
Lane Group LOS	A	A	A	B	B	B	D	C	D	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.48	3.85	3.70	0.73	7.17	7.11	1.51	4.13	3.80	2.50	3.64
50th-Percentile Queue Length [ft/ln]	11.91	96.22	92.45	18.28	179.16	177.67	37.85	103.27	95.11	62.56	91.12
95th-Percentile Queue Length [veh/ln]	0.86	6.93	6.66	1.32	11.56	11.48	2.72	7.44	6.85	4.50	6.56
95th-Percentile Queue Length [ft/ln]	21.45	173.20	166.41	32.90	288.92	286.97	68.12	185.88	171.20	112.61	164.02

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	8.72	8.21	8.24	18.56	14.96	14.99	36.20	32.24	32.24	50.52	29.86	32.25
Movement LOS	A	A	A	B	B	B	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	8.25			15.11			33.27			37.39		
Approach LOS	A			B			C			D		
d_I, Intersection Delay [s/veh]	17.83											
Intersection LOS	B											
Intersection V/C	0.542											

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 8: US 1/Oglethorpe Rd

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 12.0
 Level Of Service: B
 Volume to Capacity (v/c): 0.535

Intersection Setup

Name	US 1		US 1		Oglethorpe	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00		40.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	US 1		US 1		Oglethorpe	
Base Volume Input [veh/h]	21	973	1208	40	117	54
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.04	1.97	0.00	1.67	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	8	31	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	981	1239	40	117	54
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	273	344	11	33	15
Total Analysis Volume [veh/h]	23	1090	1377	44	130	60
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	66.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Split	Split
Signal group	2	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lag	-
Minimum Green [s]	15	15	15	15	15	15
Maximum Green [s]	85	85	85	85	25	25
Amber [s]	4.0	4.0	4.0	4.0	4.0	4.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	90	90	90	90	30	30
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	7	7
Pedestrian Clearance [s]	0	0	0	0	10	10
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall		No	No		No	
Maximum Recall		Yes	Yes		Yes	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	50.0	50.0	50.0	50.0	50.0	50.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	85	85	85	85	25
g / C, Green / Cycle	0.71	0.71	0.71	0.71	0.21
(v / s)_i Volume / Saturation Flow Rate	0.33	0.33	0.38	0.39	0.11
s, saturation flow rate [veh/h]	1721	1694	1863	1843	1743
c, Capacity [veh/h]	1250	1200	1320	1306	363
d1, Uniform Delay [s]	7.31	7.57	8.25	8.31	42.20
k, delay calibration	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.17	1.27	1.58	1.63	5.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.45	0.46	0.54	0.54	0.52
d, Delay for Lane Group [s/veh]	8.47	8.84	9.83	9.94	47.51
Lane Group LOS	A	A	A	A	D
Critical Lane Group	No	No	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	5.72	5.83	7.91	7.97	5.60
50th-Percentile Queue Length [ft/ln]	142.93	145.81	197.77	199.35	139.89
95th-Percentile Queue Length [veh/ln]	9.64	9.79	12.52	12.61	9.48
95th-Percentile Queue Length [ft/ln]	240.97	244.82	313.08	315.13	236.88

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	8.47	8.66	9.88	9.94	47.51	47.51
Movement LOS	A	A	A	A	D	D
d_A, Approach Delay [s/veh]	8.65		9.88		47.51	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	12.01					
Intersection LOS	B					
Intersection V/C	0.535					

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SG: 2 90s

SG: 4 30s

SG: 104 17s

SG: 6 90s

Intersection Level Of Service Report

Intersection 9: US 1/Madison St

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 16.9
 Level Of Service: B
 Volume to Capacity (v/c): 0.649

Intersection Setup

Name	US 1			US 1			Madison			Madison		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	US 1			US 1			Madison			Madison		
Base Volume Input [veh/h]	72	925	12	7	1159	91	109	20	114	68	61	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	8	0	0	31	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	72	933	12	7	1190	91	109	20	114	68	61	22
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	259	3	2	331	25	30	6	32	19	17	6
Total Analysis Volume [veh/h]	80	1037	13	8	1322	101	121	22	127	76	68	24
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			2			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	74.0
Offset Reference	LagEnd
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	2	2	2	6	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	20	20	20	20	20	20	15	15	15	15	15	15
Maximum Green [s]	85	85	85	85	85	85	25	25	25	25	25	25
Amber [s]	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	90	90	90	90	90	90	30	30	30	30	30	30
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	0	0
Pedestrian Clearance [s]	13	13	13	13	13	13	10	10	10	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall		No			No			No			No	
Maximum Recall		Yes			Yes			Yes			Yes	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	85	85	85	85	85	85	25	25
g / C, Green / Cycle	0.71	0.71	0.71	0.71	0.71	0.71	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.21	0.28	0.28	0.01	0.39	0.39	0.20	0.13
s, saturation flow rate [veh/h]	383	1863	1855	546	1863	1816	1375	1312
c, Capacity [veh/h]	255	1319	1314	375	1319	1287	330	317
d1, Uniform Delay [s]	18.20	7.11	7.11	10.87	8.31	8.34	47.14	42.60
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.19	0.90	0.91	0.10	1.62	1.68	19.82	6.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.31	0.40	0.40	0.02	0.54	0.55	0.82	0.53
d, Delay for Lane Group [s/veh]	21.39	8.01	8.02	10.98	9.93	10.02	66.96	48.82
Lane Group LOS	C	A	A	B	A	B	E	D
Critical Lane Group	No	No	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	1.56	5.18	5.16	0.10	8.33	8.21	9.82	5.10
50th-Percentile Queue Length [ft/ln]	39.07	129.45	128.94	2.50	208.13	205.26	245.44	127.56
95th-Percentile Queue Length [veh/ln]	2.81	8.91	8.88	0.18	13.06	12.91	14.96	8.81
95th-Percentile Queue Length [ft/ln]	70.33	222.75	222.06	4.50	326.43	322.74	373.90	220.18

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	21.39	8.02	8.02	10.98	9.97	10.02	66.96	66.96	66.96	48.82	48.82	48.82
Movement LOS	C	A	A	B	A	B	E	E	E	D	D	D
d_A, Approach Delay [s/veh]	8.96			9.98			66.96			48.82		
Approach LOS	A			A			E			D		
d_I, Intersection Delay [s/veh]	16.90											
Intersection LOS	B											
Intersection V/C	0.649											

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SG: 2 90s

SG: 4 30s

SG: 102 20s

SG: 104 17s

SG: 6 90s

SG: 8 30s

SG: 106 20s

Intersection Level Of Service Report

Intersection 10: US 1/Jefferson St

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 20.4
 Level Of Service: C
 Volume to Capacity (v/c): 0.778

Intersection Setup

Name	US 1			US 1			Jefferson St					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	150.00	100.00	100.00	175.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	US 1			US 1			Jefferson St					
Base Volume Input [veh/h]	301	950	1	7	1257	103	57	7	105	40	24	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.82	2.00	2.00	2.00	2.00	2.22	1.43	2.00	1.82	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	8	0	0	31	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	301	958	1	7	1288	103	57	7	105	40	24	8
Peak Hour Factor	0.9000	0.9000	1.0000	1.0000	0.9000	0.9000	0.9000	1.0000	0.9000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	84	266	0	2	358	29	16	2	29	10	6	2
Total Analysis Volume [veh/h]	334	1064	1	7	1431	114	63	7	117	40	24	8
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	90.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	6	4	4	4	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lag	-	-	-	-	-
Minimum Green [s]	8	20	0	0	20	20	20	20	20	0	20	0
Maximum Green [s]	15	90	0	0	70	70	20	20	20	0	20	0
Amber [s]	4.0	4.0	0.0	0.0	4.0	4.0	4.0	4.0	4.0	0.0	4.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	20	95	0	0	75	75	25	25	25	0	25	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	0	0	0	13	13	13	13	13	0	13	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	0.0
Minimum Recall	No	No			No			No			No	
Maximum Recall	Yes	Yes			Yes			No			No	
Pedestrian Recall	No	No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	90	90	90	70	70	70	20	20
g / C, Green / Cycle	0.75	0.75	0.75	0.58	0.58	0.58	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.54	0.29	0.29	0.01	0.42	0.42	0.12	0.06
s, saturation flow rate [veh/h]	623	1863	1862	528	1863	1815	1553	1150
c, Capacity [veh/h]	457	1397	1397	306	1087	1059	299	238
d1, Uniform Delay [s]	25.38	5.25	5.25	17.30	17.90	18.02	47.16	44.03
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.21	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.91	0.79	0.79	0.14	4.06	4.30	4.09	0.71
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.73	0.38	0.38	0.02	0.72	0.72	0.63	0.30
d, Delay for Lane Group [s/veh]	35.29	6.04	6.04	17.44	21.97	22.32	51.25	44.73
Lane Group LOS	D	A	A	B	C	C	D	D
Critical Lane Group	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.40	4.20	4.20	0.12	15.66	15.55	5.67	1.95
50th-Percentile Queue Length [ft/ln]	85.12	105.04	105.02	2.89	391.43	388.69	141.70	48.87
95th-Percentile Queue Length [veh/ln]	6.13	7.56	7.56	0.21	22.15	22.01	9.57	3.52
95th-Percentile Queue Length [ft/ln]	153.22	189.07	189.03	5.21	553.66	550.36	239.31	87.97

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.29	6.04	6.04	17.44	22.13	22.32	51.25	51.25	51.25	44.73	44.73	44.73
Movement LOS	D	A	A	B	C	C	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	13.03			22.12			51.25			44.73		
Approach LOS	B			C			D			D		
d_I, Intersection Delay [s/veh]	20.36											
Intersection LOS	C											
Intersection V/C	0.778											

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 11: US 1/Hamilton St (North)

Control Type:	Signalized	Delay (sec / veh):	1.6
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.475

Intersection Setup

Name	US 1		US 1		Hamilton	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	150.00	100.00	100.00	100.00
Speed [mph]	30.00		35.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	US 1		US 1		Hamilton	
Base Volume Input [veh/h]	1228	4	2	1370	0	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	3.85	0.00	2.04	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	8	0	0	31	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1236	4	2	1401	0	1
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	343	1	1	389	0	0
Total Analysis Volume [veh/h]	1373	4	2	1557	0	1
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	90.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Split	Split
Signal group	2	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	-	-	Lag	-	Lag	-
Minimum Green [s]	20	20	20	20	15	15
Maximum Green [s]	84	84	84	84	25	25
Amber [s]	5.0	5.0	5.0	5.0	4.0	4.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	90	90	90	90	30	30
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	7	7	0	0	5	5
Pedestrian Clearance [s]	8	8	0	0	10	10
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	4.0	4.0	4.0	4.0	3.0	3.0
Minimum Recall	No			No	No	
Maximum Recall	Yes			Yes	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	50.0	50.0	50.0	50.0	50.0	50.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	3.00
g_i, Effective Green Time [s]	108	108	108	108	1
g / C, Green / Cycle	0.90	0.90	0.90	0.90	0.00
(v / s)_i Volume / Saturation Flow Rate	0.37	0.37	0.01	0.44	0.00
s, saturation flow rate [veh/h]	1863	1861	400	3545	1615
c, Capacity [veh/h]	1681	1680	387	3200	9
d1, Uniform Delay [s]	0.90	0.90	2.03	1.01	59.36
k, delay calibration	0.50	0.50	0.50	0.50	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.74	0.74	0.02	0.53	5.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.41	0.41	0.01	0.49	0.11
d, Delay for Lane Group [s/veh]	1.64	1.65	2.05	1.55	64.45
Lane Group LOS	A	A	A	A	E
Critical Lane Group	No	No	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.71	0.71	0.01	0.39	0.04
50th-Percentile Queue Length [ft/ln]	17.78	17.80	0.21	9.66	1.09
95th-Percentile Queue Length [veh/ln]	1.28	1.28	0.02	0.70	0.08
95th-Percentile Queue Length [ft/ln]	32.00	32.04	0.39	17.38	1.96

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	1.64	1.65	2.05	1.55	64.45	64.45
Movement LOS	A	A	A	A	E	E
d_A, Approach Delay [s/veh]	1.64		1.55		64.45	
Approach LOS	A		A		E	
d_I, Intersection Delay [s/veh]	1.61					
Intersection LOS	A					
Intersection V/C	0.475					

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SG: 2 90s

SG: 4 30s

SG: 102 15s

SG: 104 15s

SG: 6 90s

Intersection Level Of Service Report

Intersection 12: US 1/Hamilton St (South)/US 1 Alt

Control Type:	Signalized	Delay (sec / veh):	312.1
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.941

Intersection Setup

Name	US 1			US 1			Hamilton			US 1 ALT		
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	250.00
Speed [mph]	30.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	US 1			US 1			Hamilton			US 1 ALT		
Base Volume Input [veh/h]	0	328	20	466	901	0	7	7	10	95	0	902
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.17	0.00	2.00	2.06	0.00	0.00	0.00	0.00	2.63	0.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	3	0	18	13	0	0	0	0	0	0	5
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	331	20	484	914	0	7	7	10	95	0	907
Peak Hour Factor	1.0000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	92	6	134	254	0	2	2	3	26	0	252
Total Analysis Volume [veh/h]	0	368	22	538	1016	0	8	8	11	106	0	1008
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			3			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	18.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Permiss	Permiss	Overlap
Signal group	0	6	6	5	2	0	3	3	3	8	0	8
Auxiliary Signal Groups												5,8
Lead / Lag	-	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	0	20	20	4	20	0	5	5	5	5	0	5
Maximum Green [s]	0	55	55	20	63	0	5	5	5	30	0	30
Amber [s]	0.0	4.0	4.0	4.0	4.0	0.0	3.5	3.5	3.5	3.0	0.0	3.0
All red [s]	0.0	1.0	1.0	0.0	1.0	0.0	1.5	1.5	1.5	1.0	0.0	1.0
Split [s]	0	60	60	8	68	0	10	10	10	42	0	42
Vehicle Extension [s]	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0
Walk [s]	0	0	0	0	0	0	0	0	0	5	0	5
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	10	0	10
Rest In Walk		No			No			No		No		
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0
I2, Clearance Lost Time [s]	0.0	3.0	3.0	2.0	3.0	0.0	3.0	3.0	3.0	2.0	0.0	2.0
Minimum Recall		No		Yes	No			No		No		No
Maximum Recall		Yes		No	Yes			No		No		No
Pedestrian Recall		No		No	No			No		No		No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	50.0	50.0	50.0	50.0	0.0	50.0	50.0	50.0	50.0	0.0	50.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	3.00	2.00	0.00
g_i, Effective Green Time [s]	78	78	86	86	3	17	25
g / C, Green / Cycle	0.65	0.65	0.71	0.71	0.02	0.14	0.21
(v / s)_i Volume / Saturation Flow Rate	0.10	0.11	0.73	0.59	0.02	0.06	0.60
s, saturation flow rate [veh/h]	1860	1823	1051	1337	1748	1763	1667
c, Capacity [veh/h]	1204	1180	780	955	43	255	352
d1, Uniform Delay [s]	8.34	8.36	19.14	12.00	57.96	46.72	47.33
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.29	0.30	27.57	8.19	13.71	1.08	846.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.16	0.17	0.98	0.83	0.62	0.42	2.86
d, Delay for Lane Group [s/veh]	8.63	8.66	46.71	20.19	71.67	47.80	893.59
Lane Group LOS	A	A	D	C	E	D	F
Critical Lane Group	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	2.03	2.03	16.93	14.99	0.98	2.99	93.31
50th-Percentile Queue Length [ft/ln]	50.64	50.81	423.26	374.77	24.59	74.86	2332.78
95th-Percentile Queue Length [veh/ln]	3.65	3.66	23.68	21.34	1.77	5.39	145.96
95th-Percentile Queue Length [ft/ln]	91.15	91.46	591.96	533.52	44.27	134.75	3648.96

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	8.64	8.66	46.71	26.08	0.00	71.67	71.67	71.67	47.80	0.00	893.59
Movement LOS		A	A	D	C		E	E	E	D		F
d_A, Approach Delay [s/veh]	8.64			33.22			71.67			813.11		
Approach LOS	A			C			E			F		
d_I, Intersection Delay [s/veh]	312.07											
Intersection LOS	F											
Intersection V/C	0.941											

Sequence

Ring 1	-	2	3	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 13: US 1 Alt/Decatur St

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 44.0
 Level Of Service: D
 Volume to Capacity (v/c): 0.750

Intersection Setup

Name	US 1 ALT		Decatur St		US 1 ALT	
Approach	Northbound		Westbound		Southwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	0	1	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		No	

Volumes

Name	US 1 ALT		Decatur St		US 1 ALT	
Base Volume Input [veh/h]	667	49	139	332	119	432
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.13	2.13	1.97	2.00	2.63	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	5	0	0	0	0	18
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	672	49	139	332	119	450
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	187	14	39	92	33	125
Total Analysis Volume [veh/h]	747	54	154	369	132	500
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	15.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	Unsignalized	Split	Split	ProtectedPermissi	Permissive
Signal group	6	0	4	0	5	2
Auxiliary Signal Groups						
Lead / Lag	-	-	Lag	-	Lead	-
Minimum Green [s]	10	0	5	0	4	10
Maximum Green [s]	39	0	15	0	10	54
Amber [s]	5.0	0.0	4.0	0.0	4.0	5.0
All red [s]	1.0	0.0	1.0	0.0	1.0	1.0
Split [s]	30	0	30	0	30	30
Vehicle Extension [s]	0.2	0.0	3.0	0.0	3.0	0.2
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	4.0	0.0	3.0	0.0	3.0	4.0
Minimum Recall	No		No		No	No
Maximum Recall	Yes		No		No	Yes
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	30.0	0.0	30.0	0.0	30.0	30.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	L	R	L	C
C, Cycle Length [s]	80	80	80	80	80
L, Total Lost Time per Cycle [s]	6.00	5.00	5.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	3.00	3.00	0.00	4.00
g_i, Effective Green Time [s]	45	15	15	54	54
g / C, Green / Cycle	0.56	0.19	0.19	0.68	0.68
(v / s)_i Volume / Saturation Flow Rate	0.40	0.09	0.23	0.16	0.27
s, saturation flow rate [veh/h]	1860	1775	1583	845	1863
c, Capacity [veh/h]	1045	333	297	487	1257
d1, Uniform Delay [s]	12.85	28.92	32.50	9.24	5.78
k, delay calibration	0.50	0.11	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.19	1.00	134.53	1.37	0.94
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.72	0.46	1.24	0.27	0.40
d, Delay for Lane Group [s/veh]	17.04	29.92	167.03	10.61	6.72
Lane Group LOS	B	C	F	B	A
Critical Lane Group	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	9.75	2.65	16.64	0.80	3.29
50th-Percentile Queue Length [ft/ln]	243.66	66.28	415.94	20.10	82.34
95th-Percentile Queue Length [veh/ln]	14.87	4.77	25.82	1.45	5.93
95th-Percentile Queue Length [ft/ln]	371.66	119.30	645.43	36.19	148.22

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	17.04	0.00	29.92	167.03	10.61	6.72
Movement LOS	B		C	F	B	A
d_A, Approach Delay [s/veh]	17.04		126.66		7.53	
Approach LOS	B		F		A	
d_I, Intersection Delay [s/veh]	44.02					
Intersection LOS	D					
Intersection V/C	0.750					

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: US 1 Alt/Charles Armentrout St

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	US 1 Alt		US 1 ALT		Charles L Armentrout	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	US 1 Alt		US 1 ALT		Charles L Armentrout	
Base Volume Input [veh/h]	1070	786	481	146	18	572
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.08	2.00	2.00	2.00	3.85	2.17
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	5	18	0	0	12
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1073	791	499	146	18	584
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	298	220	139	41	5	162
Total Analysis Volume [veh/h]	1192	879	554	162	20	649
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1.35	0.01	0.01	0.00	0.00	1.22
d_M, Delay for Movement [s/veh]	180.15	0.00	0.00	0.00	10000.00	140.09
Movement LOS	F	A	A	A	F	F
95th-Percentile Queue Length [veh/ln]	47.82	0.00	0.00	0.00	4.26	24.57
95th-Percentile Queue Length [ft/ln]	1195.52	0.00	0.00	0.00	106.51	614.34
d_A, Approach Delay [s/veh]	103.69		0.00		434.86	
Approach LOS	F		A		F	
d_I, Intersection Delay [s/veh]	146.31					
Intersection LOS	F					

Intersection Level Of Service Report

Intersection 15: US 1/Gallatin St

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 3.7
 Level Of Service: A
 Volume to Capacity (v/c): 0.331

Intersection Setup

Name	US 1		US 1		Gallatin St.	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		0.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		No	

Volumes

Name	US 1		US 1		Gallatin St.	
Base Volume Input [veh/h]	18	341	952	65	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.11	2.05	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	3	13	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	344	965	65	0	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	96	268	18	0	0
Total Analysis Volume [veh/h]	20	382	1072	72	0	0
Presence of On-Street Parking	No	No	No	No		
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	111
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	2.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	6	6	2	2	0	0
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	-	-
Minimum Green [s]	4	4	4	4	0	0
Maximum Green [s]	86	86	86	86	0	0
Amber [s]	4.0	4.0	4.0	4.0	0.0	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	90	90	90	90	0	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	0.0	0.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Rest In Walk						
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	0.0	0.0
Minimum Recall		No	No			
Maximum Recall		Yes	Yes			
Pedestrian Recall		No	No			
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	50.0	50.0	50.0	50.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	8
Pedestrian Walk [s]	20
Pedestrian Clearance [s]	10

Lane Group Calculations

Lane Group	C	C	C	C	
C, Cycle Length [s]	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	97	97	97	97	
g / C, Green / Cycle	0.81	0.81	0.81	0.81	
(v / s)_i Volume / Saturation Flow Rate	0.13	0.12	0.31	0.31	
s, saturation flow rate [veh/h]	1519	1693	1862	1821	
c, Capacity [veh/h]	1260	1368	1504	1471	
d1, Uniform Delay [s]	2.48	2.53	3.21	3.24	
k, delay calibration	0.50	0.50	0.50	0.50	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.26	0.23	0.73	0.78	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.16	0.15	0.38	0.39	
d, Delay for Lane Group [s/veh]	2.75	2.76	3.94	4.01	
Lane Group LOS	A	A	A	A	
Critical Lane Group	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	0.86	0.91	3.21	3.25	
50th-Percentile Queue Length [ft/ln]	21.61	22.79	80.25	81.24	
95th-Percentile Queue Length [veh/ln]	1.56	1.64	5.78	5.85	
95th-Percentile Queue Length [ft/ln]	38.89	41.02	144.44	146.24	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	2.75	2.75	3.97	4.01	0.00	0.00
Movement LOS	A	A	A	A		
d_A, Approach Delay [s/veh]	2.75		3.98		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	3.66					
Intersection LOS	A					
Intersection V/C	0.331					

Sequence

Ring 1	-	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SG: 2 90s

SG: 8 30s

SG: 6 90s

Intersection Level Of Service Report Intersection 16: US 1/Farragut St

Control Type: Signalized
Analysis Method: HCM 2010
Analysis Period: 15 minutes

Delay (sec / veh): 9.9
Level Of Service: A
Volume to Capacity (v/c): 0.332

Intersection Setup

Name	US 1		Farragut		US 1	
Approach	Southbound		Eastbound		Northeastbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	30.00		25.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	US 1		Farragut		US 1	
Base Volume Input [veh/h]	942	3	35	25	10	301
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.97	0.00	0.00	0.00	0.00	2.11
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	13	0	0	0	0	3
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	955	3	35	25	10	304
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	265	1	10	7	3	84
Total Analysis Volume [veh/h]	1061	3	39	28	11	338
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	96.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	Permissive	Split	Split	Permissive	Permissive
Signal group	6	6	4	4	2	2
Auxiliary Signal Groups						
Lead / Lag	-	-	Lag	-	Lag	-
Minimum Green [s]	20	20	20	20	20	20
Maximum Green [s]	83	83	26	26	83	83
Amber [s]	5.0	5.0	4.0	4.0	5.0	5.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	89	89	31	31	89	89
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	7	7	0	0
Pedestrian Clearance [s]	0	0	13	13	0	0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	4.0	4.0	3.0	3.0	4.0	4.0
Minimum Recall	No		No			No
Maximum Recall	Yes		Yes			Yes
Pedestrian Recall	No		No			No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	50.0	50.0	50.0	50.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	6.00	6.00	5.00	5.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00
l2, Clearance Lost Time [s]	4.00	4.00	3.00	3.00	4.00
g_i, Effective Green Time [s]	83	83	26	26	83
g / C, Green / Cycle	0.69	0.69	0.22	0.22	0.69
(v / s)_i Volume / Saturation Flow Rate	0.29	0.29	0.02	0.02	0.19
s, saturation flow rate [veh/h]	1863	1862	1810	1615	1798
c, Capacity [veh/h]	1289	1288	392	350	1275
d1, Uniform Delay [s]	7.98	7.99	37.63	37.47	7.02
k, delay calibration	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.98	0.98	0.51	0.45	0.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.41	0.41	0.10	0.08	0.27
d, Delay for Lane Group [s/veh]	8.96	8.97	38.13	37.91	7.55
Lane Group LOS	A	A	D	D	A
Critical Lane Group	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.86	5.86	0.99	0.71	3.27
50th-Percentile Queue Length [ft/ln]	146.38	146.45	24.75	17.79	81.67
95th-Percentile Queue Length [veh/ln]	9.82	9.83	1.78	1.28	5.88
95th-Percentile Queue Length [ft/ln]	245.59	245.69	44.55	32.03	147.01

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	8.96	8.97	38.13	37.91	7.55	7.55
Movement LOS	A	A	D	D	A	A
d_A, Approach Delay [s/veh]	8.96		38.04		7.55	
Approach LOS	A		D		A	
d_I, Intersection Delay [s/veh]	9.95					
Intersection LOS	A					
Intersection V/C	0.332					

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 17: US 1/43rd Avenue

Control Type: Two-way stop
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 36.3
 Level Of Service: E
 Volume to Capacity (v/c): 0.049

Intersection Setup

Name	US 1		US 1			
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0
Pocket Length [ft]	150.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	US 1		US 1			
Base Volume Input [veh/h]	112	331	895	57	6	85
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	3	13	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	112	334	908	57	6	85
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	84	227	14	2	21
Total Analysis Volume [veh/h]	112	334	908	57	6	85
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.16	0.00	0.01	0.00	0.05	0.16
d_M, Delay for Movement [s/veh]	11.02	0.00	0.00	0.00	36.33	13.96
Movement LOS	B	A	A	A	E	B
95th-Percentile Queue Length [veh/ln]	0.56	0.00	0.00	0.00	0.78	0.78
95th-Percentile Queue Length [ft/ln]	13.96	0.00	0.00	0.00	19.46	19.46
d_A, Approach Delay [s/veh]	2.77		0.00		15.44	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	1.76					
Intersection LOS	E					

Intersection Level Of Service Report

Intersection 18: US 1/42nd Place/Crittendon St

Control Type:	Signalized	Delay (sec / veh):	33.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.888

Intersection Setup

Name	42nd Pl			Crittenden St			US 1			US 1		
Approach	Southbound			Eastbound			Northeastbound			Southwestbound		
Lane Configuration												
Turning Movement	Left	Right	Right2	Left	Thru	Right	Left2	Left	Thru	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			25.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	42nd Pl			Crittenden St			US 1			US 1		
Base Volume Input [veh/h]	1	14	0	0	23	257	286	14	426	940	20	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	2.00	2.14	0.00	2.17	2.05	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	12	3	0	3	13	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	14	0	0	23	269	289	14	429	953	20	5
Peak Hour Factor	0.9000	0.9000	0.9000	1.0000	0.9000	0.9000	1.0000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	4	0	0	6	75	72	4	119	265	6	1
Total Analysis Volume [veh/h]	1	16	0	0	26	299	289	16	477	1059	22	6
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	12.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal group	4	4	4	0	3	3	0	6	6	6	6	6
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	-	-	-	-	Lag	-	-	-	-
Minimum Green [s]	5	5	5	0	5	5	0	20	20	20	20	20
Maximum Green [s]	19	19	19	0	25	25	0	60	60	60	60	60
Amber [s]	4.0	4.0	4.0	0.0	4.0	4.0	0.0	5.0	5.0	5.0	5.0	5.0
All red [s]	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0
Split [s]	24	24	24	0	30	30	0	66	66	66	66	66
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk	No				No				No	No		
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	0.0	3.0	3.0	0.0	4.0	4.0	4.0	4.0	4.0
Minimum Recall	No				No				No	No		
Maximum Recall	No				No				Yes	Yes		
Pedestrian Recall	No				No				No	No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	50.0	50.0	50.0	0.0	50.0	50.0	0.0	50.0	50.0	50.0	50.0	50.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	2	25	77	77	77	77
g / C, Green / Cycle	0.02	0.21	0.64	0.64	0.64	0.64
(v / s)_i Volume / Saturation Flow Rate	0.01	0.20	0.59	0.13	0.29	0.29
s, saturation flow rate [veh/h]	1625	1635	517	3541	1862	1845
c, Capacity [veh/h]	31	341	300	2263	1190	1179
d1, Uniform Delay [s]	58.34	46.94	37.68	9.03	11.03	11.07
k, delay calibration	0.11	0.38	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.13	32.73	56.10	0.21	1.26	1.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.55	0.95	1.02	0.21	0.46	0.46
d, Delay for Lane Group [s/veh]	72.47	79.67	93.79	9.24	12.29	12.37
Lane Group LOS	E	E	F	A	B	B
Critical Lane Group	Yes	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.64	12.72	13.75	2.52	7.25	7.28
50th-Percentile Queue Length [ft/ln]	15.96	318.06	343.75	62.98	181.19	182.00
95th-Percentile Queue Length [veh/ln]	1.15	18.57	20.09	4.53	11.66	11.71
95th-Percentile Queue Length [ft/ln]	28.73	464.31	502.13	113.36	291.56	292.63

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	72.47	72.47	72.47	0.00	79.67	79.67	93.79	93.79	9.24	12.33	12.37	12.37
Movement LOS	E	E	E		E	E	F	F	A	B	B	B
d_A, Approach Delay [s/veh]	72.47			79.67			42.21			12.33		
Approach LOS	E			E			D			B		
d_I, Intersection Delay [s/veh]	33.26											
Intersection LOS	C											
Intersection V/C	0.888											

Sequence

Ring 1	-	-	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 19: US 1/41st Place/Charles Armentrout Drive

Control Type:	Signalized	Delay (sec / veh):	42.9
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.946

Intersection Setup

Name	US 1			US 1			Charles L Armentrout			41st		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	43.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	US 1			US 1			Charles L Armentrout			41st		
Base Volume Input [veh/h]	3	233	207	409	825	1	644	4	505	2	2	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.38	2.14	2.00	0.00	2.00	0.00	2.21	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	3	0	12	13	0	0	0	3	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	236	207	421	838	1	644	4	508	2	2	3
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	66	58	117	233	0	179	1	141	1	1	1
Total Analysis Volume [veh/h]	3	262	230	468	931	1	716	4	564	2	2	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	4			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	42.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss
Signal group	6	6	6	5	2	2	8	8	2	4	4	4
Auxiliary Signal Groups									2,5			
Lead / Lag	Lag	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	20	20	20	5	20	20	8	8	20	8	8	8
Maximum Green [s]	25	25	25	18	48	48	60	60	48	60	60	60
Amber [s]	5.0	5.0	5.0	4.0	5.0	5.0	4.0	4.0	5.0	4.0	4.0	4.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	2.0	2.0	1.0	2.0	2.0	2.0
Split [s]	31	31	31	23	54	54	66	66	54	66	66	66
Vehicle Extension [s]	6.0	6.0	6.0	3.0	6.0	6.0	3.0	3.0	6.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Recall		No		No	No			No	No		No	
Maximum Recall		Yes		No	Yes			No	Yes		No	
Pedestrian Recall		No		No	No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	0.0	50.0	50.0	50.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	C	R	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	5.50	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	0.00	4.00	4.00	4.00	0.00	4.00
g_i, Effective Green Time [s]	25	25	25	48	48	48	60	48	60
g / C, Green / Cycle	0.21	0.21	0.21	0.40	0.40	0.40	0.50	0.40	0.50
(v / s)_i Volume / Saturation Flow Rate	0.00	0.07	0.15	0.33	0.25	0.25	0.50	0.36	0.00
s, saturation flow rate [veh/h]	610	3547	1577	1400	1863	1862	1443	1580	1874
c, Capacity [veh/h]	60	739	329	580	745	745	782	632	975
d1, Uniform Delay [s]	60.00	40.60	44.02	31.51	28.81	28.81	29.70	33.59	15.06
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.45	0.50	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.57	1.33	11.75	11.47	3.94	3.95	16.51	17.38	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

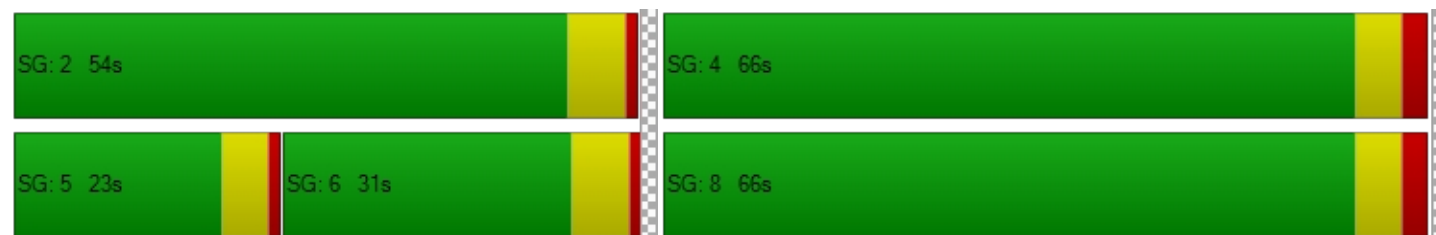
X, volume / capacity	0.05	0.35	0.70	0.81	0.63	0.63	0.92	0.89	0.01
d, Delay for Lane Group [s/veh]	61.57	41.94	55.77	42.98	32.75	32.75	46.22	50.97	15.06
Lane Group LOS	E	D	E	D	C	C	D	D	B
Critical Lane Group	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.12	3.38	7.24	12.59	11.31	11.31	23.68	18.26	0.10
50th-Percentile Queue Length [ft/ln]	2.89	84.45	181.07	314.74	282.86	282.79	591.96	456.51	2.48
95th-Percentile Queue Length [veh/ln]	0.21	6.08	11.66	18.41	16.83	16.83	31.66	25.27	0.18
95th-Percentile Queue Length [ft/ln]	5.21	152.01	291.41	460.22	420.77	420.69	791.47	631.72	4.47

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	61.57	41.94	55.77	42.98	32.75	32.75	46.22	46.22	50.97	15.06	15.06	15.06
Movement LOS	E	D	E	D	C	C	D	D	D	B	B	B
d_A, Approach Delay [s/veh]	48.48			36.17			48.30			15.06		
Approach LOS	D			D			D			B		
d_I, Intersection Delay [s/veh]	42.93											
Intersection LOS	D											
Intersection V/C	0.946											

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 20: MD 410/Toledo Terrace

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 180.1
 Level Of Service: F
 Volume to Capacity (v/c): 32.667

Intersection Setup

Name				Toledo Terrace			MD 410			MD 410		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	500.00	100.00	900.00	175.00	100.00	175.00
Speed [mph]	30.00			30.00			50.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name				Toledo Terrace			MD 410			MD 410		
Base Volume Input [veh/h]	93	5	80	167	22	235	135	683	153	71	1109	89
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.44	0.00	2.50	2.38	0.00	1.96	2.07	2.00	1.92	2.00	2.05	3.85
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	43	0	0	0	0	0	0	6	11	0	26	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	136	5	80	167	22	235	135	689	164	71	1135	89
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	1	22	46	6	65	38	191	46	20	315	25
Total Analysis Volume [veh/h]	151	6	89	186	24	261	150	766	182	79	1261	99
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	4			2			1			5		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	9.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	8	8	8	4	4	4	1	6	6	2	2	2
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	8	8	8	8	8	8	5	20	20	20	20	20
Maximum Green [s]	36	36	36	36	36	36	25	102	102	72	72	72
Amber [s]	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5
All red [s]	2.0	2.0	2.0	2.0	2.0	2.0	1.0	1.5	1.5	1.5	1.5	1.5
Split [s]	42	42	42	42	42	42	30	108	108	78	78	78
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	5.0	5.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0
Minimum Recall		No			No		No	No			No	
Maximum Recall		No			No		No	Yes			Yes	
Pedestrian Recall		No			No		No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	R	L	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	0.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	36	36	36	36	102	102	102	90	90	90
g / C, Green / Cycle	0.24	0.24	0.24	0.24	0.68	0.68	0.68	0.60	0.60	0.60
(v / s)_i Volume / Saturation Flow Rate	15.92	0.06	29.67	0.16	0.26	0.22	0.12	0.11	0.36	0.06
s, saturation flow rate [veh/h]	10	1566	7	1582	567	3547	1580	698	3545	1553
c, Capacity [veh/h]	49	376	47	380	357	2412	1074	394	2131	933
d1, Uniform Delay [s]	74.27	45.93	75.00	51.88	14.28	9.80	8.68	21.46	18.52	12.75
k, delay calibration	0.50	0.11	0.50	0.20	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1029.27	0.32	1610.42	4.08	3.59	0.35	0.34	1.14	1.22	0.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	3.17	0.24	4.47	0.69	0.42	0.32	0.17	0.20	0.59	0.11
d, Delay for Lane Group [s/veh]	1103.54	46.25	1685.42	55.95	17.87	10.14	9.02	22.60	19.74	12.98
Lane Group LOS	F	D	F	E	B	B	A	C	B	B
Critical Lane Group	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	16.06	2.75	22.83	9.43	1.92	4.78	2.06	1.68	13.12	1.44
50th-Percentile Queue Length [ft/ln]	401.39	68.74	570.66	235.66	48.00	119.42	51.61	41.88	327.93	35.95
95th-Percentile Queue Length [veh/ln]	28.90	4.95	40.28	14.46	3.46	8.36	3.72	3.02	19.06	2.59
95th-Percentile Queue Length [ft/ln]	722.51	123.73	1007.06	361.54	86.40	209.03	92.90	75.38	476.43	64.70

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	1103.54	1103.54	46.25	1685.42	1685.42	55.95	17.87	10.14	9.02	22.60	19.74	12.98
Movement LOS	F	F	D	F	F	E	B	B	A	C	B	B
d_A, Approach Delay [s/veh]	721.02			782.47			11.01			19.43		
Approach LOS	F			F			B			B		
d_I, Intersection Delay [s/veh]	180.08											
Intersection LOS	F											
Intersection V/C	32.667											

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 21: MD 410/Editors Park Dr

Control Type:	Two-way stop	Delay (sec / veh):	383.9
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.214

Intersection Setup

Name	Editors Park Dr		MD 410		MD 410		
Approach	Northbound		Eastbound		Westbound		
Lane Configuration							
Turning Movement	Left	Right	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	200.00	150.00	100.00	100.00
Speed [mph]	30.00		45.00		45.00		
Grade [%]	0.00		0.00		0.00		
Crosswalk	Yes		Yes		Yes		

Volumes

Name	Editors Park Dr		MD 410		MD 410		
Base Volume Input [veh/h]	58	54	821	102	1	65	1280
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.85	0.00	2.00	1.64	0.00	1.89	2.05
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	130	6	0	0	32	26
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	184	827	102	1	97	1306
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	51	230	28	0	27	363
Total Analysis Volume [veh/h]	64	204	919	113	1	108	1451
Pedestrian Volume [ped/h]	0		0		0		

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1.21	0.37	0.01	0.00	0.01	0.16	0.01
d_M, Delay for Movement [s/veh]	383.85	322.07	0.00	0.00	25.83	11.47	0.00
Movement LOS	F	F	A	A	D	B	A
95th-Percentile Queue Length [veh/ln]	17.93	17.93	0.00	0.00	0.52	0.52	0.00
95th-Percentile Queue Length [ft/ln]	448.22	448.22	0.00	0.00	12.97	12.97	0.00
d_A, Approach Delay [s/veh]	336.83		0.00		0.81		
Approach LOS	F		A		A		
d_I, Intersection Delay [s/veh]	32.01						
Intersection LOS	F						

Intersection Level Of Service Report

Intersection 22: MD 410/Prince George's Plaza

Control Type:	Signalized	Delay (sec / veh):	13.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.400

Intersection Setup

Name	Metro			PG Plaza			MD 410			MD 410		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	2	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	250.00	100.00	250.00	225.00	100.00	100.00	325.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Metro			PG Plaza			MD 410			MD 410		
Base Volume Input [veh/h]	76	11	66	30	16	18	98	790	59	57	1244	39
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.54	3.85	2.22	0.00	0.00	3.85	2.22	2.07	1.74	2.21	2.00	3.85
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	136	0	0	58	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	76	11	66	30	16	18	98	926	59	57	1302	39
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	3	18	8	4	5	27	257	16	16	362	11
Total Analysis Volume [veh/h]	84	12	73	33	18	20	109	1029	66	63	1447	43
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	39.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	3	3	3	4	4	4	1	6	6	5	2	2
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	20	20	5	20	20
Maximum Green [s]	24	24	24	24	24	24	25	54	54	25	54	54
Amber [s]	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.5	4.5	4.0	4.5	4.5
All red [s]	1.5	1.5	1.5	1.5	1.5	1.5	1.0	1.5	1.5	1.0	1.5	1.5
Split [s]	30	30	30	30	30	30	30	60	60	30	60	60
Vehicle Extension [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	5.0	5.0	2.5	5.0	5.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.0	4.0	4.0	3.0	4.0	4.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	294.0	294.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	30.0	30.0	30.0	30.0	6.0	6.0	30.0	5.0	5.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	5.50	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.50	3.50	3.50	3.50	3.50	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	10	10	5	5	5	118	108	108	118	108	108
g / C, Green / Cycle	0.07	0.07	0.03	0.03	0.03	0.79	0.72	0.72	0.79	0.72	0.72
(v / s)_i Volume / Saturation Flow Rate	0.02	0.05	0.01	0.01	0.01	0.24	0.20	0.20	0.11	0.29	0.03
s, saturation flow rate [veh/h]	3461	1589	3514	1900	1555	461	3544	1805	594	5074	1555
c, Capacity [veh/h]	234	108	112	61	50	392	2561	1304	500	3656	1120
d1, Uniform Delay [s]	66.80	68.87	70.96	70.97	71.21	5.09	7.26	7.26	4.02	8.20	6.03
k, delay calibration	0.08	0.08	0.08	0.08	0.08	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.69	9.18	1.07	2.01	3.89	1.76	0.28	0.55	0.52	0.32	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.36	0.79	0.29	0.30	0.40	0.28	0.28	0.28	0.13	0.40	0.04
d, Delay for Lane Group [s/veh]	67.49	78.05	72.04	72.98	75.10	6.85	7.54	7.81	4.54	8.52	6.09
Lane Group LOS	E	E	E	E	E	A	A	A	A	A	A
Critical Lane Group	No	Yes	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.57	3.50	0.64	0.71	0.81	0.81	3.74	3.91	0.42	5.55	0.38
50th-Percentile Queue Length [ft/ln]	39.26	87.60	16.02	17.86	20.31	20.18	93.46	97.71	10.45	138.83	9.42
95th-Percentile Queue Length [veh/ln]	2.83	6.31	1.15	1.29	1.46	1.45	6.73	7.03	0.75	9.42	0.68
95th-Percentile Queue Length [ft/ln]	70.66	157.68	28.83	32.15	36.56	36.33	168.23	175.87	18.82	235.45	16.95

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	67.49	78.05	78.05	72.04	72.98	75.10	6.85	7.62	7.81	4.54	8.52	6.09
Movement LOS	E	E	E	E	E	E	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	72.80			73.14			7.56			8.29		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	13.17											
Intersection LOS	B											
Intersection V/C	0.400											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 23: MD 410/Belcrest Rd

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 58.7
 Level Of Service: E
 Volume to Capacity (v/c): 0.774

Intersection Setup

Name	Belcrest Road			Belcrest Rd			MD 410			MD 410		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	250.00	100.00	100.00	250.00	100.00	100.00	225.00	100.00	100.00	225.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Belcrest Road			Belcrest Rd			MD 410			MD 410		
Base Volume Input [veh/h]	232	270	11	95	409	93	112	684	122	194	1021	62
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.21	2.00	3.85	2.00	2.21	2.63	2.00	2.00	2.38	2.63	2.00	2.63
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	18	0	0	40	0	3	17	44	75	32	37	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	250	270	11	135	409	96	129	728	197	226	1058	62
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	69	75	3	38	114	27	36	202	55	63	294	17
Total Analysis Volume [veh/h]	278	300	12	150	454	107	143	809	219	251	1176	69
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	26			10			91			71		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	144.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	4	4	4	3	3	3	1	6	6	5	2	2
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	8	20	20	8	20	20
Maximum Green [s]	21	21	21	33	33	33	21	50	50	21	50	50
Amber [s]	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.5	4.5	4.0	4.5	4.5
All red [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Split [s]	27	27	27	39	39	39	27	57	57	27	57	57
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.5	4.5	4.0	4.5	4.5
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	30.0	30.0	30.0	30.0	30.0	30.0	30.0	5.0	5.0	30.0	5.0	5.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.50	6.50	6.00	6.50	6.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.50	4.50	4.00	4.50	4.50
g_i, Effective Green Time [s]	20	20	20	30	30	30	14	54	54	21	61	61
g / C, Green / Cycle	0.13	0.13	0.13	0.20	0.20	0.20	0.09	0.36	0.36	0.14	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.11	0.11	0.11	0.08	0.19	0.15	0.08	0.23	0.14	0.14	0.33	0.04
s, saturation flow rate [veh/h]	1770	1827	1652	1774	1859	1434	1774	3547	1544	1763	3547	1562
c, Capacity [veh/h]	232	239	216	361	378	291	168	1286	560	247	1447	637
d1, Uniform Delay [s]	63.82	63.78	63.89	52.01	58.55	55.95	66.84	39.47	35.50	64.49	39.33	27.51
k, delay calibration	0.20	0.19	0.20	0.11	0.31	0.19	0.11	0.50	0.50	0.39	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.95	14.11	16.83	0.77	21.26	6.13	11.30	2.34	2.05	54.63	5.10	0.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.85	0.87	0.42	0.92	0.73	0.85	0.63	0.39	1.02	0.81	0.11
d, Delay for Lane Group [s/veh]	78.77	77.90	80.73	52.77	79.81	62.08	78.14	41.81	37.55	119.13	44.43	27.85
Lane Group LOS	E	E	F	D	E	E	E	D	D	F	D	C
Critical Lane Group	No	No	Yes	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.42	8.60	8.04	5.04	15.18	8.11	5.84	12.46	6.19	13.01	19.57	1.58
50th-Percentile Queue Length [ft/ln]	210.57	214.97	201.05	126.11	379.51	202.71	146.06	311.60	154.64	325.21	489.21	39.56
95th-Percentile Queue Length [veh/ln]	13.18	13.41	12.69	8.73	21.57	12.78	9.81	18.25	10.26	19.08	26.82	2.85
95th-Percentile Queue Length [ft/ln]	329.55	335.20	317.32	218.20	539.26	319.46	245.17	456.35	256.61	476.88	670.58	71.21

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	78.51	79.55	80.73	52.77	75.64	62.08	78.14	41.81	37.55	119.13	44.43	27.85
Movement LOS	E	E	F	D	E	E	E	D	D	F	D	C
d_A, Approach Delay [s/veh]	79.09			68.78			45.45			56.20		
Approach LOS	E			E			D			E		
d_I, Intersection Delay [s/veh]	58.68											
Intersection LOS	E											
Intersection V/C	0.774											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 24: MD 410/MD 500/Adelphi Rd

Control Type:	Signalized	Delay (sec / veh):	110.7
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.058

Intersection Setup

Name	Adelphi Rd			MD 410			MD 410			MD 500		
Approach	Southbound			Eastbound			Westbound			Northeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	0	0	0
Pocket Length [ft]	350.00	100.00	150.00	300.00	100.00	100.00	350.00	100.00	150.00	100.00	100.00	100.00
Speed [mph]	45.00			45.00			50.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Adelphi Rd			MD 410			MD 410			MD 500		
Base Volume Input [veh/h]	352	541	30	43	779	13	582	1233	526	8	591	381
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	1.56	2.63	2.00	0.00	2.00	2.04	2.09	3.85	2.13	2.15
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	3	2	0	84	0	10	21	0	8	12	35
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	352	544	32	43	863	13	592	1254	526	16	603	416
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	98	151	9	12	240	4	164	348	146	4	168	116
Total Analysis Volume [veh/h]	391	604	36	48	959	14	658	1393	584	18	670	462
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	6			5			9			3		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Protecte	Permiss	Unsigna	Protecte	Permiss	Overlap	Split	Split	Split
Signal group	4	4	0	1	6	0	5	2	2	3	3	0
Auxiliary Signal Groups									2,4			
Lead / Lag	Lag	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	5	25	0	5	5	5	7	7	0
Maximum Green [s]	23	23	0	9	30	0	44	30	30	26	26	0
Amber [s]	5.0	5.0	0.0	4.0	5.0	0.0	4.0	5.0	5.0	5.0	5.0	0.0
All red [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Split [s]	30	30	0	15	37	0	50	72	72	33	33	0
Vehicle Extension [s]	2.5	2.5	0.0	3.0	5.0	0.0	6.0	3.0	3.0	2.5	2.5	0.0
Walk [s]	0	0	0	0	0	0	0	5	5	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	10	10	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	5.0	5.0	0.0	4.0	5.0	0.0	4.0	5.0	5.0	5.0	5.0	0.0
Minimum Recall		No		No	No		No	No	No		No	
Maximum Recall		No		No	Yes		No	No	No		No	
Pedestrian Recall		No		No	No		No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	294.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	30.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	R	C	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	5.00	5.00	5.00	0.00	5.00	0.00	5.00	0.00	5.00	5.00	5.00
g_i, Effective Green Time [s]	23	23	23	80	53	80	65	110	26	26	26
g / C, Green / Cycle	0.15	0.15	0.15	0.53	0.36	0.53	0.43	0.73	0.17	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.19	0.19	0.20	0.13	0.27	0.36	0.39	0.37	0.19	0.19	0.30
s, saturation flow rate [veh/h]	1774	1851	1660	384	3547	1848	3545	1578	1856	1693	1556
c, Capacity [veh/h]	272	284	255	96	1259	807	1536	1157	322	293	270
d1, Uniform Delay [s]	63.50	63.50	63.50	40.10	42.76	28.50	39.67	8.47	62.00	62.00	62.00
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.31	0.38	0.50	0.45	0.45	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	147.88	146.89	149.95	17.21	4.39	5.80	7.30	1.57	83.55	85.61	335.93
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.27	1.27	1.27	0.50	0.76	0.82	0.91	0.50	1.12	1.12	1.71
d, Delay for Lane Group [s/veh]	211.38	210.39	213.45	57.31	47.15	34.30	46.97	10.04	145.55	147.61	397.93
Lane Group LOS	F	F	F	E	D	C	D	B	F	F	F
Critical Lane Group	No	No	No	Yes	No	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	21.36	22.21	20.14	1.55	16.07	7.01	24.30	7.29	19.48	17.94	35.25
50th-Percentile Queue Length [ft/ln]	534.06	555.34	503.52	38.80	401.76	175.36	607.39	182.27	487.02	448.49	881.30
95th-Percentile Queue Length [veh/ln]	32.20	33.33	30.59	2.79	22.64	11.36	32.38	11.72	28.28	26.32	55.13
95th-Percentile Queue Length [ft/ln]	805.04	833.25	764.65	69.83	566.11	283.95	809.48	292.97	706.93	657.99	1378.35

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	211.25	211.85	213.45	57.31	47.15	0.00	34.30	46.97	10.04	145.55	146.56	397.93
Movement LOS	F	F	F	E	D		C	D	B	F	F	F
d_A, Approach Delay [s/veh]	211.68			47.63			35.62			247.53		
Approach LOS	F			D			D			F		
d_I, Intersection Delay [s/veh]	110.72											
Intersection LOS	F											
Intersection V/C	1.058											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report Intersection 25: Ager Rd/23rd Ave

Control Type: Signalized
Analysis Method: HCM 6th Edition
Analysis Period: 15 minutes

Delay (sec / veh): 35.9
Level Of Service: D
Volume to Capacity (v/c): 0.579

Intersection Setup

Name	Rittenhouse St			23rd Ave			Ager Rd.			Ager Rd.		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	200.00	100.00	100.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Rittenhouse St			23rd Ave			Ager Rd.			Ager Rd.		
Base Volume Input [veh/h]	14	18	22	267	13	75	19	875	164	11	465	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	47	0	0	14	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	18	22	267	13	75	19	922	164	11	479	3
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	5	6	67	3	19	5	231	41	3	120	1
Total Analysis Volume [veh/h]	14	18	22	267	13	75	19	922	164	11	479	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	35	0	0	35	0
Maximum Green [s]	0	20	0	0	30	0	0	35	0	0	35	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	25	0	0	30	0	0	39	0	0	39	0
Vehicle Extension [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	21	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	20	25	35	35	35	35	35	35
g / C, Green / Cycle	0.22	0.28	0.39	0.39	0.39	0.39	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.03	0.25	0.02	0.33	0.33	0.02	0.14	0.14
s, saturation flow rate [veh/h]	1557	1392	822	1683	1596	467	1683	1679
c, Capacity [veh/h]	396	422	297	654	621	110	654	653
d1, Uniform Delay [s]	28.19	31.02	24.93	25.12	25.14	40.39	19.62	19.62
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.71	18.04	0.41	13.16	13.84	1.82	1.60	1.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.14	0.84	0.06	0.85	0.85	0.10	0.37	0.37
d, Delay for Lane Group [s/veh]	28.91	49.06	25.34	38.29	38.98	42.21	21.21	21.22
Lane Group LOS	C	D	C	D	D	D	C	C
Critical Lane Group	No	Yes	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	1.00	9.08	0.33	12.53	12.01	0.28	3.72	3.71
50th-Percentile Queue Length [ft/ln]	25.12	226.98	8.28	313.20	300.22	7.10	92.90	92.77
95th-Percentile Queue Length [veh/ln]	1.81	14.02	0.60	18.33	17.69	0.51	6.69	6.68
95th-Percentile Queue Length [ft/ln]	45.22	350.52	14.91	458.32	442.30	12.78	167.21	166.98

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	28.91	28.91	28.91	49.06	49.06	49.06	25.34	38.56	38.98	42.21	21.22	21.22
Movement LOS	C	C	C	D	D	D	C	D	D	D	C	C
d_A, Approach Delay [s/veh]	28.91			49.06			38.39			21.68		
Approach LOS	C			D			D			C		
d_I, Intersection Delay [s/veh]	35.92											
Intersection LOS	D											
Intersection V/C	0.579											

Other Modes

g_Walk,mi, Effective Walk Time [s]	34.0			34.0			20.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	17.42			17.42			27.22			34.67		
I_p,int, Pedestrian LOS Score for Intersection	1.757			1.970			3.181			2.661		
Crosswalk LOS	A			A			C			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	444			556			778			778		
d_b, Bicycle Delay [s]	27.22			23.47			16.81			16.81		
I_b,int, Bicycle LOS Score for Intersection	1.649			2.145			2.471			1.966		
Bicycle LOS	A			B			B			A		

Sequence

Ring 1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 26: Ager Rd/Oglethorpe St/School

Control Type:	Signalized	Delay (sec / veh):	39.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.420

Intersection Setup

Name	Oglethorpe St			School			Ager Rd.			Ager Rd.		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	1200.00	350.00	100.00	100.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Oglethorpe St			School			Ager Rd.			Ager Rd.		
Base Volume Input [veh/h]	27	12	36	14	0	4	25	936	80	122	718	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	47	0	0	14	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	27	12	36	14	0	4	25	983	80	122	732	12
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	3	9	4	0	1	6	246	20	31	183	3
Total Analysis Volume [veh/h]	27	12	36	14	0	4	25	983	80	122	732	12
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	4	0	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	10	0	5	10	0
Maximum Green [s]	0	20	0	0	20	0	20	30	0	20	30	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	30	0	0	30	0	30	45	0	30	45	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	6.0	0.0	3.0	6.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	27	0	0	11	0	0	12	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	L	C	C
C, Cycle Length [s]	109	109	109	109	109	109	109	109
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	3.00	0.00	3.00	3.00
g_i, Effective Green Time [s]	25	25	70	40	40	70	40	40
g / C, Green / Cycle	0.23	0.23	0.64	0.37	0.37	0.64	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.05	0.01	0.02	0.32	0.32	0.13	0.22	0.22
s, saturation flow rate [veh/h]	1422	1272	1028	1683	1639	928	1683	1673
c, Capacity [veh/h]	371	350	639	618	601	549	618	614
d1, Uniform Delay [s]	34.02	32.75	8.93	32.11	32.12	14.02	28.06	28.06
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.22	0.28	0.11	15.61	15.98	0.93	4.34	4.36
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.20	0.05	0.04	0.87	0.87	0.22	0.60	0.60
d, Delay for Lane Group [s/veh]	35.24	33.02	9.05	47.72	48.10	14.95	32.40	32.42
Lane Group LOS	D	C	A	D	D	B	C	C
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.74	0.40	0.22	15.39	15.06	1.16	8.44	8.40
50th-Percentile Queue Length [ft/ln]	43.46	9.99	5.41	384.75	376.40	29.06	211.00	209.92
95th-Percentile Queue Length [veh/ln]	3.13	0.72	0.39	21.82	21.42	2.09	13.20	13.15
95th-Percentile Queue Length [ft/ln]	78.22	17.98	9.74	545.60	535.49	52.30	330.11	328.73

Movement, Approach, & Intersection Results

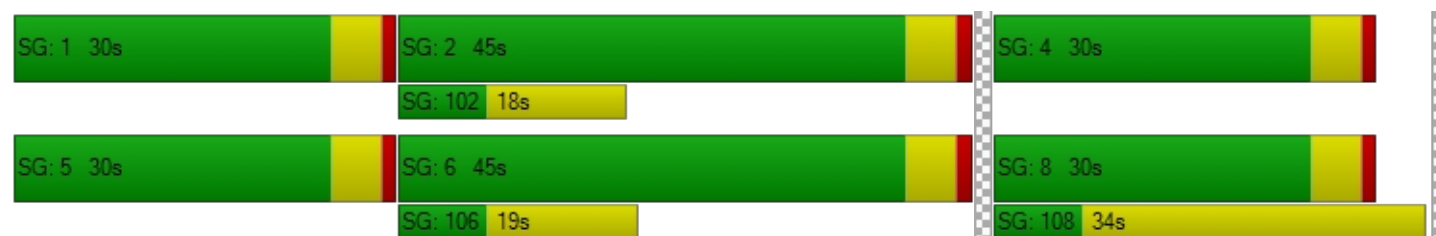
d_M, Delay for Movement [s/veh]	35.24	35.24	35.24	33.02	33.02	33.02	9.05	47.89	48.10	14.95	32.41	32.42
Movement LOS	D	D	D	C	C	C	A	D	D	B	C	C
d_A, Approach Delay [s/veh]	35.24			33.02			47.01			29.95		
Approach LOS	D			C			D			C		
d_I, Intersection Delay [s/veh]	39.24											
Intersection LOS	D											
Intersection V/C	0.420											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	25.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	23.47	34.67
I_p,int, Pedestrian LOS Score for Intersection	1.783	1.894	2.729	2.765
Crosswalk LOS	A	A	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	556	556	889	889
d_b, Bicycle Delay [s]	23.47	23.47	13.89	13.89
I_b,int, Bicycle LOS Score for Intersection	1.683	1.589	2.457	2.274
Bicycle LOS	A	A	B	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 27: Ager Rd/Nicholson St

Control Type: Two-way stop
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 1,934.8
 Level Of Service: F
 Volume to Capacity (v/c): 4.241

Intersection Setup

Name	Ager Rd.				Nicholson St			Nicholson St			Ager Rd.			
Approach	Northbound				Northeastbound			Southwestbound			Southeastbound			
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	0	0	1	0	0	0
Pocket Length [ft]	225.0	100.0	100.0	150.0	100.00	100.00	100.00	100.00	100.00	100.00	200.0	100.0	100.0	100.0
Speed [mph]	35.00				30.00			30.00			35.00			
Grade [%]	0.00				0.00			0.00			0.00			
Crosswalk	Yes				Yes			Yes			Yes			

Volumes

Name	Ager Rd.				Nicholson St			Nicholson St			Ager Rd.			
Base Volume Input [veh/h]	1	39	741	25	98	17	82	60	18	239	6	51	713	82
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	2.00	0.00	1.82	0.00	0.00	1.74	0.00	2.44	2.00	3.57
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	47	0	0	0	0	0	0	0	0	0	14	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	39	788	25	98	17	82	60	18	239	6	51	727	82
Peak Hour Factor	0.900	0.900	0.900	0.900	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.900	0.900	0.900	0.900
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	11	219	7	27	5	23	17	5	66	2	14	202	23
Total Analysis Volume [veh/h]	1	43	876	28	109	19	91	67	20	266	7	57	808	91
Pedestrian Volume [ped/h]	0				0			0			0			

Intersection Settings

Priority Scheme	Free	Stop	Stop	Free
Flared Lane		No	No	
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance		No	No	
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.06	0.01	0.00	4.24	0.36	0.16	1.53	0.40	0.48	0.05	0.08	0.01	0.00
d_M, Delay for Movement [s/veh]	19.76	10.03	0.00	0.00	1934.77	1863.70	1801.16	763.09	752.88	687.17	29.33	10.78	0.00	0.00
Movement LOS	C	B	A	A	F	F	F	F	F	F	D	B	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	24.93	24.93	24.93	30.22	30.22	30.22	0.03	0.03	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.10	0.10	0.00	0.00	623.21	623.21	623.21	755.58	755.58	755.58	0.87	0.87	0.00	0.00
d_A, Approach Delay [s/veh]	0.48				1873.09			705.30			0.85			
Approach LOS	A				F			F			A			
d_I, Intersection Delay [s/veh]	265.99													
Intersection LOS	F													

Intersection Level Of Service Report

Intersection 28: Ager Rd/Hamilton St

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 16.3
 Level Of Service: B
 Volume to Capacity (v/c): 0.651

Intersection Setup

Name	Hamilton St			Hamilton St			Ager Rd.			Ager Rd.		
Approach	Eastbound			Westbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1	1	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	1500.00
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Hamilton St			Hamilton St			Ager Rd.			Ager Rd.		
Base Volume Input [veh/h]	28	74	10	45	220	330	79	180	55	388	347	115
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.33	1.72	0.00	3.85	2.08	1.91	2.06	1.84	3.33	2.21	2.00	2.63
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	47	82	58	0	23	0	17	0	0	0	0	14
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	75	156	68	45	243	330	96	180	55	388	347	129
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	43	19	13	68	92	27	50	15	108	96	36
Total Analysis Volume [veh/h]	83	173	76	50	270	367	107	200	61	431	386	143
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	4	0	0	8	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	10	0	5	10	0
Maximum Green [s]	0	26	0	0	26	0	0	30	0	10	45	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	4.0	0.0	3.0	4.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	30	0	0	30	0	0	35	0	15	50	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	3.0	0.0	2.0	3.0	0.0
Minimum Recall		No			No			Yes		Yes	Yes	
Maximum Recall		No			No			No		No	No	
Pedestrian Recall		No			No			No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C	R	L	C	C	L	C
C, Cycle Length [s]	64	64	64	64	64	64	64	64	64	64
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	3.00	3.00	3.00	0.00	3.00
g_i, Effective Green Time [s]	18	18	18	18	18	23	23	23	37	37
g / C, Green / Cycle	0.27	0.27	0.27	0.27	0.27	0.37	0.37	0.37	0.59	0.59
(v / s)_i Volume / Saturation Flow Rate	0.15	0.13	0.12	0.12	0.23	0.12	0.07	0.07	0.33	0.30
s, saturation flow rate [veh/h]	796	1599	1042	1694	1585	870	1866	1720	1322	1778
c, Capacity [veh/h]	314	439	365	465	435	253	684	631	888	1040
d1, Uniform Delay [s]	22.71	19.48	18.84	19.10	21.96	25.73	13.85	13.89	7.42	7.86
k, delay calibration	0.11	0.11	0.11	0.11	0.13	0.11	0.11	0.11	0.50	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.75	0.83	0.54	0.61	5.45	1.13	0.14	0.16	1.89	0.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.38	0.49	0.34	0.42	0.84	0.42	0.20	0.20	0.49	0.51
d, Delay for Lane Group [s/veh]	23.46	20.31	19.38	19.71	27.41	26.86	13.99	14.04	9.31	8.25
Lane Group LOS	C	C	B	B	C	C	B	B	A	A
Critical Lane Group	No	No	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.58	2.52	1.34	2.26	5.34	1.52	1.20	1.15	2.90	3.32
50th-Percentile Queue Length [ft/ln]	39.55	62.89	33.58	56.61	133.42	38.03	30.04	28.69	72.45	83.12
95th-Percentile Queue Length [veh/ln]	2.85	4.53	2.42	4.08	9.13	2.74	2.16	2.07	5.22	5.98
95th-Percentile Queue Length [ft/ln]	71.20	113.21	60.45	101.90	228.13	68.45	54.08	51.64	130.42	149.61

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	23.46	20.96	20.31	19.38	19.62	27.41	26.86	14.01	14.04	9.31	8.25	8.25
Movement LOS	C	C	C	B	B	C	C	B	B	A	A	A
d_A, Approach Delay [s/veh]	21.43			23.77			17.75			8.73		
Approach LOS	C			C			B			A		
d_I, Intersection Delay [s/veh]	16.34											
Intersection LOS	B											
Intersection V/C	0.651											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 29: Toledo Rd/Belcrest Rd

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 8.6
 Level Of Service: A
 Volume to Capacity (v/c): 0.375

Intersection Setup

Name	Belcrest Rd				Belcrest Rd				Toledo Rd			Toledo Rd		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	1	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	400.0	100.0	100.0	100.0	200.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00				30.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Crosswalk	Yes				No				Yes			Yes		

Volumes

Name	Belcrest Rd				Belcrest Rd				Toledo Rd			Toledo Rd		
Base Volume Input [veh/h]	15	96	258	53	2	78	497	73	28	18	28	57	23	90
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.03	1.83	1.37	0.00	2.00	2.02	0.00	0.00	2.86	0.00	2.86	3.45	2.13
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	18	0	0	0	3	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	96	276	53	2	78	500	73	28	18	28	57	23	90
Peak Hour Factor	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	27	77	15	1	22	139	20	8	5	8	16	6	25
Total Analysis Volume [veh/h]	17	107	307	59	2	87	556	81	31	20	31	63	26	100
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	8				0				20			15		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	2	2	2	2	6	6	6	6	4	4	4	8	8	8
Auxiliary Signal Groups														
Lead / Lag	Lag	Lag	-	-	Lag	Lag	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Maximum Green [s]	40	40	40	40	40	40	40	40	30	30	30	30	30	30
Amber [s]	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	45	45	45	45	45	45	45	45	35	35	35	35	35	35
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	15	15	15	15	15	15	15	15	21	21	21	21	21	21
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall			No				No			No			No	
Maximum Recall			Yes				Yes			No			No	
Pedestrian Recall			No				No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	30.0	30.0	30.0	30.0	0.0	0.0	0.0	0.0	30.0	30.0	30.0	30.0	30.0	30.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	C
C, Cycle Length [s]	61	61	61	61	61	61	61	61	61	61
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	40	40	40	40	40	40	11	11	11	11
g / C, Green / Cycle	0.66	0.66	0.66	0.66	0.66	0.66	0.18	0.18	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.16	0.10	0.10	0.09	0.17	0.18	0.02	0.01	0.02	0.13
s, saturation flow rate [veh/h]	780	1866	1756	1007	1862	1773	1285	1847	1593	1508
c, Capacity [veh/h]	551	1231	1158	711	1228	1169	145	324	280	344
d1, Uniform Delay [s]	7.15	3.91	3.92	5.64	4.26	4.27	29.79	20.84	21.02	23.53
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.94	0.26	0.28	0.36	0.53	0.56	0.72	0.08	0.17	1.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

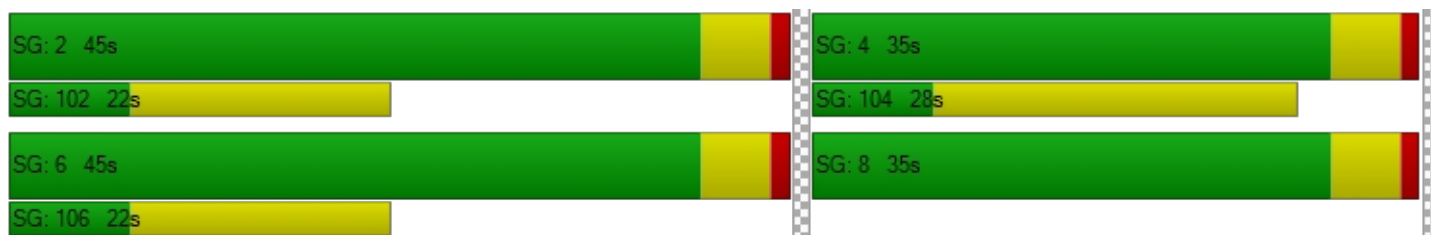
X, volume / capacity	0.22	0.15	0.15	0.13	0.26	0.27	0.21	0.06	0.11	0.55
d, Delay for Lane Group [s/veh]	8.10	4.17	4.20	6.00	4.79	4.83	30.51	20.91	21.19	24.90
Lane Group LOS	A	A	A	A	A	A	C	C	C	C
Critical Lane Group	No	No	No	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.83	0.69	0.67	0.47	1.31	1.27	0.46	0.23	0.36	2.51
50th-Percentile Queue Length [ft/ln]	20.74	17.18	16.63	11.74	32.84	31.76	11.54	5.74	9.03	62.74
95th-Percentile Queue Length [veh/ln]	1.49	1.24	1.20	0.85	2.36	2.29	0.83	0.41	0.65	4.52
95th-Percentile Queue Length [ft/ln]	37.32	30.93	29.93	21.13	59.11	57.16	20.78	10.33	16.26	112.94

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	8.10	8.10	4.18	4.20	6.00	6.00	4.80	4.83	30.51	20.91	21.19	24.90	24.90	24.90
Movement LOS	A	A	A	A	A	A	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	5.17				4.95				24.65			24.90		
Approach LOS	A				A				C			C		
d_I, Intersection Delay [s/veh]	8.65													
Intersection LOS	A													
Intersection V/C	0.375													

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 30: Adelphi Rd/Belcrest Rd

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 23.7
 Level Of Service: C
 Volume to Capacity (v/c): 0.783

Intersection Setup

Name	Belcrest Rd			Underwood St			Adelphi Rd				Adelphi Rd		
Approach	Northeastbound			Southwestbound			Northwestbound				Southeastbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	150.0	100.0	100.0	100.0	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Crosswalk	No			Yes			Yes				Yes		

Volumes

Name	Belcrest Rd			Underwood St			Adelphi Rd				Adelphi Rd		
Base Volume Input [veh/h]	376	0	31	18	42	6	2	37	1013	0	0	735	680
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.98	0.00	0.00	1.99	1.94
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	18	0	0	0	0	0	0	0	12	0	0	5	3
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	394	0	31	18	42	6	2	37	1025	0	0	740	683
Peak Hour Factor	0.9000	1.0000	1.0000	0.9000	0.9000	0.9000	0.900	0.900	0.900	1.000	1.0000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	109	0	8	5	12	2	1	10	285	0	0	206	190
Total Analysis Volume [veh/h]	438	0	31	20	47	7	2	41	1139	0	0	822	759
Presence of On-Street Parking	No		No	No		No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			1				5		
Bicycle Volume [bicycles/h]	0			0			0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	15.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss
Signal group	4	0	0	8	8	8	5	5	2	0	0	6	6
Auxiliary Signal Groups													
Lead / Lag	Lead	-	-	Lag	-	-	Lead	Lead	-	-	-	-	-
Minimum Green [s]	4	0	0	4	4	4	4	4	4	0	0	4	4
Maximum Green [s]	30	0	0	16	16	16	11	11	60	0	0	45	45
Amber [s]	4.0	0.0	0.0	3.0	3.0	3.0	3.5	3.5	3.5	0.0	0.0	4.0	4.0
All red [s]	1.0	0.0	0.0	1.0	1.0	1.0	0.5	0.5	1.0	0.0	0.0	1.0	1.0
Split [s]	30	0	0	30	30	30	30	30	30	0	0	30	30
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	0.0	3.0	3.0
Walk [s]	4	0	0	4	4	4	0	0	3	0	0	3	3
Pedestrian Clearance [s]	13	0	0	13	13	13	0	0	8	0	0	8	8
Rest In Walk	No				No				No			No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	0.0	0.0	2.0	2.0	2.0	2.0	2.0	2.5	0.0	0.0	3.0	3.0
Minimum Recall	No				No			No	No			No	
Maximum Recall	No				No			No	Yes			Yes	
Pedestrian Recall	No				No			No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	30.0	30.0	30.0	0.0	0.0	30.0	30.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C
C, Cycle Length [s]	94	94	94	94	94	94	94
L, Total Lost Time per Cycle [s]	5.00	5.00	4.00	4.25	4.50	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	2.00	0.00	2.50	3.00	3.00
g_i, Effective Green Time [s]	15	15	6	60	60	53	53
g / C, Green / Cycle	0.16	0.16	0.06	0.64	0.64	0.56	0.56
(v / s)_i Volume / Saturation Flow Rate	0.13	0.13	0.04	0.02	0.32	0.42	0.50
s, saturation flow rate [veh/h]	1772	1781	1844	1810	3547	1863	1593
c, Capacity [veh/h]	285	287	113	453	2251	1039	889
d1, Uniform Delay [s]	38.33	38.33	43.38	19.23	9.30	16.05	18.34
k, delay calibration	0.11	0.11	0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.77	5.75	6.19	0.42	0.82	5.25	12.93
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.82	0.65	0.10	0.51	0.76	0.89
d, Delay for Lane Group [s/veh]	44.10	44.08	49.56	19.64	10.11	21.30	31.27
Lane Group LOS	D	D	D	B	B	C	C
Critical Lane Group	No	Yes	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.61	5.64	1.87	0.35	5.86	13.45	16.83
50th-Percentile Queue Length [ft/ln]	140.36	141.04	46.79	8.67	146.55	336.28	420.83
95th-Percentile Queue Length [veh/ln]	9.50	9.54	3.37	0.62	9.83	19.47	23.56
95th-Percentile Queue Length [ft/ln]	237.51	238.42	84.22	15.61	245.82	486.65	589.05

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	44.09	0.00	44.08	49.56	49.56	49.56	19.64	19.64	10.11	0.00	0.00	21.68	31.27
Movement LOS	D		D	D	D	D	B	B	B			C	C
d_A, Approach Delay [s/veh]	44.09			49.56			10.46			26.29			
Approach LOS	D			D			B			C			
d_I, Intersection Delay [s/veh]	23.67												
Intersection LOS	C												
Intersection V/C	0.783												

Sequence

Ring 1	-	2	-	4	-	8	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 31: Adelphi Rd/Campus Dr

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 31.8
 Level Of Service: C
 Volume to Capacity (v/c): 0.473

Intersection Setup

Name	Adelphi Rd.			Adelphi Rd.			Campus Dr.			Campus Dr.		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	0	0	1	0	0	0
Pocket Length [ft]	350.00	100.00	500.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Adelphi Rd.			Adelphi Rd.			Campus Dr.			Campus Dr.		
Base Volume Input [veh/h]	230	953	80	209	1338	0	0	140	206	73	127	66
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.27	2.08	2.27	2.00	2.05	0.00	0.00	2.00	2.21	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	30	0	0	8	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	230	983	80	209	1346	0	0	140	206	73	127	66
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	1.0000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	64	273	22	58	374	0	0	39	57	20	35	18
Total Analysis Volume [veh/h]	256	1092	89	232	1496	0	0	156	229	81	141	73
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	248
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	45.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Overlap	Overlap	Permiss	Permiss	Permiss	Permiss	Split	Split	Split
Signal group	3	8	8	1	1	0	0	2	2	6	6	6
Auxiliary Signal Groups				1,7	1,4							
Lead / Lag	Lag	-	-	Lag	-	-	-	-	-	Lag	-	-
Minimum Green [s]	5	8	8	15	15	0	0	25	25	5	5	5
Maximum Green [s]	30	60	60	40	40	0	0	60	60	30	30	30
Amber [s]	4.0	4.0	4.0	4.0	4.0	0.0	0.0	4.5	4.5	4.5	4.5	4.5
All red [s]	1.0	2.0	2.0	1.0	1.0	0.0	0.0	1.5	1.5	1.5	1.5	1.5
Split [s]	30	30	30	30	30	0	0	30	30	30	30	30
Vehicle Extension [s]	3.0	3.5	3.5	3.0	3.0	0.0	0.0	4.0	4.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	4.0	4.0	3.0	3.0	0.0	0.0	4.0	4.0	4.0	4.0	4.0
Minimum Recall	Yes	Yes		Yes	Yes			Yes			Yes	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	30.0	30.0	30.0	30.0	30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	R	C	C	R
C, Cycle Length [s]	118	118	118	118	118	118	118	118	118	118
L, Total Lost Time per Cycle [s]	5.00	6.00	6.00	5.00	5.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	4.00	4.00	0.00	0.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	19	34	34	57	73	25	25	10	10	10
g / C, Green / Cycle	0.16	0.28	0.28	0.49	0.62	0.21	0.21	0.09	0.09	0.09
(v / s)_i Volume / Saturation Flow Rate	0.14	0.22	0.06	0.07	0.42	0.04	0.14	0.06	0.06	0.05
s, saturation flow rate [veh/h]	1769	5070	1579	3445	3545	3547	1580	1800	1695	1583
c, Capacity [veh/h]	291	1447	451	1672	2179	751	335	154	145	135
d1, Uniform Delay [s]	48.22	38.46	31.98	16.78	15.18	38.40	42.93	52.79	52.73	51.80
k, delay calibration	0.12	0.13	0.13	0.11	0.17	0.15	0.15	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.40	0.99	0.26	0.04	0.62	0.19	3.51	7.10	7.08	3.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

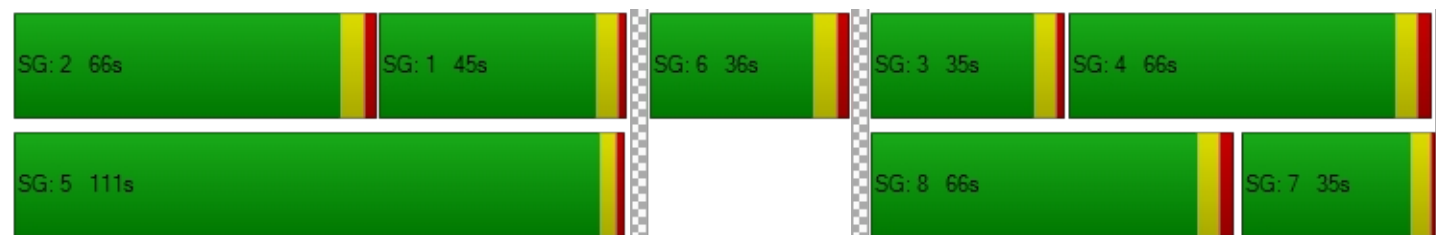
X, volume / capacity	0.88	0.75	0.20	0.14	0.69	0.21	0.68	0.75	0.74	0.54
d, Delay for Lane Group [s/veh]	57.61	39.45	32.24	16.82	15.80	38.59	46.44	59.89	59.82	55.11
Lane Group LOS	E	D	C	B	B	D	D	E	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.96	9.46	1.93	1.69	12.20	1.87	6.41	3.61	3.35	2.18
50th-Percentile Queue Length [ft/ln]	199.07	236.50	48.21	42.25	304.89	46.85	160.29	90.31	83.69	54.53
95th-Percentile Queue Length [veh/ln]	12.59	14.50	3.47	3.04	17.92	3.37	10.56	6.50	6.03	3.93
95th-Percentile Queue Length [ft/ln]	314.76	362.61	86.78	76.05	448.08	84.34	264.11	162.56	150.64	98.16

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	57.61	39.45	32.24	16.82	15.80	0.00	0.00	38.59	46.44	59.89	59.84	55.11
Movement LOS	E	D	C	B	B			D	D	E	E	E
d_A, Approach Delay [s/veh]	42.24			15.94			43.26			58.68		
Approach LOS	D			B			D			E		
d_I, Intersection Delay [s/veh]	31.78											
Intersection LOS	C											
Intersection V/C	0.473											

Sequence

Ring 1	1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	-	-	8	7	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report Intersection 32: Adelphi Rd/Toledo Rd

Control Type: Signalized
Analysis Method: HCM 2010
Analysis Period: 15 minutes

Delay (sec / veh): 6.3
Level Of Service: A
Volume to Capacity (v/c): 0.424

Intersection Setup

Name	Adelphi Rd			Adelphi Rd		Toledo Rd	
Approach	Northbound			Southbound		Eastbound	
Lane Configuration							
Turning Movement	U-turn	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	1	0	1
Pocket Length [ft]	150.00	100.00	100.00	100.00	100.00	100.00	200.00
Speed [mph]	45.00			30.00		30.00	
Grade [%]	0.00			0.00		0.00	
Crosswalk	Yes			No		Yes	

Volumes

Name	Adelphi Rd			Adelphi Rd		Toledo Rd	
Base Volume Input [veh/h]	6	156	1022	667	104	51	75
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.97	2.01	2.05	1.88	2.38	1.96
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	12	5	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	156	1034	672	104	51	75
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	43	287	187	29	14	21
Total Analysis Volume [veh/h]	7	173	1149	747	116	57	83
Presence of On-Street Parking	No		No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	6			0		6	
Bicycle Volume [bicycles/h]	0			0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	ProtectedP	Permissive	Permissive	Permissive	Split	Split
Signal group	5	5	2	6	6	4	4
Auxiliary Signal Groups							
Lead / Lag	Lead	Lead	-	-	-	Lag	-
Minimum Green [s]	4	4	4	4	4	4	4
Maximum Green [s]	15	15	65	45	45	25	25
Amber [s]	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	20	20	70	50	50	30	30
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	7	7	7	7	7
Pedestrian Clearance [s]	0	0	6	6	6	13	13
Rest In Walk			No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall		No	No	No		No	
Maximum Recall		No	Yes	Yes		No	
Pedestrian Recall		No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	30.0	30.0	30.0	30.0	30.0	30.0	30.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	82	82	82	82	82	82
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	65	65	56	56	7	7
g / C, Green / Cycle	0.79	0.79	0.68	0.68	0.09	0.09
(v / s)_i Volume / Saturation Flow Rate	0.22	0.32	0.21	0.07	0.03	0.05
s, saturation flow rate [veh/h]	834	3546	3545	1578	1767	1552
c, Capacity [veh/h]	718	2796	2390	1064	159	140
d1, Uniform Delay [s]	2.58	2.73	5.55	4.73	35.26	36.05
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.84	0.45	0.34	0.21	1.35	3.96
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.25	0.41	0.31	0.11	0.36	0.59
d, Delay for Lane Group [s/veh]	3.41	3.17	5.89	4.93	36.61	40.01
Lane Group LOS	A	A	A	A	D	D
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.42	1.24	2.26	0.63	1.12	1.73
50th-Percentile Queue Length [ft/ln]	10.46	31.04	56.47	15.72	27.93	43.20
95th-Percentile Queue Length [veh/ln]	0.75	2.24	4.07	1.13	2.01	3.11
95th-Percentile Queue Length [ft/ln]	18.83	55.88	101.65	28.29	50.27	77.76

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	3.41	3.41	3.17	5.89	4.93	36.61	40.01
Movement LOS	A	A	A	A	A	D	D
d_A, Approach Delay [s/veh]	3.21			5.76		38.63	
Approach LOS	A			A		D	
d_I, Intersection Delay [s/veh]	6.28						
Intersection LOS	A						
Intersection V/C	0.424						

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 33: Hamilton St/40th Pl/39th Ave

Control Type: All-way stop
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 15.7
 Level Of Service: C
 Volume to Capacity (v/c): 0.658

Intersection Setup

Name	Magruder Park Ent				39th Ave				Hamilton St			
Approach	Northbound				Southbound				Eastbound			
Lane Configuration												
Turning Movement	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Left2	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00				30.00				35.00			
Grade [%]	0.00				0.00				0.00			
Crosswalk	Yes				Yes				Yes			

Volumes

Name	Magruder Park Ent				39th Ave				Hamilton St			
Base Volume Input [veh/h]	4	1	0	2	0	6	2	29	62	0	335	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.85	0.00	2.15	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	12	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	1	0	2	0	6	2	29	62	0	347	8
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	0	0	1	0	2	1	8	17	0	96	2
Total Analysis Volume [veh/h]	4	1	0	2	0	7	2	32	69	0	386	9
Pedestrian Volume [ped/h]	0				0				0			

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	576	623	705
Degree of Utilization, x	0.01	0.07	0.66

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.04	0.21	4.96
95th-Percentile Queue Length [ft]	0.92	5.27	124.00
Approach Delay [s/veh]	9.33	9.18	17.38
Approach LOS	A	A	C
Intersection Delay [s/veh]	15.66		
Intersection LOS	C		

Intersection Setup

Name	Hamilton St				Gallatin St			
Approach	Westbound				Northwestbound			
Lane Configuration								
Turning Movement	Left2	Left	Thru	Right	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00				35.00			
Grade [%]	0.00				0.00			
Crosswalk	Yes				Yes			

Volumes

Name	Hamilton St				Gallatin St			
Base Volume Input [veh/h]	6	6	112	2	12	375	2	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.20	0.00	0.00	2.18	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	3	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	6	112	2	12	378	2	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	2	31	1	3	105	1	0
Total Analysis Volume [veh/h]	7	7	124	2	13	420	2	0
Pedestrian Volume [ped/h]	0				0			

Intersection Settings

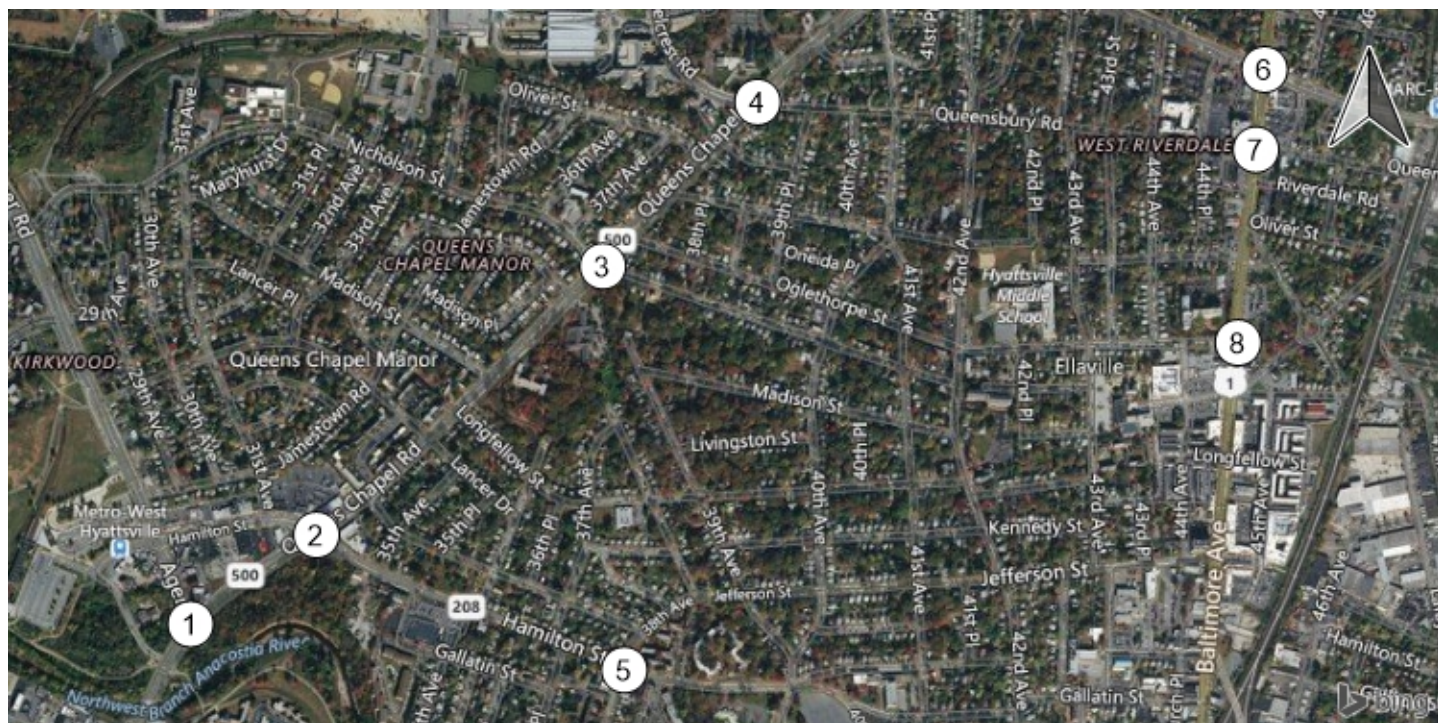
Lanes

Capacity per Entry Lane [veh/h]	600	702
Degree of Utilization, x	0.23	0.62

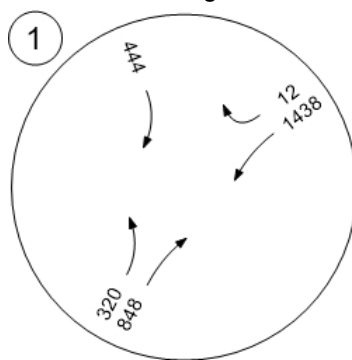
Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.90	4.32
95th-Percentile Queue Length [ft]	22.46	108.04
Approach Delay [s/veh]	10.81	16.09
Approach LOS	B	C
Intersection Delay [s/veh]	15.66	
Intersection LOS	C	

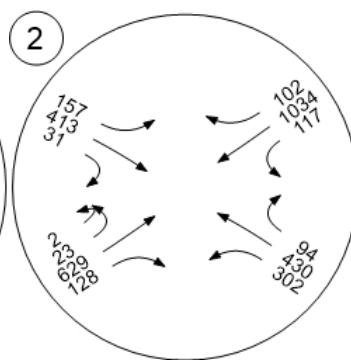
Traffic Volume - Future Total Volume



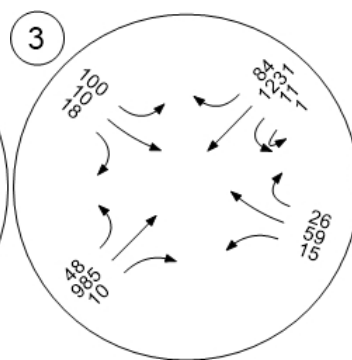
MD 500/Ager Rd



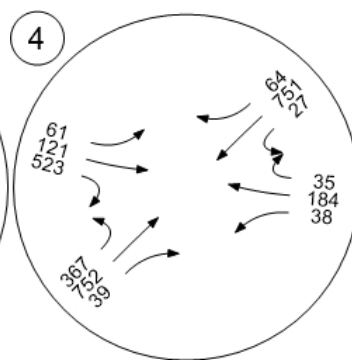
MD 500/Hamilton St



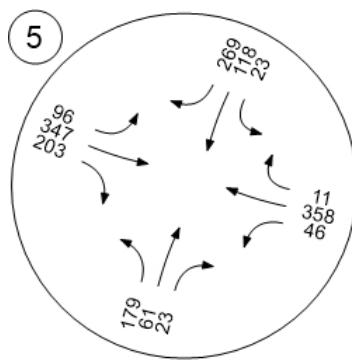
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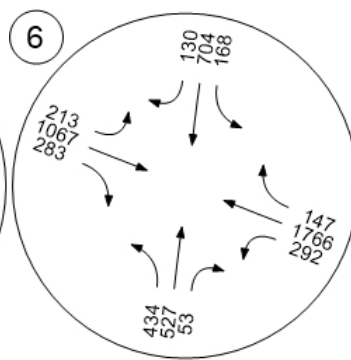
MD 500/Belcrest Rd/Queens



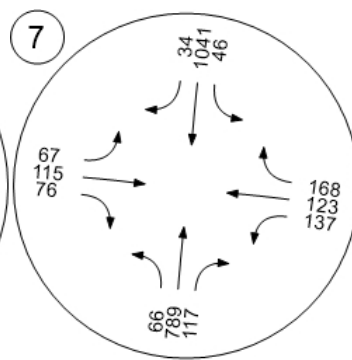
MD 208(Hamilton St)/38th Av



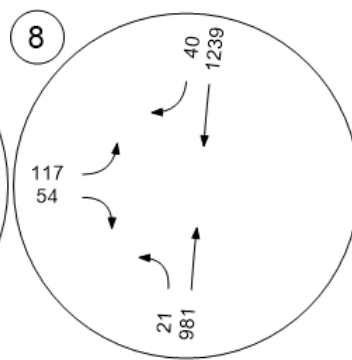
US 1/MD 410



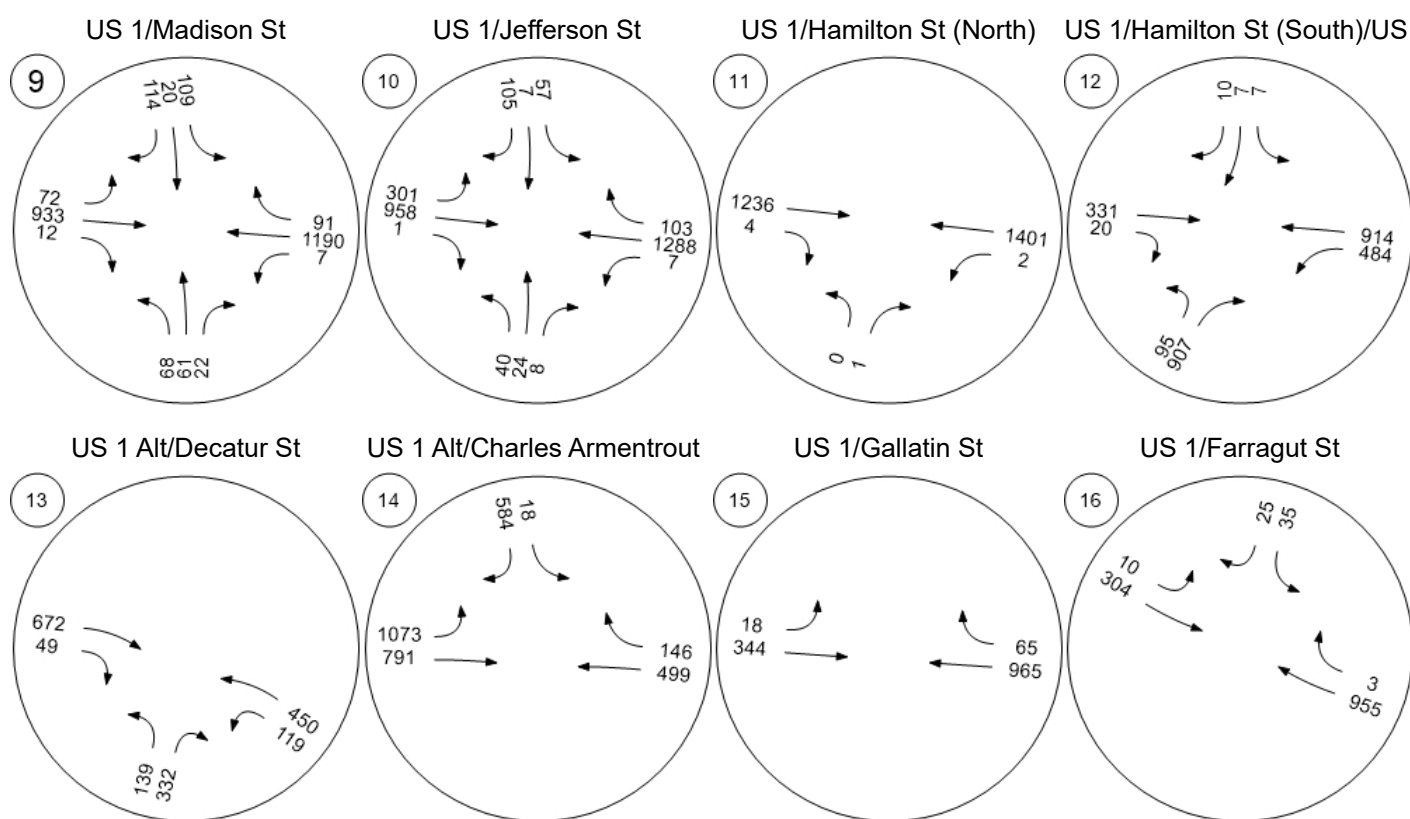
US 1/Queensbury Rd



US 1/Oglethorpe Rd

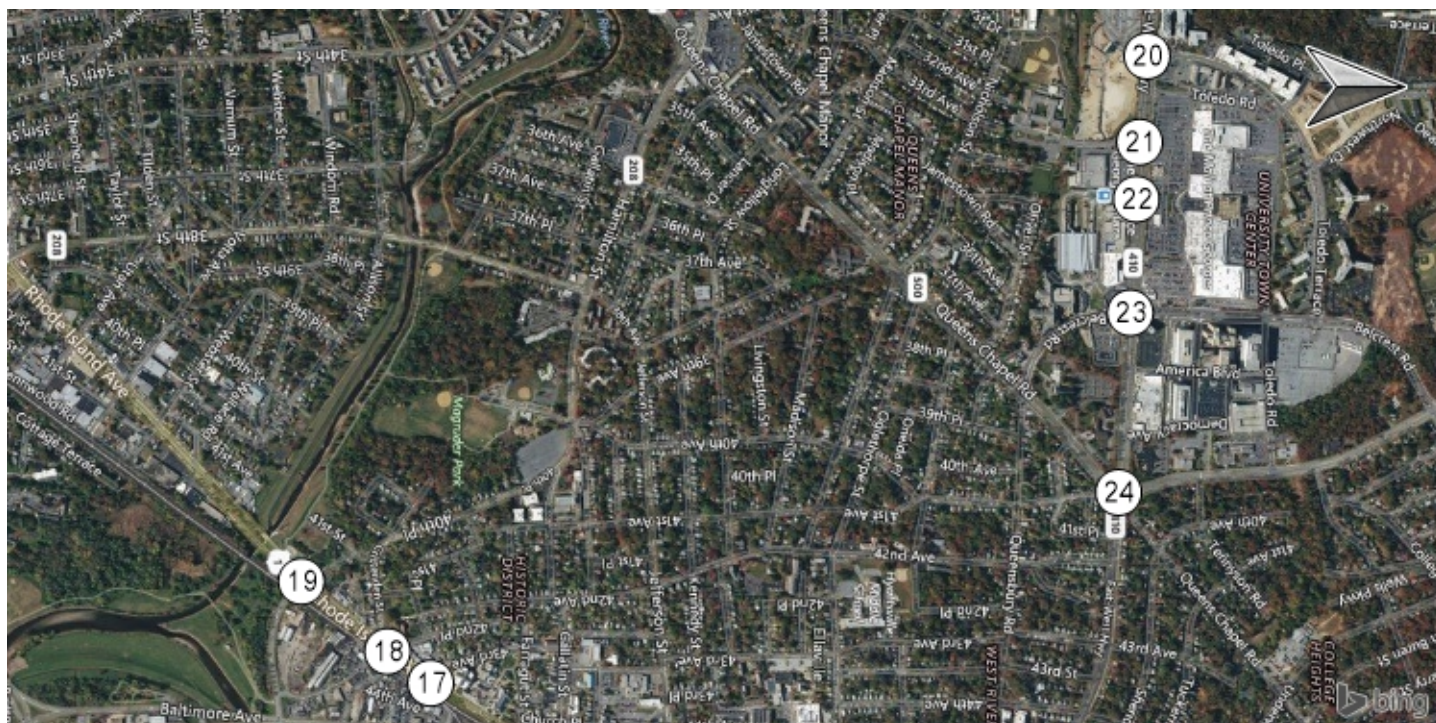


Traffic Volume - Future Total Volume

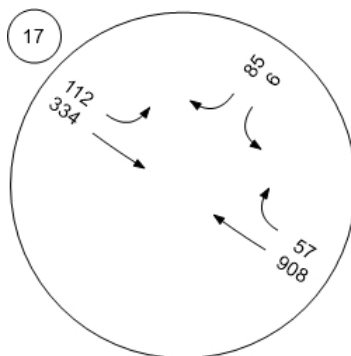


Version 6.00-00

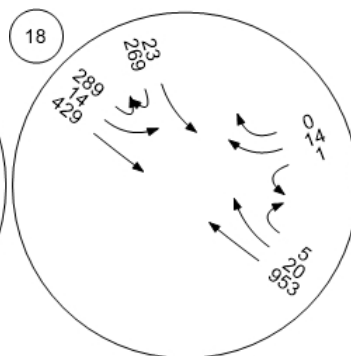
Traffic Volume - Future Total Volume



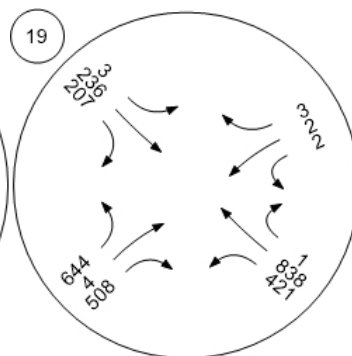
US 1/43rd Avenue



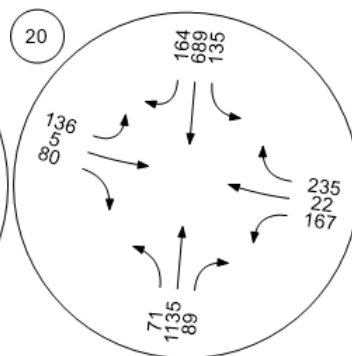
US 1/42nd Place/Crittendon



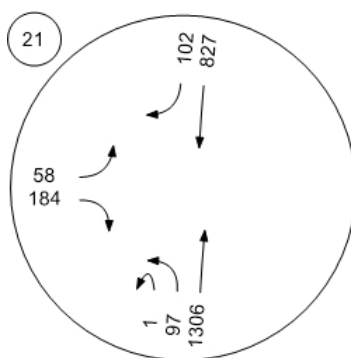
US 1/41st Place/Charles Arm



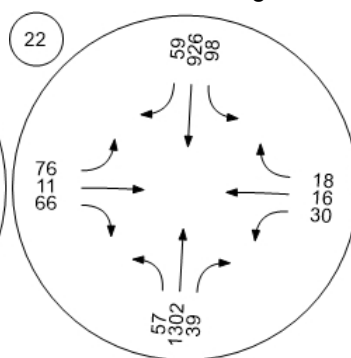
MD 410/Toledo Terrace



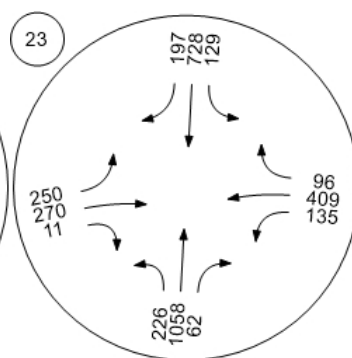
MD 410/Editors Park Dr



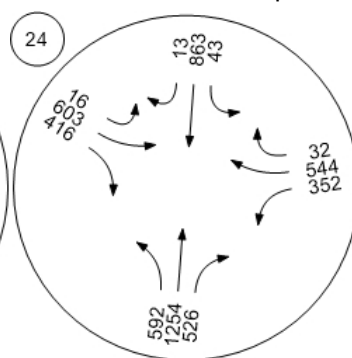
MD 410/Prince George's Plaza



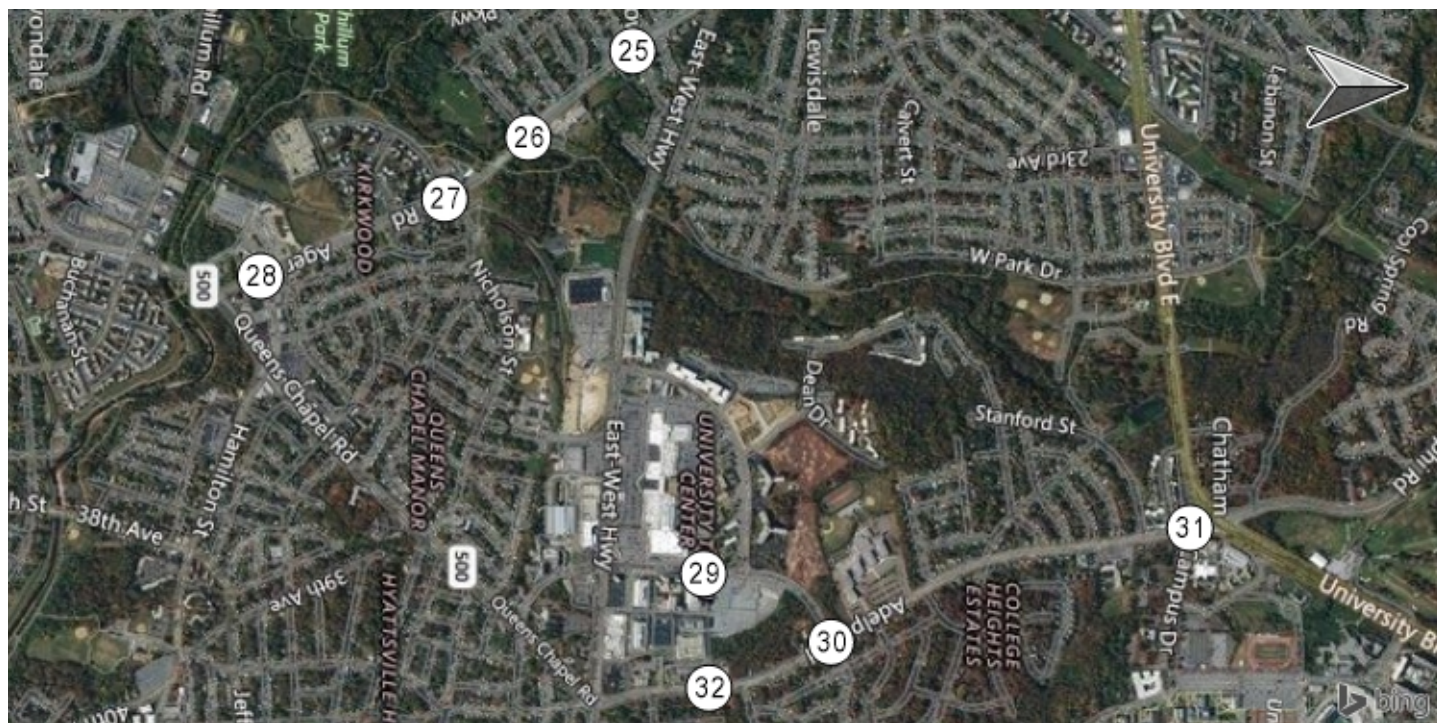
MD 410/Belcrest Rd



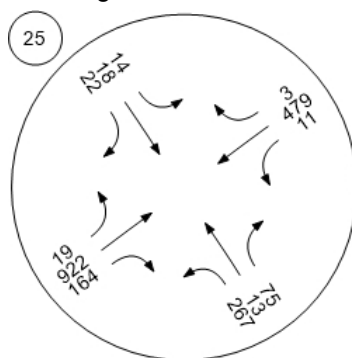
MD 410/MD 500/Adelphi Rd



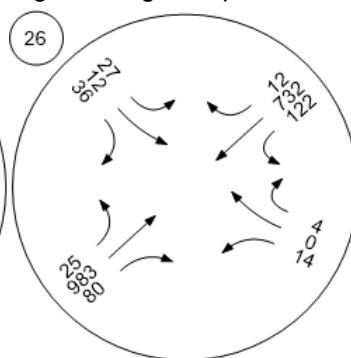
Traffic Volume - Future Total Volume



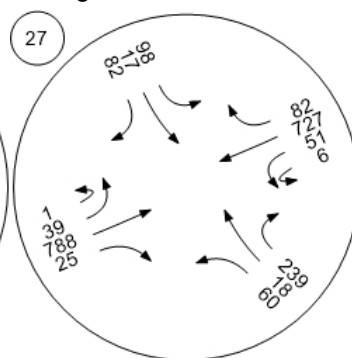
Ager Rd/23rd Ave



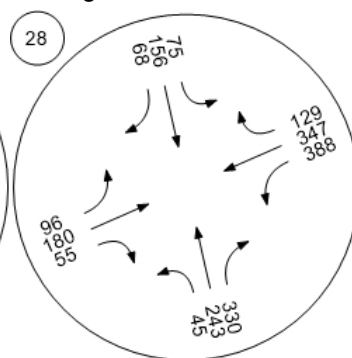
Ager Rd/Oglethorpe St/Scho



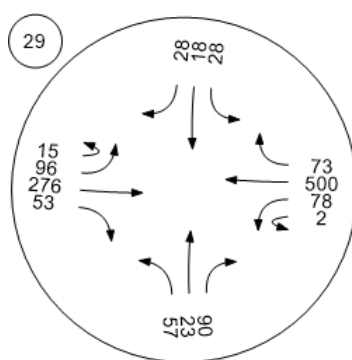
Ager Rd/Nicholson St



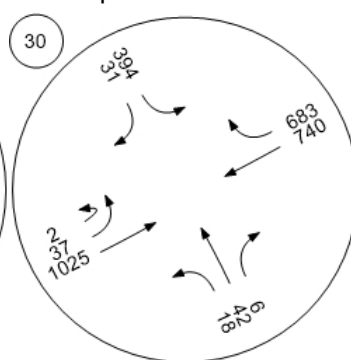
Ager Rd/Hamilton St



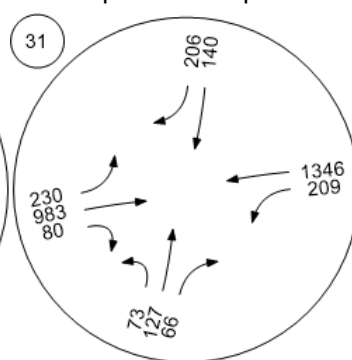
Toledo Rd/Belcrest Rd



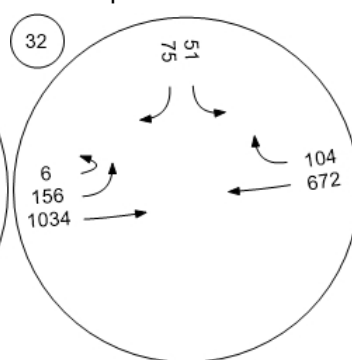
Adelphi Rd/Belcrest Rd



Adelphi Rd/Campus Dr



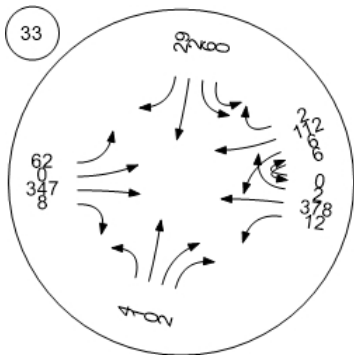
Adelphi Rd/Toledo Rd



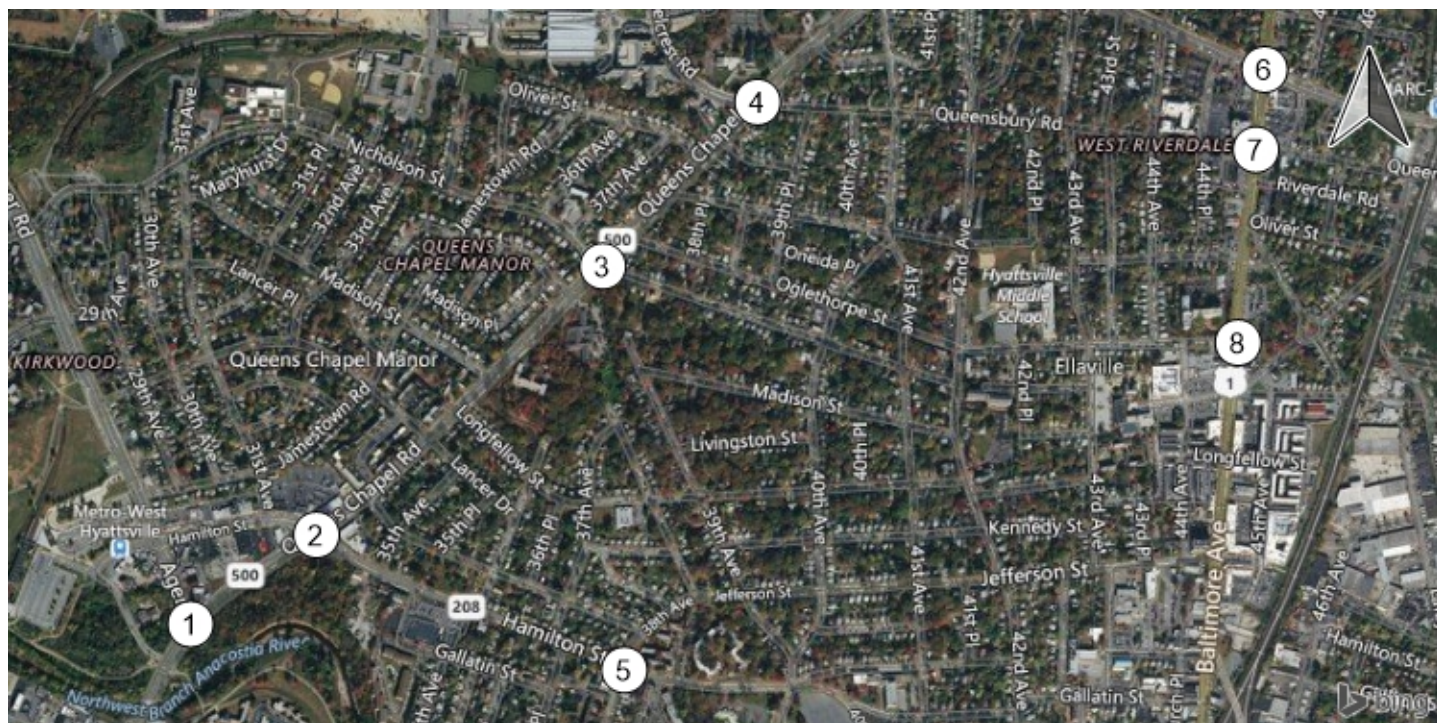
Traffic Volume - Future Total Volume



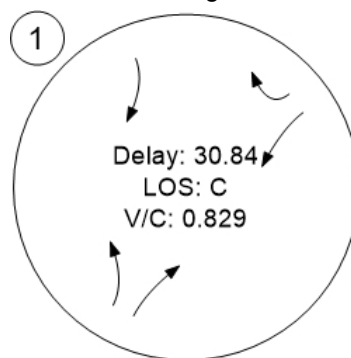
Hamilton St/40th Pl/39th Ave



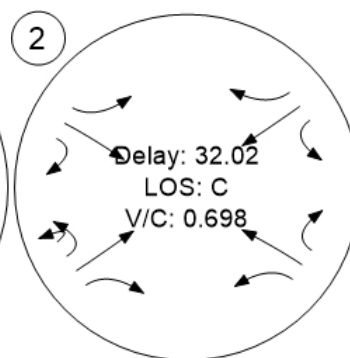
Traffic Conditions



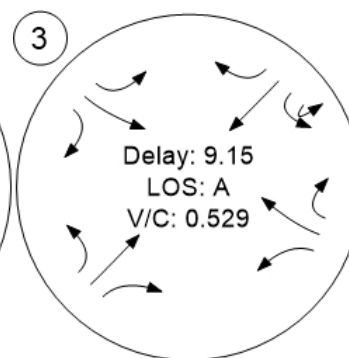
MD 500/Ager Rd



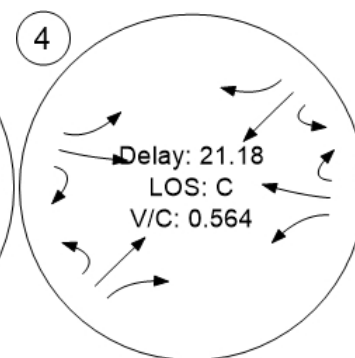
MD 500/Hamilton St



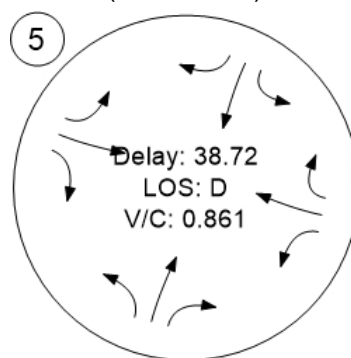
MD 500/Nicholson St



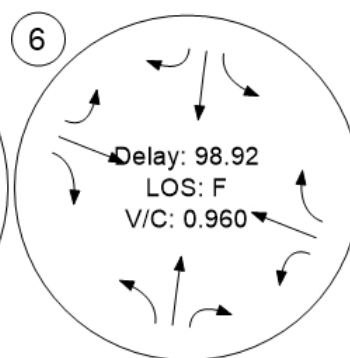
MD 500/Belcrest Rd/Queens



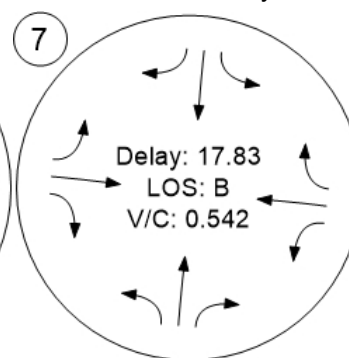
MD 208(Hamilton St)/38th Av



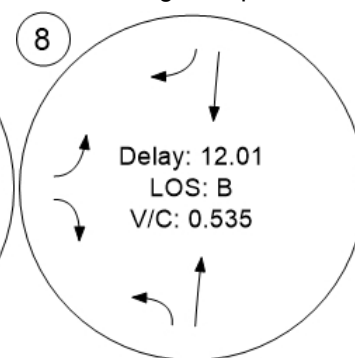
US 1/MD 410



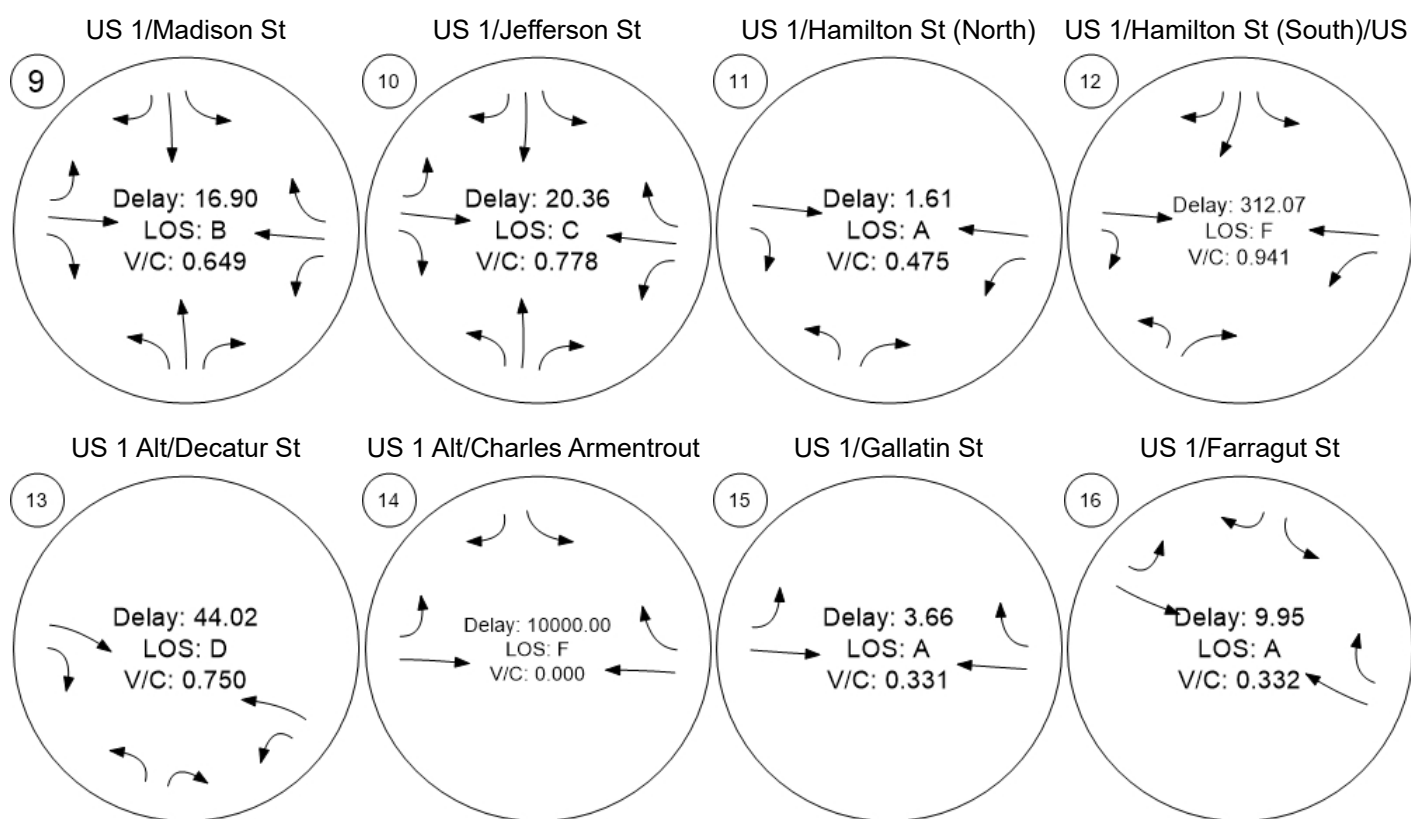
US 1/Queensbury Rd



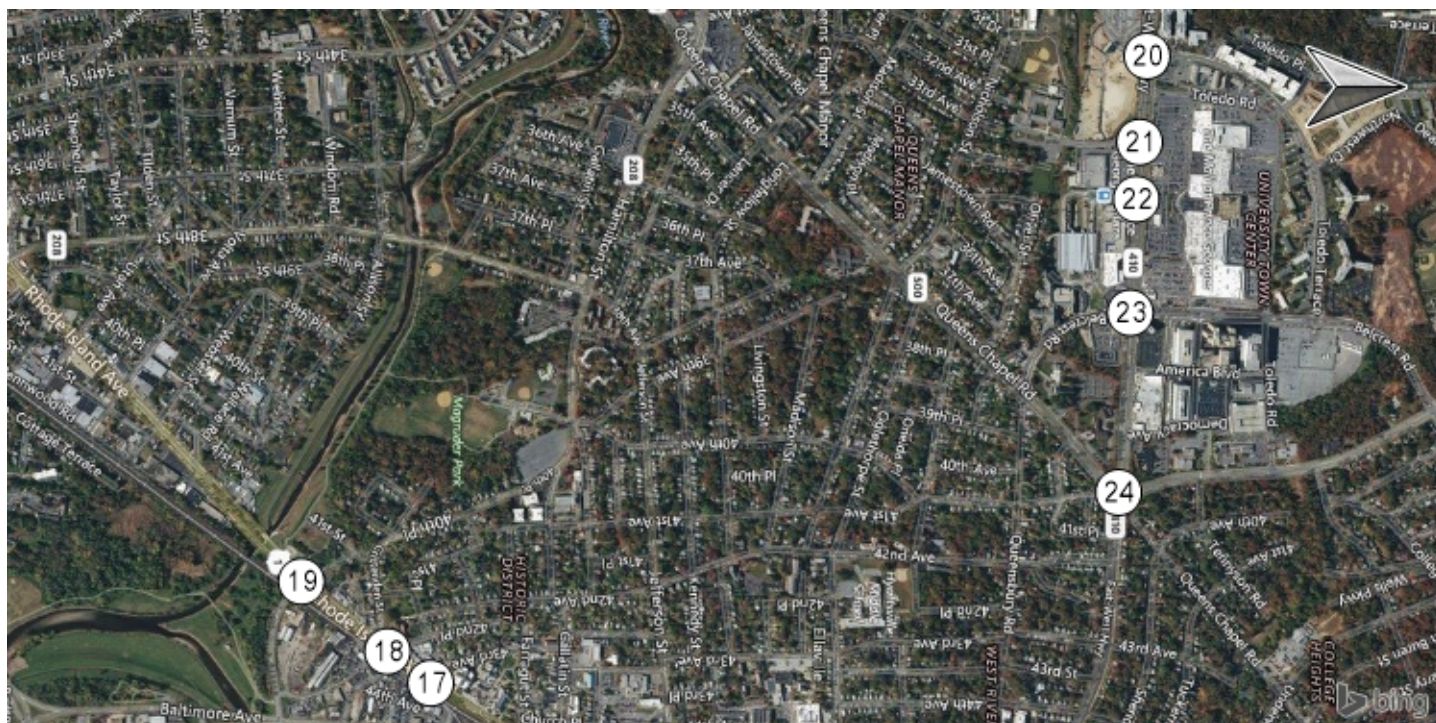
US 1/Oglethorpe Rd



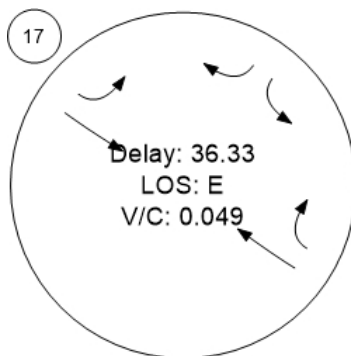
Traffic Conditions



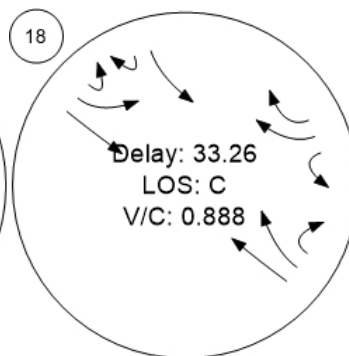
Traffic Conditions



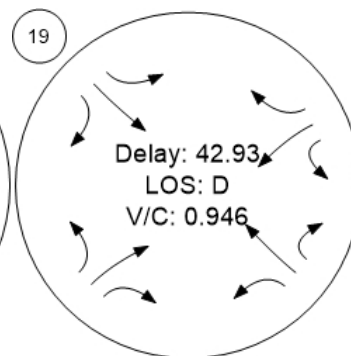
US 1/43rd Avenue



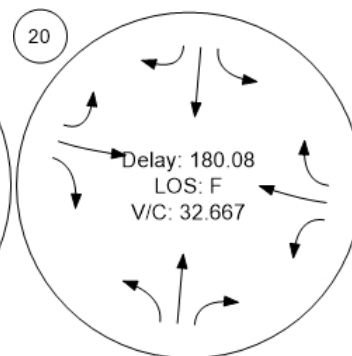
US 1/42nd Place/Crittendon



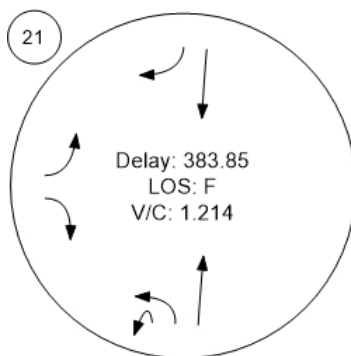
US 1/41st Place/Charles Arm



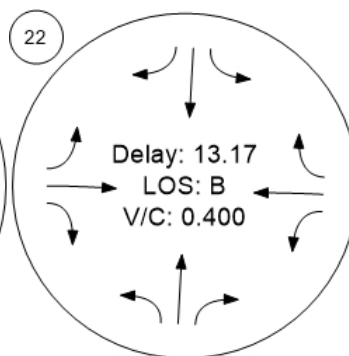
MD 410/Toledo Terrace



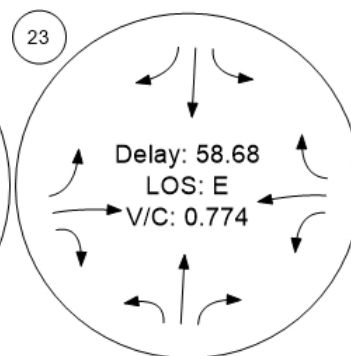
MD 410/Editors Park Dr



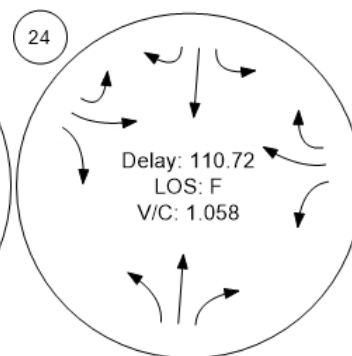
MD 410/Prince George's Plaz



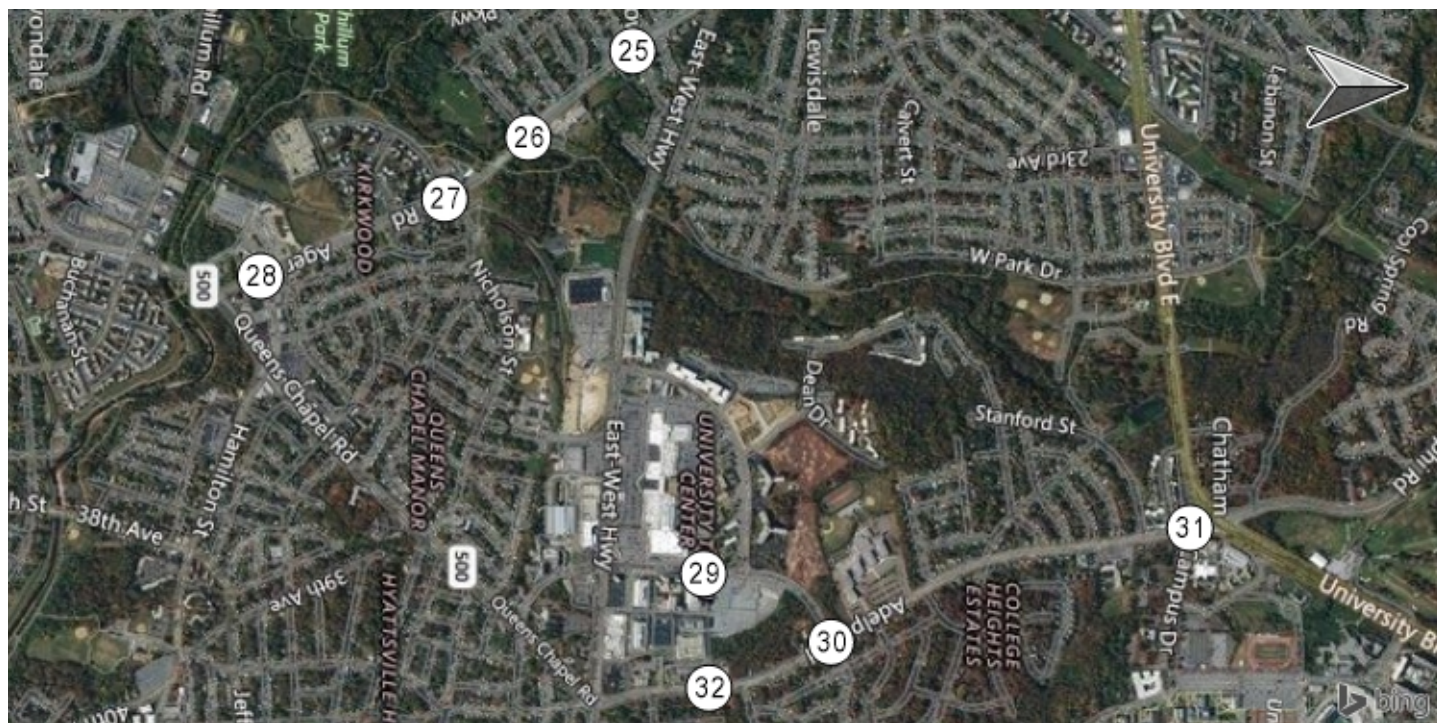
MD 410/Belcrest Rd



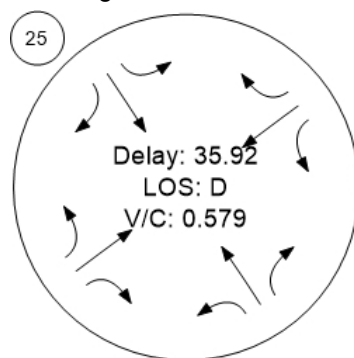
MD 410/MD 500/Adelphi Rd



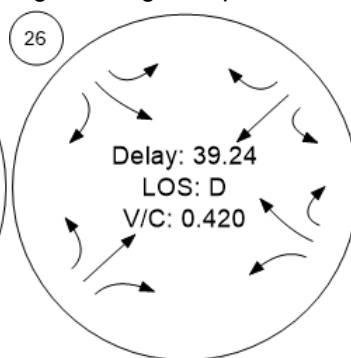
Traffic Conditions



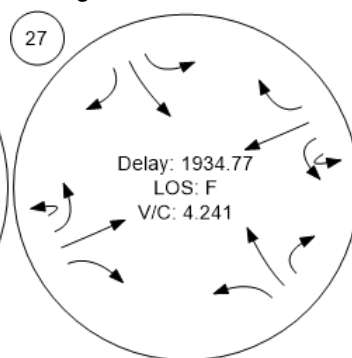
Ager Rd/23rd Ave



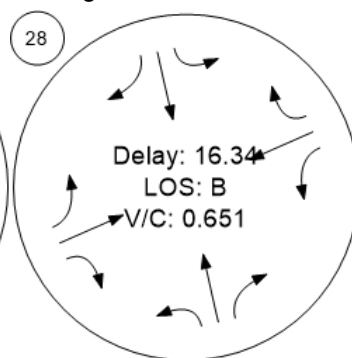
Ager Rd/Oglethorpe St/Scho



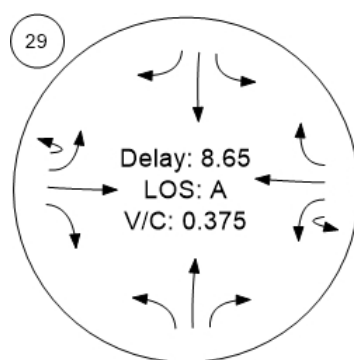
Ager Rd/Nicholson St



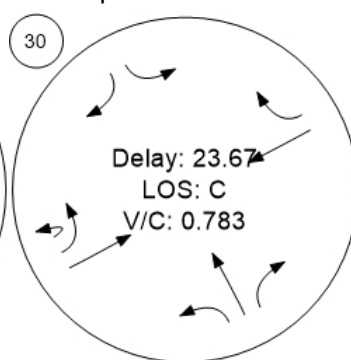
Ager Rd/Hamilton St



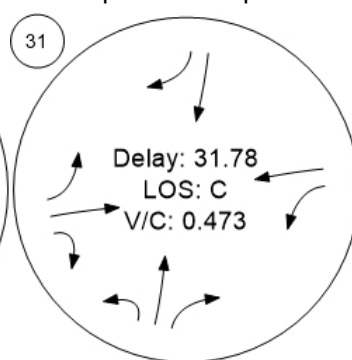
Toledo Rd/Belcrest Rd



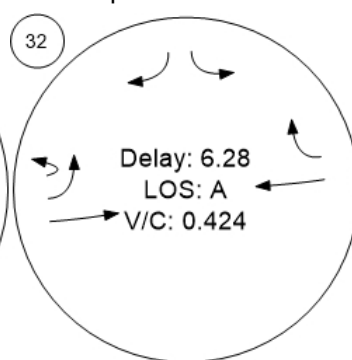
Adelphi Rd/Belcrest Rd



Adelphi Rd/Campus Dr



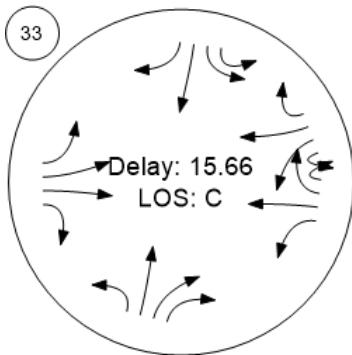
Adelphi Rd/Toledo Rd



Traffic Conditions



Hamilton St/40th Pl/39th Ave



Hyattsville Transportation Plan

Vistro File: K:\...\2037 PM Build.vistro

Scenario: Base Scenario

Report File: K:\...\2037 PM_Build.pdf

8/1/2018

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	MD 500/Ager Rd	Signalized	HCM 2010	NEB Left	1.159	69.4	E
2	MD 500/Hamilton St	Signalized	HCM 2010	NEB Thru	1.038	108.3	F
3	MD 500/Nicholson St	Signalized	HCM 2010	SEB Left	0.631	13.7	B
4	MD 500/Belcrest Rd/Queensbury Rd	Signalized	HCM 2010	EB Thru	0.761	26.3	C
5	MD 208(Hamilton St)/38th Ave	Signalized	HCM 2010	SEB Left	0.957	48.4	D
6	US 1/MD 410	Signalized	HCM 2010	EB Left	1.038	122.4	F
7	US 1/Queensbury Rd	Signalized	HCM 2010	SB Left	0.861	28.9	C
8	US 1/Oglethorpe Rd	Signalized	HCM 2010	EB Left	0.505	6.6	A
9	US 1/Madison St	Signalized	HCM 2010	EB Right	0.475	10.7	B
10	US 1/Jefferson St	Signalized	HCM 2010	EB Right	0.595	18.4	B
11	US 1/Hamilton St (North)	Two-way stop	HCM 2010	WB Right	0.018	15.9	C
12	US 1/Hamilton St (South)/US 1 Alt	Signalized	HCM 2010	SB Left	0.953	51.9	D
13	US 1 Alt/Decatur St	Signalized	HCM 2010	WB Right	0.720	19.6	B
14	US 1 Alt/Charles Armentrout St	Signalized	HCM 2010	SB Thru	0.729	90.0	F
15	US 1/Gallatin St	Signalized	HCM 2010	EB Left	0.283	3.6	A
16	US 1/Farragut St	Signalized	HCM 2010	EB Left	0.565	10.3	B
17	US 1/43rd Ave	Two-way stop	HCM 6th Edition	SEB Left	0.099	21.6	C
18	US 1/42nd Place/Crittendon Street	Signalized	HCM 2010	EB Right	0.892	55.0	E
19	US 1/41st Place/Charles Armentrout Dr	Signalized	HCM 2010	NWB Left	0.904	33.0	C
20	MD 410/Toledo Terrace	Signalized	HCM 2010	NB Left	0.758	46.1	D
21	MD 410/Editors Park Dr	Signalized	HCM 2010	WB Left	0.777	8.4	A
22	MD 410/Prince George's Plaza	Signalized	HCM 2010	NB Right	0.535	24.8	C
23	MD 410/Belcrest Rd	Signalized	HCM 2010	WB Left	0.967	67.9	E
24	MD 410/MD 500/Adelphi Rd	Signalized	HCM 2010	NB Right	1.146	108.5	F
25	Ager Rd/23rd Ave	Signalized	HCM 6th Edition	NEB Thru	0.432	18.7	B
26	Ager Rd/Oglethorpe St/School	Signalized	HCM 6th Edition	SEB Right	0.394	47.2	D

27	Ager Rd/Nicholson St	Signalized	HCM 2010	NEB Right	0.512	11.0	B
28	Ager Rd/Hamilton St	Signalized	HCM 2010	EB Left	1,901.841	37.7	D
29	Toledo Rd/Belcrest Rd	Signalized	HCM 2010	EB Left	0.549	15.2	B
30	Adelphi Rd/Belcrest Rd	Signalized	HCM 2010	SWB Left	0.873	35.2	D
31	Adelphi Rd/Campus Dr	Signalized	HCM 2010	WB Left	1.208	180.6	F
32	Adelphi Rd/Toledo Rd	Signalized	HCM 2010	EB Left	0.501	9.7	A
33	Hamilton St/40th Pl/39th Ave	Roundabout	HCM 2010	EB Thru		8.9	A
4302	New Intersection	Two-way stop	HCM 6th Edition	NB Left	0.000	14.9	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report

Intersection 1: MD 500/Ager Rd

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 69.4
 Level Of Service: E
 Volume to Capacity (v/c): 1.159

Intersection Setup

Name	Ager Rd.		MD 500		MD 500	
Approach	Southbound		Northeastbound		Southwestbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	400.00	100.00	100.00	300.00
Speed [mph]	35.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		No	

Volumes

Name	Ager Rd.		MD 500		MD 500	
Base Volume Input [veh/h]	0	364	633	1298	1027	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	2.00	2.00	3.85
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	37	61	81	44	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	401	694	1379	1071	58
Peak Hour Factor	1.0000	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	109	189	375	291	16
Total Analysis Volume [veh/h]	0	436	754	1499	1164	63
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	9		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	22.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Split	Split
Signal group	0	4	1	2	2	0
Auxiliary Signal Groups		1,4				
Lead / Lag	-	-	Lead	-	-	-
Minimum Green [s]	0	5	5	20	20	0
Maximum Green [s]	0	43	30	36	36	0
Amber [s]	0.0	4.0	3.0	5.0	5.0	0.0
All red [s]	0.0	1.0	1.0	1.0	1.0	0.0
Split [s]	0	14	50	26	26	0
Vehicle Extension [s]	0.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Rest In Walk		No		No	No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	2.0	4.0	4.0	0.0
Minimum Recall		No	No	No	No	
Maximum Recall		No	No	Yes	Yes	
Pedestrian Recall		No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	30.0	30.0	30.0	30.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	R	L	C	C	R
C, Cycle Length [s]	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	44	30	36	36	36
g / C, Green / Cycle	0.49	0.33	0.40	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.28	0.43	0.42	0.33	0.04
s, saturation flow rate [veh/h]	1583	1774	3547	3547	1545
c, Capacity [veh/h]	775	590	1416	1416	617
d1, Uniform Delay [s]	16.20	30.07	27.07	24.20	16.95
k, delay calibration	0.32	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.92	137.44	41.00	5.49	0.33
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.56	1.28	1.06	0.82	0.10
d, Delay for Lane Group [s/veh]	18.11	167.51	68.08	29.69	17.28
Lane Group LOS	B	F	F	C	B
Critical Lane Group	Yes	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.23	34.37	21.86	11.22	0.83
50th-Percentile Queue Length [ft/ln]	155.72	859.25	546.59	280.41	20.63
95th-Percentile Queue Length [veh/ln]	10.32	50.86	30.73	16.71	1.49
95th-Percentile Queue Length [ft/ln]	258.05	1271.42	768.33	417.73	37.14

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	18.11	167.51	68.08	29.69	17.28
Movement LOS		B	F	F	C	B
d_A, Approach Delay [s/veh]	18.11		101.36		29.05	
Approach LOS	B		F		C	
d_I, Intersection Delay [s/veh]	69.43					
Intersection LOS	E					
Intersection V/C	1.159					

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 2: MD 500/Hamilton St

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 108.3
 Level Of Service: F
 Volume to Capacity (v/c): 1.038

Intersection Setup

Name	MD 500				MD 500			Hamilton St			Hamilton St		
Approach	Northeastbound				Southwestbound			Northwestbound			Southeastbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	1	0	1	1	0	0	0	0	1
Pocket Length [ft]	200.0	100.0	100.0	200.0	220.00	100.00	200.00	200.00	100.00	100.00	100.00	100.00	50.00
Speed [mph]	40.00				40.00			35.00			35.00		
Grade [%]	0.00				0.00			0.00			0.00		
Crosswalk	Yes				Yes			Yes			Yes		

Volumes

Name	MD 500				MD 500			Hamilton St			Hamilton St		
Base Volume Input [veh/h]	2	149	1342	316	166	784	143	199	459	89	168	462	38
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.63	2.00	2.00	2.63	2.27	2.11	2.00	2.00	2.27	3.85
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	81	0	11	44	48	0	36	20	29	22	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	149	1423	316	177	828	191	199	495	109	197	484	38
Peak Hour Factor	0.920	0.920	0.920	0.920	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	40	387	86	48	225	52	54	135	30	54	132	10
Total Analysis Volume [veh/h]	2	162	1547	343	192	900	208	216	538	118	214	526	41
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	180
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	23.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	1	1	6	6	5	2	2	3	8	8	7	4	4
Auxiliary Signal Groups													
Lead / Lag	Lead	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	20	20	5	5	5	5	5	5	5	5	5
Maximum Green [s]	29	29	30	30	30	30	30	25	75	75	25	75	75
Amber [s]	4.0	4.0	5.0	5.0	3.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	4.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	34	34	36	36	34	36	36	30	80	80	30	80	80
Vehicle Extension [s]	3.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk			No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	4.0	4.0	2.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall		No	No		No	No		No	No		No	No	
Maximum Recall		No	Yes		No	Yes		No	No		No	No	
Pedestrian Recall		No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	30.0	30.0	5.0	5.0	5.0	5.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C
C, Cycle Length [s]	180	180	180	180	180	180	180	180	180	180
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.00	4.00	0.00	4.00	4.00	0.00	3.00	0.00	3.00
g_i, Effective Green Time [s]	79	58	58	79	62	62	90	68	90	70
g / C, Green / Cycle	0.44	0.32	0.32	0.44	0.34	0.34	0.50	0.38	0.50	0.39
(v / s)_i Volume / Saturation Flow Rate	0.19	0.44	0.22	0.28	0.25	0.13	0.21	0.36	0.22	0.31
s, saturation flow rate [veh/h]	858	3547	1574	676	3547	1574	1025	1803	992	1834
c, Capacity [veh/h]	298	1152	511	249	1220	541	339	683	279	710
d1, Uniform Delay [s]	36.99	60.76	52.46	54.21	51.89	44.62	35.08	54.62	47.06	48.94
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.31	0.11	0.21
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.11	160.08	6.86	20.23	4.01	2.06	8.89	19.14	4.43	4.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

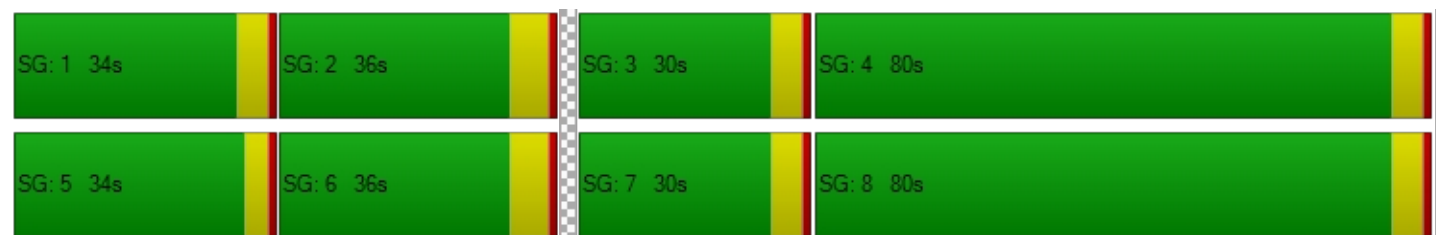
X, volume / capacity	0.55	1.34	0.67	0.77	0.74	0.38	0.64	0.96	0.77	0.80
d, Delay for Lane Group [s/veh]	44.11	220.84	59.32	74.44	55.90	46.68	43.97	73.76	51.48	53.01
Lane Group LOS	D	F	E	E	E	D	D	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	5.03	51.60	14.33	6.70	18.45	7.37	6.24	32.46	5.69	23.38
50th-Percentile Queue Length [ft/ln]	125.79	1289.89	358.17	167.61	461.33	184.35	156.07	811.44	142.27	584.55
95th-Percentile Queue Length [veh/ln]	8.71	75.30	20.53	10.95	25.50	11.83	10.34	41.80	9.60	31.31
95th-Percentile Queue Length [ft/ln]	217.76	1882.54	513.36	273.77	637.46	295.69	258.50	1045.03	240.07	782.80

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	44.11	44.11	220.8	59.32	74.44	55.90	46.68	43.97	73.76	73.76	51.48	53.01	53.01
Movement LOS	D	D	F	E	E	E	D	D	E	E	D	D	D
d_A, Approach Delay [s/veh]	179.75				57.17			66.38			52.59		
Approach LOS	F				E			E			D		
d_I, Intersection Delay [s/veh]	108.35												
Intersection LOS	F												
Intersection V/C	1.038												

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 3: MD 500/Nicholson St

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 13.7
 Level Of Service: B
 Volume to Capacity (v/c): 0.631

Intersection Setup

Name	Nicholson St			MD 500			MD 500				Nicholson St		
Approach	Westbound			Northeastbound			Southwestbound				Southeastbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	1	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	150.00	100.00	100.00	150.0	100.0	100.0	100.0	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Crosswalk	Yes			Yes			Yes				Yes		

Volumes

Name	Nicholson St			MD 500			MD 500				Nicholson St		
Base Volume Input [veh/h]	9	11	11	42	1548	41	1	35	1100	98	96	17	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	0.00	2.27	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	130	0	0	0	103	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	11	11	42	1678	41	1	35	1203	98	96	17	35
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.900	0.900	0.900	0.900	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	3	3	12	466	11	0	10	334	27	27	5	10
Total Analysis Volume [veh/h]	10	12	12	47	1864	46	1	39	1337	109	107	19	39
Presence of On-Street Parking	No		No	No		No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0				0		
Bicycle Volume [bicycles/h]	0			0			0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss
Signal group	0	4	0	5	2	0	0	1	6	0	0	8	0
Auxiliary Signal Groups													
Lead / Lag	-	-	-	Lead	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	5	0	0	5	0
Maximum Green [s]	0	30	0	30	30	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	25	0	10	85	0	0	10	85	0	0	25	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	10	0	0	10	0
Rest In Walk		No			No				No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No		No	No			No	No			No	
Maximum Recall		No		No	No			No	No			No	
Pedestrian Recall		No		No	No			No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	L	C	C	L	C	C	C
C, Cycle Length [s]	48	48	48	48	48	48	48	48
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00
l2, Clearance Lost Time [s]	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	34	27	27	34	27	27	6
g / C, Green / Cycle	0.13	0.70	0.57	0.57	0.70	0.57	0.57	0.13
(v / s)_i Volume / Saturation Flow Rate	0.02	0.08	0.51	0.52	0.09	0.39	0.39	0.10
s, saturation flow rate [veh/h]	1772	560	1863	1847	430	1863	1814	1572
c, Capacity [veh/h]	331	514	1069	1060	418	1059	1031	331
d1, Uniform Delay [s]	18.41	4.36	8.92	9.00	8.22	7.33	7.37	20.08
k, delay calibration	0.11	0.11	0.32	0.32	0.11	0.18	0.18	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.13	0.08	7.71	8.38	0.10	1.32	1.41	1.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.10	0.09	0.89	0.90	0.10	0.69	0.69	0.50
d, Delay for Lane Group [s/veh]	18.55	4.43	16.63	17.38	8.32	8.65	8.78	21.24
Lane Group LOS	B	A	B	B	A	A	A	C
Critical Lane Group	No	No	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.31	0.06	7.74	7.97	0.06	3.81	3.78	1.69
50th-Percentile Queue Length [ft/ln]	7.80	1.59	193.50	199.18	1.40	95.32	94.50	42.35
95th-Percentile Queue Length [veh/ln]	0.56	0.11	12.30	12.60	0.10	6.86	6.80	3.05
95th-Percentile Queue Length [ft/ln]	14.04	2.86	307.56	314.90	2.53	171.58	170.11	76.24

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	18.55	18.55	18.55	4.43	16.99	17.38	8.32	8.32	8.71	8.78	21.24	21.24	21.24
Movement LOS	B	B	B	A	B	B	A	A	A	A	C	C	C
d_A, Approach Delay [s/veh]	18.55			16.70			8.70				21.24		
Approach LOS	B			B			A				C		
d_I, Intersection Delay [s/veh]	13.66												
Intersection LOS	B												
Intersection V/C	0.631												

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: MD 500/Belcrest Rd/Queensbury Rd

Control Type:	Signalized	Delay (sec / veh):	26.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.761

Intersection Setup

Name				Queensbury Road			MD 500			MD 500		
Approach	Eastbound			Westbound			Northeastbound			Southwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	150.00	100.00	100.00	100.00	375.00	100.00	100.00	200.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name				Queensbury Road			MD 500			MD 500		
Base Volume Input [veh/h]	85	211	614	66	203	37	472	1120	87	30	658	36
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.85	2.38	2.21	3.85	2.38	3.85	2.21	2.08	2.78	3.70	1.97	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	55	0	0	0	71	59	0	0	48	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	85	211	669	66	203	37	543	1179	87	30	706	36
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	59	186	18	56	10	151	328	24	8	196	10
Total Analysis Volume [veh/h]	94	234	743	73	226	41	603	1310	97	33	784	40
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	6			18			1			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	63.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	4	4	0	8	8	8	1	6	6	5	2	2
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	20	20	0	20	20	20	5	20	20	10	20	20
Maximum Green [s]	40	40	0	40	40	40	40	53	53	40	53	53
Amber [s]	4.0	4.0	0.0	4.0	4.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	2.0	2.0	1.0	2.0	2.0
Split [s]	45	45	0	45	45	45	45	60	60	45	60	60
Vehicle Extension [s]	6.0	6.0	0.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
Minimum Recall		Yes			Yes		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	30.0	30.0	30.0	0.0	0.0	0.0	30.0	30.0	30.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	L	C	C
C, Cycle Length [s]	93	93	93	93	93	93	93	93
L, Total Lost Time per Cycle [s]	5.00	5.00	7.00	7.00	7.00	7.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	5.00	5.00	0.00	5.00	5.00
g_i, Effective Green Time [s]	29	29	52	41	41	52	34	34
g / C, Green / Cycle	0.31	0.31	0.56	0.44	0.44	0.56	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.26	0.25	0.31	0.38	0.39	0.05	0.22	0.22
s, saturation flow rate [veh/h]	1242	1383	1932	1861	1812	606	1863	1831
c, Capacity [veh/h]	437	478	1000	825	803	321	688	676
d1, Uniform Delay [s]	29.56	28.23	13.80	23.13	23.52	15.57	23.76	23.77
k, delay calibration	0.41	0.18	0.11	0.19	0.20	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.36	3.17	0.59	4.50	5.83	0.14	0.86	0.87
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.71	0.60	0.85	0.88	0.10	0.60	0.60
d, Delay for Lane Group [s/veh]	38.92	31.40	14.39	27.63	29.35	15.71	24.62	24.64
Lane Group LOS	D	C	B	C	C	B	C	C
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.91	7.02	3.18	13.98	14.46	0.27	6.94	6.83
50th-Percentile Queue Length [ft/ln]	197.72	175.45	79.38	349.39	361.58	6.85	173.42	170.63
95th-Percentile Queue Length [veh/ln]	12.52	11.36	5.72	20.11	20.70	0.49	11.26	11.11
95th-Percentile Queue Length [ft/ln]	313.03	284.07	142.89	502.67	517.50	12.33	281.41	277.74

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.92	38.92	0.00	31.40	31.40	31.40	14.39	28.43	29.35	15.71	24.63	24.64
Movement LOS	D	D		C	C	C	B	C	C	B	C	C
d_A, Approach Delay [s/veh]	38.92			31.40			24.26			24.29		
Approach LOS	D			C			C			C		
d_I, Intersection Delay [s/veh]	26.31											
Intersection LOS	C											
Intersection V/C	0.761											

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: MD 208(Hamilton St)/38th Ave

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 48.4
 Level Of Service: D
 Volume to Capacity (v/c): 0.957

Intersection Setup

Name				Hamilton St			38th Ave			Hamilton St		
Approach	Northbound			Westbound			Southwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	125.00	100.00	100.00
Speed [mph]	30.00			35.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name				Hamilton St			38th Ave			Hamilton St		
Base Volume Input [veh/h]	244	185	32	23	424	35	63	125	185	197	369	162
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.27	3.33	0.00	3.70	2.00	0.00	0.00	2.22	1.89	1.69	1.88	1.65
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	44	0	0	0	12	0	0	0	0	0	7	26
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	288	185	32	23	436	35	63	125	185	197	376	188
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	80	51	9	6	121	10	18	35	51	55	104	52
Total Analysis Volume [veh/h]	320	206	36	26	484	39	70	139	206	219	418	209
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	5			4			5			6		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	2	8	8	8	6	6	6	4	4	4
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	15	15	20	20	20	15	15	15	20	20	20
Maximum Green [s]	15	45	45	35	35	35	20	20	20	35	35	35
Amber [s]	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	25	50	50	40	40	40	25	25	25	40	40	40
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall	Yes	No			No			No			No	
Maximum Recall	Yes	Yes			Yes			Yes			Yes	
Pedestrian Recall	No	No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	L	C	C	L	C
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	2.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	45	35	35	25	35	35
g / C, Green / Cycle	0.50	0.39	0.39	0.28	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.49	0.03	0.28	0.25	0.25	0.36
s, saturation flow rate [veh/h]	1150	782	1838	1658	877	1757
c, Capacity [veh/h]	677	104	715	504	189	683
d1, Uniform Delay [s]	17.38	43.77	23.49	31.38	41.79	26.13
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.30	5.73	6.52	14.07	115.27	19.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.25	0.73	0.82	1.16	0.92
d, Delay for Lane Group [s/veh]	28.67	49.50	30.02	45.45	157.05	45.41
Lane Group LOS	C	D	C	D	F	D
Critical Lane Group	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	10.05	0.73	10.19	10.37	10.18	15.52
50th-Percentile Queue Length [ft/ln]	251.17	18.33	254.75	259.33	254.40	388.04
95th-Percentile Queue Length [veh/ln]	15.25	1.32	15.43	15.66	16.79	21.98
95th-Percentile Queue Length [ft/ln]	381.13	32.99	385.63	391.39	419.68	549.57

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	28.67	28.67	28.67	49.50	30.02	30.02	45.45	45.45	45.45	157.05	45.41	45.41
Movement LOS	C	C	C	D	C	C	D	D	D	F	D	D
d_A, Approach Delay [s/veh]	28.67			30.94			45.45			74.31		
Approach LOS	C			C			D			E		
d_I, Intersection Delay [s/veh]	48.41											
Intersection LOS	D											
Intersection V/C	0.957											

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 6: US 1/MD 410

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 122.4
 Level Of Service: F
 Volume to Capacity (v/c): 1.038

Intersection Setup

Name	US 1			US 1			MD 410			MD 410		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T			T T T			T T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	200.00	100.00	100.00	225.00	100.00	100.00	600.00	100.00	100.00	700.00	100.00	450.00
Speed [mph]	45.00			45.00			50.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	US 1			US 1			MD 410			MD 410		
Base Volume Input [veh/h]	450	549	64	232	606	199	336	1602	380	245	1383	158
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.15	2.00	2.38	2.07	2.00	2.00	2.00	2.00	2.00	2.00	2.03	1.67
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	28	0	0	0	0	28	15	33	15	0	56	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	478	549	64	232	606	227	351	1635	395	245	1439	158
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	133	153	18	64	168	63	98	454	110	68	400	44
Total Analysis Volume [veh/h]	531	610	71	258	673	252	390	1817	439	272	1599	176
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			3			6		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	180
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	9.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	1	6	6	5	2	0	7	4	4	3	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	15	15	5	25	0	5	15	15	5	25	25
Maximum Green [s]	29	38	38	29	38	0	24	66	66	24	66	66
Amber [s]	4.0	4.5	4.5	4.0	4.5	0.0	4.0	4.5	4.5	4.0	4.5	4.5
All red [s]	1.0	2.0	2.0	1.0	2.0	0.0	1.0	2.0	2.0	1.0	2.0	2.0
Split [s]	34	45	45	34	45	0	29	72	72	29	72	72
Vehicle Extension [s]	3.0	5.0	5.0	3.0	5.0	0.0	3.0	5.0	5.0	3.0	5.0	5.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	4.5	4.5	3.0	4.5	0.0	3.0	4.5	4.5	3.0	4.5	4.5
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	Yes		No	Yes		No	Yes		No	Yes	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	30.0	5.0	5.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	180	180	180	180	180	180	180	180	180	180	180	180
L, Total Lost Time per Cycle [s]	6.50	6.50	6.50	6.50	6.50	6.50	5.00	6.50	6.50	5.00	6.50	6.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.50	4.50	0.00	4.50	4.50	3.00	4.50	4.50	3.00	4.50	4.50
g_i, Effective Green Time [s]	72	46	46	72	43	43	24	73	73	17	66	66
g / C, Green / Cycle	0.40	0.26	0.26	0.40	0.24	0.24	0.13	0.41	0.41	0.09	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.26	0.19	0.19	0.23	0.26	0.26	0.22	0.51	0.28	0.08	0.33	0.34
s, saturation flow rate [veh/h]	2035	1863	1792	1098	1863	1688	1774	3547	1583	3445	3546	1770
c, Capacity [veh/h]	621	477	459	371	443	402	237	1437	642	317	1290	644
d1, Uniform Delay [s]	52.87	61.17	61.22	41.69	68.59	68.59	78.00	53.52	44.04	80.57	54.59	54.82
k, delay calibration	0.29	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.82	9.29	9.75	10.35	69.74	74.22	310.15	124.55	5.84	6.73	11.55	20.83
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

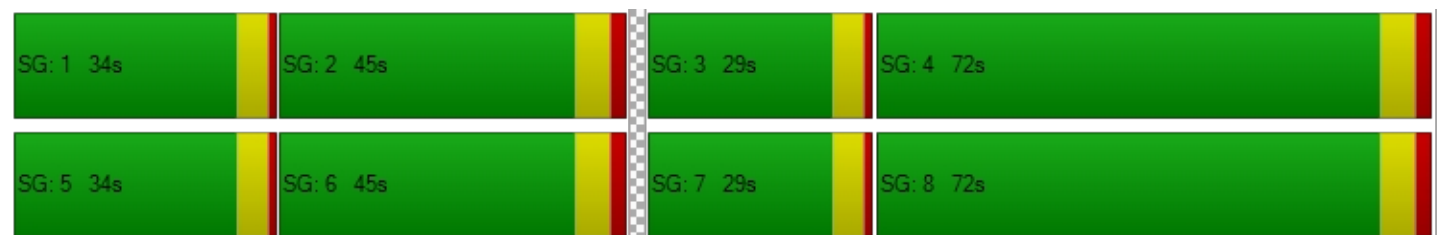
X, volume / capacity	0.86	0.73	0.73	0.70	1.09	1.10	1.65	1.26	0.68	0.86	0.92	0.92
d, Delay for Lane Group [s/veh]	61.69	70.46	70.98	52.04	138.32	142.81	388.15	178.07	49.88	87.30	66.14	75.65
Lane Group LOS	E	E	E	D	F	F	F	F	D	F	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	9.02	15.53	15.07	9.01	28.68	26.50	31.17	56.21	16.79	6.51	27.27	29.19
50th-Percentile Queue Length [ft/ln]	225.42	388.30	376.76	225.13	717.08	662.45	779.26	1405.14	419.81	162.72	681.72	729.74
95th-Percentile Queue Length [veh/ln]	13.94	22.00	21.44	13.93	39.48	36.93	48.20	80.07	23.51	10.69	35.83	38.05
95th-Percentile Queue Length [ft/ln]	348.53	549.88	535.93	348.17	987.02	923.35	1204.98	2001.70	587.82	267.32	895.82	951.25

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	61.69	70.68	70.98	52.04	139.58	142.81	388.15	178.07	49.88	87.30	68.63	75.65
Movement LOS	E	E	E	D	F	F	F	F	D	F	E	E
d_A, Approach Delay [s/veh]	66.76			121.18			187.77			71.71		
Approach LOS	E			F			F			E		
d_I, Intersection Delay [s/veh]	122.45											
Intersection LOS	F											
Intersection V/C	1.038											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 7: US 1/Queensbury Rd

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 28.9
 Level Of Service: C
 Volume to Capacity (v/c): 0.861

Intersection Setup

Name	US 1			US 1			Queensbury			Queensbury		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	250.00	100.00	100.00	150.00	100.00	100.00	350.00	100.00	100.00	200.00	100.00	200.00
Speed [mph]	45.00			45.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	US 1			US 1			Queensbury			Queensbury		
Base Volume Input [veh/h]	77	892	155	205	900	114	50	276	85	44	148	140
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	1.89	3.85	2.00	3.85	1.96	2.30	1.85	1.69	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	28	0	0	15	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	77	920	155	205	915	114	50	276	85	44	148	140
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	256	43	57	254	32	14	77	24	12	41	39
Total Analysis Volume [veh/h]	86	1022	172	228	1017	127	56	307	94	49	164	156
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			11			11			4		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	2	6	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	15	15	15	15	15	8	8	8	8	8	8
Maximum Green [s]	9	50	50	36	36	36	29	29	29	29	29	29
Amber [s]	3.5	4.5	4.5	4.5	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	14	56	56	42	42	42	34	34	34	34	34	34
Vehicle Extension [s]	3.0	5.0	5.0	5.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	3.5	3.5	3.5	3.5	3.5	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall	No	No			No			No			No	
Maximum Recall	No	Yes			Yes			No			No	
Pedestrian Recall	No	No			No			No			No	
Detector Location [ft]	0.0	294.0	294.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	30.0	6.0	6.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	5.50	5.50	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.50	3.50	3.50	3.50	3.50	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	52	52	52	43	43	43	27	27	27	27	27
g / C, Green / Cycle	0.58	0.58	0.58	0.48	0.48	0.48	0.30	0.30	0.30	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.13	0.33	0.33	0.50	0.31	0.32	0.05	0.22	0.05	0.09	0.10
s, saturation flow rate [veh/h]	661	1863	1769	458	1863	1786	1209	1784	983	1863	1566
c, Capacity [veh/h]	388	1080	1025	199	895	858	332	541	151	565	475
d1, Uniform Delay [s]	11.32	11.82	11.85	38.05	17.66	17.74	29.54	28.16	40.73	23.94	24.24
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.21	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.31	2.14	2.29	109.48	3.65	3.90	0.24	3.89	1.22	0.28	0.40
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.22	0.57	0.57	1.15	0.65	0.66	0.17	0.74	0.32	0.29	0.33
d, Delay for Lane Group [s/veh]	12.63	13.96	14.14	147.53	21.31	21.64	29.77	32.05	41.95	24.22	24.64
Lane Group LOS	B	B	B	F	C	C	C	C	D	C	C
Critical Lane Group	Yes	No	No	Yes	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.77	6.96	6.71	10.29	8.88	8.68	1.01	8.09	1.10	2.65	2.57
50th-Percentile Queue Length [ft/ln]	19.26	174.05	167.65	257.37	222.03	217.04	25.32	202.32	27.44	66.34	64.17
95th-Percentile Queue Length [veh/ln]	1.39	11.29	10.95	16.96	13.77	13.51	1.82	12.76	1.98	4.78	4.62
95th-Percentile Queue Length [ft/ln]	34.66	282.24	273.82	423.94	344.22	337.85	45.58	318.95	49.39	119.42	115.51

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	12.63	14.04	14.14	147.53	21.45	21.64	29.77	32.05	32.05	41.95	24.22	24.64
Movement LOS	B	B	B	F	C	C	C	C	C	D	C	C
d_A, Approach Delay [s/veh]	13.96			42.42			31.78			26.75		
Approach LOS	B			D			C			C		
d_I, Intersection Delay [s/veh]	28.88											
Intersection LOS	C											
Intersection V/C	0.861											

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 8: US 1/Oglethorpe Rd

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 6.6
 Level Of Service: A
 Volume to Capacity (v/c): 0.505

Intersection Setup

Name	US 1		US 1		Oglethorpe	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00		40.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	US 1		US 1		Oglethorpe	
Base Volume Input [veh/h]	43	1153	1049	9	54	28
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.04	1.97	0.00	1.67	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	28	15	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	43	1181	1064	9	54	28
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	328	296	3	15	8
Total Analysis Volume [veh/h]	48	1312	1182	10	60	31
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	105.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Split	Split
Signal group	2	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lag	-
Minimum Green [s]	15	15	15	15	15	15
Maximum Green [s]	85	85	85	85	25	25
Amber [s]	4.0	4.0	4.0	4.0	4.0	4.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	90	90	90	90	30	30
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall		No	No		No	
Maximum Recall		Yes	Yes		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	50.0	50.0	50.0	50.0	50.0	50.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	96	96	96	96	14
g / C, Green / Cycle	0.80	0.80	0.80	0.80	0.12
(v / s)_i Volume / Saturation Flow Rate	0.42	0.41	0.32	0.32	0.05
s, saturation flow rate [veh/h]	1615	1694	1863	1858	1738
c, Capacity [veh/h]	1318	1349	1484	1479	209
d1, Uniform Delay [s]	3.89	4.20	3.66	3.67	48.99
k, delay calibration	0.50	0.50	0.50	0.50	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.40	1.39	0.81	0.82	1.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.51	0.51	0.40	0.40	0.43
d, Delay for Lane Group [s/veh]	5.30	5.58	4.47	4.48	50.41
Lane Group LOS	A	A	A	A	D
Critical Lane Group	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.34	4.77	3.34	3.35	2.65
50th-Percentile Queue Length [ft/ln]	108.61	119.28	83.50	83.64	66.13
95th-Percentile Queue Length [veh/ln]	7.76	8.35	6.01	6.02	4.76
95th-Percentile Queue Length [ft/ln]	194.07	208.83	150.29	150.55	119.04

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	5.30	5.45	4.48	4.48	50.41	50.41
Movement LOS	A	A	A	A	D	D
d_A, Approach Delay [s/veh]	5.44		4.48		50.41	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	6.56					
Intersection LOS	A					
Intersection V/C	0.505					

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SG: 2 90s

SG: 4 30s

SG: 6 90s

Intersection Level Of Service Report

Intersection 9: US 1/Madison St

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 10.7
 Level Of Service: B
 Volume to Capacity (v/c): 0.475

Intersection Setup

Name	US 1			US 1			Madison			Madison		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	US 1			US 1			Madison			Madison		
Base Volume Input [veh/h]	15	1162	85	19	1029	27	19	16	26	16	5	21
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	28	0	0	15	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	1190	85	19	1044	27	19	16	26	16	5	21
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	331	24	5	290	8	5	4	7	4	1	6
Total Analysis Volume [veh/h]	17	1322	94	21	1160	30	21	18	29	18	6	23
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			2			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	105.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	2	2	2	6	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	20	20	20	20	20	20	15	15	15	15	15	15
Maximum Green [s]	85	85	85	85	85	85	25	25	25	25	25	25
Amber [s]	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	90	90	90	90	90	90	30	30	30	30	30	30
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall		No			No			No			No	
Maximum Recall		Yes			Yes			Yes			Yes	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	85	85	85	85	85	85	25	25
g / C, Green / Cycle	0.71	0.71	0.71	0.71	0.71	0.71	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.04	0.38	0.39	0.05	0.32	0.32	0.04	0.03
s, saturation flow rate [veh/h]	478	1863	1820	385	1863	1846	1633	1595
c, Capacity [veh/h]	325	1319	1289	257	1319	1308	380	374
d1, Uniform Delay [s]	12.32	8.28	8.31	15.13	7.51	7.52	39.11	38.64
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.31	1.60	1.65	0.62	1.12	1.14	1.03	0.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.05	0.54	0.54	0.08	0.45	0.45	0.18	0.13
d, Delay for Lane Group [s/veh]	12.63	9.88	9.96	15.75	8.64	8.65	40.14	39.33
Lane Group LOS	B	A	A	B	A	A	D	D
Critical Lane Group	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.23	8.25	8.14	0.34	6.23	6.18	1.79	1.22
50th-Percentile Queue Length [ft/ln]	5.86	206.21	203.52	8.42	155.69	154.53	44.68	30.45
95th-Percentile Queue Length [veh/ln]	0.42	12.96	12.82	0.61	10.32	10.26	3.22	2.19
95th-Percentile Queue Length [ft/ln]	10.54	323.96	320.51	15.15	258.01	256.47	80.42	54.81

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	12.63	9.92	9.96	15.75	8.64	8.65	40.14	40.14	40.14	39.33	39.33	39.33
Movement LOS	B	A	A	B	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	9.95			8.77			40.14			39.33		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	10.68											
Intersection LOS	B											
Intersection V/C	0.475											

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SG: 2 90s

SG: 4 30s

SG: 6 90s

SG: 8 30s

Intersection Level Of Service Report

Intersection 10: US 1/Jefferson St

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 18.4
 Level Of Service: B
 Volume to Capacity (v/c): 0.595

Intersection Setup

Name	US 1			US 1			Jefferson St			Jefferson St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	150.00	100.00	100.00	175.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	US 1			US 1			Jefferson St			Jefferson St		
Base Volume Input [veh/h]	171	1136	32	63	958	63	76	49	130	59	52	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.82	2.00	2.00	2.00	2.00	2.22	1.43	2.00	1.82	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	28	0	0	15	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	171	1164	32	63	973	63	76	49	130	59	52	34
Peak Hour Factor	0.9000	0.9000	1.0000	1.0000	0.9000	0.9000	0.9000	1.0000	0.9000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	323	8	16	270	18	21	12	36	15	13	9
Total Analysis Volume [veh/h]	190	1293	32	63	1081	70	84	49	144	59	52	34
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	108.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	6	4	4	4	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lag	-	-	-	-	-
Minimum Green [s]	8	20	0	0	20	20	20	20	20	0	20	0
Maximum Green [s]	15	85	0	0	65	65	25	25	25	0	25	0
Amber [s]	4.0	4.0	0.0	0.0	4.0	4.0	4.0	4.0	4.0	0.0	4.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	20	90	0	0	70	70	30	30	30	0	30	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	0.0
Minimum Recall	No	No			No			No			No	
Maximum Recall	No	Yes			Yes			No			No	
Pedestrian Recall	No	No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	85	85	85	72	72	72	25	25
g / C, Green / Cycle	0.71	0.71	0.71	0.60	0.60	0.60	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.29	0.36	0.36	0.15	0.31	0.31	0.19	0.13
s, saturation flow rate [veh/h]	655	1863	1847	412	1863	1823	1436	1074
c, Capacity [veh/h]	465	1322	1311	234	1119	1095	336	265
d1, Uniform Delay [s]	9.02	7.86	7.87	23.70	13.91	13.92	46.84	42.46
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.36	0.17
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.65	1.37	1.39	2.82	1.73	1.77	15.28	2.76
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.41	0.50	0.50	0.27	0.52	0.52	0.82	0.55
d, Delay for Lane Group [s/veh]	11.68	9.23	9.26	26.52	15.64	15.69	62.12	45.22
Lane Group LOS	B	A	A	C	B	B	E	D
Critical Lane Group	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.74	7.29	7.27	1.39	9.15	8.99	9.61	4.10
50th-Percentile Queue Length [ft/ln]	43.54	182.35	181.66	34.64	228.84	224.70	240.20	102.43
95th-Percentile Queue Length [veh/ln]	3.13	11.72	11.69	2.49	14.12	13.90	14.69	7.38
95th-Percentile Queue Length [ft/ln]	78.37	293.08	292.19	62.34	352.89	347.62	367.28	184.38

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	11.68	9.24	9.26	26.52	15.66	15.69	62.12	62.12	62.12	45.22	45.22	45.22
Movement LOS	B	A	A	C	B	B	E	E	E	D	D	D
d_A, Approach Delay [s/veh]	9.55			16.23			62.12			45.22		
Approach LOS	A			B			E			D		
d_I, Intersection Delay [s/veh]	18.38											
Intersection LOS	B											
Intersection V/C	0.595											

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 11: US 1/Hamilton St (North)

Control Type: Two-way stop
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 15.9
 Level Of Service: C
 Volume to Capacity (v/c): 0.018

Intersection Setup

Name	US 1		US 1		Hamilton	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	150.00	100.00	100.00	100.00
Speed [mph]	30.00		35.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	US 1		US 1		Hamilton	
Base Volume Input [veh/h]	1394	0	3	999	0	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	3.85	0.00	2.04	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	28	0	0	15	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1422	0	3	1014	0	5
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	395	0	1	282	0	1
Total Analysis Volume [veh/h]	1580	0	3	1127	0	6
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.00	0.00	0.01	0.00	0.02
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	15.87
Movement LOS	A	A		A		C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.05
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	1.36
d_A, Approach Delay [s/veh]	0.00		0.00		15.87	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.04					
Intersection LOS	C					

Intersection Level Of Service Report

Intersection 12: US 1/Hamilton St (South)/US 1 Alt

Control Type:	Signalized	Delay (sec / veh):	51.9
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.953

Intersection Setup

Name	US 1			US 1			Hamilton			US 1 ALT		
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	250.00
Speed [mph]	30.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	US 1			US 1			Hamilton			US 1 ALT		
Base Volume Input [veh/h]	0	658	81	634	459	0	5	28	7	47	57	717
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.17	0.00	2.00	2.06	0.00	0.00	0.00	0.00	2.63	0.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	0	8	7	0	0	0	0	0	0	16
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	670	81	642	466	0	5	28	7	47	57	733
Peak Hour Factor	1.0000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	186	23	178	129	0	1	8	2	13	14	204
Total Analysis Volume [veh/h]	0	744	90	713	518	0	6	31	8	52	57	814
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			3			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Split	Split	Permiss	Permiss	Overlap
Signal group	0	6	6	5	2	0	3	3	3	8	8	8
Auxiliary Signal Groups												5,8
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lag	-	-
Minimum Green [s]	0	20	20	5	20	0	0	0	0	5	5	5
Maximum Green [s]	0	40	40	20	79	0	0	0	0	30	30	30
Amber [s]	0.0	4.0	4.0	3.5	4.0	0.0	0.0	0.0	0.0	3.0	3.0	3.0
All red [s]	0.0	1.0	1.0	1.5	1.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0
Split [s]	0	45	45	39	84	0	0	0	0	36	36	36
Vehicle Extension [s]	0.0	3.0	3.0	3.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	0	0	0	0	0	5	5	5
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	10	10	10
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	3.0	3.0	3.0	3.0	0.0	0.0	0.0	0.0	2.0	2.0	2.0
Minimum Recall		No		Yes	No						No	No
Maximum Recall		Yes		Yes	Yes						No	No
Pedestrian Recall		No		No	No						No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	50.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C		C	R
C, Cycle Length [s]	120	120	120	120	120		120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00		4.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	3.00		2.00	0.00
g_i, Effective Green Time [s]	40	40	79	79	79		32	70
g / C, Green / Cycle	0.33	0.33	0.66	0.66	0.66		0.27	0.58
(v / s)_i Volume / Saturation Flow Rate	0.22	0.23	0.71	0.18	0.18		0.06	0.51
s, saturation flow rate [veh/h]	1860	1791	1005	1470	1470		1856	1583
c, Capacity [veh/h]	620	597	610	968	968		495	924
d1, Uniform Delay [s]	34.37	34.76	27.35	8.50	8.50		34.28	21.44
k, delay calibration	0.50	0.50	0.50	0.50	0.50		0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	5.74	6.65	92.62	0.68	0.68		0.22	11.85
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.67	0.70	1.17	0.27	0.27		0.22	0.88
d, Delay for Lane Group [s/veh]	40.12	41.41	119.97	9.18	9.18		34.50	33.28
Lane Group LOS	D	D	F	A	A		C	C
Critical Lane Group	No	Yes	Yes	No	No		No	Yes
50th-Percentile Queue Length [veh/ln]	11.38	11.61	24.89	2.86	2.86		2.55	21.85
50th-Percentile Queue Length [ft/ln]	284.59	290.34	622.29	71.41	71.41		63.83	546.33
95th-Percentile Queue Length [veh/ln]	16.92	17.20	37.27	5.14	5.14		4.60	29.52
95th-Percentile Queue Length [ft/ln]	422.93	430.07	931.67	128.53	128.53		114.90	738.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	40.68	41.41	119.97	9.18	9.18	0.00	0.00	0.00	34.50	34.50	33.28
Movement LOS		D	D	F	A	A				C	C	C
d_A, Approach Delay [s/veh]	40.76			73.35			0.00			33.43		
Approach LOS	D			E			A			C		
d_I, Intersection Delay [s/veh]	51.92											
Intersection LOS	D											
Intersection V/C	0.953											

Sequence

Ring 1	-	2	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 13: US 1 Alt/Decatur St

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 19.6
 Level Of Service: B
 Volume to Capacity (v/c): 0.720

Intersection Setup

Name	US 1 ALT		Decatur St		US 1 ALT	
Approach	Northbound		Westbound		Southwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	0	1	1	0
Pocket Length [ft]	100.00	100.00	100.00	75.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		No	

Volumes

Name	US 1 ALT		Decatur St		US 1 ALT	
Base Volume Input [veh/h]	652	169	87	212	312	574
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.13	2.13	1.97	2.00	2.63	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	16	0	0	0	0	8
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	668	169	87	212	312	582
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	186	47	24	59	87	162
Total Analysis Volume [veh/h]	742	188	97	236	347	647
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	15.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	Unsignalized	Split	Split	ProtectedPermissi	Permissive
Signal group	6	0	4	0	5	2
Auxiliary Signal Groups						
Lead / Lag	-	-	Lag	-	Lead	-
Minimum Green [s]	10	0	5	0	4	10
Maximum Green [s]	39	0	15	0	10	54
Amber [s]	5.0	0.0	4.0	0.0	4.0	5.0
All red [s]	1.0	0.0	1.0	0.0	1.0	1.0
Split [s]	30	0	30	0	30	30
Vehicle Extension [s]	0.2	0.0	3.0	0.0	3.0	0.2
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	4.0	0.0	3.0	0.0	3.0	4.0
Minimum Recall	No		No		No	No
Maximum Recall	Yes		No		No	Yes
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	30.0	0.0	30.0	0.0	30.0	30.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	L	R	L	C
C, Cycle Length [s]	79	79	79	79	79
L, Total Lost Time per Cycle [s]	6.00	5.00	5.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	3.00	3.00	0.00	4.00
g_i, Effective Green Time [s]	41	14	14	54	54
g / C, Green / Cycle	0.52	0.17	0.17	0.69	0.69
(v / s)_i Volume / Saturation Flow Rate	0.40	0.05	0.15	0.37	0.35
s, saturation flow rate [veh/h]	1860	1775	1583	929	1863
c, Capacity [veh/h]	964	308	275	539	1278
d1, Uniform Delay [s]	15.20	28.40	31.55	12.79	5.93
k, delay calibration	0.50	0.11	0.23	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.91	0.58	14.54	5.81	1.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.31	0.86	0.64	0.51
d, Delay for Lane Group [s/veh]	21.12	28.98	46.09	18.60	7.36
Lane Group LOS	C	C	D	B	A
Critical Lane Group	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	10.98	1.61	5.32	2.58	4.43
50th-Percentile Queue Length [ft/ln]	274.44	40.15	132.98	64.52	110.83
95th-Percentile Queue Length [veh/ln]	16.41	2.89	9.10	4.65	7.89
95th-Percentile Queue Length [ft/ln]	410.28	72.28	227.54	116.13	197.16

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	21.12	0.00	28.98	46.09	18.60	7.36
Movement LOS	C		C	D	B	A
d_A, Approach Delay [s/veh]	21.12		41.11		11.29	
Approach LOS	C		D		B	
d_I, Intersection Delay [s/veh]	19.61					
Intersection LOS	B					
Intersection V/C	0.720					

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 14: US 1 Alt/Charles Armentrout St

Control Type:	Signalized	Delay (sec / veh):	90.0
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.729

Intersection Setup

Name	US 1 Alt		US 1 ALT		Charles L Armentrout	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	US 1 Alt		US 1 ALT		Charles L Armentrout	
Base Volume Input [veh/h]	662	724	623	71	95	1343
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.08	2.00	2.00	2.00	3.85	2.17
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	12	16	8	0	0	7
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	674	740	631	71	95	1350
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	187	206	175	20	26	375
Total Analysis Volume [veh/h]	749	822	701	79	106	1500
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtectedPermissi	Permissive	Permissive	Permissive	Permissive	Unsignalized
Signal group	5	2	6	0	3	3
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	5
Maximum Green [s]	30	30	30	0	30	30
Amber [s]	3.0	3.0	3.0	0.0	3.0	3.0
All red [s]	1.0	1.0	1.0	0.0	1.0	1.0
Split [s]	42	81	39	0	39	39
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	3.0
Walk [s]	0	5	5	0	5	5
Pedestrian Clearance [s]	0	10	10	0	10	10
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	77	77	35	35	35
g / C, Green / Cycle	0.64	0.64	0.29	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.59	0.44	0.38	0.05	0.06
s, saturation flow rate [veh/h]	1277	1863	1863	1583	1743
c, Capacity [veh/h]	693	1195	543	462	508
d1, Uniform Delay [s]	35.83	13.79	42.50	31.69	32.05
k, delay calibration	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	58.23	3.24	143.98	0.80	0.93
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.08	0.69	1.29	0.17	0.21
d, Delay for Lane Group [s/veh]	94.06	17.03	186.48	32.49	32.98
Lane Group LOS	F	B	F	C	C
Critical Lane Group	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	21.51	14.41	37.63	1.83	2.50
50th-Percentile Queue Length [ft/ln]	537.74	360.15	940.66	45.66	62.41
95th-Percentile Queue Length [veh/ln]	31.00	20.63	55.14	3.29	4.49
95th-Percentile Queue Length [ft/ln]	774.91	515.77	1378.54	82.19	112.33

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	94.06	17.03	186.48	32.49	32.98	0.00
Movement LOS	F	B	F	C	C	
d_A, Approach Delay [s/veh]	53.76		170.88		32.98	
Approach LOS	D		F		C	
d_I, Intersection Delay [s/veh]	90.04					
Intersection LOS	F					
Intersection V/C	0.729					

Sequence

Ring 1	2	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SG: 2 81s

SG: 3 39s

SG: 103 15s

SG: 5 42s

SG: 6 39s

SG: 106 15s

Intersection Level Of Service Report

Intersection 15: US 1/Gallatin St

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 3.6
 Level Of Service: A
 Volume to Capacity (v/c): 0.283

Intersection Setup

Name	US 1		US 1		Gallatin St.	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		0.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		No	

Volumes

Name	US 1		US 1		Gallatin St.	
Base Volume Input [veh/h]	23	767	449	45	10	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.11	2.05	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	7	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	779	456	45	10	10
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	216	127	13	3	3
Total Analysis Volume [veh/h]	26	866	507	50	10	10
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		4		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	84.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	6	6	2	2	4	0
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	4	4	4	4	5	0
Maximum Green [s]	86	86	86	86	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	75	75	75	75	15	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	0	20	20	5	0
Pedestrian Clearance [s]	0	0	10	10	10	0
Rest In Walk						
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall		No	No		No	
Maximum Recall		Yes	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	50.0	50.0	50.0	50.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	8
Pedestrian Walk [s]	20
Pedestrian Clearance [s]	10

Lane Group Calculations

Lane Group	C	C	C	C	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	100	100	100	100	2
g / C, Green / Cycle	0.83	0.83	0.83	0.83	0.02
(v / s)_i Volume / Saturation Flow Rate	0.26	0.26	0.15	0.15	0.01
s, saturation flow rate [veh/h]	1778	1693	1862	1805	1707
c, Capacity [veh/h]	1504	1403	1542	1495	36
d1, Uniform Delay [s]	2.35	2.38	2.08	2.09	58.22
k, delay calibration	0.50	0.50	0.50	0.50	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.52	0.58	0.26	0.28	12.41
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.30	0.31	0.18	0.19	0.55
d, Delay for Lane Group [s/veh]	2.87	2.96	2.34	2.37	70.63
Lane Group LOS	A	A	A	A	E
Critical Lane Group	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.93	1.88	1.03	1.04	0.75
50th-Percentile Queue Length [ft/ln]	48.14	46.88	25.84	26.07	18.87
95th-Percentile Queue Length [veh/ln]	3.47	3.38	1.86	1.88	1.36
95th-Percentile Queue Length [ft/ln]	86.64	84.39	46.51	46.93	33.96

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	2.87	2.92	2.35	2.37	70.63	70.63
Movement LOS	A	A	A	A	E	E
d_A, Approach Delay [s/veh]	2.91		2.36		70.63	
Approach LOS	A		A		E	
d_I, Intersection Delay [s/veh]	3.62					
Intersection LOS	A					
Intersection V/C	0.283					

Sequence

Ring 1	-	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SG: 2 75s

SG: 4 15s

SG: 8 30s

SG: 6 75s

Intersection Level Of Service Report

Intersection 16: US 1/Farragut St

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 10.3
 Level Of Service: B
 Volume to Capacity (v/c): 0.565

Intersection Setup

Name	US 1		Farragut		US 1	
Approach	Southbound		Eastbound		Northeastbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		25.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	US 1		Farragut		US 1	
Base Volume Input [veh/h]	445	9	47	36	12	757
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.97	0.00	0.00	0.00	0.00	2.11
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	7	0	0	0	0	12
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	452	9	47	36	12	769
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	126	3	13	10	3	214
Total Analysis Volume [veh/h]	502	10	52	40	13	854
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	78.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	Permissive	Split	Split	Permissive	Permissive
Signal group	6	6	4	4	2	2
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lag	-
Minimum Green [s]	20	20	20	20	20	20
Maximum Green [s]	89	89	20	20	89	89
Amber [s]	5.0	5.0	4.0	4.0	5.0	5.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	95	95	25	25	95	95
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	4.0	4.0	3.0	3.0	4.0	4.0
Minimum Recall	No		No			No
Maximum Recall	Yes		Yes			Yes
Pedestrian Recall	No		No			No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	50.0	50.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C
C, Cycle Length [s]	120	120	120	120
L, Total Lost Time per Cycle [s]	6.00	6.00	5.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00
l2, Clearance Lost Time [s]	4.00	4.00	3.00	4.00
g_i, Effective Green Time [s]	89	89	20	89
g / C, Green / Cycle	0.74	0.74	0.17	0.74
(v / s)_i Volume / Saturation Flow Rate	0.14	0.14	0.05	0.47
s, saturation flow rate [veh/h]	1863	1851	1719	1848
c, Capacity [veh/h]	1382	1373	287	1401
d1, Uniform Delay [s]	4.64	4.65	44.02	7.50
k, delay calibration	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.30	0.30	2.94	2.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.19	0.19	0.32	0.62
d, Delay for Lane Group [s/veh]	4.94	4.95	46.96	9.56
Lane Group LOS	A	A	D	A
Critical Lane Group	No	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	1.81	1.82	2.68	9.73
50th-Percentile Queue Length [ft/ln]	45.33	45.40	66.89	243.28
95th-Percentile Queue Length [veh/ln]	3.26	3.27	4.82	14.85
95th-Percentile Queue Length [ft/ln]	81.59	81.72	120.41	371.18

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	4.94	4.95	46.96	46.96	9.56	9.56
Movement LOS	A	A	D	D	A	A
d_A, Approach Delay [s/veh]	4.94		46.96		9.56	
Approach LOS	A		D		A	
d_I, Intersection Delay [s/veh]	10.29					
Intersection LOS	B					
Intersection V/C	0.565					

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SG: 2 95s

SG: 4 25s

SG: 6 95s

Intersection Level Of Service Report

Intersection 17: US 1/43rd Ave

Control Type: Two-way stop
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 21.6
 Level Of Service: C
 Volume to Capacity (v/c): 0.099

Intersection Setup

Name	US 1		US 1			
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0
Pocket Length [ft]	150.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	US 1		US 1			
Base Volume Input [veh/h]	50	743	467	16	24	70
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	7	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	50	755	474	16	24	70
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	189	119	4	6	18
Total Analysis Volume [veh/h]	50	755	474	16	24	70
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.01	0.00	0.00	0.10	0.09
d_M, Delay for Movement [s/veh]	8.53	0.00	0.00	0.00	21.56	11.50
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.15	0.00	0.00	0.00	0.70	0.70
95th-Percentile Queue Length [ft/ln]	3.67	0.00	0.00	0.00	17.52	17.52
d_A, Approach Delay [s/veh]	0.53		0.00		14.07	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	1.26					
Intersection LOS	C					

Intersection Level Of Service Report

Intersection 18: US 1/42nd Place/Crittendon Street

Control Type:	Signalized	Delay (sec / veh):	55.0
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.892

Intersection Setup

Name	42nd Pl			Crittenden St			US 1			US 1		
Approach	Southbound			Eastbound			Northeastbound			Southwestbound		
Lane Configuration												
Turning Movement	Left	Right	Right2	Left	Thru	Right	Left2	Left	Thru	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			25.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	42nd Pl			Crittenden St			US 1			US 1		
Base Volume Input [veh/h]	5	16	0	0	38	355	346	50	778	518	30	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	2.00	2.14	0.00	2.17	2.05	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	7	12	0	12	7	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	16	0	0	38	362	358	50	790	525	30	5
Peak Hour Factor	0.9000	0.9000	0.9000	1.0000	0.9000	0.9000	1.0000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	4	0	0	11	101	90	14	219	146	8	1
Total Analysis Volume [veh/h]	6	18	0	0	42	402	358	56	878	583	33	6
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	42.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal group	4	4	4	0	3	3	0	6	6	2	6	6
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	-	-	-	-	Lag	-	-	-	-
Minimum Green [s]	5	5	5	0	5	5	0	20	20	20	20	20
Maximum Green [s]	19	19	19	0	25	25	0	60	60	60	60	60
Amber [s]	4.0	4.0	4.0	0.0	4.0	4.0	0.0	5.0	5.0	5.0	5.0	5.0
All red [s]	1.0	1.0	1.0	0.0	1.0	1.0	0.0	4.0	4.0	1.0	4.0	4.0
Split [s]	24	24	24	0	30	30	0	66	66	66	66	66
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk	No				No				No	No		
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	0.0	3.0	3.0	0.0	7.0	7.0	6.0	7.0	7.0
Minimum Recall	No				No				No	No		
Maximum Recall	No				No				Yes	Yes		
Pedestrian Recall	No				No				No	No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	50.0	50.0	50.0	0.0	50.0	50.0	0.0	50.0	50.0	50.0	50.0	50.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	9.00	9.00	8.00	8.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	7.00	7.00	6.00	6.00
g_i, Effective Green Time [s]	3	25	73	73	74	74
g / C, Green / Cycle	0.02	0.21	0.61	0.61	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate	0.01	0.27	0.52	0.25	0.17	0.17
s, saturation flow rate [veh/h]	1660	1638	800	3541	1862	1821
c, Capacity [veh/h]	40	341	467	2158	1150	1125
d1, Uniform Delay [s]	58.00	47.51	29.93	12.18	10.53	10.58
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.72	155.40	21.13	0.57	0.58	0.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.60	1.30	0.89	0.41	0.27	0.28
d, Delay for Lane Group [s/veh]	71.72	202.91	51.06	12.75	11.11	11.19
Lane Group LOS	E	F	D	B	B	B
Critical Lane Group	Yes	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.88	24.96	14.10	5.95	3.78	3.80
50th-Percentile Queue Length [ft/ln]	22.00	623.98	352.38	148.68	94.39	94.93
95th-Percentile Queue Length [veh/ln]	1.58	37.70	20.25	9.95	6.80	6.83
95th-Percentile Queue Length [ft/ln]	39.60	942.48	506.31	248.66	169.90	170.87

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	71.72	71.72	71.72	0.00	202.91	202.91	51.06	51.06	12.75	11.14	11.19	11.19
Movement LOS	E	E	E		F	F	D	D	B	B	B	B
d_A, Approach Delay [s/veh]	71.72			202.91			25.02			11.15		
Approach LOS	E			F			C			B		
d_I, Intersection Delay [s/veh]	55.03											
Intersection LOS	E											
Intersection V/C	0.892											

Sequence

Ring 1	-	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 19: US 1/41st Place/Charles Armentrout Dr

Control Type:	Signalized	Delay (sec / veh):	33.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.904

Intersection Setup

Name	US 1			US 1			Charles L Armentrout			41st		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	43.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	US 1			US 1			Charles L Armentrout			41st		
Base Volume Input [veh/h]	1	675	563	592	356	2	271	3	474	2	2	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.38	2.14	2.00	0.00	2.00	0.00	2.21	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	0	7	7	0	0	0	12	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	687	563	599	363	2	271	3	486	2	2	2
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	191	156	166	101	1	75	1	135	1	1	1
Total Analysis Volume [veh/h]	1	763	626	666	403	2	301	3	540	2	2	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	4			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	42.0
Offset Reference	LagEnd
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss
Signal group	6	6	6	5	2	2	8	8	2	4	4	4
Auxiliary Signal Groups									2,5			
Lead / Lag	Lag	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	20	20	20	5	20	20	8	8	20	8	8	8
Maximum Green [s]	49	49	49	25	78	78	30	30	78	30	30	30
Amber [s]	5.0	5.0	5.0	4.0	5.0	5.0	4.0	4.0	5.0	4.0	4.0	4.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	2.0	2.0	1.0	2.0	2.0	2.0
Split [s]	54	54	54	30	84	84	36	36	84	36	36	36
Vehicle Extension [s]	6.0	6.0	6.0	3.0	6.0	6.0	3.0	3.0	6.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Recall		No		No	No			No	No		No	
Maximum Recall		Yes		No	Yes			No	Yes		No	
Pedestrian Recall		No		No	No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	0.0	50.0	50.0	50.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	C	R	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	5.50	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	0.00	4.00	4.00	4.00	0.00	4.00
g_i, Effective Green Time [s]	51	51	51	81	81	81	27	81	27
g / C, Green / Cycle	0.43	0.43	0.43	0.68	0.68	0.68	0.22	0.68	0.22
(v / s)_i Volume / Saturation Flow Rate	0.00	0.22	0.40	0.62	0.11	0.11	0.21	0.34	0.00
s, saturation flow rate [veh/h]	996	3547	1577	1069	1863	1860	1462	1580	1870
c, Capacity [veh/h]	427	1512	673	701	1260	1258	387	1069	458
d1, Uniform Delay [s]	23.98	25.16	32.74	20.35	7.05	7.05	45.38	9.55	36.29
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.29	0.50	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.01	1.21	21.34	23.75	0.27	0.27	9.09	1.71	0.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.50	0.93	0.95	0.16	0.16	0.79	0.51	0.01
d, Delay for Lane Group [s/veh]	23.99	26.36	54.07	44.10	7.33	7.33	54.47	11.26	36.30
Lane Group LOS	C	C	D	D	A	A	D	B	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.02	7.86	20.22	12.81	1.84	1.84	9.88	7.17	0.14
50th-Percentile Queue Length [ft/ln]	0.47	196.43	505.57	320.35	46.02	45.95	247.00	179.34	3.53
95th-Percentile Queue Length [veh/ln]	0.03	12.45	27.60	18.68	3.31	3.31	15.03	11.57	0.25
95th-Percentile Queue Length [ft/ln]	0.84	311.36	689.95	467.12	82.84	82.71	375.87	289.15	6.36

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	23.99	26.36	54.07	44.10	7.33	7.33	54.47	54.47	11.26	36.30	36.30	36.30
Movement LOS	C	C	D	D	A	A	D	D	B	D	D	D
d_A, Approach Delay [s/veh]	38.84			30.19			26.82			36.30		
Approach LOS	D			C			C			D		
d_I, Intersection Delay [s/veh]	32.98											
Intersection LOS	C											
Intersection V/C	0.904											

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 20: MD 410/Toledo Terrace

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 46.1
 Level Of Service: D
 Volume to Capacity (v/c): 0.758

Intersection Setup

Name				Toledo Terrace			MD 410			MD 410		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	500.00	100.00	900.00	175.00	100.00	175.00
Speed [mph]	30.00			30.00			50.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name				Toledo Terrace			MD 410			MD 410		
Base Volume Input [veh/h]	99	32	93	127	19	283	387	1306	145	81	998	155
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.44	0.00	2.50	2.38	0.00	1.96	2.07	2.00	1.92	2.00	2.05	3.85
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	22	0	0	0	0	0	0	24	41	0	13	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	121	32	93	127	19	283	387	1330	186	81	1011	155
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	9	26	35	5	79	108	369	52	23	281	43
Total Analysis Volume [veh/h]	134	36	103	141	21	314	430	1478	207	90	1123	172
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	4			2			1			5		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	66.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	8	8	8	4	4	4	1	6	6	2	2	2
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	8	8	8	8	8	8	5	20	20	20	20	20
Maximum Green [s]	39	39	39	39	39	39	31	99	99	63	63	63
Amber [s]	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5
All red [s]	2.0	2.0	2.0	2.0	2.0	2.0	1.0	1.5	1.5	1.5	1.5	1.5
Split [s]	45	45	45	45	45	45	36	105	105	69	69	69
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	5.0	5.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0
Minimum Recall		No			No		No	No			No	
Maximum Recall		No			No		No	Yes			Yes	
Pedestrian Recall		No			No		No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	0.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	39	39	39	39	99	99	99	65	65	65
g / C, Green / Cycle	0.26	0.26	0.26	0.26	0.66	0.66	0.66	0.44	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.13	0.08	0.11	0.21	0.50	0.45	0.47	0.31	0.35	0.36
s, saturation flow rate [veh/h]	1036	1673	1236	1629	856	1863	1784	291	1862	1776
c, Capacity [veh/h]	108	435	272	423	503	1229	1177	83	810	773
d1, Uniform Delay [s]	72.59	44.79	56.76	51.71	40.14	15.83	16.43	71.20	37.06	37.24
k, delay calibration	0.11	0.11	0.11	0.28	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	124.66	0.42	1.53	8.25	16.82	3.12	3.74	123.61	8.82	9.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.24	0.32	0.52	0.79	0.86	0.69	0.72	1.08	0.81	0.82
d, Delay for Lane Group [s/veh]	197.25	45.21	58.29	59.96	56.96	18.95	20.17	194.81	45.88	46.83
Lane Group LOS	F	D	E	E	E	B	C	F	D	D
Critical Lane Group	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	7.93	4.29	5.09	12.76	8.24	17.02	17.78	6.01	22.38	21.78
50th-Percentile Queue Length [ft/ln]	198.14	107.19	127.17	318.95	205.96	425.57	444.62	150.30	559.47	544.49
95th-Percentile Queue Length [veh/ln]	13.86	7.68	8.79	18.62	12.95	23.79	24.70	10.51	30.14	29.43
95th-Percentile Queue Length [ft/ln]	346.41	192.09	219.64	465.40	323.64	594.72	617.52	262.82	753.42	735.83

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	197.25	45.21	45.21	58.29	59.96	59.96	56.96	19.47	20.17	194.81	46.27	46.83
Movement LOS	F	D	D	E	E	E	E	B	C	F	D	D
d_A, Approach Delay [s/veh]	119.84			59.46			27.16			55.99		
Approach LOS	F			E			C			E		
d_I, Intersection Delay [s/veh]	46.13											
Intersection LOS	D											
Intersection V/C	0.758											

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 21: MD 410/Editors Park Dr

Control Type:	Signalized	Delay (sec / veh):	8.4
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.777

Intersection Setup

Name	Editors Park Dr		MD 410		MD 410		
Approach	Northbound		Eastbound		Westbound		
Lane Configuration							
Turning Movement	Left	Right	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	200.00	150.00	100.00	100.00
Speed [mph]	30.00		45.00		45.00		
Grade [%]	0.00		0.00		0.00		
Crosswalk	Yes		Yes		Yes		

Volumes

Name	Editors Park Dr		MD 410		MD 410		
Base Volume Input [veh/h]	64	67	1460	109	1	35	1282
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.85	0.00	2.00	1.64	0.00	1.89	2.05
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	64	24	0	0	121	13
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	64	131	1484	109	1	156	1295
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	36	412	30	0	43	360
Total Analysis Volume [veh/h]	71	146	1649	121	1	173	1439
Presence of On-Street Parking	No	No	No	No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0		
Bicycle Volume [bicycles/h]	0		0		0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	5	0	6	0	0	0	2
Auxiliary Signal Groups							
Lead / Lag	Lead	-	-	-	-	-	-
Minimum Green [s]	5	0	5	0	0	0	5
Maximum Green [s]	30	0	30	0	0	0	30
Amber [s]	3.0	0.0	3.0	0.0	0.0	0.0	3.0
All red [s]	1.0	0.0	1.0	0.0	0.0	0.0	1.0
Split [s]	74	0	46	0	0	0	46
Vehicle Extension [s]	3.0	0.0	3.0	0.0	0.0	0.0	3.0
Walk [s]	5	0	5	0	0	0	5
Pedestrian Clearance [s]	10	0	10	0	0	0	10
Rest In Walk	No		No				No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	0.0	0.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	0.0	0.0	0.0	2.0
Minimum Recall	No		No				No
Maximum Recall	No		No				No
Pedestrian Recall	No		No				No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	L	C
C, Cycle Length [s]	46	46	46	46	46
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	30	30	30	30
g / C, Green / Cycle	0.17	0.66	0.66	0.66	0.66
(v / s)_i Volume / Saturation Flow Rate	0.13	0.48	0.49	0.65	0.28
s, saturation flow rate [veh/h]	1674	1863	1819	269	5072
c, Capacity [veh/h]	284	1221	1192	230	3324
d1, Uniform Delay [s]	18.12	5.18	5.29	20.31	3.79
k, delay calibration	0.11	0.25	0.26	0.44	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.24	1.90	2.23	18.44	0.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

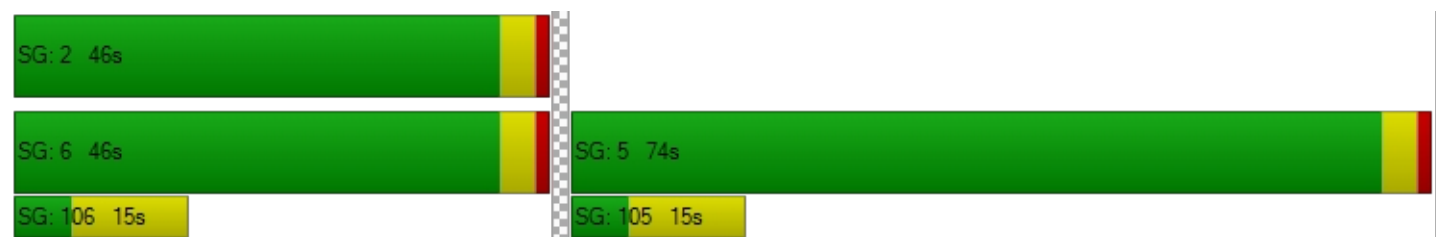
X, volume / capacity	0.76	0.72	0.74	0.76	0.43
d, Delay for Lane Group [s/veh]	22.37	7.08	7.53	38.74	3.88
Lane Group LOS	C	A	A	D	A
Critical Lane Group	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.25	2.00	2.12	2.77	0.56
50th-Percentile Queue Length [ft/ln]	56.20	49.89	53.00	69.17	14.09
95th-Percentile Queue Length [veh/ln]	4.05	3.59	3.82	4.98	1.01
95th-Percentile Queue Length [ft/ln]	101.15	89.81	95.40	124.51	25.36

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	22.37	22.37	7.29	7.53	38.74	38.74	3.88
Movement LOS	C	C	A	A	D	D	A
d_A, Approach Delay [s/veh]	22.37		7.30		7.64		
Approach LOS	C		A		A		
d_I, Intersection Delay [s/veh]	8.36						
Intersection LOS	A						
Intersection V/C	0.777						

Sequence

Ring 1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 22: MD 410/Prince George's Plaza

Control Type:	Signalized	Delay (sec / veh):	24.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.535

Intersection Setup

Name	Metro			PG Plaza			MD 410			MD 410		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	2	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	250.00	100.00	250.00	225.00	100.00	100.00	325.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Metro			PG Plaza			MD 410			MD 410		
Base Volume Input [veh/h]	175	17	165	126	12	34	132	1307	62	98	1139	70
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.54	3.85	2.22	0.00	0.00	3.85	2.22	2.07	1.74	2.21	2.00	3.85
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	88	0	0	134	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	175	17	165	126	12	34	132	1395	62	98	1273	70
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	49	5	46	35	3	9	37	388	17	27	354	19
Total Analysis Volume [veh/h]	194	19	183	140	13	38	147	1550	69	109	1414	78
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	75.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	3	3	3	4	4	4	1	6	6	5	2	2
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	20	20	5	20	20
Maximum Green [s]	24	24	24	24	24	24	25	54	54	25	54	54
Amber [s]	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.5	4.5	4.0	4.5	4.5
All red [s]	1.5	1.5	1.5	1.5	1.5	1.5	1.0	1.5	1.5	1.0	1.5	1.5
Split [s]	30	30	30	30	30	30	30	60	60	30	60	60
Vehicle Extension [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	5.0	5.0	2.5	5.0	5.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.0	4.0	4.0	3.0	4.0	4.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	294.0	294.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	30.0	30.0	30.0	30.0	6.0	6.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	5.50	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.50	3.50	3.50	3.50	3.50	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	21	21	8	8	8	103	93	93	103	92	92
g / C, Green / Cycle	0.14	0.14	0.06	0.06	0.06	0.69	0.62	0.62	0.69	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.06	0.13	0.04	0.01	0.02	0.30	0.30	0.30	0.25	0.28	0.28
s, saturation flow rate [veh/h]	3461	1577	3514	1900	1555	482	3544	1821	432	3547	1813
c, Capacity [veh/h]	490	223	197	106	87	349	2192	1126	316	2170	1110
d1, Uniform Delay [s]	58.54	63.38	69.62	67.30	68.52	11.08	15.63	15.64	11.16	15.65	15.65
k, delay calibration	0.08	0.24	0.08	0.08	0.08	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.39	23.35	3.54	0.38	2.55	3.71	0.78	1.51	2.98	0.69	1.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.40	0.90	0.71	0.12	0.44	0.42	0.49	0.49	0.35	0.45	0.45
d, Delay for Lane Group [s/veh]	58.93	86.73	73.16	67.68	71.07	14.79	16.41	17.16	14.14	16.34	17.00
Lane Group LOS	E	F	E	E	E	B	B	B	B	B	B
Critical Lane Group	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.41	9.07	2.75	0.49	1.48	1.86	9.66	10.17	1.35	8.81	9.22
50th-Percentile Queue Length [ft/ln]	85.13	226.67	68.86	12.21	37.04	46.57	241.53	254.30	33.77	220.35	230.46
95th-Percentile Queue Length [veh/ln]	6.13	14.00	4.96	0.88	2.67	3.35	14.76	15.40	2.43	13.68	14.20
95th-Percentile Queue Length [ft/ln]	153.24	350.12	123.95	21.98	66.67	83.83	368.97	385.06	60.79	342.08	354.94

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	58.93	86.73	86.73	73.16	67.68	71.07	14.79	16.64	17.16	14.14	16.54	17.00
Movement LOS	E	F	F	E	E	E	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	73.11			72.37			16.51			16.40		
Approach LOS	E			E			B			B		
d_I, Intersection Delay [s/veh]	24.83											
Intersection LOS	C											
Intersection V/C	0.535											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 23: MD 410/Belcrest Rd

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 67.9
 Level Of Service: E
 Volume to Capacity (v/c): 0.967

Intersection Setup

Name				Belcrest Rd			MD 410			MD 410		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	250.00	100.00	100.00	250.00	100.00	100.00	225.00	100.00	100.00	225.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name				Belcrest Rd			MD 410			MD 410		
Base Volume Input [veh/h]	363	387	6	310	601	126	210	1114	276	239	867	122
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.21	2.00	3.85	2.00	2.21	2.63	2.00	2.00	2.38	2.63	2.00	2.63
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	71	0	0	20	0	10	29	21	38	17	53	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	434	387	6	330	601	136	239	1135	314	256	920	122
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	121	108	2	92	167	38	66	315	87	71	256	34
Total Analysis Volume [veh/h]	482	430	7	367	668	151	266	1261	349	284	1022	136
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	26			10			91			71		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	60.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal group	7	4	4	3	8	3	1	6	6	5	2	2
Auxiliary Signal Groups									6,7			2,3
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	20	20	5	20	20
Maximum Green [s]	30	29	29	30	30	30	17	53	53	11	47	47
Amber [s]	3.0	4.0	4.0	4.0	3.0	4.0	4.0	4.5	4.5	4.0	4.5	4.5
All red [s]	1.0	2.0	2.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Split [s]	30	36	36	20	46	20	30	60	60	24	54	54
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
Walk [s]	0	0	0	0	5	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	10	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	4.0	4.0	4.0	2.0	4.0	4.0	4.5	4.5	4.0	4.5	4.5
Minimum Recall	No	No		No	No		No	No	No	No	No	No
Maximum Recall	No	No		No	No		No	Yes	Yes	No	Yes	Yes
Pedestrian Recall	No	No		No	No		No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	30.0	5.0	5.0	30.0	5.0	5.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	4.00	4.00	4.00	6.00	6.50	4.00	6.00	6.50	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.00	4.00	0.00	2.00	2.00	4.00	4.50	0.00	4.00	4.50	0.00
g_i, Effective Green Time [s]	23	30	30	59	39	39	24	57	86	18	51	71
g / C, Green / Cycle	0.15	0.20	0.20	0.39	0.26	0.26	0.16	0.38	0.57	0.12	0.34	0.48
(v / s)_i Volume / Saturation Flow Rate	0.17	0.12	0.12	0.24	0.23	0.24	0.15	0.36	0.22	0.16	0.29	0.09
s, saturation flow rate [veh/h]	2757	1863	1844	1538	1859	1659	1774	3547	1556	1763	3547	1564
c, Capacity [veh/h]	508	374	370	601	478	426	283	1346	892	211	1204	745
d1, Uniform Delay [s]	63.40	54.32	54.35	36.56	53.57	54.42	62.29	44.80	17.62	66.02	45.96	22.50
k, delay calibration	0.11	0.11	0.11	0.50	0.32	0.36	0.35	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.95	1.46	1.50	4.58	14.56	23.21	31.45	13.45	1.29	183.59	7.55	0.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.95	0.59	0.59	0.61	0.88	0.93	0.94	0.94	0.39	1.35	0.85	0.18
d, Delay for Lane Group [s/veh]	73.35	55.78	55.84	41.14	68.13	77.63	93.74	58.25	18.92	249.60	53.50	23.04
Lane Group LOS	E	E	E	D	E	E	F	E	B	F	D	C
Critical Lane Group	No	No	No	Yes	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	9.82	7.70	7.67	11.60	17.25	17.38	12.31	24.34	6.73	18.70	18.47	2.83
50th-Percentile Queue Length [ft/ln]	245.47	192.55	191.65	290.06	431.33	434.43	307.83	608.54	168.28	467.56	461.84	70.83
95th-Percentile Queue Length [veh/ln]	14.96	12.25	12.21	17.19	24.07	24.21	18.07	32.43	10.99	28.93	25.52	5.10
95th-Percentile Queue Length [ft/ln]	373.94	306.34	305.16	429.71	601.63	605.34	451.70	810.82	274.65	723.13	638.06	127.50

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	73.35	55.81	55.84	41.14	71.62	77.63	93.74	58.25	18.92	249.60	53.50	23.04
Movement LOS	E	E	E	D	E	E	F	E	B	F	D	C
d_A, Approach Delay [s/veh]	65.01			62.96			55.97			89.25		
Approach LOS	E			E			E			F		
d_I, Intersection Delay [s/veh]	67.88											
Intersection LOS	E											
Intersection V/C	0.967											

Sequence

Ring 1	1	2	3	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 24: MD 410/MD 500/Adelphi Rd

Control Type:	Signalized	Delay (sec / veh):	108.5
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.146

Intersection Setup

Name	MD 500			Adelphi Rd			MD 410			MD 410		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	350.00	100.00	350.00	350.00	100.00	150.00	300.00	100.00	100.00	350.00	100.00	150.00
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	MD 500			Adelphi Rd			MD 410			MD 410		
Base Volume Input [veh/h]	35	657	480	525	352	47	101	1302	54	479	1205	400
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.85	2.13	2.15	2.00	2.00	1.56	2.63	2.00	0.00	2.00	2.04	2.09
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	30	7	22	0	12	6	0	41	0	36	76	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	65	664	502	525	364	53	101	1343	54	515	1281	400
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	184	139	146	101	15	28	373	15	143	356	111
Total Analysis Volume [veh/h]	72	738	558	583	404	59	112	1492	60	572	1423	444
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	3			6			5			9		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	75.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna	Protecte	Permiss	Overlap
Signal group	3	8	0	7	4	0	1	6	0	5	2	2
Auxiliary Signal Groups												2,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	25	0	5	5	5
Maximum Green [s]	5	30	0	30	29	0	12	46	0	27	61	61
Amber [s]	3.0	3.0	0.0	3.0	5.0	0.0	4.0	5.0	0.0	4.0	5.0	5.0
All red [s]	1.0	1.0	0.0	1.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Split [s]	12	39	0	25	52	0	18	53	0	33	68	68
Vehicle Extension [s]	3.0	3.0	0.0	3.0	2.5	0.0	3.0	5.0	0.0	6.0	3.0	3.0
Walk [s]	0	5	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	5.0	0.0	4.0	5.0	0.0	4.0	5.0	5.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	Yes		No	Yes	Yes
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	294.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	30.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	5.00	5.00	0.00	5.00	0.00	5.00	0.00
g_i, Effective Green Time [s]	5	35	35	21	48	48	79	51	79	66	130
g / C, Green / Cycle	0.03	0.23	0.23	0.14	0.32	0.32	0.53	0.34	0.53	0.44	0.87
(v / s)_i Volume / Saturation Flow Rate	0.04	0.21	0.36	0.17	0.11	0.04	0.20	0.42	0.36	0.40	0.28
s, saturation flow rate [veh/h]	1743	3542	1563	3445	3547	1583	563	3547	1598	3545	1579
c, Capacity [veh/h]	58	824	364	483	1133	505	230	1203	705	1566	1370
d1, Uniform Delay [s]	72.50	55.79	57.55	64.50	39.21	36.09	31.69	49.56	44.29	39.05	1.83
k, delay calibration	0.41	0.11	0.50	0.11	0.08	0.08	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	184.64	3.75	254.20	98.18	0.14	0.08	7.20	115.40	9.87	9.32	0.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.24	0.90	1.53	1.21	0.36	0.12	0.49	1.24	0.81	0.91	0.32
d, Delay for Lane Group [s/veh]	257.15	59.54	311.76	162.67	39.36	36.17	38.89	164.96	54.16	48.37	2.45
Lane Group LOS	F	E	F	F	D	D	D	F	D	D	A
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.21	13.88	39.34	15.76	5.78	1.56	2.45	41.51	6.66	26.00	1.72
50th-Percentile Queue Length [ft/ln]	130.31	346.91	983.39	393.99	144.39	38.93	61.13	1037.87	166.44	649.90	43.08
95th-Percentile Queue Length [veh/ln]	9.38	19.99	60.42	24.17	9.72	2.80	4.40	59.57	10.89	34.36	3.10
95th-Percentile Queue Length [ft/ln]	234.55	499.65	1510.42	604.15	242.92	70.08	110.03	1489.32	272.23	858.94	77.55

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	257.15	59.54	311.76	162.67	39.36	36.17	38.89	164.96	0.00	54.16	48.37	2.45
Movement LOS	F	E	F	F	D	D	D	F		D	D	A
d_A, Approach Delay [s/veh]	172.82			107.91			156.16			41.37		
Approach LOS	F			F			F			D		
d_I, Intersection Delay [s/veh]	108.51											
Intersection LOS	F											
Intersection V/C	1.146											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report Intersection 25: Ager Rd/23rd Ave

Control Type: Signalized
Analysis Method: HCM 6th Edition
Analysis Period: 15 minutes

Delay (sec / veh): 18.7
Level Of Service: B
Volume to Capacity (v/c): 0.432

Intersection Setup

Name							Ager Rd.			Ager Rd.		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	200.00	100.00	100.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name							Ager Rd.			Ager Rd.		
Base Volume Input [veh/h]	14	24	13	199	31	37	21	635	3	25	811	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	30	0	0	49	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	24	13	199	31	37	21	665	3	25	860	14
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	6	3	50	8	9	5	166	1	6	215	4
Total Analysis Volume [veh/h]	14	24	13	199	31	37	21	665	3	25	860	14
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	35	0	0	35	0
Maximum Green [s]	0	20	0	0	30	0	0	35	0	0	35	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	25	0	0	35	0	0	50	0	0	50	0
Vehicle Extension [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	21	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	20	30	45	45	45	45	45	45
g / C, Green / Cycle	0.22	0.33	0.50	0.50	0.50	0.50	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.03	0.19	0.04	0.20	0.20	0.04	0.26	0.26
s, saturation flow rate [veh/h]	1545	1443	571	1683	1680	692	1683	1673
c, Capacity [veh/h]	394	516	252	841	840	325	841	837
d1, Uniform Delay [s]	28.11	24.44	22.78	14.04	14.04	19.49	15.21	15.21
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.68	3.69	0.65	1.40	1.40	0.46	2.30	2.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.13	0.52	0.08	0.40	0.40	0.08	0.52	0.52
d, Delay for Lane Group [s/veh]	28.79	28.13	23.43	15.44	15.44	19.95	17.51	17.52
Lane Group LOS	C	C	C	B	B	B	B	B
Critical Lane Group	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.95	4.95	0.36	4.24	4.24	0.38	6.10	6.07
50th-Percentile Queue Length [ft/ln]	23.66	123.84	8.95	106.09	105.96	9.50	152.52	151.74
95th-Percentile Queue Length [veh/ln]	1.70	8.60	0.64	7.62	7.61	0.68	10.15	10.11
95th-Percentile Queue Length [ft/ln]	42.58	215.09	16.12	190.56	190.37	17.10	253.79	252.75

Movement, Approach, & Intersection Results

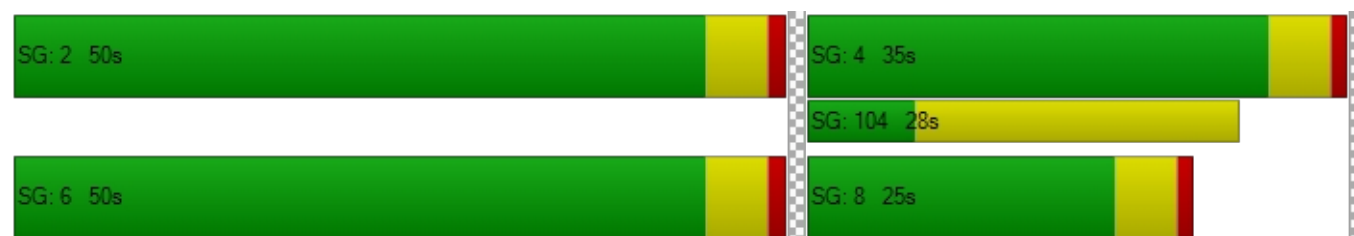
d_M, Delay for Movement [s/veh]	28.79	28.79	28.79	28.13	28.13	28.13	23.43	15.44	15.44	19.95	17.52	17.52
Movement LOS	C	C	C	C	C	C	C	B	B	B	B	B
d_A, Approach Delay [s/veh]	28.79			28.13			15.69			17.59		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	18.68											
Intersection LOS	B											
Intersection V/C	0.432											

Other Modes

g_Walk,mi, Effective Walk Time [s]	45.0			45.0			20.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	11.25			11.25			27.22			34.67		
I_p,int, Pedestrian LOS Score for Intersection	1.756			1.860			3.019			2.687		
Crosswalk LOS	A			A			C			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	444			667			1000			1000		
d_b, Bicycle Delay [s]	27.22			20.00			11.25			11.25		
I_b,int, Bicycle LOS Score for Intersection	1.644			2.000			2.128			2.301		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 26: Ager Rd/Oglethorpe St/School

Control Type:	Signalized	Delay (sec / veh):	47.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.394

Intersection Setup

Name							Ager Rd.			Ager Rd.		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	1200.00	350.00	100.00	100.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name							Ager Rd.			Ager Rd.		
Base Volume Input [veh/h]	21	0	32	2	0	0	51	981	2	3	1040	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	30	0	0	49	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	0	32	2	0	0	51	1011	2	3	1089	35
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	0	8	1	0	0	13	253	1	1	272	9
Total Analysis Volume [veh/h]	21	0	32	2	0	0	51	1011	2	3	1089	35
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	4	0	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	10	0	5	10	0
Maximum Green [s]	0	20	0	0	20	0	20	30	0	20	30	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	30	0	0	30	0	30	45	0	30	45	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	6.0	0.0	3.0	6.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	27	0	0	11	0	0	12	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	L	C	C
C, Cycle Length [s]	109	109	109	109	109	109	109	109
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	3.00	0.00	3.00	3.00
g_i, Effective Green Time [s]	25	25	70	40	40	70	40	40
g / C, Green / Cycle	0.23	0.23	0.64	0.37	0.37	0.64	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.04	0.00	0.06	0.30	0.30	0.00	0.34	0.34
s, saturation flow rate [veh/h]	1384	1255	912	1683	1682	942	1683	1665
c, Capacity [veh/h]	363	354	537	618	617	564	618	611
d1, Uniform Delay [s]	33.54	32.42	13.50	31.25	31.25	11.07	32.88	32.88
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.84	0.03	0.35	11.64	11.64	0.02	20.42	20.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.15	0.01	0.10	0.82	0.82	0.01	0.91	0.92
d, Delay for Lane Group [s/veh]	34.38	32.45	13.85	42.88	42.89	11.08	53.30	53.51
Lane Group LOS	C	C	B	D	D	B	D	D
Critical Lane Group	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.21	0.04	0.46	13.64	13.63	0.03	17.16	17.01
50th-Percentile Queue Length [ft/ln]	30.20	1.10	11.48	340.89	340.69	0.65	429.01	425.31
95th-Percentile Queue Length [veh/ln]	2.17	0.08	0.83	19.69	19.68	0.05	23.95	23.78
95th-Percentile Queue Length [ft/ln]	54.36	1.97	20.67	492.29	492.04	1.16	598.85	594.42

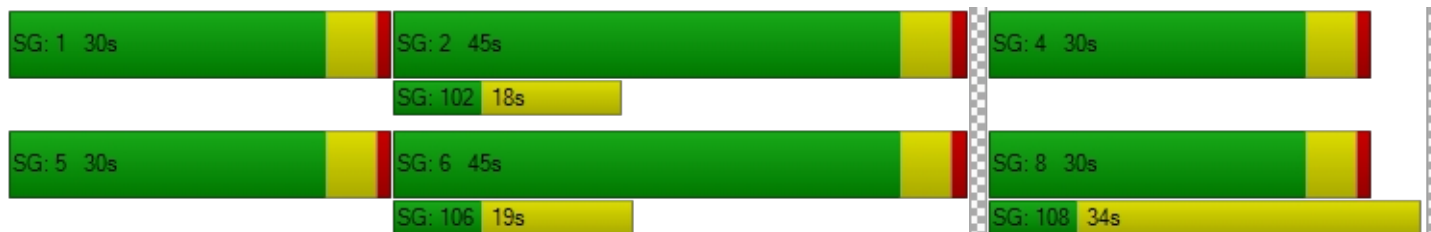
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	34.38	34.38	34.38	32.45	32.45	32.45	13.85	42.89	42.89	11.08	53.40	53.51
Movement LOS	C	C	C	C	C	C	B	D	D	B	D	D
d_A, Approach Delay [s/veh]	34.38			32.45			41.49			53.29		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	47.24											
Intersection LOS	D											
Intersection V/C	0.394											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	25.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	23.47	34.67
l_p,int, Pedestrian LOS Score for Intersection	1.810	1.719	2.784	2.820
Crosswalk LOS	A	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	556	556	889	889
d_b, Bicycle Delay [s]	23.47	23.47	13.89	13.89
l_b,int, Bicycle LOS Score for Intersection	1.647	1.563	2.437	2.489
Bicycle LOS	A	A	B	B

Sequence

[illegible]

Intersection Level Of Service Report Intersection 27: Ager Rd/Nicholson St

Control Type: Signalized
Analysis Method: HCM 2010
Analysis Period: 15 minutes

Delay (sec / veh): 11.0
Level Of Service: B
Volume to Capacity (v/c): 0.512

Intersection Setup

Name	Ager Rd				Nicholson St			Nicholson St			Ager Rd.			
Approach	Northbound				Northeastbound			Southwestbound			Southeastbound			
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	0	0	1	0	0	0
Pocket Length [ft]	225.0	100.0	100.0	150.0	100.00	100.00	100.00	100.00	100.00	100.00	200.0	100.0	100.0	100.0
Speed [mph]	35.00				30.00			30.00			35.00			
Grade [%]	0.00				0.00			0.00			0.00			
Crosswalk	Yes				Yes			Yes			Yes			

Volumes

Name	Ager Rd				Nicholson St			Nicholson St			Ager Rd.			
Base Volume Input [veh/h]	1	78	838	96	69	14	70	25	10	107	6	175	742	93
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	2.00	0.00	1.82	0.00	0.00	1.74	0.00	2.44	2.00	3.57
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	30	0	0	0	0	0	0	0	0	0	49	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	78	868	96	69	14	70	25	10	107	6	175	791	93
Peak Hour Factor	0.900	0.900	0.900	0.900	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.900	0.900	0.900	0.900
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	22	241	27	19	4	19	7	3	30	2	49	220	26
Total Analysis Volume [veh/h]	1	87	964	107	77	16	78	28	11	119	7	194	879	103
Presence of On-Street Parking	No			No	No		No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0				0			0			0			
Bicycle Volume [bicycles/h]	0				0			0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permi	Permi	Permi	Permi
Signal group	0	0	2	0	0	8	0	0	4	0	0	0	6	0
Auxiliary Signal Groups														
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	5	0	0	5	0	0	0	5	0
Maximum Green [s]	0	0	30	0	0	30	0	0	30	0	0	0	30	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0
Split [s]	0	0	68	0	0	22	0	0	22	0	0	0	68	0
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	5	0	0	5	0	0	5	0	0	0	5	0
Pedestrian Clearance [s]	0	0	10	0	0	10	0	0	10	0	0	0	10	0
Rest In Walk			No			No			No				No	
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall			No			No			No				No	
Maximum Recall			No			No			No				No	
Pedestrian Recall			No			No			No				No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	64	64	64	18	18	64	64	64
g / C, Green / Cycle	0.71	0.71	0.71	0.20	0.20	0.71	0.71	0.71
(v / s)_i Volume / Saturation Flow Rate	0.15	0.29	0.29	0.13	0.10	0.38	0.27	0.27
s, saturation flow rate [veh/h]	582	1863	1798	1340	1638	523	1863	1795
c, Capacity [veh/h]	419	1325	1279	326	375	378	1325	1277
d1, Uniform Delay [s]	9.23	5.31	5.31	33.03	31.80	13.56	5.13	5.14
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.14	0.95	0.98	5.93	3.46	5.29	0.82	0.85
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.21	0.41	0.41	0.52	0.42	0.53	0.38	0.38
d, Delay for Lane Group [s/veh]	10.37	6.25	6.29	38.96	35.25	18.85	5.95	5.99
Lane Group LOS	B	A	A	D	D	B	A	A
Critical Lane Group	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.89	3.51	3.41	3.93	3.35	3.05	3.11	3.01
50th-Percentile Queue Length [ft/ln]	22.28	87.80	85.22	98.32	83.63	76.37	77.73	75.36
95th-Percentile Queue Length [veh/ln]	1.60	6.32	6.14	7.08	6.02	5.50	5.60	5.43
95th-Percentile Queue Length [ft/ln]	40.11	158.04	153.39	176.98	150.54	137.47	139.92	135.65

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	10.37	10.37	6.27	6.29	38.96	38.96	38.96	35.25	35.25	35.25	18.85	18.85	5.97	5.99
Movement LOS	B	B	A	A	D	D	D	D	D	D	B	B	A	A
d_A, Approach Delay [s/veh]	6.58				38.96			35.25			8.16			
Approach LOS	A				D			D			A			
d_I, Intersection Delay [s/veh]	11.05													
Intersection LOS	B													
Intersection V/C	0.512													

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SG: 2 68s

SG: 4 22s

SG: 102 15s

SG: 104 15s

SG: 6 68s

SG: 8 22s

SG: 106 15s

SG: 108 15s

Intersection Level Of Service Report Intersection 28: Ager Rd/Hamilton St

Control Type: Signalized
Analysis Method: HCM 2010
Analysis Period: 15 minutes

Delay (sec / veh): 37.7
Level Of Service: D
Volume to Capacity (v/c): 1,901.841

Intersection Setup

Name	Hamilton St			Hamilton St			Ager Rd.			Ager Rd.		
Approach	Eastbound			Westbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1	1	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	1500.00
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Hamilton St			Hamilton St			Ager Rd.			Ager Rd.		
Base Volume Input [veh/h]	65	158	16	130	83	488	28	388	125	454	290	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.33	1.72	0.00	3.85	2.08	1.91	2.06	1.84	3.33	2.21	2.00	2.63
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	30	51	37	0	84	0	61	0	0	0	0	49
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	95	209	53	130	167	488	89	388	125	454	290	99
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	58	15	36	46	136	25	108	35	126	81	28
Total Analysis Volume [veh/h]	106	232	59	144	186	542	99	431	139	504	322	110
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	8	0	0	4	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	10	0	5	10	0
Maximum Green [s]	0	26	0	0	26	0	0	30	0	10	45	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	4.0	0.0	3.0	4.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	30	0	0	30	0	0	35	0	15	50	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	3.0	0.0	2.0	3.0	0.0
Minimum Recall		No			No			Yes		Yes	Yes	
Maximum Recall		No			No			No		No	No	
Pedestrian Recall		No			No			No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C	L	C	C	L	C
C, Cycle Length [s]	73	73	73	73	73	73	73	73	73
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	3.00	3.00	3.00	0.00	3.00
g_i, Effective Green Time [s]	26	26	26	26	24	24	24	38	38
g / C, Green / Cycle	0.36	0.36	0.36	0.36	0.33	0.33	0.33	0.52	0.52
(v / s)_i Volume / Saturation Flow Rate	1588.26	0.18	0.35	0.38	0.10	0.16	0.16	0.44	0.24
s, saturation flow rate [veh/h]	0	1641	950	1440	952	1866	1712	1133	1783
c, Capacity [veh/h]	99	586	411	514	234	610	559	625	925
d1, Uniform Delay [s]	36.39	18.27	25.63	23.39	29.92	19.61	19.64	15.00	11.11
k, delay calibration	0.50	0.11	0.42	0.48	0.11	0.11	0.11	0.50	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	111.02	0.65	13.23	53.95	1.22	0.60	0.67	10.65	0.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.07	0.50	0.80	1.05	0.42	0.49	0.49	0.81	0.47
d, Delay for Lane Group [s/veh]	147.41	18.93	38.87	77.34	31.14	20.21	20.30	25.66	11.48
Lane Group LOS	F	B	D	F	C	C	C	C	B
Critical Lane Group	Yes	No	No	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	4.75	3.61	6.79	15.63	1.65	3.80	3.53	6.51	3.86
50th-Percentile Queue Length [ft/ln]	118.66	90.25	169.85	390.85	41.32	94.93	88.19	162.73	96.60
95th-Percentile Queue Length [veh/ln]	8.54	6.50	11.07	22.89	2.97	6.83	6.35	10.69	6.96
95th-Percentile Queue Length [ft/ln]	213.59	162.46	276.71	572.14	74.37	170.87	158.74	267.33	173.89

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	147.41	18.93	18.93	38.87	38.87	77.34	31.14	20.24	20.30	25.66	11.48	11.48
Movement LOS	F	B	B	D	D	F	C	C	C	C	B	B
d_A, Approach Delay [s/veh]	53.23			62.78			21.86			19.11		
Approach LOS	D			E			C			B		
d_I, Intersection Delay [s/veh]	37.71											
Intersection LOS	D											
Intersection V/C	1901.841											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 29: Toledo Rd/Belcrest Rd

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 15.2
 Level Of Service: B
 Volume to Capacity (v/c): 0.549

Intersection Setup

Name	Belcrest Rd				Belcrest Rd				Toledo Rd			Toledo Rd		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	1	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	400.0	100.0	100.0	100.0	200.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00				30.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Crosswalk	Yes				No				Yes			Yes		

Volumes

Name	Belcrest Rd				Belcrest Rd				Toledo Rd			Toledo Rd		
Base Volume Input [veh/h]	15	192	383	78	2	93	444	144	157	69	179	56	80	87
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.03	1.83	1.37	0.00	2.00	2.02	0.00	0.00	2.86	0.00	2.86	3.45	2.13
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	8	0	0	0	10	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	192	391	78	2	93	454	144	157	69	179	56	80	87
Peak Hour Factor	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	53	109	22	1	26	126	40	44	19	50	16	22	24
Total Analysis Volume [veh/h]	17	213	434	87	2	103	504	160	174	77	199	62	89	97
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	8				0				20			15		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	2	2	2	2	6	6	6	6	4	4	4	8	8	8
Auxiliary Signal Groups														
Lead / Lag	Lag	Lag	-	-	Lag	Lag	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Maximum Green [s]	40	40	40	40	40	40	40	40	30	30	30	30	30	30
Amber [s]	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	15	15	15	15	15	15	15	15	21	21	21	21	21	21
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall			No				No			No			No	
Maximum Recall			Yes				Yes			No			No	
Pedestrian Recall			No				No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	30.0	30.0	30.0	30.0	0.0	0.0	0.0	0.0	30.0	30.0	30.0	30.0	30.0	30.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	C
C, Cycle Length [s]	72	72	72	72	72	72	72	72	72	72
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	40	40	40	40	40	40	22	22	22	22
g / C, Green / Cycle	0.55	0.55	0.55	0.55	0.55	0.55	0.31	0.31	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.30	0.14	0.14	0.12	0.19	0.19	0.14	0.04	0.12	0.15
s, saturation flow rate [veh/h]	760	1866	1750	874	1862	1694	1217	1847	1602	1603
c, Capacity [veh/h]	414	1032	968	487	1031	937	328	570	494	557
d1, Uniform Delay [s]	17.81	8.42	8.43	12.72	8.85	8.88	27.85	18.04	19.74	20.24
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.30	0.61	0.66	1.01	0.88	0.99	1.34	0.11	0.53	0.56
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.56	0.26	0.26	0.22	0.34	0.34	0.53	0.14	0.40	0.45
d, Delay for Lane Group [s/veh]	23.11	9.03	9.09	13.74	9.73	9.87	29.19	18.15	20.27	20.80
Lane Group LOS	C	A	A	B	A	A	C	B	C	C
Critical Lane Group	Yes	No	No	No	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.54	2.08	1.98	1.13	2.83	2.64	2.85	0.90	2.57	3.28
50th-Percentile Queue Length [ft/ln]	88.47	51.89	49.42	28.14	70.76	66.03	71.23	22.53	64.33	82.09
95th-Percentile Queue Length [veh/ln]	6.37	3.74	3.56	2.03	5.09	4.75	5.13	1.62	4.63	5.91
95th-Percentile Queue Length [ft/ln]	159.24	93.40	88.95	50.66	127.37	118.86	128.22	40.55	115.79	147.77

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	23.11	23.11	9.05	9.09	13.74	13.74	9.77	9.87	29.19	18.15	20.27	20.80	20.80	20.80
Movement LOS	C	C	A	A	B	B	A	A	C	B	C	C	C	C
d_A, Approach Delay [s/veh]	13.36				10.33				23.36			20.80		
Approach LOS	B				B				C			C		
d_I, Intersection Delay [s/veh]	15.17													
Intersection LOS	B													
Intersection V/C	0.549													

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SG: 2 45s

SG: 102 22s

SG: 6 45s

SG: 106 22s

SG: 4 35s

SG: 104 28s

SG: 8 35s

Intersection Level Of Service Report

Intersection 30: Adelphi Rd/Belcrest Rd

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 35.2
 Level Of Service: D
 Volume to Capacity (v/c): 0.873

Intersection Setup

Name	Belcrest Rd			Underwood St			Adelphi Rd				Adelphi Rd		
Approach	Northeastbound			Southwestbound			Northwestbound				Southeastbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	150.0	100.0	100.0	100.0	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Crosswalk	No			Yes			Yes				Yes		

Volumes

Name	Belcrest Rd			Underwood St			Adelphi Rd				Adelphi Rd		
Base Volume Input [veh/h]	693	0	68	10	8	1	2	17	1150	0	0	819	650
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.98	0.00	0.00	1.99	1.94
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	8	0	0	0	0	0	0	0	7	0	0	18	10
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	701	0	68	10	8	1	2	17	1157	0	0	837	660
Peak Hour Factor	0.9000	1.0000	1.0000	0.9000	0.9000	0.9000	0.900	0.900	0.900	1.000	1.0000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	195	0	17	3	2	0	1	5	321	0	0	233	183
Total Analysis Volume [veh/h]	779	0	68	11	9	1	2	19	1286	0	0	930	733
Presence of On-Street Parking	No		No	No		No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			1				5		
Bicycle Volume [bicycles/h]	0			0			0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	122
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss
Signal group	4	4	0	8	8	8	5	5	2	0	0	6	6
Auxiliary Signal Groups													
Lead / Lag	Lead	-	-	Lag	-	-	Lead	Lead	-	-	-	-	-
Minimum Green [s]	4	4	0	4	4	4	4	4	4	0	0	4	4
Maximum Green [s]	30	30	0	17	17	17	11	11	60	0	0	46	46
Amber [s]	4.0	4.0	0.0	4.0	4.0	4.0	3.5	3.5	4.0	0.0	0.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	0.5	0.5	1.0	0.0	0.0	1.0	1.0
Split [s]	35	35	0	22	22	22	15	15	65	0	0	50	50
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	0.0	3.0	3.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk	No				No				No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	0.0	3.0	3.0	3.0	2.0	2.0	3.0	0.0	0.0	2.0	2.0
Minimum Recall	No				No			No	No			No	
Maximum Recall	No				No			No	Yes			Yes	
Pedestrian Recall	No				No			No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	30.0	30.0	30.0	0.0	0.0	30.0	30.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C
C, Cycle Length [s]	104	104	104	104	104	104	104
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	0.00	3.00	2.00	2.00
g_i, Effective Green Time [s]	27	27	2	60	60	55	55
g / C, Green / Cycle	0.26	0.26	0.02	0.58	0.58	0.53	0.53
(v / s)_i Volume / Saturation Flow Rate	0.24	0.24	0.01	0.05	0.36	0.45	0.52
s, saturation flow rate [veh/h]	1772	1775	1836	402	3547	1863	1612
c, Capacity [veh/h]	466	467	34	179	2038	982	850
d1, Uniform Delay [s]	37.18	37.30	50.87	24.18	14.84	21.07	24.09
k, delay calibration	0.31	0.31	0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.99	17.28	16.15	1.34	1.50	8.94	25.97
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.91	0.61	0.12	0.63	0.85	0.98
d, Delay for Lane Group [s/veh]	53.18	54.58	67.02	25.51	16.34	30.00	50.06
Lane Group LOS	D	D	E	C	B	C	D
Critical Lane Group	No	Yes	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	12.27	12.60	0.70	0.27	9.92	18.61	24.63
50th-Percentile Queue Length [ft/ln]	306.80	314.98	17.44	6.66	248.08	465.35	615.71
95th-Percentile Queue Length [veh/ln]	18.02	18.42	1.26	0.48	15.09	25.69	32.77
95th-Percentile Queue Length [ft/ln]	450.43	460.52	31.39	11.99	377.23	642.23	819.18

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	53.82	0.00	54.58	67.02	67.02	67.02	25.51	25.51	16.34	0.00	0.00	32.13	50.06
Movement LOS	D		D	E	E	E	C	C	B			C	D
d_A, Approach Delay [s/veh]	53.88			67.02			16.48			40.03			
Approach LOS	D			E			B			D			
d_I, Intersection Delay [s/veh]	35.22												
Intersection LOS	D												
Intersection V/C	0.873												

Sequence

Ring 1	-	2	-	4	-	8	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 31: Adelphi Rd/Campus Dr

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 180.6
 Level Of Service: F
 Volume to Capacity (v/c): 1.208

Intersection Setup

Name	Adelphi Rd.			Adelphi Rd.			Campus Dr.			Campus Dr.		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	0	0	1	0	0	0
Pocket Length [ft]	350.00	100.00	500.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Adelphi Rd.			Adelphi Rd.			Campus Dr.			Campus Dr.		
Base Volume Input [veh/h]	242	1536	43	174	1132	0	0	111	340	125	169	355
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.27	2.08	2.27	2.00	2.05	0.00	0.00	2.00	2.21	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	15	0	0	28	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	242	1551	43	174	1160	0	0	111	340	125	169	355
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	1.0000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	67	431	12	48	322	0	0	31	94	35	47	99
Total Analysis Volume [veh/h]	269	1723	48	193	1289	0	0	123	378	139	188	394
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	248
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Overlap	Permiss	Permiss	Overlap	Overlap	Permiss	Permiss	Split	Split	Split	Split	Split
Signal group	3	8	8	1	1	0	0	2	2	6	6	6
Auxiliary Signal Groups	3,8			1,7	1,4							
Lead / Lag	Lag	-	-	Lag	-	-	-	-	-	Lag	-	-
Minimum Green [s]	5	8	8	15	15	0	0	25	25	5	5	5
Maximum Green [s]	30	60	60	40	40	0	0	60	60	30	30	30
Amber [s]	4.0	4.0	4.0	4.0	4.0	0.0	0.0	4.5	4.5	4.5	4.5	4.5
All red [s]	1.0	2.0	2.0	1.0	1.0	0.0	0.0	1.5	1.5	1.5	1.5	1.5
Split [s]	35	66	66	50	50	0	0	66	66	36	36	36
Vehicle Extension [s]	3.0	3.5	3.5	3.0	3.0	0.0	0.0	4.0	4.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	4.0	4.0	3.0	3.0	0.0	0.0	4.0	4.0	4.0	4.0	4.0
Minimum Recall	Yes	Yes		Yes	Yes			Yes			Yes	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	30.0	30.0	30.0	30.0	30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	R	C	C	R
C, Cycle Length [s]	215	215	215	215	215	215	215	215	215	215
L, Total Lost Time per Cycle [s]	5.50	6.00	6.00	5.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.00	4.00	0.00	0.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	94	60	60	108	115	54	54	30	30	30
g / C, Green / Cycle	0.44	0.28	0.28	0.50	0.53	0.25	0.25	0.14	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.38	0.34	0.03	0.06	0.36	0.03	0.24	0.00	0.11	0.25
s, saturation flow rate [veh/h]	702	5070	1579	3445	3545	3547	1580	0	1695	1583
c, Capacity [veh/h]	323	1414	440	1732	1891	893	398	33	236	221
d1, Uniform Delay [s]	83.05	77.56	57.68	28.19	36.82	62.40	79.17	107.56	89.59	92.56
k, delay calibration	0.50	0.13	0.13	0.11	0.50	0.15	0.36	0.11	0.27	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	21.43	100.14	0.13	0.03	2.01	0.10	28.05	1434.06	13.71	370.65
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	1.22	0.11	0.11	0.68	0.14	0.95	4.15	0.80	1.78
d, Delay for Lane Group [s/veh]	104.48	177.70	57.81	28.22	38.83	62.50	107.22	1541.62	103.30	463.21
Lane Group LOS	F	F	E	C	D	E	F	F	F	F
Critical Lane Group	No	Yes	No	Yes	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	11.54	39.07	1.98	2.70	25.36	2.66	23.76	15.23	11.11	35.12
50th-Percentile Queue Length [ft/ln]	288.61	976.64	49.54	67.60	634.12	66.53	593.91	380.66	277.66	877.94
95th-Percentile Queue Length [veh/ln]	17.12	55.45	3.57	4.87	33.62	4.79	31.75	26.99	16.57	54.64
95th-Percentile Queue Length [ft/ln]	427.92	1386.21	89.17	121.68	840.61	119.75	793.75	674.69	414.29	1366.10

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	104.48	177.70	57.81	28.22	38.83	0.00	0.00	62.50	107.22	1541.62	103.30	463.21
Movement LOS	F	F	E	C	D			E	F	F	F	F
d_A, Approach Delay [s/veh]	165.23			37.45			96.24			577.27		
Approach LOS	F			D			F			F		
d_I, Intersection Delay [s/veh]	180.65											
Intersection LOS	F											
Intersection V/C	1.208											

Sequence

Ring 1	1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	-	8	7	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report Intersection 32: Adelphi Rd/Toledo Rd

Control Type: Signalized
Analysis Method: HCM 2010
Analysis Period: 15 minutes

Delay (sec / veh): 9.7
Level Of Service: A
Volume to Capacity (v/c): 0.501

Intersection Setup

Name	Adelphi Rd			Adelphi Rd		Toledo Rd	
Approach	Northbound			Southbound		Eastbound	
Lane Configuration							
Turning Movement	U-turn	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	1	0	1
Pocket Length [ft]	150.00	100.00	100.00	100.00	100.00	100.00	200.00
Speed [mph]	45.00			30.00		30.00	
Grade [%]	0.00			0.00		0.00	
Crosswalk	Yes			No		Yes	

Volumes

Name	Adelphi Rd			Adelphi Rd		Toledo Rd	
Base Volume Input [veh/h]	6	122	1087	758	118	169	90
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.97	2.01	2.05	1.88	2.38	1.96
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	7	18	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	122	1094	776	118	169	90
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	34	304	216	33	47	25
Total Analysis Volume [veh/h]	7	136	1216	862	131	188	100
Presence of On-Street Parking	No		No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	6			0		6	
Bicycle Volume [bicycles/h]	0			0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	20.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	ProtectedP	Permissive	Permissive	Permissive	Split	Split
Signal group	5	5	2	6	6	4	4
Auxiliary Signal Groups							
Lead / Lag	Lead	Lead	-	-	-	Lag	-
Minimum Green [s]	4	4	4	4	4	4	4
Maximum Green [s]	15	15	65	45	45	25	25
Amber [s]	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	30	30	30	30	30	30	30
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	7	7	7	7	7
Pedestrian Clearance [s]	0	0	6	6	6	13	13
Rest In Walk			No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall		No	No	No		No	
Maximum Recall		No	Yes	Yes		No	
Pedestrian Recall		No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	30.0	30.0	30.0	30.0	30.0	30.0	30.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	87	87	87	87	87	87
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	65	65	56	56	12	12
g / C, Green / Cycle	0.74	0.74	0.64	0.64	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.19	0.34	0.24	0.08	0.11	0.06
s, saturation flow rate [veh/h]	766	3546	3545	1578	1767	1564
c, Capacity [veh/h]	612	2637	2261	1006	251	222
d1, Uniform Delay [s]	4.02	4.38	7.57	6.25	36.00	34.37
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.89	0.58	0.49	0.27	4.43	1.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.23	0.46	0.38	0.13	0.75	0.45
d, Delay for Lane Group [s/veh]	4.91	4.96	8.06	6.52	40.43	35.79
Lane Group LOS	A	A	A	A	D	D
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.56	2.66	3.50	0.91	4.09	2.01
50th-Percentile Queue Length [ft/ln]	14.10	66.62	87.50	22.86	102.14	50.13
95th-Percentile Queue Length [veh/ln]	1.02	4.80	6.30	1.65	7.35	3.61
95th-Percentile Queue Length [ft/ln]	25.38	119.92	157.50	41.14	183.85	90.24

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	4.91	4.91	4.96	8.06	6.52	40.43	35.79
Movement LOS	A	A	A	A	A	D	D
d_A, Approach Delay [s/veh]	4.95			7.86		38.82	
Approach LOS	A			A		D	
d_I, Intersection Delay [s/veh]	9.74						
Intersection LOS	A						
Intersection V/C	0.501						

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 33: Hamilton St/40th Pl/39th Ave

Control Type: Roundabout
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 8.9
 Level Of Service: A

Intersection Setup

Name	Magruder Park Ent				39th Ave				Hamilton St			
Approach	Northbound				Southbound				Eastbound			
Lane Configuration												
Turning Movement	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Left2	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00				30.00				35.00			
Grade [%]	0.00				0.00				0.00			
Crosswalk	Yes				Yes				Yes			

Volumes

Name	Magruder Park Ent				39th Ave				Hamilton St			
Base Volume Input [veh/h]	18	8	0	2	0	21	16	46	22	0	418	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.85	0.00	2.15	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	7	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	8	0	2	0	21	16	46	22	0	425	25
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	2	0	1	0	6	4	13	6	0	118	7
Total Analysis Volume [veh/h]	20	9	0	2	0	23	18	51	24	0	472	28
Pedestrian Volume [ped/h]	0				0				0			

Intersection Settings

Number of Conflicting Circulating Lanes	1				1				1			
Circulating Flow Rate [veh/h]	530				609				52			
Exiting Flow Rate [veh/h]	57				49				649			
Demand Flow Rate [veh/h]	18	8	0	2	0	21	16	46	22	0	425	25
Adjusted Demand Flow Rate [veh/h]	20	9	0	2	0	23	18	51	24	0	472	28

Lanes

Overwrite Calculated Critical Headway	No				No				No			
User-Defined Critical Headway [s]	4.00				4.00				4.00			
Overwrite Calculated Follow-Up Time	No				No				No			
User-Defined Follow-Up Time [s]	3.00				3.00				3.00			
A (intercept)	1130.00				1130.00				1130.00			
B (coefficient)	0.00100				0.00100				0.00100			
HV Adjustment Factor	1.00				1.00				0.98			
Entry Flow Rate [veh/h]	31				92				536			
Capacity of Entry and Bypass Lanes [veh/h]	666				615				1073			
Pedestrian Impedance	1.00				1.00				1.00			
Capacity per Entry Lane [veh/h]	666				615				1051			
X, volume / capacity	0.05				0.15				0.50			

Movement, Approach, & Intersection Results

Lane LOS	A	A	A
95th-Percentile Queue Length [veh]	0.15	0.52	2.86
95th-Percentile Queue Length [ft]	3.66	13.10	71.53
Approach Delay [s/veh]	5.91	7.64	9.28
Approach LOS	A	A	A
Intersection Delay [s/veh]	8.87		
Intersection LOS	A		

Intersection Setup

Name	Hamilton St				Gallatin St			
Approach	Westbound				Northwestbound			
Lane Configuration								
Turning Movement	Left2	Left	Thru	Right	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00				35.00			
Grade [%]	0.00				0.00			
Crosswalk	Yes				Yes			

Volumes

Name	Hamilton St				Gallatin St			
Base Volume Input [veh/h]	0	0	67	5	10	431	8	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.20	0.00	0.00	2.18	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	12	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	67	5	10	443	8	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	19	1	3	123	2	0
Total Analysis Volume [veh/h]	0	0	74	6	11	492	9	0
Pedestrian Volume [ped/h]	0				0			

Intersection Settings

Number of Conflicting Circulating Lanes	1				1			
Circulating Flow Rate [veh/h]	577				54			
Exiting Flow Rate [veh/h]	0				507			
Demand Flow Rate [veh/h]	0	0	67	5	10	443	8	0
Adjusted Demand Flow Rate [veh/h]	0	0	74	6	11	492	9	0

Lanes

Overwrite Calculated Critical Headway	No				No			
User-Defined Critical Headway [s]	4.00				4.00			
Overwrite Calculated Follow-Up Time	No				No			
User-Defined Follow-Up Time [s]	3.00				3.00			
A (intercept)	1130.00				1130.00			
B (coefficient)	0.00100				0.00100			
HV Adjustment Factor	0.98				0.98			
Entry Flow Rate [veh/h]	82				523			
Capacity of Entry and Bypass Lanes [veh/h]	635				1071			
Pedestrian Impedance	1.00				1.00			
Capacity per Entry Lane [veh/h]	623				1049			
X, volume / capacity	0.13				0.49			

Movement, Approach, & Intersection Results

Lane LOS	A				A			
95th-Percentile Queue Length [veh]	0.44				2.75			
95th-Percentile Queue Length [ft]	11.00				68.73			
Approach Delay [s/veh]	7.28				9.10			
Approach LOS	A				A			
Intersection Delay [s/veh]	8.87							
Intersection LOS	A							

Intersection Level Of Service Report

Intersection 4302: New Intersection

Control Type: Two-way stop
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 14.9
 Level Of Service: B
 Volume to Capacity (v/c): 0.000

Intersection Setup

Name							Queensbury			Queensbury		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name							Queensbury			Queensbury		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	363	0	0	319	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	363	0	0	319	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	91	0	0	80	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	363	0	0	319	0
Pedestrian Volume [ped/h]	0			0			0			0		

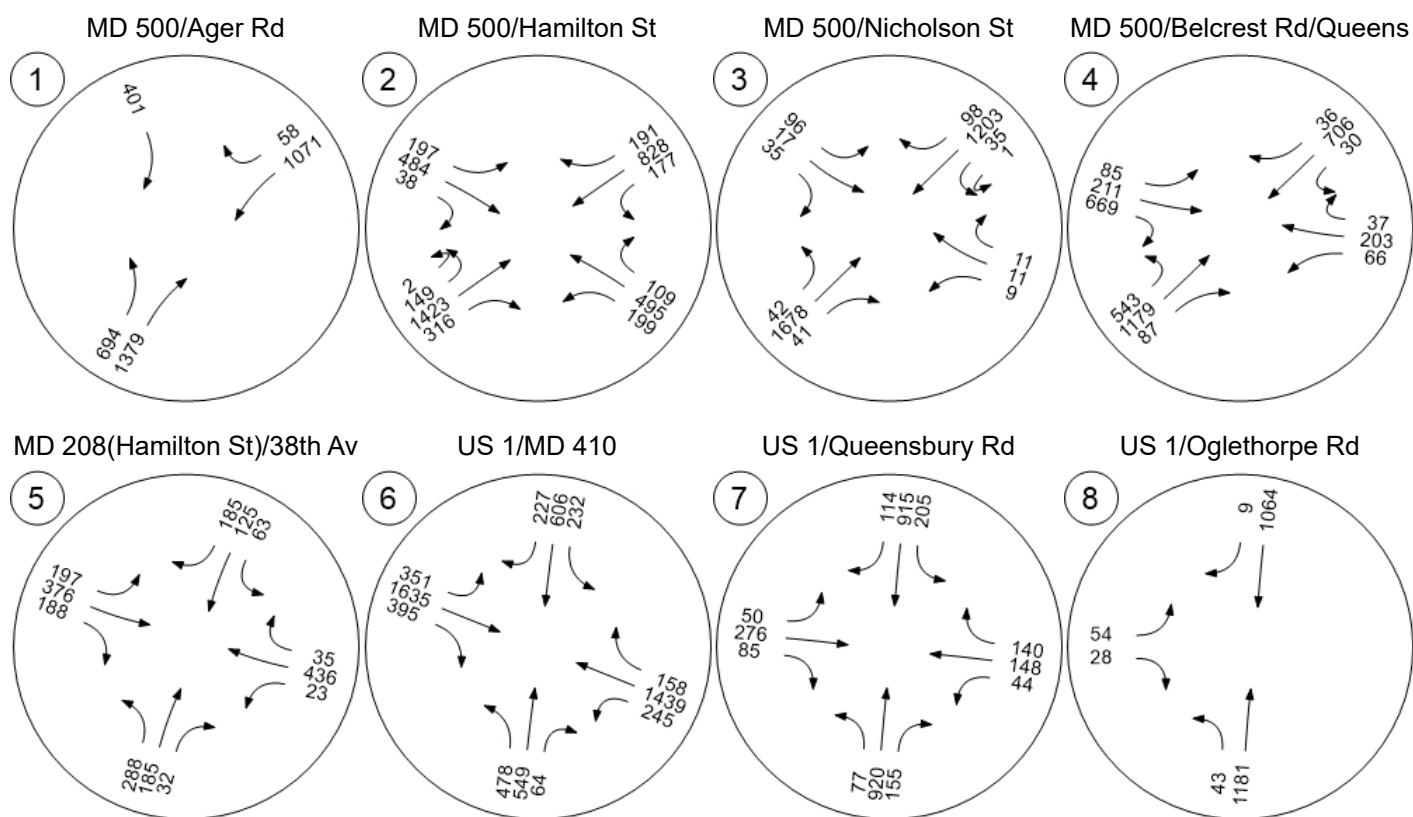
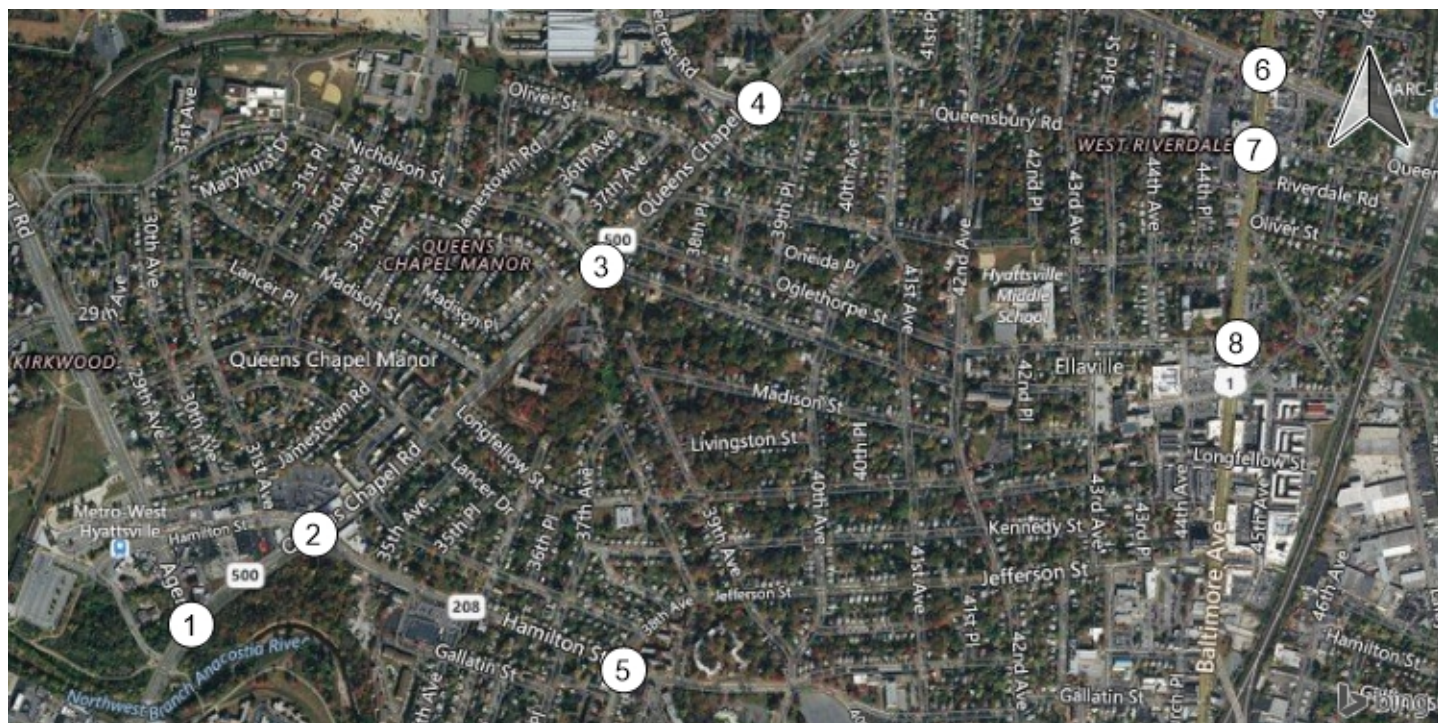
Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

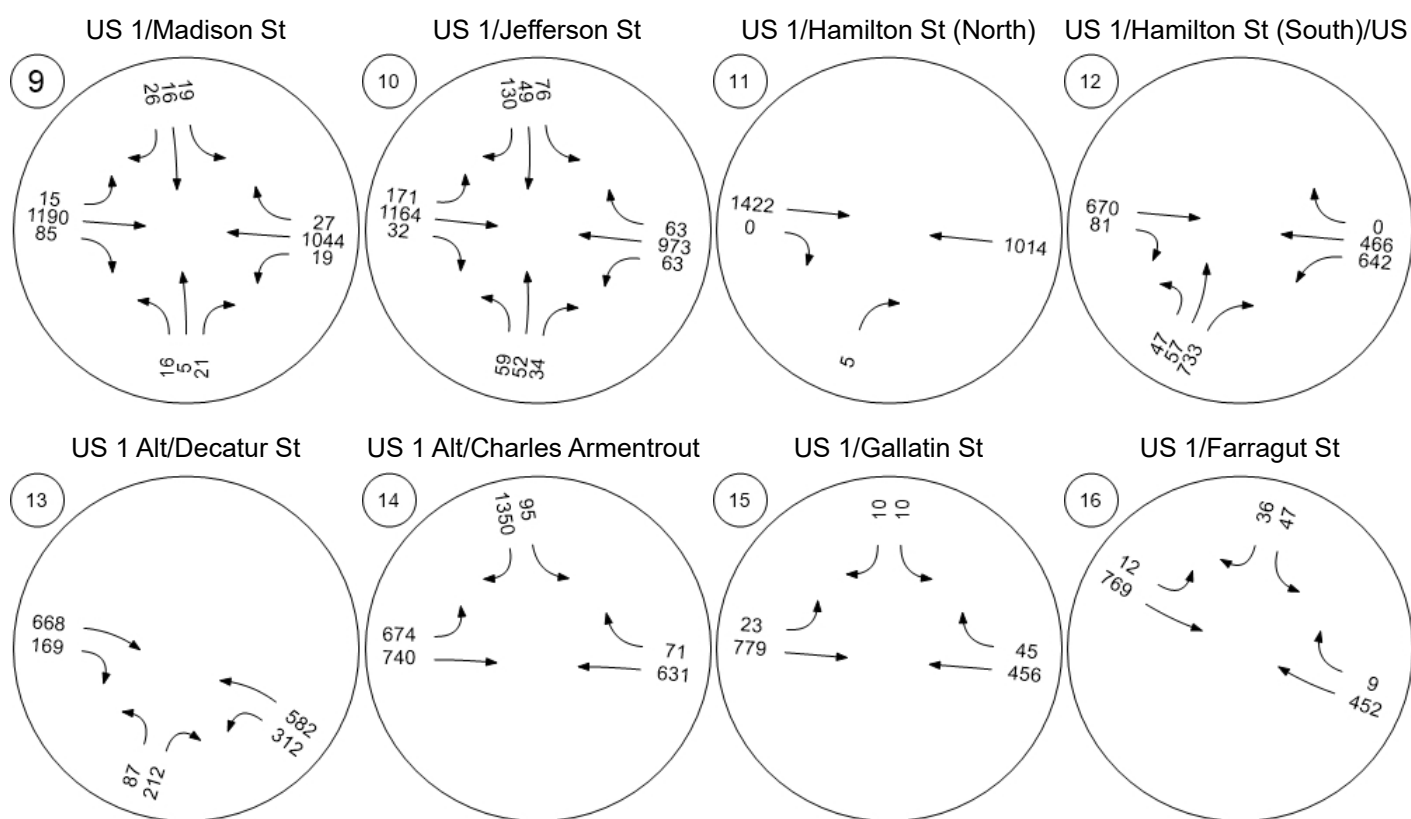
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	14.89	14.67	10.28	14.89	14.67	9.99	7.90	0.00	0.00	8.01	0.00	0.00
Movement LOS	B	B	B	B	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	13.28			13.19			0.00			0.00		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	0.00											
Intersection LOS	B											

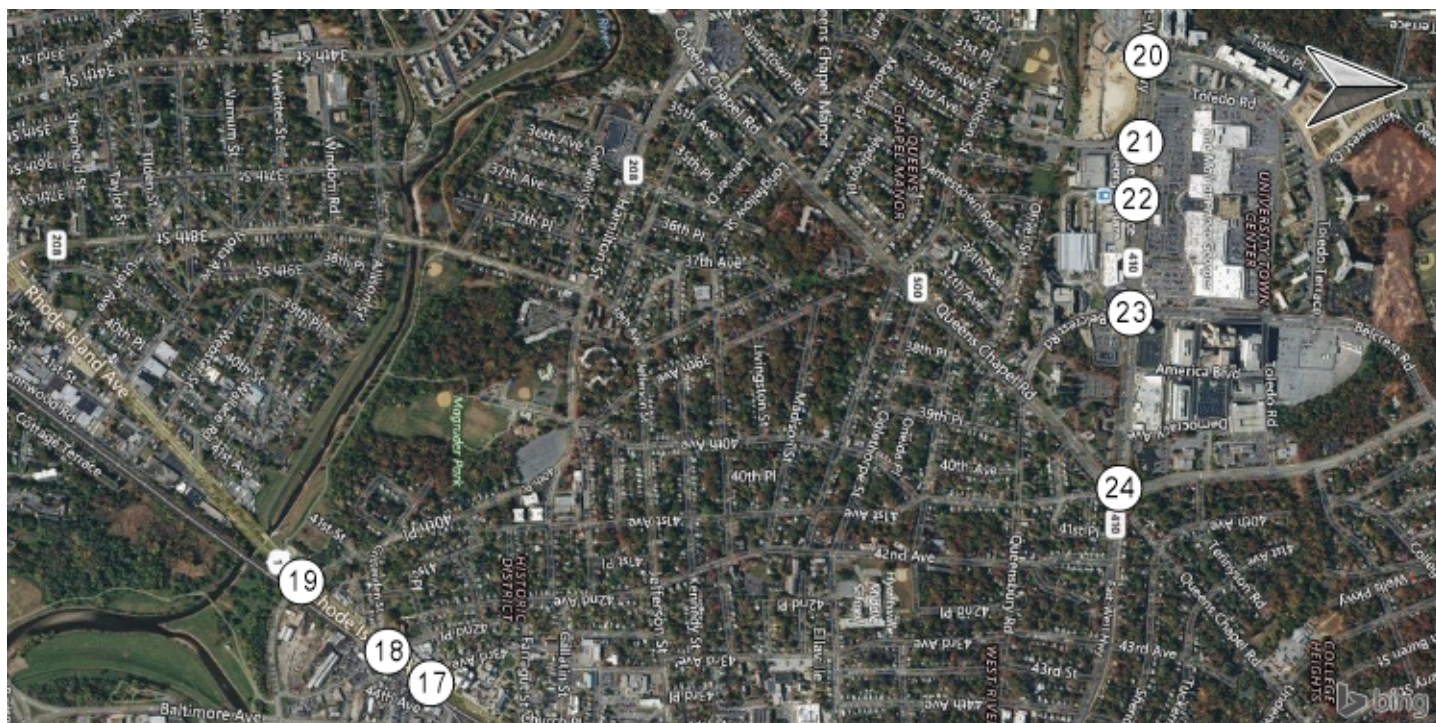
Traffic Volume - Future Total Volume



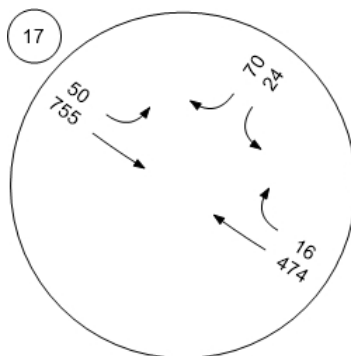
Traffic Volume - Future Total Volume



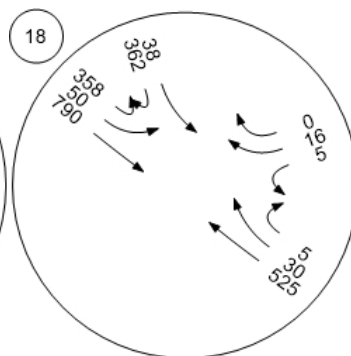
Traffic Volume - Future Total Volume



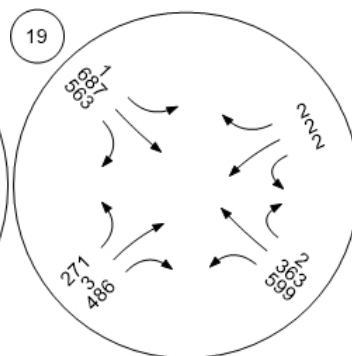
US 1/43rd Ave



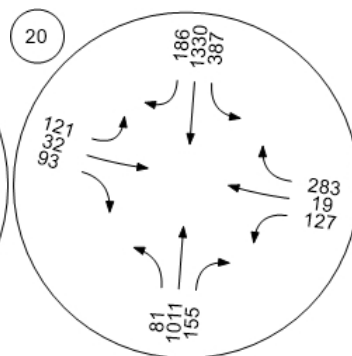
US 1/42nd Place/Crittendon



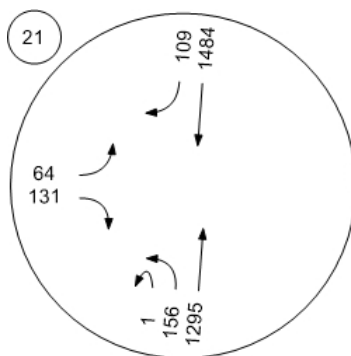
US 1/41st Place/Charles Arm



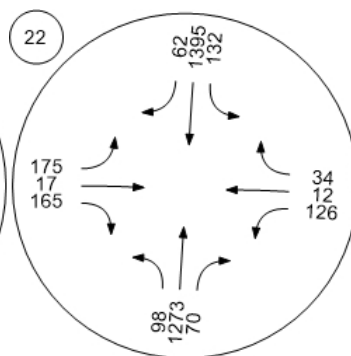
MD 410/Toledo Terrace



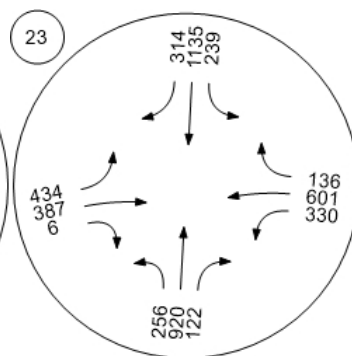
MD 410/Editors Park Dr



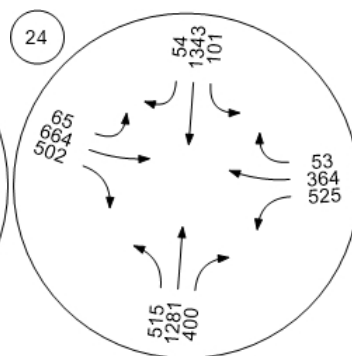
MD 410/Prince George's Plaz



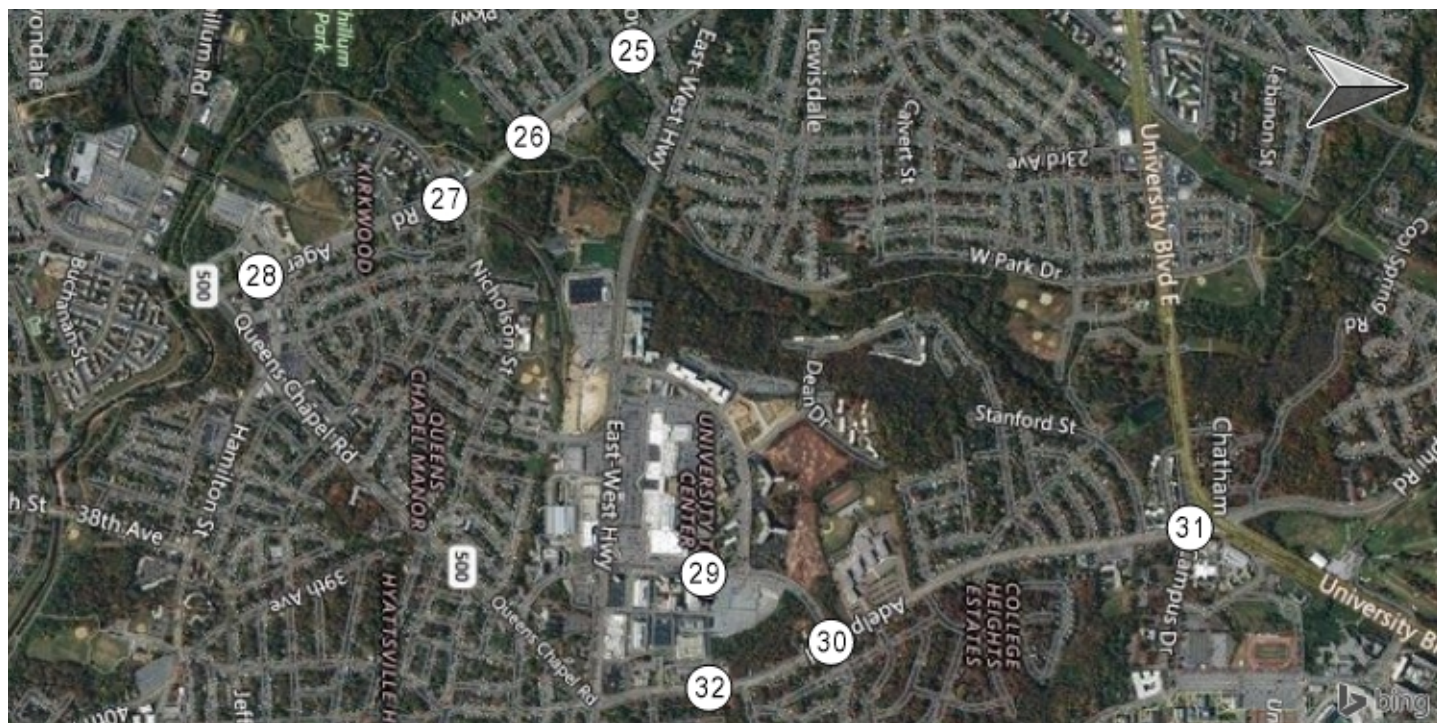
MD 410/Belcrest Rd



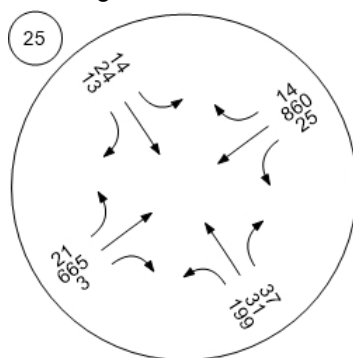
MD 410/MD 500/Adelphi Rd



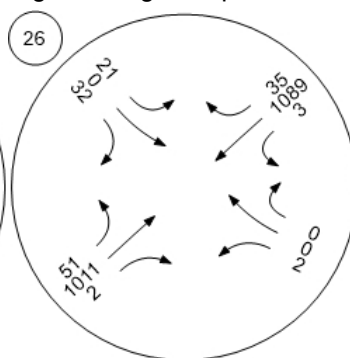
Traffic Volume - Future Total Volume



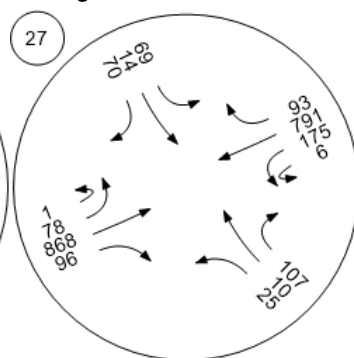
Ager Rd/23rd Ave



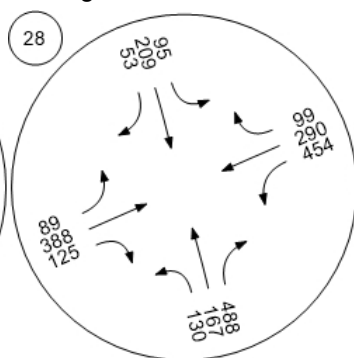
Ager Rd/Oglethorpe St/Scho



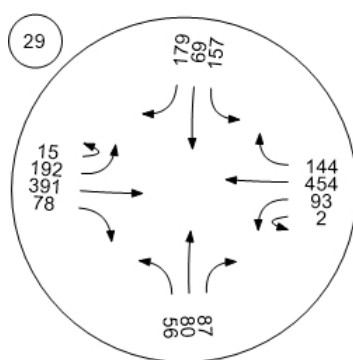
Ager Rd/Nicholson St



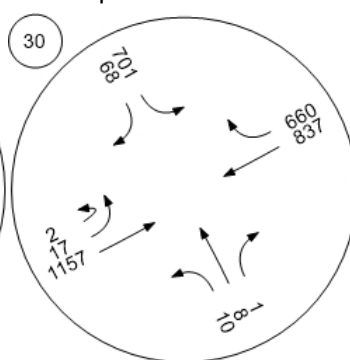
Ager Rd/Hamilton St



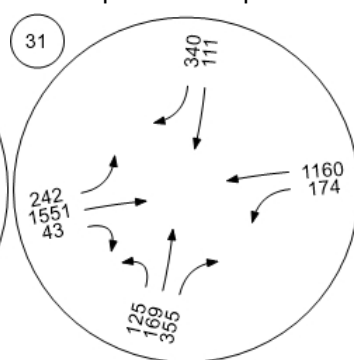
Toledo Rd/Belcrest Rd



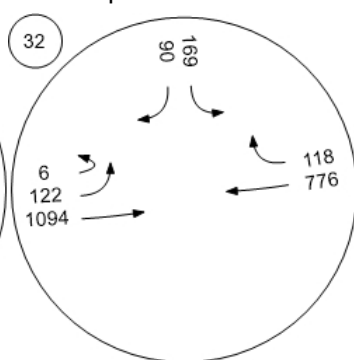
Adelphi Rd/Belcrest Rd



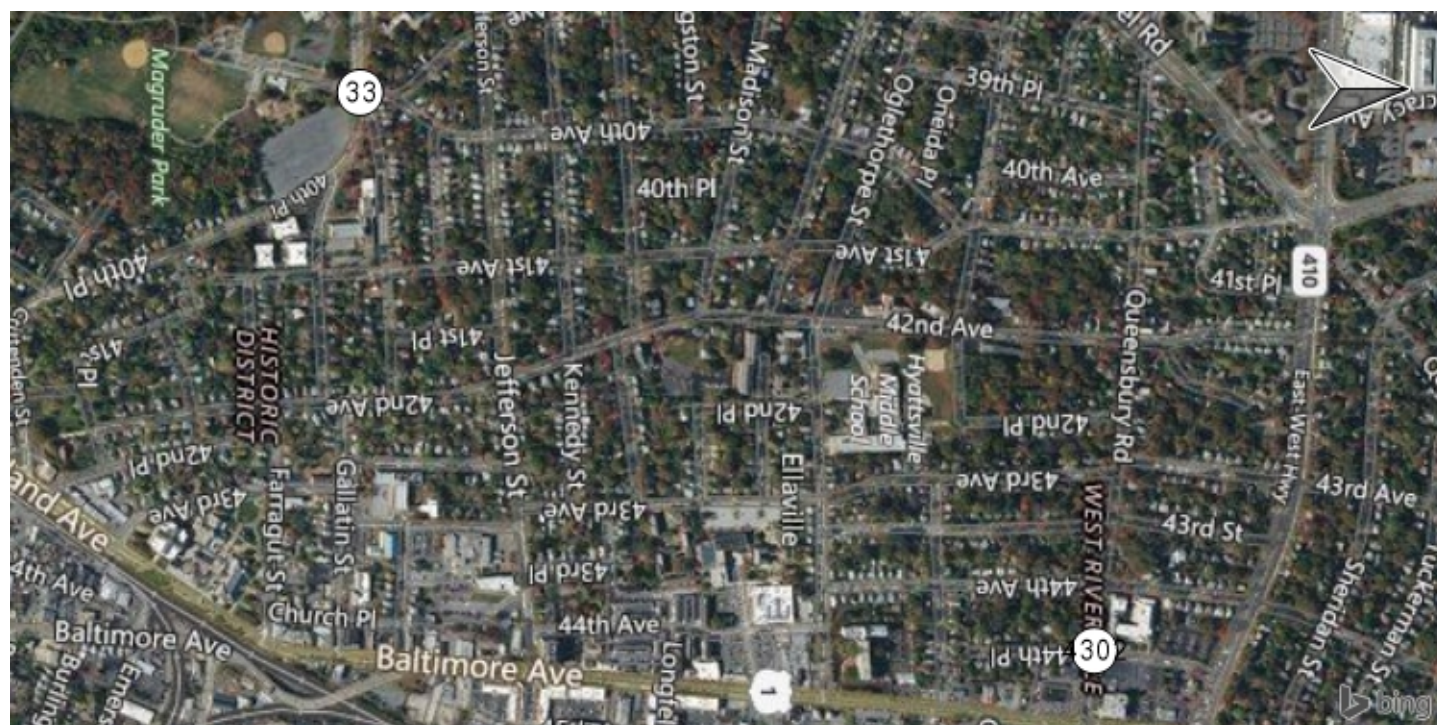
Adelphi Rd/Campus Dr



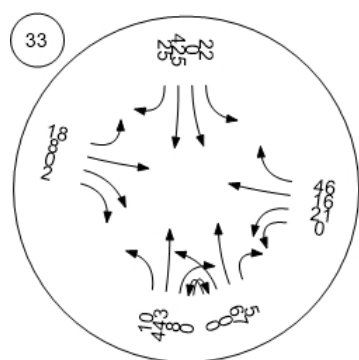
Adelphi Rd/Toledo Rd



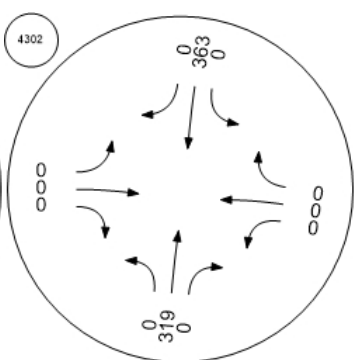
Traffic Volume - Future Total Volume



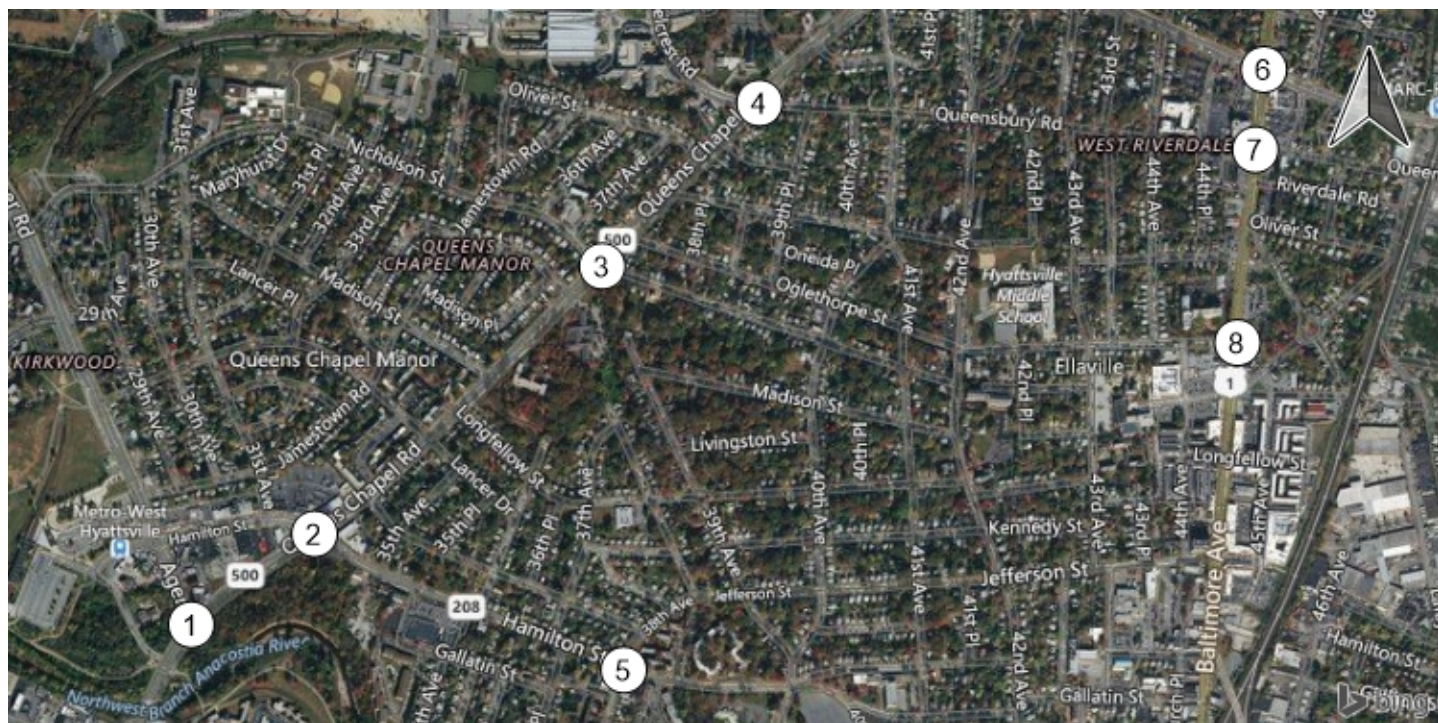
Hamilton St/40th Pl/39th Ave



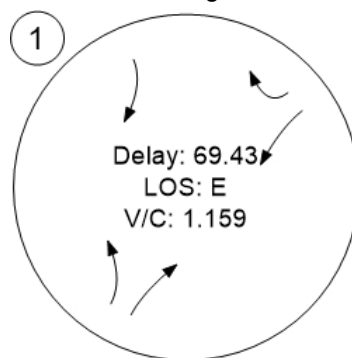
New Intersection



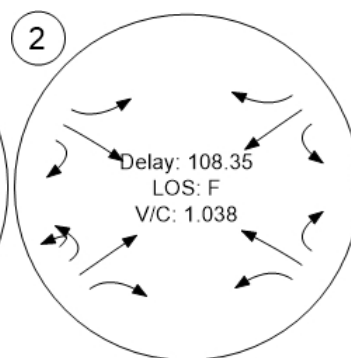
Traffic Conditions



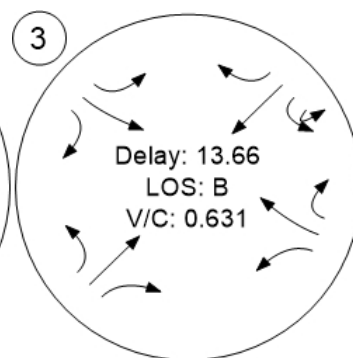
MD 500/Ager Rd



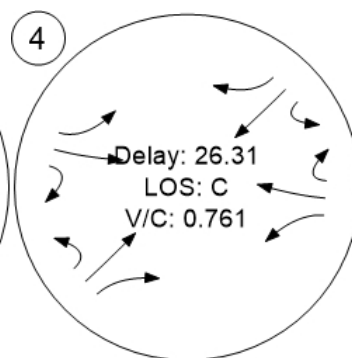
MD 500/Hamilton St



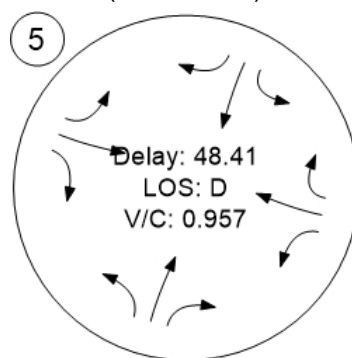
MD 500/Nicholson St



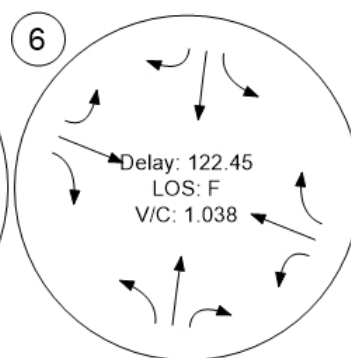
MD 500/Belcrest Rd/Queens



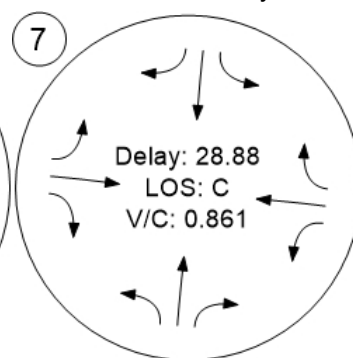
MD 208(Hamilton St)/38th Av



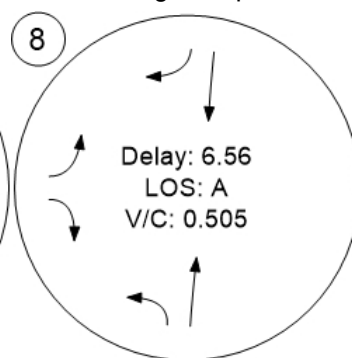
US 1/MD 410



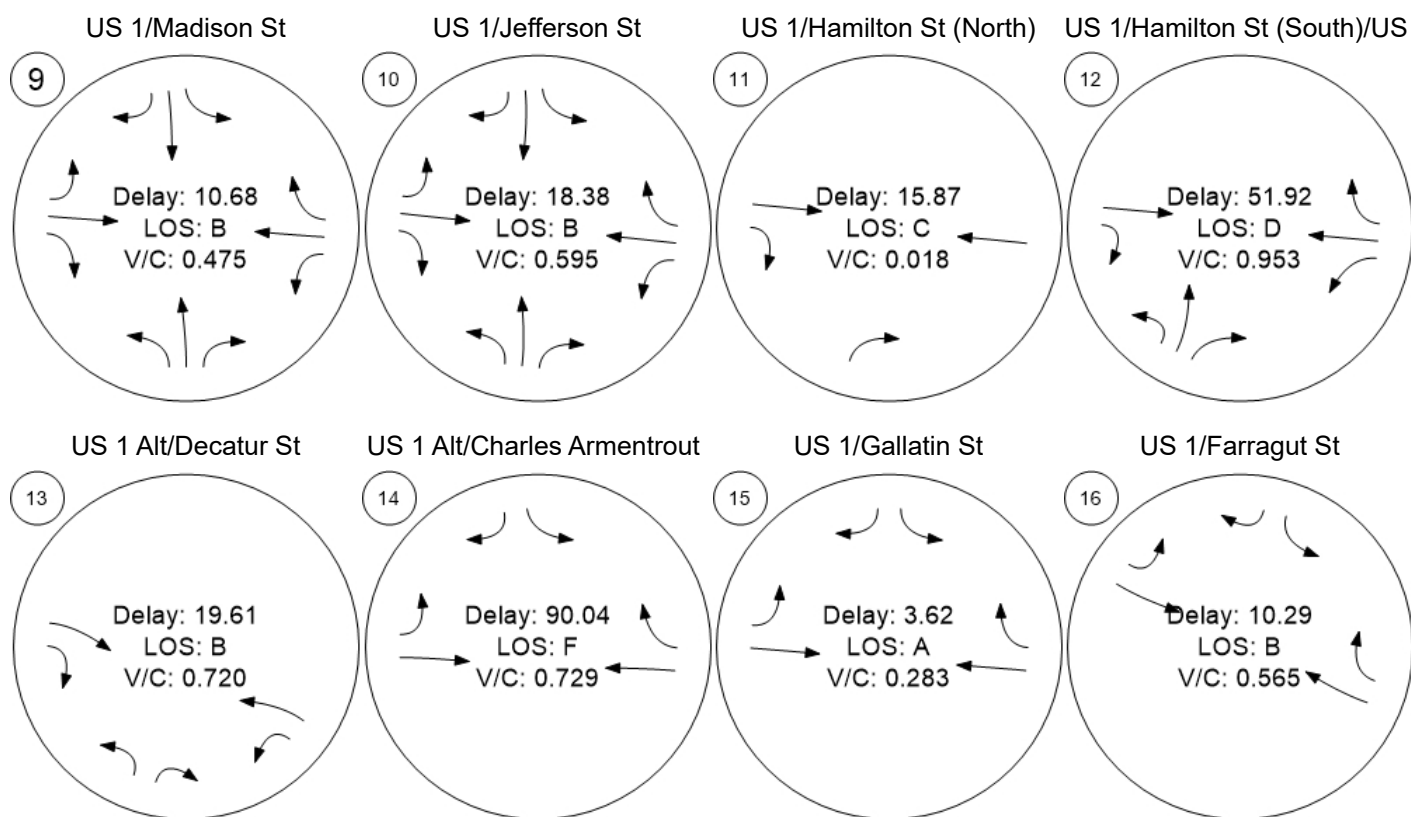
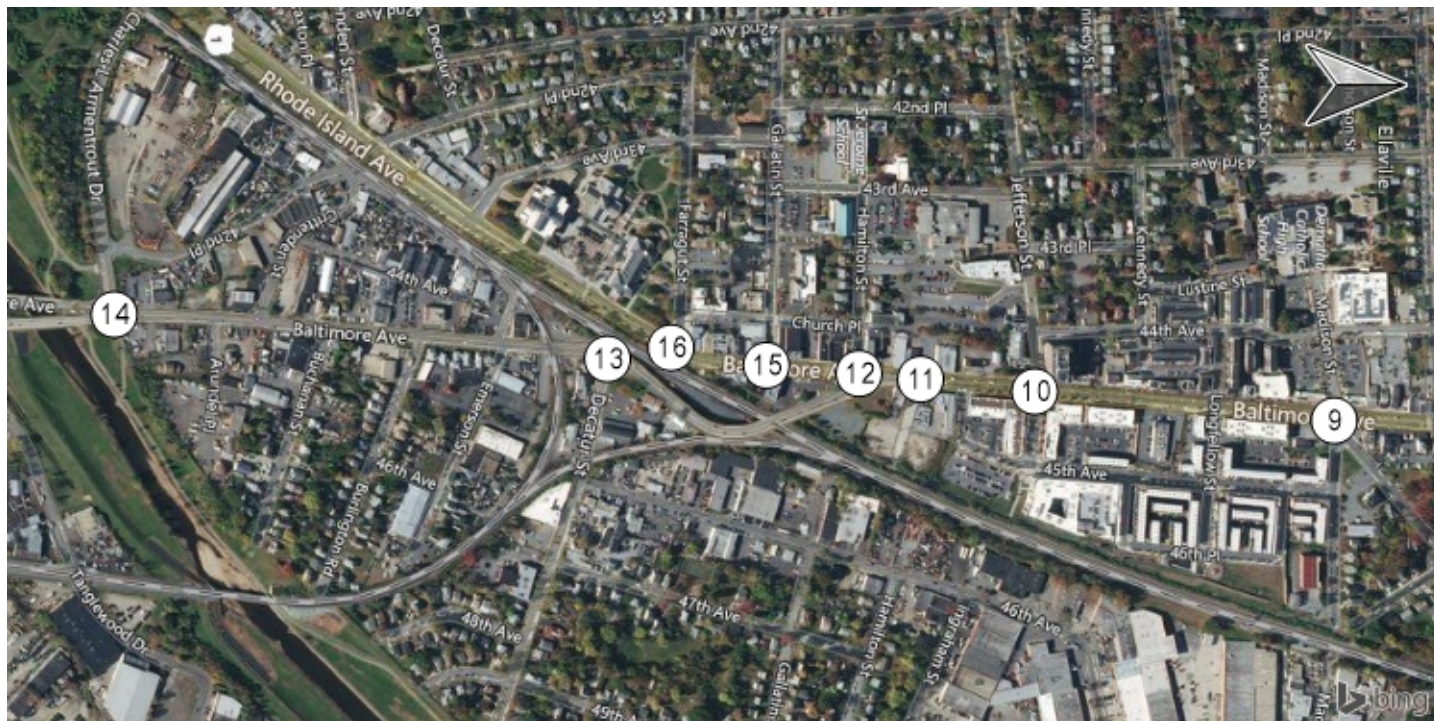
US 1/Queensbury Rd



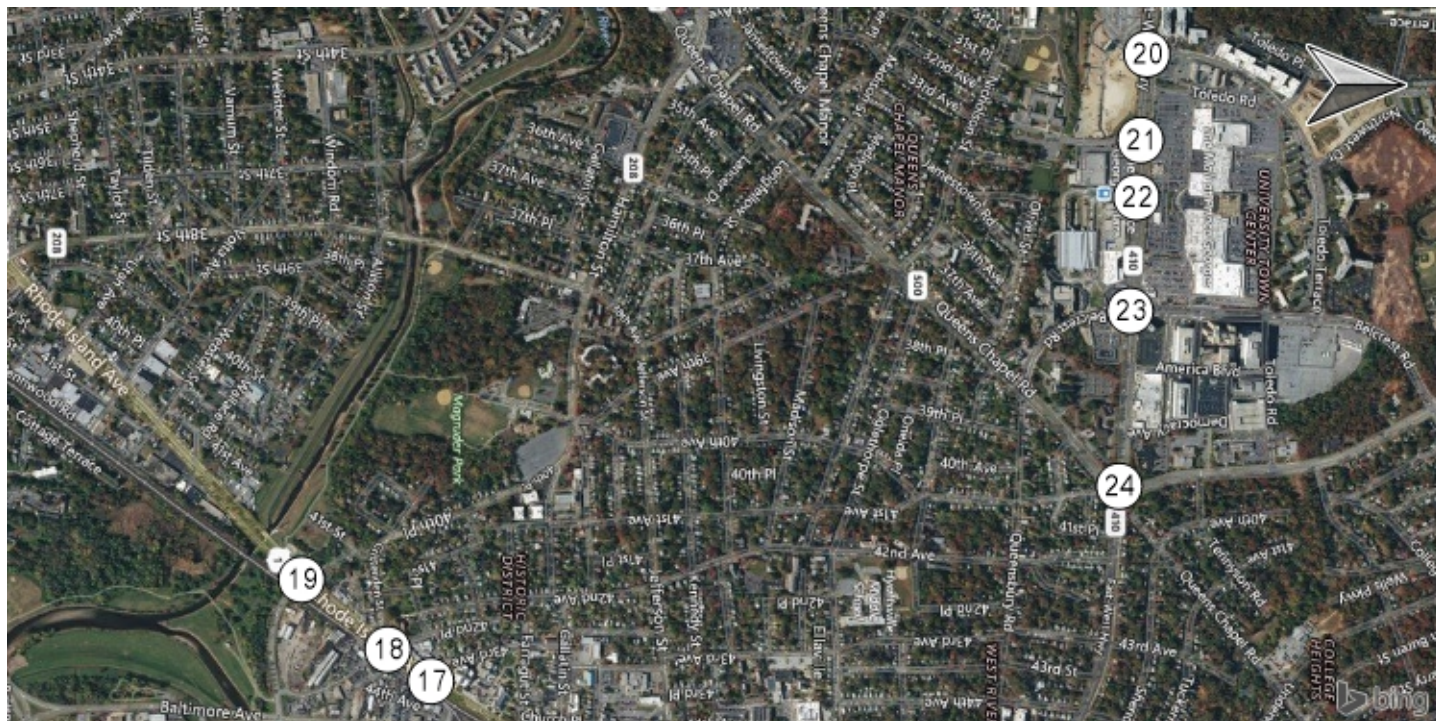
US 1/Oglethorpe Rd



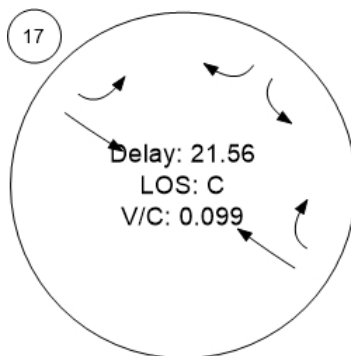
Traffic Conditions



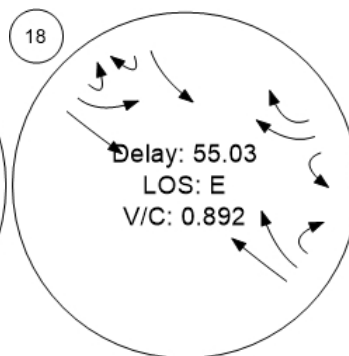
Traffic Conditions



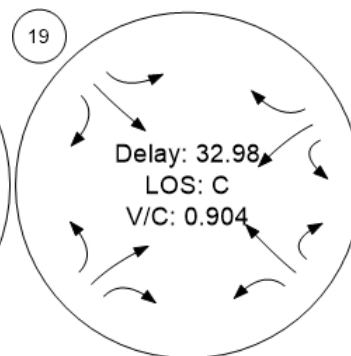
US 1/43rd Ave



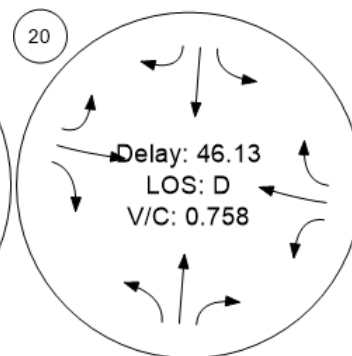
US 1/42nd Place/Crittendon



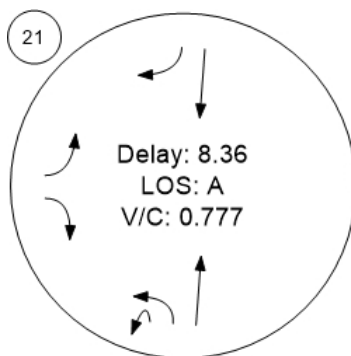
US 1/41st Place/Charles Arm



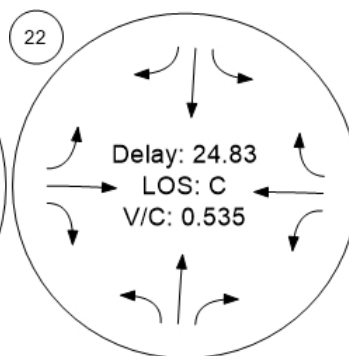
MD 410/Toledo Terrace



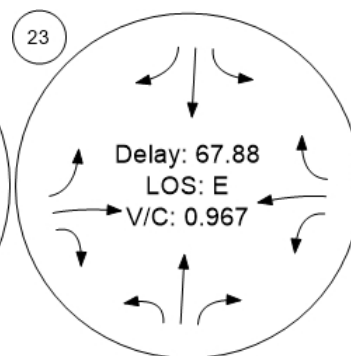
MD 410/Editors Park Dr



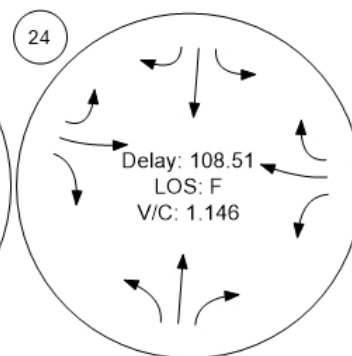
MD 410/Prince George's Plaz



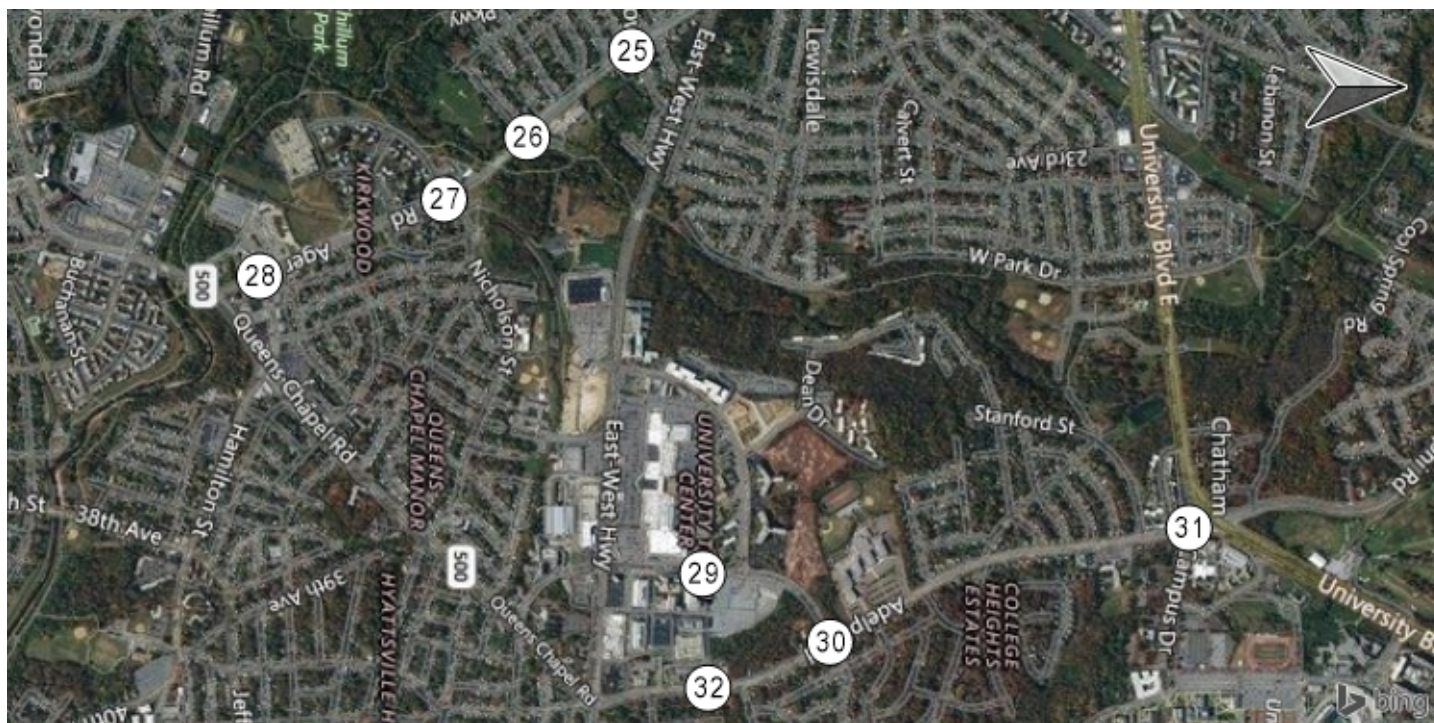
MD 410/Belcrest Rd



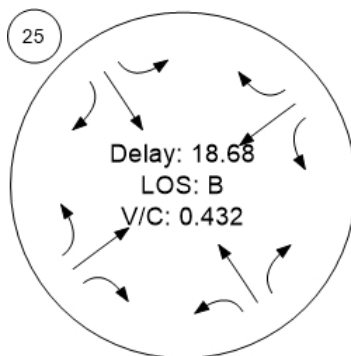
MD 410/MD 500/Adelphi Rd



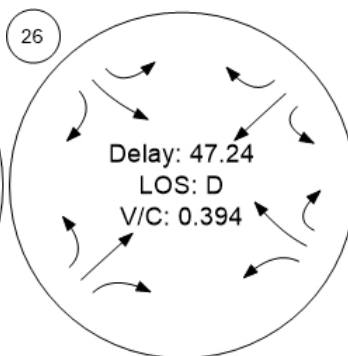
Traffic Conditions



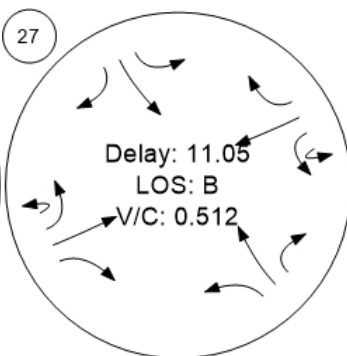
Ager Rd/23rd Ave



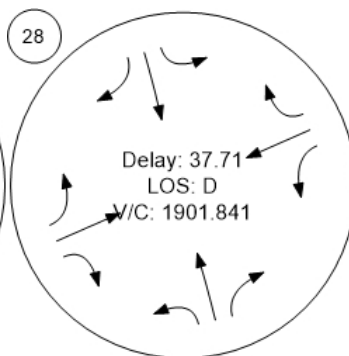
Ager Rd/Oglethorpe St/Scho



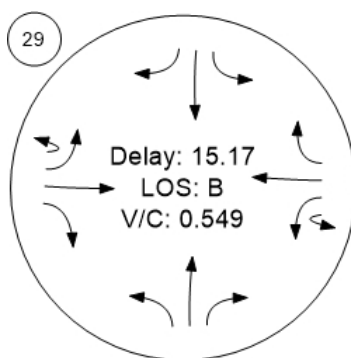
Ager Rd/Nicholson St



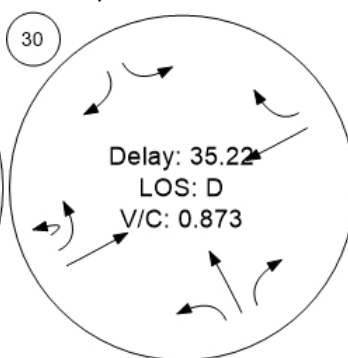
Ager Rd/Hamilton St



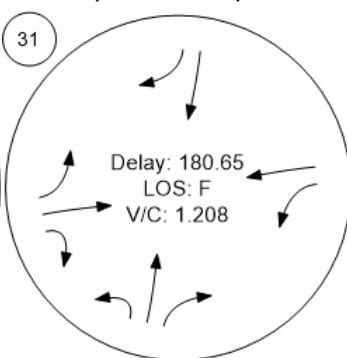
Toledo Rd/Belcrest Rd



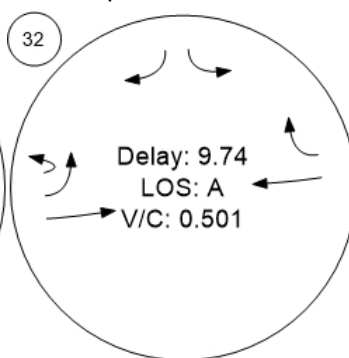
Adelphi Rd/Belcrest Rd



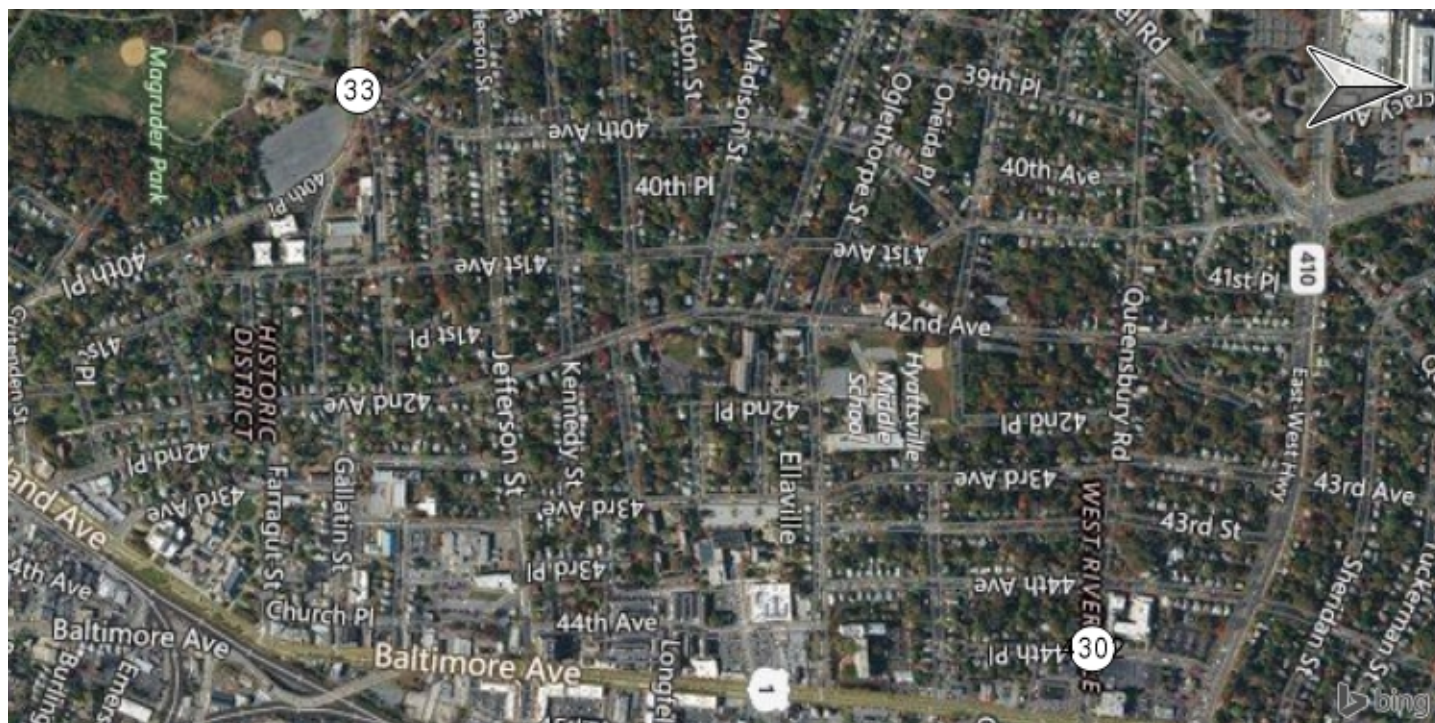
Adelphi Rd/Campus Dr



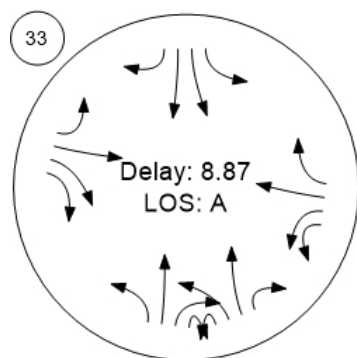
Adelphi Rd/Toledo Rd



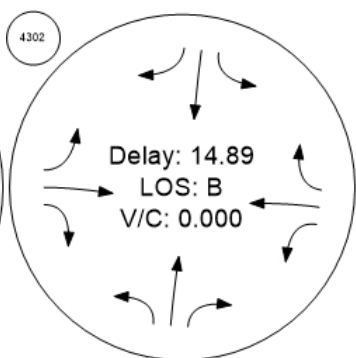
Traffic Conditions



Hamilton St/40th Pl/39th Ave



New Intersection



Hyattsville Transportation Plan

Vistro File: K:\...\2037 PM No Build.vistro

Scenario: Base Scenario

Report File: K:\...\2037 PM_No Build.pdf

6/21/2018

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	MD 500/Ager Rd	Signalized	HCM 2010	NEB Thru	0.984	37.4	D
2	MD 500/Hamilton St	Signalized	HCM 2010	NWB Right	0.839	47.3	D
3	MD 500/Nicholson St	Signalized	HCM 2010	SEB Left	0.631	13.7	B
4	MD 500/Belcrest Rd/Queensbury Rd	Signalized	HCM 2010	EB Left	0.758	35.4	D
5	MD 208(Hamilton St)/38th Ave	Signalized	HCM 2010	SEB Left	0.957	48.4	D
6	US 1/MD 410	Signalized	HCM 2010	EB Left	1.117	144.0	F
7	US 1/Queensbury Rd	Signalized	HCM 2010	SB Left	0.861	28.9	C
8	US 1/Oglethorpe Rd	Signalized	HCM 2010	EB Left	0.505	6.6	A
9	US 1/Madison St	Signalized	HCM 2010	EB Right	0.475	10.7	B
10	US 1/Jefferson St	Signalized	HCM 2010	EB Right	0.595	18.4	B
11	US 1/Hamilton St (North)	Signalized	HCM 2010	WB Right	0.463	2.1	A
12	US 1/Hamilton St (South)/US 1 Alt	Signalized	HCM 2010	NWB Right	1.285	100.4	F
13	US 1 Alt/Decatur St	Signalized	HCM 2010	WB Right	0.720	19.6	B
14	US 1 Alt/Charles Armentrout St	Two-way stop	HCM 2010	EB Left	70.395	10,000.0	F
15	US 1/Gallatin St	Signalized	HCM 2010	NB Thru	0.271	1.4	A
16	US 1/Farragut St	Signalized	HCM 2010	EB Left	0.538	10.1	B
17	US 1/43rd Ave	Two-way stop	HCM 6th Edition	SEB Left	0.099	21.6	C
18	US 1/42nd Place/Crittendon Street	Signalized	HCM 2010	EB Right	0.892	53.2	D
19	US 1/41st Place/Charles Armentrout Dr	Signalized	HCM 2010	NWB Left	0.904	33.0	C
20	MD 410/Toledo Terrace	Signalized	HCM 2010	NB Left	8.025	115.5	F
21	MD 410/Editors Park Dr	Two-way stop	HCM 2010	NB Left	8.839	4,351.3	F
22	MD 410/Prince George's Plaza	Signalized	HCM 2010	NB Right	0.535	24.6	C
23	MD 410/Belcrest Rd	Signalized	HCM 2010	WB Left	1.021	120.3	F
24	MD 410/MD 500/Adelphi Rd	Signalized	HCM 2010	NEB Right	1.199	212.1	F
25	Ager Rd/23rd Ave	Signalized	HCM 6th Edition	NEB Thru	0.432	18.7	B
	Ager Rd/Oglethorpe		HCM 6th				

Version 6.00-00

26	Ager Rd/Greenidge St/School	Signalized	HCM 2010 Edition	SEB Right	0.394	47.2	D
27	Ager Rd/Nicholson St	Two-way stop	HCM 2010	SWB Thru	0.721	10,000.0	F
28	Ager Rd/Hamilton St	Signalized	HCM 2010	WB Right	0.821	25.5	C
29	Toledo Rd/Belcrest Rd	Signalized	HCM 2010	EB Left	0.549	15.2	B
30	Adelphi Rd/Belcrest Rd	Signalized	HCM 2010	SWB Left	0.873	35.2	D
31	Adelphi Rd/Campus Dr	Signalized	HCM 2010	WB Left	1.208	180.6	F
32	Adelphi Rd/Toledo Rd	Signalized	HCM 2010	EB Left	0.501	9.7	A
33	Hamilton St/40th Pl/39th Ave	All-way stop	HCM 2010	EB Thru	0.771	21.3	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report

Intersection 1: MD 500/Ager Rd

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 37.4
 Level Of Service: D
 Volume to Capacity (v/c): 0.984

Intersection Setup

Name	Ager Rd.		MD 500		MD 500	
Approach	Southbound		Northeastbound		Southwestbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	400.00	100.00	100.00	300.00
Speed [mph]	35.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		No	

Volumes

Name	Ager Rd.		MD 500		MD 500	
Base Volume Input [veh/h]	0	364	633	1298	1027	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	2.00	2.00	3.85
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	37	61	81	44	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	401	694	1379	1071	58
Peak Hour Factor	1.0000	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	109	189	375	291	16
Total Analysis Volume [veh/h]	0	436	754	1499	1164	63
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	9		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	22.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Split	Split
Signal group	0	4	4	2	2	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lag	-	-	-
Minimum Green [s]	0	5	5	20	20	0
Maximum Green [s]	0	43	43	36	36	0
Amber [s]	0.0	4.0	4.0	5.0	5.0	0.0
All red [s]	0.0	1.0	1.0	1.0	1.0	0.0
Split [s]	0	48	48	42	42	0
Vehicle Extension [s]	0.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	0	0
Pedestrian Clearance [s]	0	10	10	0	0	0
Rest In Walk		No		No	No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	3.0	4.0	4.0	0.0
Minimum Recall		No	No	No	No	
Maximum Recall		No	No	Yes	Yes	
Pedestrian Recall		No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	30.0	30.0	30.0	30.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	R	L	C	C	R
C, Cycle Length [s]	87	87	87	87	87
L, Total Lost Time per Cycle [s]	5.00	5.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	40	40	36	36	36
g / C, Green / Cycle	0.46	0.46	0.42	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.28	0.43	0.42	0.33	0.04
s, saturation flow rate [veh/h]	1583	1774	3547	3547	1545
c, Capacity [veh/h]	724	811	1475	1475	642
d1, Uniform Delay [s]	17.60	22.19	25.29	22.00	15.41
k, delay calibration	0.12	0.34	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.92	13.97	27.64	4.37	0.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.60	0.93	1.02	0.79	0.10
d, Delay for Lane Group [s/veh]	18.52	36.15	52.94	26.37	15.71
Lane Group LOS	B	D	F	C	B
Critical Lane Group	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.17	15.89	19.16	10.16	0.76
50th-Percentile Queue Length [ft/ln]	154.20	397.25	479.09	254.10	18.92
95th-Percentile Queue Length [veh/ln]	10.24	22.43	26.66	15.39	1.36
95th-Percentile Queue Length [ft/ln]	256.03	560.69	666.46	384.81	34.06

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	18.52	36.15	52.94	26.37	15.71
Movement LOS		B	D	F	C	B
d_A, Approach Delay [s/veh]	18.52		47.32		25.82	
Approach LOS	B		D		C	
d_I, Intersection Delay [s/veh]	37.38					
Intersection LOS	D					
Intersection V/C	0.984					

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SG: 2 42s

SG: 4 48s

SG: 104 15s

Intersection Level Of Service Report

Intersection 2: MD 500/Hamilton St

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 47.3
 Level Of Service: D
 Volume to Capacity (v/c): 0.839

Intersection Setup

Name	MD 500				MD 500			Hamilton St			Hamilton St		
Approach	Northeastbound				Southwestbound			Northwestbound			Southeastbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	200.0	100.0	100.0	200.0	220.00	100.00	200.00	200.00	100.00	100.00	180.00	100.00	50.00
Speed [mph]	40.00				40.00			35.00			35.00		
Grade [%]	0.00				0.00			0.00			0.00		
Crosswalk	Yes				Yes			Yes			Yes		

Volumes

Name	MD 500				MD 500			Hamilton St			Hamilton St		
Base Volume Input [veh/h]	2	149	1342	316	166	784	143	199	459	89	168	462	38
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.63	2.00	2.00	2.63	2.27	2.11	2.00	2.00	2.27	3.85
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	81	0	11	44	48	0	36	20	29	22	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	149	1423	316	177	828	191	199	495	109	197	484	38
Peak Hour Factor	0.920	0.920	0.920	0.920	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	40	387	86	48	225	52	54	135	30	54	132	10
Total Analysis Volume [veh/h]	2	162	1547	343	192	900	208	216	538	118	214	526	41
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	180
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	23.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	1	1	6	6	5	2	2	3	8	8	7	4	4
Auxiliary Signal Groups													
Lead / Lag	Lead	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	20	20	5	5	5	5	5	5	5	5	5
Maximum Green [s]	29	29	30	30	30	30	30	25	75	75	25	75	75
Amber [s]	4.0	4.0	5.0	5.0	3.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	4.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	34	34	36	36	34	36	36	30	80	80	30	80	80
Vehicle Extension [s]	3.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk			No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	4.0	4.0	2.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall		No	No		No	No		No	No		No	No	
Maximum Recall		No	Yes		No	Yes		No	No		No	No	
Pedestrian Recall		No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	30.0	30.0	5.0	5.0	5.0	5.0	5.0	30.0	30.0	30.0	30.0	30.0	30.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	180	180	180	180	180	180	180	180	180	180	180	180
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.00	4.00	0.00	4.00	4.00	0.00	3.00	3.00	0.00	3.00	3.00
g_i, Effective Green Time [s]	108	92	92	108	94	94	61	37	37	61	37	37
g / C, Green / Cycle	0.60	0.51	0.51	0.60	0.52	0.52	0.34	0.21	0.21	0.34	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.21	0.44	0.22	0.36	0.25	0.13	0.18	0.18	0.18	0.19	0.15	0.03
s, saturation flow rate [veh/h]	766	3547	1574	531	3547	1574	1196	1861	1746	1132	3537	1555
c, Capacity [veh/h]	418	1803	800	252	1848	820	342	382	358	305	721	317
d1, Uniform Delay [s]	18.94	38.60	27.83	43.39	27.66	23.79	47.39	69.51	69.52	48.71	67.02	58.59
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.75	5.56	1.68	19.39	0.92	0.74	8.61	7.01	7.45	2.95	1.44	0.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

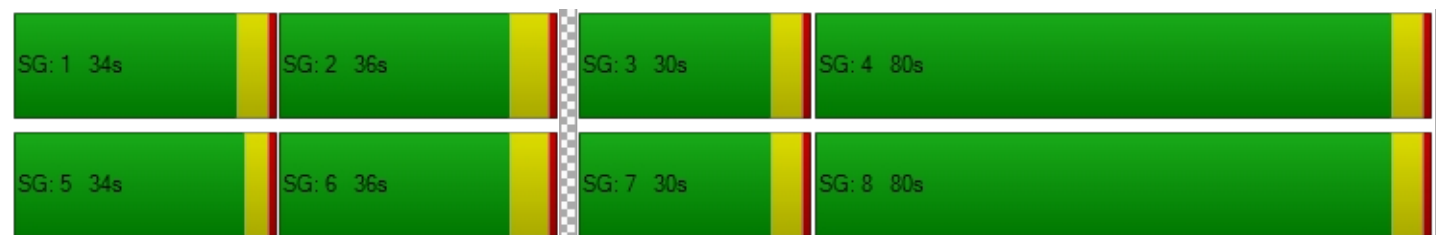
X, volume / capacity	0.39	0.86	0.43	0.76	0.49	0.25	0.63	0.89	0.89	0.70	0.73	0.13
d, Delay for Lane Group [s/veh]	21.69	44.16	29.51	62.78	28.58	24.53	56.00	76.52	76.97	51.66	68.45	58.78
Lane Group LOS	C	D	C	E	C	C	E	E	E	D	E	E
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.31	30.51	9.68	4.92	12.66	5.11	8.21	15.89	14.97	7.56	11.48	1.56
50th-Percentile Queue Length [ft/ln]	82.64	762.75	242.05	123.05	316.56	127.71	205.25	397.28	374.23	189.06	287.04	39.04
95th-Percentile Queue Length [veh/ln]	5.95	39.57	14.79	8.56	18.50	8.82	12.91	22.43	21.31	12.07	17.04	2.81
95th-Percentile Queue Length [ft/ln]	148.75	989.21	369.63	214.01	462.45	220.38	322.73	560.73	532.86	301.81	425.96	70.26

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	21.69	21.69	44.16	29.51	62.78	28.58	24.53	56.00	76.69	76.97	51.66	68.45	58.78
Movement LOS	C	C	D	C	E	C	C	E	E	E	D	E	E
d_A, Approach Delay [s/veh]	39.92				32.99			71.60			63.34		
Approach LOS	D				C			E			E		
d_I, Intersection Delay [s/veh]	47.29												
Intersection LOS	D												
Intersection V/C	0.839												

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 3: MD 500/Nicholson St

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 13.7
 Level Of Service: B
 Volume to Capacity (v/c): 0.631

Intersection Setup

Name	Nicholson St			MD 500			MD 500				Nicholson St		
Approach	Westbound			Northeastbound			Southwestbound				Southeastbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	1	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	150.00	100.00	100.00	150.0	100.0	100.0	100.0	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Crosswalk	Yes			Yes			Yes				Yes		

Volumes

Name	Nicholson St			MD 500			MD 500				Nicholson St		
Base Volume Input [veh/h]	9	11	11	42	1548	41	1	35	1100	98	96	17	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	0.00	2.27	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	130	0	0	0	103	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	11	11	42	1678	41	1	35	1203	98	96	17	35
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.900	0.900	0.900	0.900	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	3	3	12	466	11	0	10	334	27	27	5	10
Total Analysis Volume [veh/h]	10	12	12	47	1864	46	1	39	1337	109	107	19	39
Presence of On-Street Parking	No		No	No		No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0				0		
Bicycle Volume [bicycles/h]	0			0			0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss
Signal group	0	4	0	5	2	0	0	1	6	0	0	8	0
Auxiliary Signal Groups													
Lead / Lag	-	-	-	Lead	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	5	0	0	5	0
Maximum Green [s]	0	30	0	30	30	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	25	0	10	85	0	0	10	85	0	0	25	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	10	0	0	10	0
Rest In Walk		No			No				No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No		No	No			No	No			No	
Maximum Recall		No		No	No			No	No			No	
Pedestrian Recall		No		No	No			No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	L	C	C	L	C	C	C
C, Cycle Length [s]	48	48	48	48	48	48	48	48
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00
l2, Clearance Lost Time [s]	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	34	27	27	34	27	27	6
g / C, Green / Cycle	0.13	0.70	0.57	0.57	0.70	0.57	0.57	0.13
(v / s)_i Volume / Saturation Flow Rate	0.02	0.08	0.51	0.52	0.09	0.39	0.39	0.10
s, saturation flow rate [veh/h]	1772	560	1863	1847	430	1863	1814	1572
c, Capacity [veh/h]	331	514	1069	1060	418	1059	1031	331
d1, Uniform Delay [s]	18.41	4.36	8.92	9.00	8.22	7.33	7.37	20.08
k, delay calibration	0.11	0.11	0.32	0.32	0.11	0.18	0.18	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.13	0.08	7.71	8.38	0.10	1.32	1.41	1.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.10	0.09	0.89	0.90	0.10	0.69	0.69	0.50
d, Delay for Lane Group [s/veh]	18.55	4.43	16.63	17.38	8.32	8.65	8.78	21.24
Lane Group LOS	B	A	B	B	A	A	A	C
Critical Lane Group	No	No	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.31	0.06	7.74	7.97	0.06	3.81	3.78	1.69
50th-Percentile Queue Length [ft/ln]	7.80	1.59	193.50	199.18	1.40	95.32	94.50	42.35
95th-Percentile Queue Length [veh/ln]	0.56	0.11	12.30	12.60	0.10	6.86	6.80	3.05
95th-Percentile Queue Length [ft/ln]	14.04	2.86	307.56	314.90	2.53	171.58	170.11	76.24

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	18.55	18.55	18.55	4.43	16.99	17.38	8.32	8.32	8.71	8.78	21.24	21.24	21.24
Movement LOS	B	B	B	A	B	B	A	A	A	A	C	C	C
d_A, Approach Delay [s/veh]	18.55			16.70			8.70				21.24		
Approach LOS	B			B			A				C		
d_I, Intersection Delay [s/veh]	13.66												
Intersection LOS	B												
Intersection V/C	0.631												

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: MD 500/Belcrest Rd/Queensbury Rd

Control Type:	Signalized	Delay (sec / veh):	35.4
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.758

Intersection Setup

Name				Queensbury Road			MD 500			MD 500		
Approach	Eastbound			Westbound			Northeastbound			Southwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	375.00	100.00	100.00	200.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name				Queensbury Road			MD 500			MD 500		
Base Volume Input [veh/h]	85	211	614	66	203	37	472	1120	87	30	658	36
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.85	2.38	2.21	3.85	2.38	3.85	2.21	2.08	2.78	3.70	1.97	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	55	0	0	0	71	59	0	0	48	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	85	211	669	66	203	37	543	1179	87	30	706	36
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	59	186	18	56	10	151	328	24	8	196	10
Total Analysis Volume [veh/h]	94	234	743	73	226	41	603	1310	97	33	784	40
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	6			18			1			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	63.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	4	3	0	8	4	8	1	6	6	5	2	2
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	8	8	0	0	8	0	8	25	25	8	25	25
Maximum Green [s]	30	30	0	0	30	0	40	53	53	40	53	53
Amber [s]	4.0	4.0	0.0	0.0	4.0	0.0	4.0	5.0	5.0	4.0	5.0	5.0
All red [s]	3.0	3.0	0.0	0.0	3.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0
Split [s]	82	82	0	0	82	0	14	38	38	30	54	54
Vehicle Extension [s]	4.0	4.0	0.0	0.0	4.0	0.0	5.0	6.0	6.0	3.5	6.0	6.0
Walk [s]	7	7	0	0	7	0	0	7	7	0	7	7
Pedestrian Clearance [s]	24	24	0	0	24	0	0	24	24	0	24	24
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	5.0	5.0	0.0	0.0	5.0	0.0	4.0	5.0	5.0	4.0	5.0	5.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	30.0	30.0	0.0	0.0	30.0	0.0	0.0	0.0	0.0	30.0	30.0	30.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	5.00	5.00	5.00	0.00	5.00	5.00	0.00	5.00	5.00
g_i, Effective Green Time [s]	30	30	30	61	50	50	61	39	39
g / C, Green / Cycle	0.28	0.28	0.28	0.58	0.48	0.48	0.58	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.09	0.13	0.27	0.30	0.38	0.39	0.06	0.22	0.22
s, saturation flow rate [veh/h]	1088	1856	1240	1990	1861	1812	576	1863	1831
c, Capacity [veh/h]	70	527	394	1065	890	866	313	694	682
d1, Uniform Delay [s]	52.74	30.92	38.75	14.29	23.07	23.47	15.75	26.71	26.71
k, delay calibration	0.15	0.15	0.38	0.23	0.43	0.44	0.39	0.39	0.39
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	184.84	0.84	17.15	1.02	6.19	7.23	0.53	2.99	3.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

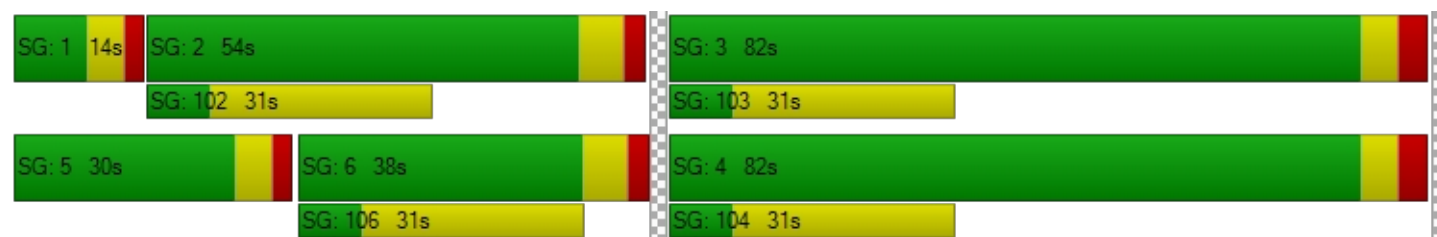
X, volume / capacity	1.35	0.44	0.86	0.57	0.79	0.81	0.11	0.60	0.60
d, Delay for Lane Group [s/veh]	237.57	31.75	55.90	15.31	29.27	30.69	16.28	29.69	29.76
Lane Group LOS	F	C	E	B	C	C	B	C	C
Critical Lane Group	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.40	4.96	10.49	3.56	15.55	15.99	0.34	8.50	8.37
50th-Percentile Queue Length [ft/ln]	135.08	123.98	262.14	89.08	388.64	399.77	8.44	212.41	209.16
95th-Percentile Queue Length [veh/ln]	9.73	8.61	15.80	6.41	22.01	22.55	0.61	13.28	13.11
95th-Percentile Queue Length [ft/ln]	243.15	215.28	394.91	160.35	550.30	563.73	15.18	331.92	327.75

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	237.57	31.75	0.00	55.90	55.90	55.90	15.31	29.93	30.69	16.28	29.72	29.76
Movement LOS	F	C		E	E	E	B	C	C	B	C	C
d_A, Approach Delay [s/veh]	90.74			55.90			25.58			29.21		
Approach LOS	F			E			C			C		
d_I, Intersection Delay [s/veh]	35.42											
Intersection LOS	D											
Intersection V/C	0.758											

Sequence

Ring 1	1	2	-	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: MD 208(Hamilton St)/38th Ave

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 48.4
 Level Of Service: D
 Volume to Capacity (v/c): 0.957

Intersection Setup

Name				Hamilton St			38th Ave			Hamilton St		
Approach	Northbound			Westbound			Southwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	125.00	100.00	100.00
Speed [mph]	30.00			35.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name				Hamilton St			38th Ave			Hamilton St		
Base Volume Input [veh/h]	244	185	32	23	424	35	63	125	185	197	369	162
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.27	3.33	0.00	3.70	2.00	0.00	0.00	2.22	1.89	1.69	1.88	1.65
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	44	0	0	0	12	0	0	0	0	0	7	26
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	288	185	32	23	436	35	63	125	185	197	376	188
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	80	51	9	6	121	10	18	35	51	55	104	52
Total Analysis Volume [veh/h]	320	206	36	26	484	39	70	139	206	219	418	209
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	5			4			5			6		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	2	8	8	8	6	6	6	4	4	4
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	15	15	20	20	20	15	15	15	20	20	20
Maximum Green [s]	15	45	45	35	35	35	20	20	20	35	35	35
Amber [s]	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	25	50	50	40	40	40	25	25	25	40	40	40
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall	Yes	No			No			No			No	
Maximum Recall	Yes	Yes			Yes			Yes			Yes	
Pedestrian Recall	No	No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	L	C	C	L	C
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	2.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	45	35	35	25	35	35
g / C, Green / Cycle	0.50	0.39	0.39	0.28	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.49	0.03	0.28	0.25	0.25	0.36
s, saturation flow rate [veh/h]	1150	782	1838	1658	877	1757
c, Capacity [veh/h]	677	104	715	504	189	683
d1, Uniform Delay [s]	17.38	43.77	23.49	31.38	41.79	26.13
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.30	5.73	6.52	14.07	115.27	19.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.25	0.73	0.82	1.16	0.92
d, Delay for Lane Group [s/veh]	28.67	49.50	30.02	45.45	157.05	45.41
Lane Group LOS	C	D	C	D	F	D
Critical Lane Group	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	10.05	0.73	10.19	10.37	10.18	15.52
50th-Percentile Queue Length [ft/ln]	251.17	18.33	254.75	259.33	254.40	388.04
95th-Percentile Queue Length [veh/ln]	15.25	1.32	15.43	15.66	16.79	21.98
95th-Percentile Queue Length [ft/ln]	381.13	32.99	385.63	391.39	419.68	549.57

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	28.67	28.67	28.67	49.50	30.02	30.02	45.45	45.45	45.45	157.05	45.41	45.41
Movement LOS	C	C	C	D	C	C	D	D	D	F	D	D
d_A, Approach Delay [s/veh]	28.67			30.94			45.45			74.31		
Approach LOS	C			C			D			E		
d_I, Intersection Delay [s/veh]	48.41											
Intersection LOS	D											
Intersection V/C	0.957											

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 6: US 1/MD 410

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 144.0
 Level Of Service: F
 Volume to Capacity (v/c): 1.117

Intersection Setup

Name	US 1			US 1			MD 410			MD 410		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	200.00	100.00	100.00	225.00	100.00	100.00	600.00	100.00	100.00	700.00	100.00	450.00
Speed [mph]	45.00			45.00			50.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	US 1			US 1			MD 410			MD 410		
Base Volume Input [veh/h]	450	549	64	232	606	199	336	1602	380	245	1383	158
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.15	2.00	2.38	2.07	2.00	2.00	2.00	2.00	2.00	2.00	2.03	1.67
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	28	0	0	0	0	28	15	33	15	0	56	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	478	549	64	232	606	227	351	1635	395	245	1439	158
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	133	153	18	64	168	63	98	454	110	68	400	44
Total Analysis Volume [veh/h]	531	610	71	258	673	252	390	1817	439	272	1599	176
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			3			6		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	180
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	9.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	1	6	6	5	2	0	7	4	4	3	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	15	15	5	25	0	5	15	15	5	25	25
Maximum Green [s]	29	38	38	29	38	0	24	66	66	24	66	66
Amber [s]	4.0	4.5	4.5	4.0	4.5	0.0	4.0	4.5	4.5	4.0	4.5	4.5
All red [s]	1.0	2.0	2.0	1.0	2.0	0.0	1.0	2.0	2.0	1.0	2.0	2.0
Split [s]	34	45	45	34	45	0	29	72	72	29	72	72
Vehicle Extension [s]	3.0	5.0	5.0	3.0	5.0	0.0	3.0	5.0	5.0	3.0	5.0	5.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	4.5	4.5	3.0	4.5	0.0	3.0	4.5	4.5	3.0	4.5	4.5
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	Yes		No	Yes		No	Yes		No	Yes	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	294.0	294.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	30.0	5.0	5.0	30.0	6.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	180	180	180	180	180	180	180	180	180	180	180	180
L, Total Lost Time per Cycle [s]	6.50	6.50	6.50	6.50	6.50	6.50	5.00	6.50	6.50	5.00	6.50	6.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.50	4.50	0.00	4.50	4.50	3.00	4.50	4.50	3.00	4.50	4.50
g_i, Effective Green Time [s]	72	46	46	72	43	43	24	66	66	24	66	66
g / C, Green / Cycle	0.40	0.26	0.26	0.40	0.24	0.24	0.13	0.36	0.36	0.13	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.26	0.19	0.19	0.23	0.26	0.26	0.22	0.51	0.28	0.15	0.33	0.34
s, saturation flow rate [veh/h]	2035	1863	1792	1098	1863	1688	1774	3547	1583	1774	3546	1770
c, Capacity [veh/h]	621	477	459	371	443	402	237	1291	576	237	1290	644
d1, Uniform Delay [s]	52.87	61.17	61.22	41.69	68.59	68.59	78.00	57.25	50.38	78.00	54.59	54.82
k, delay calibration	0.29	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.82	9.29	9.75	10.35	69.74	74.22	310.15	188.17	9.20	104.97	11.55	20.83
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

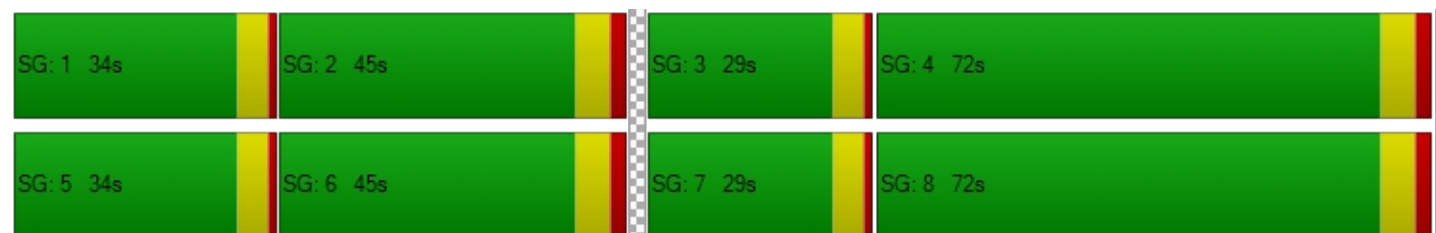
X, volume / capacity	0.86	0.73	0.73	0.70	1.09	1.10	1.65	1.41	0.76	1.15	0.92	0.92
d, Delay for Lane Group [s/veh]	61.69	70.46	70.98	52.04	138.32	142.81	388.15	245.41	59.58	182.97	66.14	75.65
Lane Group LOS	E	E	E	D	F	F	F	F	E	F	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	9.02	15.53	15.07	9.01	28.68	26.50	31.17	62.15	18.49	17.81	27.27	29.19
50th-Percentile Queue Length [ft/ln]	225.42	388.30	376.76	225.13	717.08	662.45	779.26	1553.85	462.19	445.33	681.72	729.74
95th-Percentile Queue Length [veh/ln]	13.94	22.00	21.44	13.93	39.48	36.93	48.20	91.86	25.54	26.34	35.83	38.05
95th-Percentile Queue Length [ft/ln]	348.53	549.88	535.93	348.17	987.02	923.35	1204.98	2296.39	638.48	658.47	895.82	951.25

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	61.69	70.68	70.98	52.04	139.58	142.81	388.15	245.41	59.58	182.97	68.63	75.65
Movement LOS	E	E	E	D	F	F	F	F	E	F	E	E
d_A, Approach Delay [s/veh]	66.76			121.18			235.62			84.42		
Approach LOS	E			F			F			F		
d_I, Intersection Delay [s/veh]	143.98											
Intersection LOS	F											
Intersection V/C	1.117											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 7: US 1/Queensbury Rd

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 28.9
 Level Of Service: C
 Volume to Capacity (v/c): 0.861

Intersection Setup

Name	US 1			US 1			Queensbury			Queensbury		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	250.00	100.00	100.00	150.00	100.00	100.00	350.00	100.00	100.00	200.00	100.00	200.00
Speed [mph]	45.00			45.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	US 1			US 1			Queensbury			Queensbury		
Base Volume Input [veh/h]	77	892	155	205	900	114	50	276	85	44	148	140
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	1.89	3.85	2.00	3.85	1.96	2.30	1.85	1.69	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	28	0	0	15	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	77	920	155	205	915	114	50	276	85	44	148	140
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	256	43	57	254	32	14	77	24	12	41	39
Total Analysis Volume [veh/h]	86	1022	172	228	1017	127	56	307	94	49	164	156
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			11			11			4		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	2	6	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	15	15	15	15	15	8	8	8	8	8	8
Maximum Green [s]	9	50	50	36	36	36	29	29	29	29	29	29
Amber [s]	3.5	4.5	4.5	4.5	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	14	56	56	42	42	42	34	34	34	34	34	34
Vehicle Extension [s]	3.0	5.0	5.0	5.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	3.5	3.5	3.5	3.5	3.5	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall	No	No			No			No			No	
Maximum Recall	No	Yes			Yes			No			No	
Pedestrian Recall	No	No			No			No			No	
Detector Location [ft]	0.0	294.0	294.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	30.0	6.0	6.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	5.50	5.50	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.50	3.50	3.50	3.50	3.50	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	52	52	52	43	43	43	27	27	27	27	27
g / C, Green / Cycle	0.58	0.58	0.58	0.48	0.48	0.48	0.30	0.30	0.30	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.13	0.33	0.33	0.50	0.31	0.32	0.05	0.22	0.05	0.09	0.10
s, saturation flow rate [veh/h]	661	1863	1769	458	1863	1786	1209	1784	983	1863	1566
c, Capacity [veh/h]	388	1080	1025	199	895	858	332	541	151	565	475
d1, Uniform Delay [s]	11.32	11.82	11.85	38.05	17.66	17.74	29.54	28.16	40.73	23.94	24.24
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.21	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.31	2.14	2.29	109.48	3.65	3.90	0.24	3.89	1.22	0.28	0.40
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.22	0.57	0.57	1.15	0.65	0.66	0.17	0.74	0.32	0.29	0.33
d, Delay for Lane Group [s/veh]	12.63	13.96	14.14	147.53	21.31	21.64	29.77	32.05	41.95	24.22	24.64
Lane Group LOS	B	B	B	F	C	C	C	C	D	C	C
Critical Lane Group	Yes	No	No	Yes	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.77	6.96	6.71	10.29	8.88	8.68	1.01	8.09	1.10	2.65	2.57
50th-Percentile Queue Length [ft/ln]	19.26	174.05	167.65	257.37	222.03	217.04	25.32	202.32	27.44	66.34	64.17
95th-Percentile Queue Length [veh/ln]	1.39	11.29	10.95	16.96	13.77	13.51	1.82	12.76	1.98	4.78	4.62
95th-Percentile Queue Length [ft/ln]	34.66	282.24	273.82	423.94	344.22	337.85	45.58	318.95	49.39	119.42	115.51

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	12.63	14.04	14.14	147.53	21.45	21.64	29.77	32.05	32.05	41.95	24.22	24.64
Movement LOS	B	B	B	F	C	C	C	C	C	D	C	C
d_A, Approach Delay [s/veh]	13.96			42.42			31.78			26.75		
Approach LOS	B			D			C			C		
d_I, Intersection Delay [s/veh]	28.88											
Intersection LOS	C											
Intersection V/C	0.861											

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 8: US 1/Oglethorpe Rd

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 6.6
 Level Of Service: A
 Volume to Capacity (v/c): 0.505

Intersection Setup

Name	US 1		US 1		Oglethorpe	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00		40.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	US 1		US 1		Oglethorpe	
Base Volume Input [veh/h]	43	1153	1049	9	54	28
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.04	1.97	0.00	1.67	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	28	15	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	43	1181	1064	9	54	28
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	328	296	3	15	8
Total Analysis Volume [veh/h]	48	1312	1182	10	60	31
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	105.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Split	Split
Signal group	2	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lag	-
Minimum Green [s]	15	15	15	15	15	15
Maximum Green [s]	85	85	85	85	25	25
Amber [s]	4.0	4.0	4.0	4.0	4.0	4.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	90	90	90	90	30	30
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall		No	No		No	
Maximum Recall		Yes	Yes		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	50.0	50.0	50.0	50.0	50.0	50.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	96	96	96	96	14
g / C, Green / Cycle	0.80	0.80	0.80	0.80	0.12
(v / s)_i Volume / Saturation Flow Rate	0.42	0.41	0.32	0.32	0.05
s, saturation flow rate [veh/h]	1615	1694	1863	1858	1738
c, Capacity [veh/h]	1318	1349	1484	1479	209
d1, Uniform Delay [s]	3.89	4.20	3.66	3.67	48.99
k, delay calibration	0.50	0.50	0.50	0.50	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.40	1.39	0.81	0.82	1.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.51	0.51	0.40	0.40	0.43
d, Delay for Lane Group [s/veh]	5.30	5.58	4.47	4.48	50.41
Lane Group LOS	A	A	A	A	D
Critical Lane Group	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.34	4.77	3.34	3.35	2.65
50th-Percentile Queue Length [ft/ln]	108.61	119.28	83.50	83.64	66.13
95th-Percentile Queue Length [veh/ln]	7.76	8.35	6.01	6.02	4.76
95th-Percentile Queue Length [ft/ln]	194.07	208.83	150.29	150.55	119.04

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	5.30	5.45	4.48	4.48	50.41	50.41
Movement LOS	A	A	A	A	D	D
d_A, Approach Delay [s/veh]	5.44		4.48		50.41	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	6.56					
Intersection LOS	A					
Intersection V/C	0.505					

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SG: 2 90s

SG: 4 30s

SG: 6 90s

Intersection Level Of Service Report

Intersection 9: US 1/Madison St

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 10.7
 Level Of Service: B
 Volume to Capacity (v/c): 0.475

Intersection Setup

Name	US 1			US 1			Madison			Madison		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	US 1			US 1			Madison			Madison		
Base Volume Input [veh/h]	15	1162	85	19	1029	27	19	16	26	16	5	21
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	28	0	0	15	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	1190	85	19	1044	27	19	16	26	16	5	21
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	331	24	5	290	8	5	4	7	4	1	6
Total Analysis Volume [veh/h]	17	1322	94	21	1160	30	21	18	29	18	6	23
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			2			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	105.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	2	2	2	6	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	20	20	20	20	20	20	15	15	15	15	15	15
Maximum Green [s]	85	85	85	85	85	85	25	25	25	25	25	25
Amber [s]	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	90	90	90	90	90	90	30	30	30	30	30	30
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall		No			No			No			No	
Maximum Recall		Yes			Yes			Yes			Yes	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	85	85	85	85	85	85	25	25
g / C, Green / Cycle	0.71	0.71	0.71	0.71	0.71	0.71	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.04	0.38	0.39	0.05	0.32	0.32	0.04	0.03
s, saturation flow rate [veh/h]	478	1863	1820	385	1863	1846	1633	1595
c, Capacity [veh/h]	325	1319	1289	257	1319	1308	380	374
d1, Uniform Delay [s]	12.32	8.28	8.31	15.13	7.51	7.52	39.11	38.64
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.31	1.60	1.65	0.62	1.12	1.14	1.03	0.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.05	0.54	0.54	0.08	0.45	0.45	0.18	0.13
d, Delay for Lane Group [s/veh]	12.63	9.88	9.96	15.75	8.64	8.65	40.14	39.33
Lane Group LOS	B	A	A	B	A	A	D	D
Critical Lane Group	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.23	8.25	8.14	0.34	6.23	6.18	1.79	1.22
50th-Percentile Queue Length [ft/ln]	5.86	206.21	203.52	8.42	155.69	154.53	44.68	30.45
95th-Percentile Queue Length [veh/ln]	0.42	12.96	12.82	0.61	10.32	10.26	3.22	2.19
95th-Percentile Queue Length [ft/ln]	10.54	323.96	320.51	15.15	258.01	256.47	80.42	54.81

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	12.63	9.92	9.96	15.75	8.64	8.65	40.14	40.14	40.14	39.33	39.33	39.33
Movement LOS	B	A	A	B	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	9.95			8.77			40.14			39.33		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	10.68											
Intersection LOS	B											
Intersection V/C	0.475											

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 10: US 1/Jefferson St

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 18.4
 Level Of Service: B
 Volume to Capacity (v/c): 0.595

Intersection Setup

Name	US 1			US 1			Jefferson St			Jefferson St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	150.00	100.00	100.00	175.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	US 1			US 1			Jefferson St			Jefferson St		
Base Volume Input [veh/h]	171	1136	32	63	958	63	76	49	130	59	52	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.82	2.00	2.00	2.00	2.00	2.22	1.43	2.00	1.82	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	28	0	0	15	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	171	1164	32	63	973	63	76	49	130	59	52	34
Peak Hour Factor	0.9000	0.9000	1.0000	1.0000	0.9000	0.9000	0.9000	1.0000	0.9000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	323	8	16	270	18	21	12	36	15	13	9
Total Analysis Volume [veh/h]	190	1293	32	63	1081	70	84	49	144	59	52	34
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	108.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	6	4	4	4	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lag	-	-	-	-	-
Minimum Green [s]	8	20	0	0	20	20	20	20	20	0	20	0
Maximum Green [s]	15	85	0	0	65	65	25	25	25	0	25	0
Amber [s]	4.0	4.0	0.0	0.0	4.0	4.0	4.0	4.0	4.0	0.0	4.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	20	90	0	0	70	70	30	30	30	0	30	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	0.0
Minimum Recall	No	No			No			No			No	
Maximum Recall	No	Yes			Yes			No			No	
Pedestrian Recall	No	No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	85	85	85	72	72	72	25	25
g / C, Green / Cycle	0.71	0.71	0.71	0.60	0.60	0.60	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.29	0.36	0.36	0.15	0.31	0.31	0.19	0.13
s, saturation flow rate [veh/h]	655	1863	1847	412	1863	1823	1436	1074
c, Capacity [veh/h]	465	1322	1311	234	1119	1095	336	265
d1, Uniform Delay [s]	9.02	7.86	7.87	23.70	13.91	13.92	46.84	42.46
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.36	0.17
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.65	1.37	1.39	2.82	1.73	1.77	15.28	2.76
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.41	0.50	0.50	0.27	0.52	0.52	0.82	0.55
d, Delay for Lane Group [s/veh]	11.68	9.23	9.26	26.52	15.64	15.69	62.12	45.22
Lane Group LOS	B	A	A	C	B	B	E	D
Critical Lane Group	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.74	7.29	7.27	1.39	9.15	8.99	9.61	4.10
50th-Percentile Queue Length [ft/ln]	43.54	182.35	181.66	34.64	228.84	224.70	240.20	102.43
95th-Percentile Queue Length [veh/ln]	3.13	11.72	11.69	2.49	14.12	13.90	14.69	7.38
95th-Percentile Queue Length [ft/ln]	78.37	293.08	292.19	62.34	352.89	347.62	367.28	184.38

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	11.68	9.24	9.26	26.52	15.66	15.69	62.12	62.12	62.12	45.22	45.22	45.22
Movement LOS	B	A	A	C	B	B	E	E	E	D	D	D
d_A, Approach Delay [s/veh]	9.55			16.23			62.12			45.22		
Approach LOS	A			B			E			D		
d_I, Intersection Delay [s/veh]	18.38											
Intersection LOS	B											
Intersection V/C	0.595											

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 11: US 1/Hamilton St (North)

Control Type:	Signalized	Delay (sec / veh):	2.1
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.463

Intersection Setup

Name	US 1		US 1		Hamilton	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	150.00	100.00	100.00	100.00
Speed [mph]	30.00		35.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	US 1		US 1		Hamilton	
Base Volume Input [veh/h]	1394	0	3	999	0	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	3.85	0.00	2.04	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	28	0	0	15	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1422	0	3	1014	0	5
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	395	0	1	282	0	1
Total Analysis Volume [veh/h]	1580	0	3	1127	0	6
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	78.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Split	Split
Signal group	2	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	-	-	Lag	-	Lag	-
Minimum Green [s]	20	20	20	20	15	15
Maximum Green [s]	89	89	89	89	20	20
Amber [s]	5.0	5.0	5.0	5.0	4.0	4.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	95	95	95	95	25	25
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	4.0	4.0	4.0	4.0	3.0	3.0
Minimum Recall	No			No	No	
Maximum Recall	Yes			Yes	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	50.0	50.0	50.0	50.0	50.0	50.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	3.00
g_i, Effective Green Time [s]	106	106	106	106	3
g / C, Green / Cycle	0.89	0.89	0.89	0.89	0.02
(v / s)_i Volume / Saturation Flow Rate	0.42	0.42	0.01	0.32	0.00
s, saturation flow rate [veh/h]	1863	1863	329	3545	1615
c, Capacity [veh/h]	1648	1648	314	3136	38
d1, Uniform Delay [s]	1.39	1.39	3.12	1.17	57.39
k, delay calibration	0.50	0.50	0.50	0.50	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.00	1.00	0.06	0.32	1.87
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.48	0.48	0.01	0.36	0.16
d, Delay for Lane Group [s/veh]	2.39	2.39	3.17	1.49	59.26
Lane Group LOS	A	A	A	A	E
Critical Lane Group	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.76	1.76	0.02	0.73	0.20
50th-Percentile Queue Length [ft/ln]	43.89	43.89	0.46	18.35	5.00
95th-Percentile Queue Length [veh/ln]	3.16	3.16	0.03	1.32	0.36
95th-Percentile Queue Length [ft/ln]	79.00	79.00	0.82	33.03	9.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	2.39	2.39	3.17	1.49	59.26	59.26
Movement LOS	A	A	A	A	E	E
d_A, Approach Delay [s/veh]	2.39		1.50		59.26	
Approach LOS	A		A		E	
d_I, Intersection Delay [s/veh]	2.15					
Intersection LOS	A					
Intersection V/C	0.463					

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SG: 2 95s

SG: 4 25s

SG: 6 95s

Intersection Level Of Service Report

Intersection 12: US 1/Hamilton St (South)/US 1 Alt

Control Type:	Signalized	Delay (sec / veh):	100.4
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.285

Intersection Setup

Name	US 1			US 1			Hamilton			US 1 ALT		
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	250.00
Speed [mph]	30.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	US 1			US 1			Hamilton			US 1 ALT		
Base Volume Input [veh/h]	0	658	81	634	459	0	5	30	7	47	0	717
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.17	0.00	2.00	2.06	0.00	0.00	0.00	0.00	2.63	0.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	0	8	7	0	0	0	0	0	0	16
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	670	81	642	466	0	5	30	7	47	0	733
Peak Hour Factor	1.0000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000	0.9000	0.9000	0.9000	1.0000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	186	23	178	129	0	1	8	2	13	0	204
Total Analysis Volume [veh/h]	0	744	90	713	518	0	6	33	8	52	0	814
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			3			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Permiss	Permiss	Overlap
Signal group	0	6	6	5	2	0	3	3	3	8	0	8
Auxiliary Signal Groups												5.8
Lead / Lag	-	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	0	20	20	5	20	0	5	5	5	5	0	5
Maximum Green [s]	0	40	40	20	79	0	13	13	13	30	0	30
Amber [s]	0.0	4.0	4.0	3.5	4.0	0.0	3.5	3.5	3.5	3.0	0.0	3.0
All red [s]	0.0	1.0	1.0	1.5	1.0	0.0	1.5	1.5	1.5	1.0	0.0	1.0
Split [s]	0	45	45	39	84	0	18	18	18	18	0	18
Vehicle Extension [s]	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0
Walk [s]	0	0	0	0	0	0	0	0	0	5	0	5
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	10	0	10
Rest In Walk		No			No			No		No		
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0
I2, Clearance Lost Time [s]	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	2.0	0.0	2.0
Minimum Recall		No		Yes	No			No		No		No
Maximum Recall		Yes		Yes	Yes			No		No		No
Pedestrian Recall		No		No	No			No		No		No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	50.0	50.0	50.0	50.0	0.0	50.0	50.0	50.0	50.0	0.0	50.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	4.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	3.00	2.00	0.00
g_i, Effective Green Time [s]	40	40	79	79	4	23	61
g / C, Green / Cycle	0.33	0.33	0.66	0.66	0.03	0.19	0.51
(v / s)_i Volume / Saturation Flow Rate	0.22	0.23	0.88	0.39	0.03	0.03	0.65
s, saturation flow rate [veh/h]	1860	1791	806	1337	1833	1763	1250
c, Capacity [veh/h]	622	599	558	882	62	335	633
d1, Uniform Delay [s]	34.25	34.63	21.90	11.35	57.49	40.56	29.60
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.66	6.55	138.11	2.86	17.10	0.21	140.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.67	0.70	1.28	0.59	0.76	0.16	1.29
d, Delay for Lane Group [s/veh]	39.91	41.18	160.01	14.21	74.59	40.78	169.72
Lane Group LOS	D	D	F	B	E	D	F
Critical Lane Group	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	11.36	11.59	29.30	7.87	1.72	1.32	42.32
50th-Percentile Queue Length [ft/ln]	284.03	289.72	732.38	196.78	42.99	33.08	1058.04
95th-Percentile Queue Length [veh/ln]	16.89	17.17	45.51	12.47	3.10	2.38	62.93
95th-Percentile Queue Length [ft/ln]	422.22	429.30	1137.76	311.81	77.38	59.54	1573.23

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	40.47	41.18	160.01	14.21	0.00	74.59	74.59	74.59	40.78	0.00	169.72
Movement LOS		D	D	F	B		E	E	E	D		F
d_A, Approach Delay [s/veh]	40.54			98.66			74.59			161.98		
Approach LOS	D			F			E			F		
d_I, Intersection Delay [s/veh]	100.42											
Intersection LOS	F											
Intersection V/C	1.285											

Sequence

Ring 1	-	2	3	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 13: US 1 Alt/Decatur St

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 19.6
 Level Of Service: B
 Volume to Capacity (v/c): 0.720

Intersection Setup

Name	US 1 ALT		Decatur St		US 1 ALT	
Approach	Northbound		Westbound		Southwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	0	1	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		No	

Volumes

Name	US 1 ALT		Decatur St		US 1 ALT	
Base Volume Input [veh/h]	652	169	87	212	312	574
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.13	2.13	1.97	2.00	2.63	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	16	0	0	0	0	8
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	668	169	87	212	312	582
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	186	47	24	59	87	162
Total Analysis Volume [veh/h]	742	188	97	236	347	647
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	15.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	Unsignalized	Split	Split	ProtectedPermissi	Permissive
Signal group	6	0	4	0	5	2
Auxiliary Signal Groups						
Lead / Lag	-	-	Lag	-	Lead	-
Minimum Green [s]	10	0	5	0	4	10
Maximum Green [s]	39	0	15	0	10	54
Amber [s]	5.0	0.0	4.0	0.0	4.0	5.0
All red [s]	1.0	0.0	1.0	0.0	1.0	1.0
Split [s]	30	0	30	0	30	30
Vehicle Extension [s]	0.2	0.0	3.0	0.0	3.0	0.2
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	4.0	0.0	3.0	0.0	3.0	4.0
Minimum Recall	No		No		No	No
Maximum Recall	Yes		No		No	Yes
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	30.0	0.0	30.0	0.0	30.0	30.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	L	R	L	C
C, Cycle Length [s]	79	79	79	79	79
L, Total Lost Time per Cycle [s]	6.00	5.00	5.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	3.00	3.00	0.00	4.00
g_i, Effective Green Time [s]	41	14	14	54	54
g / C, Green / Cycle	0.52	0.17	0.17	0.69	0.69
(v / s)_i Volume / Saturation Flow Rate	0.40	0.05	0.15	0.37	0.35
s, saturation flow rate [veh/h]	1860	1775	1583	929	1863
c, Capacity [veh/h]	964	308	275	539	1278
d1, Uniform Delay [s]	15.20	28.40	31.55	12.79	5.93
k, delay calibration	0.50	0.11	0.23	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.91	0.58	14.54	5.81	1.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.31	0.86	0.64	0.51
d, Delay for Lane Group [s/veh]	21.12	28.98	46.09	18.60	7.36
Lane Group LOS	C	C	D	B	A
Critical Lane Group	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	10.98	1.61	5.32	2.58	4.43
50th-Percentile Queue Length [ft/ln]	274.44	40.15	132.98	64.52	110.83
95th-Percentile Queue Length [veh/ln]	16.41	2.89	9.10	4.65	7.89
95th-Percentile Queue Length [ft/ln]	410.28	72.28	227.54	116.13	197.16

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	21.12	0.00	28.98	46.09	18.60	7.36
Movement LOS	C		C	D	B	A
d_A, Approach Delay [s/veh]	21.12		41.11		11.29	
Approach LOS	C		D		B	
d_I, Intersection Delay [s/veh]	19.61					
Intersection LOS	B					
Intersection V/C	0.720					

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 14: US 1 Alt/Charles Armentrout St

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	70.395

Intersection Setup

Name	US 1 Alt		US 1 ALT		Charles L Armentrout	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	US 1 Alt		US 1 ALT		Charles L Armentrout	
Base Volume Input [veh/h]	662	724	623	71	95	1343
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.08	2.00	2.00	2.00	3.85	2.17
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	12	16	8	0	0	7
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	674	740	631	71	95	1350
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	187	206	175	20	26	375
Total Analysis Volume [veh/h]	749	822	701	79	106	1500
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.90	0.01	0.01	0.00	70.39	3.42
d_M, Delay for Movement [s/veh]	33.54	0.00	0.00	0.00	10000.00	1114.29
Movement LOS	D	A	A	A	F	F
95th-Percentile Queue Length [veh/ln]	12.14	0.00	0.00	0.00	15.61	136.81
95th-Percentile Queue Length [ft/ln]	303.62	0.00	0.00	0.00	390.21	3420.21
d_A, Approach Delay [s/veh]	15.99		0.00		1700.77	
Approach LOS	C		A		F	
d_I, Intersection Delay [s/veh]	696.63					
Intersection LOS	F					

Intersection Level Of Service Report

Intersection 15: US 1/Gallatin St

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 1.4
 Level Of Service: A
 Volume to Capacity (v/c): 0.271

Intersection Setup

Name	US 1		US 1		Gallatin St.	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		0.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		No	

Volumes

Name	US 1		US 1		Gallatin St.	
Base Volume Input [veh/h]	23	767	449	45	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.11	2.05	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	7	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	779	456	45	0	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	216	127	13	0	0
Total Analysis Volume [veh/h]	26	866	507	50	0	0
Presence of On-Street Parking	No	No	No	No		
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		4		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	84.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	6	6	2	2	5	0
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	-	-
Minimum Green [s]	4	4	4	4	0	0
Maximum Green [s]	86	86	86	86	0	0
Amber [s]	4.0	4.0	4.0	4.0	0.0	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	90	90	90	90	0	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	0.0	0.0
Walk [s]	0	0	20	20	0	0
Pedestrian Clearance [s]	0	0	10	10	0	0
Rest In Walk						
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	0.0	0.0
Minimum Recall		No	No			
Maximum Recall		Yes	No			
Pedestrian Recall		No	No			
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	50.0	50.0	50.0	50.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	8
Pedestrian Walk [s]	20
Pedestrian Clearance [s]	10

Lane Group Calculations

Lane Group	C	C	C	C	
C, Cycle Length [s]	120	120	120	120	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	106	106	106	106	
g / C, Green / Cycle	0.88	0.88	0.88	0.88	
(v / s)_i Volume / Saturation Flow Rate	0.26	0.26	0.15	0.15	
s, saturation flow rate [veh/h]	1773	1693	1862	1805	
c, Capacity [veh/h]	1595	1494	1642	1592	
d1, Uniform Delay [s]	1.11	1.12	0.98	0.99	
k, delay calibration	0.50	0.50	0.50	0.50	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.45	0.50	0.22	0.24	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.29	0.29	0.17	0.17	
d, Delay for Lane Group [s/veh]	1.56	1.62	1.21	1.23	
Lane Group LOS	A	A	A	A	
Critical Lane Group	Yes	No	No	No	
50th-Percentile Queue Length [veh/ln]	0.82	0.81	0.44	0.44	
50th-Percentile Queue Length [ft/ln]	20.51	20.20	10.95	11.10	
95th-Percentile Queue Length [veh/ln]	1.48	1.45	0.79	0.80	
95th-Percentile Queue Length [ft/ln]	36.92	36.35	19.72	19.98	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	1.56	1.59	1.22	1.23	0.00	0.00
Movement LOS	A	A	A	A		
d_A, Approach Delay [s/veh]	1.59		1.22		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	1.45					
Intersection LOS	A					
Intersection V/C	0.271					

Sequence

Ring 1	-	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SG: 2 90s

SG: 8 30s

SG: 6 90s

Intersection Level Of Service Report

Intersection 16: US 1/Farragut St

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 10.1
 Level Of Service: B
 Volume to Capacity (v/c): 0.538

Intersection Setup

Name	US 1		Farragut		US 1	
Approach	Southbound		Eastbound		Northeastbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	30.00		25.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	US 1		Farragut		US 1	
Base Volume Input [veh/h]	445	9	47	36	12	757
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.97	0.00	0.00	0.00	0.00	2.11
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	7	0	0	0	0	12
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	452	9	47	36	12	769
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	126	3	13	10	3	214
Total Analysis Volume [veh/h]	502	10	52	40	13	854
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	78.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	Permissive	Split	Split	Permissive	Permissive
Signal group	6	6	4	4	2	2
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lag	-
Minimum Green [s]	20	20	20	20	20	20
Maximum Green [s]	89	89	20	20	89	89
Amber [s]	5.0	5.0	4.0	4.0	5.0	5.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	95	95	25	25	95	95
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	4.0	4.0	3.0	3.0	4.0	4.0
Minimum Recall	No		No			No
Maximum Recall	Yes		Yes			Yes
Pedestrian Recall	No		No			No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	50.0	50.0	50.0	50.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	6.00	6.00	5.00	5.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00
l2, Clearance Lost Time [s]	4.00	4.00	3.00	3.00	4.00
g_i, Effective Green Time [s]	89	89	20	20	89
g / C, Green / Cycle	0.74	0.74	0.17	0.17	0.74
(v / s)_i Volume / Saturation Flow Rate	0.14	0.14	0.03	0.02	0.47
s, saturation flow rate [veh/h]	1863	1851	1810	1615	1848
c, Capacity [veh/h]	1382	1373	302	269	1401
d1, Uniform Delay [s]	4.64	4.65	42.90	42.72	7.50
k, delay calibration	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.30	0.30	1.24	1.16	2.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.19	0.19	0.17	0.15	0.62
d, Delay for Lane Group [s/veh]	4.94	4.95	44.14	43.89	9.56
Lane Group LOS	A	A	D	D	A
Critical Lane Group	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.81	1.82	1.45	1.12	9.73
50th-Percentile Queue Length [ft/ln]	45.33	45.40	36.22	27.93	243.28
95th-Percentile Queue Length [veh/ln]	3.26	3.27	2.61	2.01	14.85
95th-Percentile Queue Length [ft/ln]	81.59	81.72	65.19	50.28	371.18

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	4.94	4.95	44.14	43.89	9.56	9.56
Movement LOS	A	A	D	D	A	A
d_A, Approach Delay [s/veh]	4.94		44.03		9.56	
Approach LOS	A		D		A	
d_I, Intersection Delay [s/veh]	10.11					
Intersection LOS	B					
Intersection V/C	0.538					

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SG: 2 95s

SG: 4 25s

SG: 6 95s

Intersection Level Of Service Report

Intersection 17: US 1/43rd Ave

Control Type: Two-way stop
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 21.6
 Level Of Service: C
 Volume to Capacity (v/c): 0.099

Intersection Setup

Name	US 1		US 1			
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0
Pocket Length [ft]	150.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	US 1		US 1			
Base Volume Input [veh/h]	50	743	467	16	24	70
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	7	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	50	755	474	16	24	70
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	189	119	4	6	18
Total Analysis Volume [veh/h]	50	755	474	16	24	70
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.01	0.00	0.00	0.10	0.09
d_M, Delay for Movement [s/veh]	8.53	0.00	0.00	0.00	21.56	11.50
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.15	0.00	0.00	0.00	0.70	0.70
95th-Percentile Queue Length [ft/ln]	3.67	0.00	0.00	0.00	17.52	17.52
d_A, Approach Delay [s/veh]	0.53		0.00		14.07	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	1.26					
Intersection LOS	C					

Intersection Level Of Service Report

Intersection 18: US 1/42nd Place/Crittendon Street

Control Type:	Signalized	Delay (sec / veh):	53.2
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.892

Intersection Setup

Name	42nd Pl			Crittenden St			US 1			US 1		
Approach	Southbound			Eastbound			Northeastbound			Southwestbound		
Lane Configuration												
Turning Movement	Left	Right	Right2	Left	Thru	Right	Left2	Left	Thru	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			25.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	42nd Pl			Crittenden St			US 1			US 1		
Base Volume Input [veh/h]	5	16	0	0	38	355	346	50	778	518	30	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	2.00	2.14	0.00	2.17	2.05	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	7	12	0	12	7	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	16	0	0	38	362	358	50	790	525	30	5
Peak Hour Factor	0.9000	0.9000	0.9000	1.0000	0.9000	0.9000	1.0000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	4	0	0	11	101	90	14	219	146	8	1
Total Analysis Volume [veh/h]	6	18	0	0	42	402	358	56	878	583	33	6
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	42.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal group	4	4	4	0	3	3	0	6	6	2	6	6
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	-	-	-	-	Lag	-	-	-	-
Minimum Green [s]	5	5	5	0	5	5	0	20	20	20	20	20
Maximum Green [s]	19	19	19	0	25	25	0	60	60	60	60	60
Amber [s]	4.0	4.0	4.0	0.0	4.0	4.0	0.0	5.0	5.0	5.0	5.0	5.0
All red [s]	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0
Split [s]	24	24	24	0	30	30	0	66	66	66	66	66
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk	No				No				No	No		
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	0.0	3.0	3.0	0.0	4.0	4.0	6.0	4.0	4.0
Minimum Recall	No				No				No	No		
Maximum Recall	No				No				Yes	Yes		
Pedestrian Recall	No				No				No	No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	50.0	50.0	50.0	0.0	50.0	50.0	0.0	50.0	50.0	50.0	50.0	50.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	6.00	6.00	8.00	8.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	4.00	4.00	6.00	6.00
g_i, Effective Green Time [s]	3	25	76	76	74	74
g / C, Green / Cycle	0.02	0.21	0.63	0.63	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate	0.01	0.27	0.52	0.25	0.17	0.17
s, saturation flow rate [veh/h]	1660	1638	800	3541	1862	1821
c, Capacity [veh/h]	40	341	487	2246	1150	1125
d1, Uniform Delay [s]	57.99	47.50	27.03	10.67	10.53	10.58
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.74	155.29	16.77	0.51	0.58	0.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.60	1.30	0.85	0.39	0.27	0.28
d, Delay for Lane Group [s/veh]	71.74	202.79	43.80	11.18	11.11	11.19
Lane Group LOS	E	F	D	B	B	B
Critical Lane Group	Yes	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.88	24.95	12.92	5.45	3.78	3.80
50th-Percentile Queue Length [ft/ln]	22.00	623.82	322.96	136.23	94.39	94.93
95th-Percentile Queue Length [veh/ln]	1.58	37.69	18.81	9.28	6.80	6.83
95th-Percentile Queue Length [ft/ln]	39.60	942.20	470.33	231.94	169.89	170.87

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	71.74	71.74	71.74	0.00	202.79	202.79	43.80	43.80	11.18	11.15	11.19	11.19
Movement LOS	E	E	E		F	F	D	D	B	B	B	B
d_A, Approach Delay [s/veh]	71.74			202.79			21.63			11.15		
Approach LOS	E			F			C			B		
d_I, Intersection Delay [s/veh]	53.17											
Intersection LOS	D											
Intersection V/C	0.892											

Sequence

Ring 1	-	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 19: US 1/41st Place/Charles Armentrout Dr

Control Type:	Signalized	Delay (sec / veh):	33.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.904

Intersection Setup

Name	US 1			US 1			Charles L Armentrout			41st		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	43.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	US 1			US 1			Charles L Armentrout			41st		
Base Volume Input [veh/h]	1	675	563	592	356	2	271	3	474	2	2	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.38	2.14	2.00	0.00	2.00	0.00	2.21	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	0	7	7	0	0	0	12	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	687	563	599	363	2	271	3	486	2	2	2
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	191	156	166	101	1	75	1	135	1	1	1
Total Analysis Volume [veh/h]	1	763	626	666	403	2	301	3	540	2	2	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	4			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	42.0
Offset Reference	LagEnd
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss
Signal group	6	6	6	5	2	2	8	8	2	4	4	4
Auxiliary Signal Groups									2,5			
Lead / Lag	Lag	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	20	20	20	5	20	20	8	8	20	8	8	8
Maximum Green [s]	49	49	49	25	78	78	30	30	78	30	30	30
Amber [s]	5.0	5.0	5.0	4.0	5.0	5.0	4.0	4.0	5.0	4.0	4.0	4.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	2.0	2.0	1.0	2.0	2.0	2.0
Split [s]	54	54	54	30	84	84	36	36	84	36	36	36
Vehicle Extension [s]	6.0	6.0	6.0	3.0	6.0	6.0	3.0	3.0	6.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Recall		No		No	No			No	No		No	
Maximum Recall		Yes		No	Yes			No	Yes		No	
Pedestrian Recall		No		No	No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	0.0	50.0	50.0	50.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	C	R	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	5.50	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	0.00	4.00	4.00	4.00	0.00	4.00
g_i, Effective Green Time [s]	51	51	51	81	81	81	27	81	27
g / C, Green / Cycle	0.43	0.43	0.43	0.68	0.68	0.68	0.22	0.68	0.22
(v / s)_i Volume / Saturation Flow Rate	0.00	0.22	0.40	0.62	0.11	0.11	0.21	0.34	0.00
s, saturation flow rate [veh/h]	996	3547	1577	1069	1863	1860	1462	1580	1870
c, Capacity [veh/h]	427	1512	673	701	1260	1258	387	1069	458
d1, Uniform Delay [s]	23.98	25.16	32.74	20.35	7.05	7.05	45.38	9.55	36.29
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.29	0.50	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.01	1.21	21.34	23.75	0.27	0.27	9.09	1.71	0.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.50	0.93	0.95	0.16	0.16	0.79	0.51	0.01
d, Delay for Lane Group [s/veh]	23.99	26.36	54.07	44.10	7.33	7.33	54.47	11.26	36.30
Lane Group LOS	C	C	D	D	A	A	D	B	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.02	7.86	20.22	12.81	1.84	1.84	9.88	7.17	0.14
50th-Percentile Queue Length [ft/ln]	0.47	196.43	505.57	320.35	46.02	45.95	247.00	179.34	3.53
95th-Percentile Queue Length [veh/ln]	0.03	12.45	27.60	18.68	3.31	3.31	15.03	11.57	0.25
95th-Percentile Queue Length [ft/ln]	0.84	311.36	689.95	467.12	82.84	82.71	375.87	289.15	6.36

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	23.99	26.36	54.07	44.10	7.33	7.33	54.47	54.47	11.26	36.30	36.30	36.30
Movement LOS	C	C	D	D	A	A	D	D	B	D	D	D
d_A, Approach Delay [s/veh]	38.84			30.19			26.82			36.30		
Approach LOS	D			C			C			D		
d_I, Intersection Delay [s/veh]	32.98											
Intersection LOS	C											
Intersection V/C	0.904											

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 20: MD 410/Toledo Terrace

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 115.5
 Level Of Service: F
 Volume to Capacity (v/c): 8.025

Intersection Setup

Name				Toledo Terrace			MD 410			MD 410		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	500.00	100.00	900.00	175.00	100.00	175.00
Speed [mph]	30.00			30.00			50.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name				Toledo Terrace			MD 410			MD 410		
Base Volume Input [veh/h]	99	32	93	127	19	283	387	1306	145	81	998	155
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.44	0.00	2.50	2.38	0.00	1.96	2.07	2.00	1.92	2.00	2.05	3.85
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	22	0	0	0	0	0	0	24	41	0	13	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	121	32	93	127	19	283	387	1330	186	81	1011	155
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	9	26	35	5	79	108	369	52	23	281	43
Total Analysis Volume [veh/h]	134	36	103	141	21	314	430	1478	207	90	1123	172
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	4			2			1			5		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	66.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	8	8	8	4	4	4	1	6	6	2	2	2
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	8	8	8	8	8	8	5	20	20	20	20	20
Maximum Green [s]	39	39	39	39	39	39	31	99	99	63	63	63
Amber [s]	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5
All red [s]	2.0	2.0	2.0	2.0	2.0	2.0	1.0	1.5	1.5	1.5	1.5	1.5
Split [s]	45	45	45	45	45	45	36	105	105	69	69	69
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	5.0	5.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0
Minimum Recall		No			No		No	No			No	
Maximum Recall		No			No		No	Yes			Yes	
Pedestrian Recall		No			No		No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	R	L	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	0.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	39	39	39	39	99	99	99	70	70	70
g / C, Green / Cycle	0.26	0.26	0.26	0.26	0.66	0.66	0.66	0.47	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	4.82	0.07	6.94	0.20	0.51	0.42	0.13	0.25	0.32	0.11
s, saturation flow rate [veh/h]	35	1566	23	1582	845	3547	1580	356	3545	1552
c, Capacity [veh/h]	52	406	51	410	506	2343	1044	124	1659	726
d1, Uniform Delay [s]	69.94	44.03	72.12	51.32	30.88	14.82	9.94	61.48	31.06	23.87
k, delay calibration	0.50	0.11	0.50	0.26	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1066.60	0.32	1030.06	6.93	16.24	1.30	0.43	30.77	2.24	0.77
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	3.26	0.25	3.18	0.77	0.85	0.63	0.20	0.73	0.68	0.24
d, Delay for Lane Group [s/veh]	1136.55	44.35	1102.19	58.25	47.12	16.12	10.37	92.24	33.30	24.63
Lane Group LOS	F	D	F	E	D	B	B	F	C	C
Critical Lane Group	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	17.45	3.12	16.55	11.74	8.16	13.55	2.59	4.49	15.80	3.75
50th-Percentile Queue Length [ft/ln]	436.22	77.98	413.81	293.61	204.12	338.82	64.80	112.22	394.91	93.79
95th-Percentile Queue Length [veh/ln]	31.41	5.61	29.79	17.36	12.85	19.59	4.67	7.96	22.31	6.75
95th-Percentile Queue Length [ft/ln]	785.19	140.37	744.85	434.12	321.27	489.75	116.64	199.08	557.86	168.82

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	1136.55	1136.55	44.35	1102.19	1102.19	58.25	47.12	16.12	10.37	92.24	33.30	24.63
Movement LOS	F	F	D	F	F	E	D	B	B	F	C	C
d_A, Approach Delay [s/veh]	724.47			413.54			21.86			36.05		
Approach LOS	F			F			C			D		
d_I, Intersection Delay [s/veh]	115.51											
Intersection LOS	F											
Intersection V/C	8.025											

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 21: MD 410/Editors Park Dr

Control Type: Two-way stop
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 4,351.3
 Level Of Service: F
 Volume to Capacity (v/c): 8.839

Intersection Setup

Name	Editors Park Dr		MD 410		MD 410		
Approach	Northbound		Eastbound		Westbound		
Lane Configuration							
Turning Movement	Left	Right	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	200.00	150.00	100.00	100.00
Speed [mph]	30.00		45.00		45.00		
Grade [%]	0.00		0.00		0.00		
Crosswalk	Yes		Yes		Yes		

Volumes

Name	Editors Park Dr		MD 410		MD 410		
Base Volume Input [veh/h]	64	67	1460	109	1	35	1282
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.85	0.00	2.00	1.64	0.00	1.89	2.05
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	64	24	0	0	121	13
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	64	131	1484	109	1	156	1295
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	36	412	30	0	43	360
Total Analysis Volume [veh/h]	71	146	1649	121	1	173	1439
Pedestrian Volume [ped/h]	0		0		0		

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	8.84	0.46	0.02	0.00	0.02	0.50	0.01
d_M, Delay for Movement [s/veh]	4351.30	3914.38	0.00	0.00	87.64	26.19	0.00
Movement LOS	F	F	A	A	F	D	A
95th-Percentile Queue Length [veh/ln]	27.20	27.20	0.00	0.00	2.34	2.34	0.00
95th-Percentile Queue Length [ft/ln]	679.96	679.96	0.00	0.00	58.58	58.58	0.00
d_A, Approach Delay [s/veh]	4057.34		0.00		2.86		
Approach LOS	F		A		A		
d_I, Intersection Delay [s/veh]	245.85						
Intersection LOS	F						

Intersection Level Of Service Report

Intersection 22: MD 410/Prince George's Plaza

Control Type:	Signalized	Delay (sec / veh):	24.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.535

Intersection Setup

Name	Metro			PG Plaza			MD 410			MD 410		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	2	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	250.00	100.00	250.00	225.00	100.00	100.00	325.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Metro			PG Plaza			MD 410			MD 410		
Base Volume Input [veh/h]	175	17	165	126	12	34	132	1307	62	98	1139	70
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.54	3.85	2.22	0.00	0.00	3.85	2.22	2.07	1.74	2.21	2.00	3.85
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	88	0	0	134	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	175	17	165	126	12	34	132	1395	62	98	1273	70
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	49	5	46	35	3	9	37	388	17	27	354	19
Total Analysis Volume [veh/h]	194	19	183	140	13	38	147	1550	69	109	1414	78
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	75.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	3	3	3	4	4	4	1	6	6	5	2	2
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	20	20	5	20	20
Maximum Green [s]	24	24	24	24	24	24	25	54	54	25	54	54
Amber [s]	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.5	4.5	4.0	4.5	4.5
All red [s]	1.5	1.5	1.5	1.5	1.5	1.5	1.0	1.5	1.5	1.0	1.5	1.5
Split [s]	30	30	30	30	30	30	30	60	60	30	60	60
Vehicle Extension [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	5.0	5.0	2.5	5.0	5.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.0	4.0	4.0	3.0	4.0	4.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	294.0	294.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	30.0	30.0	30.0	30.0	6.0	6.0	30.0	5.0	5.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	5.50	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.50	3.50	3.50	3.50	3.50	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	21	21	8	8	8	103	93	93	103	92	92
g / C, Green / Cycle	0.14	0.14	0.06	0.06	0.06	0.69	0.62	0.62	0.69	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.06	0.13	0.04	0.01	0.02	0.29	0.30	0.30	0.25	0.28	0.05
s, saturation flow rate [veh/h]	3461	1577	3514	1900	1555	507	3544	1821	433	5074	1555
c, Capacity [veh/h]	490	223	197	106	87	362	2190	1125	316	3105	952
d1, Uniform Delay [s]	58.54	63.38	69.62	67.30	68.52	10.93	15.68	15.69	11.17	15.66	11.89
k, delay calibration	0.08	0.24	0.08	0.08	0.08	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.39	23.35	3.54	0.38	2.55	3.37	0.78	1.52	2.96	0.48	0.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.40	0.90	0.71	0.12	0.44	0.41	0.49	0.49	0.34	0.46	0.08
d, Delay for Lane Group [s/veh]	58.93	86.73	73.16	67.68	71.07	14.30	16.47	17.21	14.13	16.14	12.06
Lane Group LOS	E	F	E	E	E	B	B	B	B	B	B
Critical Lane Group	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.41	9.07	2.75	0.49	1.48	1.84	9.68	10.19	1.35	8.36	1.08
50th-Percentile Queue Length [ft/ln]	85.13	226.67	68.86	12.21	37.04	46.05	242.03	254.82	33.74	209.03	26.95
95th-Percentile Queue Length [veh/ln]	6.13	14.00	4.96	0.88	2.67	3.32	14.78	15.43	2.43	13.10	1.94
95th-Percentile Queue Length [ft/ln]	153.24	350.12	123.95	21.98	66.67	82.90	369.60	385.72	60.74	327.58	48.51

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	58.93	86.73	86.73	73.16	67.68	71.07	14.30	16.70	17.21	14.13	16.14	12.06
Movement LOS	E	F	F	E	E	E	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	73.11			72.37			16.52			15.81		
Approach LOS	E			E			B			B		
d_I, Intersection Delay [s/veh]	24.60											
Intersection LOS	C											
Intersection V/C	0.535											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 23: MD 410/Belcrest Rd

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 120.3
 Level Of Service: F
 Volume to Capacity (v/c): 1.021

Intersection Setup

Name				Belcrest Rd			MD 410			MD 410		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	250.00	100.00	100.00	250.00	100.00	100.00	225.00	100.00	100.00	225.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name				Belcrest Rd			MD 410			MD 410		
Base Volume Input [veh/h]	363	387	6	310	601	126	210	1114	276	239	867	122
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.21	2.00	3.85	2.00	2.21	2.63	2.00	2.00	2.38	2.63	2.00	2.63
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	71	0	0	20	0	10	29	21	38	17	53	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	434	387	6	330	601	136	239	1135	314	256	920	122
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	121	108	2	92	167	38	66	315	87	71	256	34
Total Analysis Volume [veh/h]	482	430	7	367	668	151	266	1261	349	284	1022	136
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	26			10			91			71		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	60.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	4	4	4	3	3	3	1	6	6	5	2	2
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	20	20	5	20	20
Maximum Green [s]	29	29	29	32	32	32	17	53	53	11	47	47
Amber [s]	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.5	4.5	4.0	4.5	4.5
All red [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Split [s]	35	35	35	38	38	38	23	60	60	17	54	54
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.5	4.5	4.0	4.5	4.5
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	30.0	30.0	30.0	30.0	30.0	30.0	30.0	5.0	5.0	30.0	5.0	5.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.50	6.50	6.00	6.50	6.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.50	4.50	4.00	4.50	4.50
g_i, Effective Green Time [s]	28	28	28	32	32	32	17	54	54	11	48	48
g / C, Green / Cycle	0.19	0.19	0.19	0.21	0.21	0.21	0.11	0.36	0.36	0.07	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.17	0.17	0.17	0.21	0.25	0.24	0.15	0.36	0.23	0.16	0.29	0.09
s, saturation flow rate [veh/h]	1770	1813	1682	1774	1859	1475	1774	3547	1543	1763	3547	1559
c, Capacity [veh/h]	335	343	318	379	397	315	201	1280	557	129	1138	500
d1, Uniform Delay [s]	59.72	59.72	59.76	58.48	58.97	58.97	66.47	47.53	39.58	69.47	48.59	37.89
k, delay calibration	0.34	0.34	0.34	0.39	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	25.07	24.64	26.59	33.98	96.17	94.48	175.45	21.92	5.26	562.46	11.23	1.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.92	0.93	0.97	1.16	1.14	1.32	0.99	0.63	2.20	0.90	0.27
d, Delay for Lane Group [s/veh]	84.79	84.36	86.35	92.46	155.14	153.45	241.92	69.46	44.85	631.93	59.82	39.23
Lane Group LOS	F	F	F	F	F	F	F	E	D	F	E	D
Critical Lane Group	No	No	Yes	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	13.89	14.18	13.37	17.40	25.67	20.22	17.37	26.45	11.21	25.10	19.52	3.87
50th-Percentile Queue Length [ft/ln]	347.13	354.45	334.31	435.05	641.77	505.59	434.34	661.19	280.24	627.51	487.93	96.72
95th-Percentile Queue Length [veh/ln]	20.00	20.35	19.37	24.24	36.82	29.61	26.93	34.88	16.70	39.82	26.76	6.96
95th-Percentile Queue Length [ft/ln]	499.91	508.84	484.25	606.08	920.46	740.36	673.23	872.04	417.51	995.56	669.06	174.10

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	84.63	85.69	86.35	92.46	154.61	153.45	241.92	69.46	44.85	631.93	59.82	39.23
Movement LOS	F	F	F	F	F	F	F	E	D	F	E	D
d_A, Approach Delay [s/veh]	85.14			135.23			89.33			170.55		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	120.26											
Intersection LOS	F											
Intersection V/C	1.021											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 24: MD 410/MD 500/Adelphi Rd

Control Type:	Signalized	Delay (sec / veh):	212.1
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.199

Intersection Setup

Name	Adelphi Rd			MD 410			MD 410			MD 500		
Approach	Southbound			Eastbound			Westbound			Northeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	0	0	0
Pocket Length [ft]	350.00	100.00	150.00	300.00	100.00	100.00	350.00	100.00	150.00	100.00	100.00	100.00
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Adelphi Rd			MD 410			MD 410			MD 500		
Base Volume Input [veh/h]	525	352	47	101	1302	54	479	1205	400	46	727	497
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	1.56	2.63	2.00	0.00	2.00	2.04	2.09	3.85	2.13	2.15
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	6	0	41	0	36	76	0	30	7	22
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	525	364	53	101	1343	54	515	1281	400	76	734	519
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	146	101	15	28	373	15	143	356	111	21	204	144
Total Analysis Volume [veh/h]	583	404	59	112	1492	60	572	1423	444	84	816	577
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	6			5			9			3		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	75.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Protecte	Permiss	Unsigna	Protecte	Permiss	Overlap	Split	Split	Split
Signal group	4	4	0	1	6	0	5	2	2	3	3	0
Auxiliary Signal Groups									2,4			
Lead / Lag	Lag	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	5	25	0	5	5	5	7	7	0
Maximum Green [s]	29	29	0	12	46	0	27	61	61	21	21	0
Amber [s]	5.0	5.0	0.0	4.0	5.0	0.0	4.0	5.0	5.0	5.0	5.0	0.0
All red [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Split [s]	36	36	0	18	53	0	33	68	68	28	28	0
Vehicle Extension [s]	2.5	2.5	0.0	3.0	5.0	0.0	6.0	3.0	3.0	2.5	2.5	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	5.0	5.0	0.0	4.0	5.0	0.0	4.0	5.0	5.0	5.0	5.0	0.0
Minimum Recall		No		No	No		No	No	No		No	
Maximum Recall		No		No	Yes		No	Yes	Yes		No	
Pedestrian Recall		No		No	No		No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	294.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	30.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	R	C	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	5.00	5.00	5.00	0.00	5.00	0.00	5.00	0.00	5.00	5.00	5.00
g_i, Effective Green Time [s]	29	29	29	79	51	79	61	115	21	21	21
g / C, Green / Cycle	0.19	0.19	0.19	0.53	0.34	0.53	0.41	0.77	0.14	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.20	0.20	0.20	0.30	0.42	0.36	0.40	0.28	0.25	0.25	0.37
s, saturation flow rate [veh/h]	1774	1806	1640	373	3547	1598	3545	1578	1844	1693	1551
c, Capacity [veh/h]	343	349	317	96	1201	707	1442	1210	258	237	217
d1, Uniform Delay [s]	60.50	60.50	60.50	48.60	49.60	43.83	44.11	5.68	64.50	64.50	64.50
k, delay calibration	0.40	0.40	0.40	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	53.18	52.76	55.43	143.57	116.13	9.71	20.81	0.86	383.72	383.08	759.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.04	1.04	1.04	1.17	1.24	0.81	0.99	0.37	1.82	1.82	2.66
d, Delay for Lane Group [s/veh]	113.68	113.26	115.93	192.16	165.73	53.54	64.92	6.54	448.22	447.58	823.68
Lane Group LOS	F	F	F	F	F	D	E	A	F	F	F
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	18.03	18.32	16.88	5.53	41.56	6.65	29.85	4.37	37.34	34.24	54.04
50th-Percentile Queue Length [ft/ln]	450.87	457.95	421.88	138.24	1038.96	166.24	746.35	109.34	933.46	856.00	1350.94
95th-Percentile Queue Length [veh/ln]	25.49	25.83	24.09	9.95	59.67	10.88	38.81	7.80	57.99	53.56	84.48
95th-Percentile Queue Length [ft/ln]	637.26	645.86	602.28	248.84	1491.80	271.96	970.37	195.08	1449.63	1339.00	2112.08

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	113.51	115.04	115.93	192.16	165.73	0.00	53.54	64.92	6.54	448.22	447.88	823.68
Movement LOS	F	F	F	F	F		D	E	A	F	F	F
d_A, Approach Delay [s/veh]	114.24			167.58			51.62			594.71		
Approach LOS	F			F			D			F		
d_I, Intersection Delay [s/veh]	212.09											
Intersection LOS	F											
Intersection V/C	1.199											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report Intersection 25: Ager Rd/23rd Ave

Control Type: Signalized
Analysis Method: HCM 6th Edition
Analysis Period: 15 minutes

Delay (sec / veh): 18.7
Level Of Service: B
Volume to Capacity (v/c): 0.432

Intersection Setup

Name							Ager Rd.			Ager Rd.		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	200.00	100.00	100.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name							Ager Rd.			Ager Rd.		
Base Volume Input [veh/h]	14	24	13	199	31	37	21	635	3	25	811	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	30	0	0	49	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	24	13	199	31	37	21	665	3	25	860	14
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	6	3	50	8	9	5	166	1	6	215	4
Total Analysis Volume [veh/h]	14	24	13	199	31	37	21	665	3	25	860	14
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	35	0	0	35	0
Maximum Green [s]	0	20	0	0	30	0	0	35	0	0	35	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	25	0	0	35	0	0	50	0	0	50	0
Vehicle Extension [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	21	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	20	30	45	45	45	45	45	45
g / C, Green / Cycle	0.22	0.33	0.50	0.50	0.50	0.50	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.03	0.19	0.04	0.20	0.20	0.04	0.26	0.26
s, saturation flow rate [veh/h]	1545	1443	571	1683	1680	692	1683	1673
c, Capacity [veh/h]	394	516	252	841	840	325	841	837
d1, Uniform Delay [s]	28.11	24.44	22.78	14.04	14.04	19.49	15.21	15.21
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.68	3.69	0.65	1.40	1.40	0.46	2.30	2.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.13	0.52	0.08	0.40	0.40	0.08	0.52	0.52
d, Delay for Lane Group [s/veh]	28.79	28.13	23.43	15.44	15.44	19.95	17.51	17.52
Lane Group LOS	C	C	C	B	B	B	B	B
Critical Lane Group	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.95	4.95	0.36	4.24	4.24	0.38	6.10	6.07
50th-Percentile Queue Length [ft/ln]	23.66	123.84	8.95	106.09	105.96	9.50	152.52	151.74
95th-Percentile Queue Length [veh/ln]	1.70	8.60	0.64	7.62	7.61	0.68	10.15	10.11
95th-Percentile Queue Length [ft/ln]	42.58	215.09	16.12	190.56	190.37	17.10	253.79	252.75

Movement, Approach, & Intersection Results

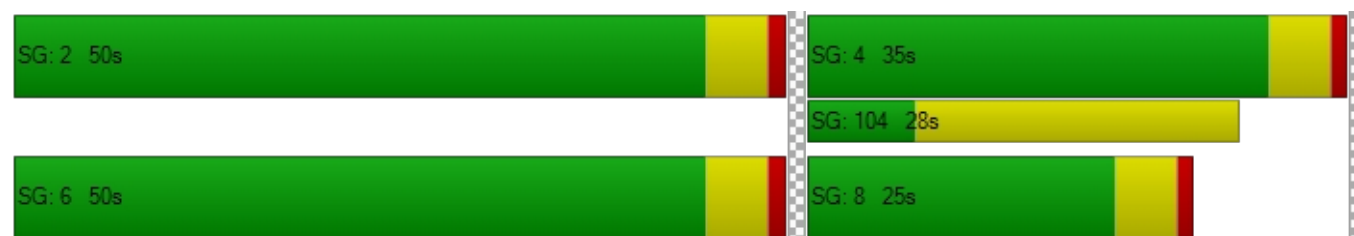
d_M, Delay for Movement [s/veh]	28.79	28.79	28.79	28.13	28.13	28.13	23.43	15.44	15.44	19.95	17.52	17.52
Movement LOS	C	C	C	C	C	C	C	B	B	B	B	B
d_A, Approach Delay [s/veh]	28.79			28.13			15.69			17.59		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	18.68											
Intersection LOS	B											
Intersection V/C	0.432											

Other Modes

g_Walk,mi, Effective Walk Time [s]	45.0			45.0			20.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	11.25			11.25			27.22			34.67		
I_p,int, Pedestrian LOS Score for Intersection	1.756			1.860			3.019			2.687		
Crosswalk LOS	A			A			C			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	444			667			1000			1000		
d_b, Bicycle Delay [s]	27.22			20.00			11.25			11.25		
I_b,int, Bicycle LOS Score for Intersection	1.644			2.000			2.128			2.301		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 26: Ager Rd/Oglethorpe St/School

Control Type:	Signalized	Delay (sec / veh):	47.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.394

Intersection Setup

Name							Ager Rd.			Ager Rd.		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	1200.00	350.00	100.00	100.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name							Ager Rd.			Ager Rd.		
Base Volume Input [veh/h]	21	0	32	2	0	0	51	981	2	3	1040	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	30	0	0	49	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	0	32	2	0	0	51	1011	2	3	1089	35
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	0	8	1	0	0	13	253	1	1	272	9
Total Analysis Volume [veh/h]	21	0	32	2	0	0	51	1011	2	3	1089	35
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	4	0	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	10	0	5	10	0
Maximum Green [s]	0	20	0	0	20	0	20	30	0	20	30	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	30	0	0	30	0	30	45	0	30	45	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	6.0	0.0	3.0	6.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	27	0	0	11	0	0	12	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	L	C	C
C, Cycle Length [s]	109	109	109	109	109	109	109	109
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	3.00	0.00	3.00	3.00
g_i, Effective Green Time [s]	25	25	70	40	40	70	40	40
g / C, Green / Cycle	0.23	0.23	0.64	0.37	0.37	0.64	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.04	0.00	0.06	0.30	0.30	0.00	0.34	0.34
s, saturation flow rate [veh/h]	1384	1255	912	1683	1682	942	1683	1665
c, Capacity [veh/h]	363	354	537	618	617	564	618	611
d1, Uniform Delay [s]	33.54	32.42	13.50	31.25	31.25	11.07	32.88	32.88
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.84	0.03	0.35	11.64	11.64	0.02	20.42	20.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.15	0.01	0.10	0.82	0.82	0.01	0.91	0.92
d, Delay for Lane Group [s/veh]	34.38	32.45	13.85	42.88	42.89	11.08	53.30	53.51
Lane Group LOS	C	C	B	D	D	B	D	D
Critical Lane Group	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.21	0.04	0.46	13.64	13.63	0.03	17.16	17.01
50th-Percentile Queue Length [ft/ln]	30.20	1.10	11.48	340.89	340.69	0.65	429.01	425.31
95th-Percentile Queue Length [veh/ln]	2.17	0.08	0.83	19.69	19.68	0.05	23.95	23.78
95th-Percentile Queue Length [ft/ln]	54.36	1.97	20.67	492.29	492.04	1.16	598.85	594.42

Movement, Approach, & Intersection Results

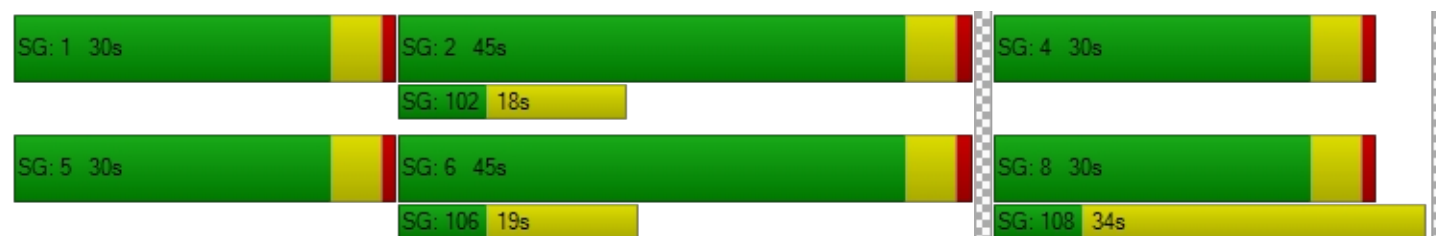
d_M, Delay for Movement [s/veh]	34.38	34.38	34.38	32.45	32.45	32.45	13.85	42.89	42.89	11.08	53.40	53.51
Movement LOS	C	C	C	C	C	C	B	D	D	B	D	D
d_A, Approach Delay [s/veh]	34.38			32.45			41.49			53.29		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	47.24											
Intersection LOS	D											
Intersection V/C	0.394											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			25.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			23.47			34.67		
I_p,int, Pedestrian LOS Score for Intersection	1.810			1.719			2.784			2.820		
Crosswalk LOS	A			A			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	556			556			889			889		
d_b, Bicycle Delay [s]	23.47			23.47			13.89			13.89		
I_b,int, Bicycle LOS Score for Intersection	1.647			1.563			2.437			2.489		
Bicycle LOS	A			A			B			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report Intersection 27: Ager Rd/Nicholson St

Control Type: Two-way stop
Analysis Method: HCM 2010
Analysis Period: 15 minutes

Delay (sec / veh): 10,000.0
Level Of Service: F
Volume to Capacity (v/c): 0.721

Intersection Setup

Name	Ager Rd				Nicholson St			Nicholson St			Ager Rd.			
Approach	Northbound				Northeastbound			Southwestbound			Southeastbound			
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	0	0	1	0	0	0
Pocket Length [ft]	225.0	100.0	100.0	150.0	100.00	100.00	100.00	100.00	100.00	100.00	200.0	100.0	100.0	100.0
Speed [mph]	35.00				30.00			30.00			35.00			
Grade [%]	0.00				0.00			0.00			0.00			
Crosswalk	Yes				Yes			Yes			Yes			

Volumes

Name	Ager Rd				Nicholson St			Nicholson St			Ager Rd.			
Base Volume Input [veh/h]	1	78	838	96	69	14	70	25	10	107	6	175	742	93
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	2.00	0.00	1.82	0.00	0.00	1.74	0.00	2.44	2.00	3.57
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	30	0	0	0	0	0	0	0	0	0	49	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	78	868	96	69	14	70	25	10	107	6	175	791	93
Peak Hour Factor	0.900	0.900	0.900	0.900	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.900	0.900	0.900	0.900
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	22	241	27	19	4	19	7	3	30	2	49	220	26
Total Analysis Volume [veh/h]	1	87	964	107	77	16	78	28	11	119	7	194	879	103
Pedestrian Volume [ped/h]	0				0			0			0			

Intersection Settings

Priority Scheme	Free	Stop	Stop	Free
Flared Lane		No	No	
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance		No	No	
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.12	0.01	0.00	9.63	1.05	0.15	0.00	0.72	0.24	0.04	0.30	0.01	0.00
d_M, Delay for Movement [s/veh]	21.90	10.81	0.00	0.00	5115.45	4902.15	4672.28	10000.0	10000.0	10000.0	28.97	13.74	0.00	0.00
Movement LOS	C	B	A	A	F	F	F	F	F	F	D	B	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	22.28	22.28	22.28	22.40	22.40	22.40	0.03	0.03	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.11	0.11	0.00	0.00	556.98	556.98	556.98	559.89	559.89	559.89	0.77	0.77	0.00	0.00
d_A, Approach Delay [s/veh]	0.83				4893.34			10000.00			2.42			
Approach LOS	A				F			F			A			
d_I, Intersection Delay [s/veh]	906.25													
Intersection LOS	F													

Intersection Level Of Service Report

Intersection 28: Ager Rd/Hamilton St

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 25.5
 Level Of Service: C
 Volume to Capacity (v/c): 0.821

Intersection Setup

Name	Hamilton St			Hamilton St			Ager Rd.			Ager Rd.		
Approach	Eastbound			Westbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1	1	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	1500.00
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Hamilton St			Hamilton St			Ager Rd.			Ager Rd.		
Base Volume Input [veh/h]	65	158	16	130	83	488	28	388	125	454	290	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.33	1.72	0.00	3.85	2.08	1.91	2.06	1.84	3.33	2.21	2.00	2.63
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	30	51	37	0	84	0	61	0	0	0	0	49
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	95	209	53	130	167	488	89	388	125	454	290	99
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	58	15	36	46	136	25	108	35	126	81	28
Total Analysis Volume [veh/h]	106	232	59	144	186	542	99	431	139	504	322	110
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	8	0	0	4	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	10	0	5	10	0
Maximum Green [s]	0	26	0	0	26	0	0	30	0	10	45	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	4.0	0.0	3.0	4.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	30	0	0	30	0	0	35	0	15	50	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	3.0	0.0	2.0	3.0	0.0
Minimum Recall		No			No			Yes		Yes	Yes	
Maximum Recall		No			No			No		No	No	
Pedestrian Recall		No			No			No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C	R	L	C	C	L	C
C, Cycle Length [s]	73	73	73	73	73	73	73	73	73	73
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	3.00	3.00	3.00	0.00	3.00
g_i, Effective Green Time [s]	26	26	26	26	26	24	24	24	38	38
g / C, Green / Cycle	0.36	0.36	0.36	0.36	0.36	0.33	0.33	0.33	0.52	0.52
(v / s)_i Volume / Saturation Flow Rate	0.16	0.14	0.21	0.11	0.34	0.10	0.16	0.16	0.44	0.24
s, saturation flow rate [veh/h]	1033	1628	672	1694	1585	952	1866	1712	1134	1783
c, Capacity [veh/h]	451	581	339	605	566	234	608	558	626	925
d1, Uniform Delay [s]	20.83	17.54	25.36	16.85	22.80	29.86	19.60	19.63	14.95	11.09
k, delay calibration	0.11	0.11	0.15	0.11	0.41	0.11	0.11	0.11	0.50	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.48	0.45	1.18	0.29	25.33	1.22	0.60	0.67	10.58	0.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.36	0.41	0.42	0.31	0.96	0.42	0.49	0.49	0.80	0.47
d, Delay for Lane Group [s/veh]	21.31	17.99	26.55	17.13	48.12	31.08	20.21	20.30	25.53	11.46
Lane Group LOS	C	B	C	B	D	C	C	C	C	B
Critical Lane Group	No	No	No	No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.19	2.79	2.21	2.11	12.12	1.65	3.79	3.53	6.49	3.86
50th-Percentile Queue Length [ft/ln]	54.75	69.86	55.15	52.80	303.01	41.23	94.86	88.13	162.32	96.48
95th-Percentile Queue Length [veh/ln]	3.94	5.03	3.97	3.80	17.83	2.97	6.83	6.35	10.67	6.95
95th-Percentile Queue Length [ft/ln]	98.55	125.75	99.27	95.05	445.75	74.22	170.75	158.63	266.79	173.67

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	21.31	18.79	17.99	26.55	17.13	48.12	31.08	20.24	20.30	25.53	11.46	11.46
Movement LOS	C	B	B	C	B	D	C	C	C	C	B	B
d_A, Approach Delay [s/veh]	19.34			37.95			21.85			19.04		
Approach LOS	B			D			C			B		
d_I, Intersection Delay [s/veh]	25.47											
Intersection LOS	C											
Intersection V/C	0.821											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 29: Toledo Rd/Belcrest Rd

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 15.2
 Level Of Service: B
 Volume to Capacity (v/c): 0.549

Intersection Setup

Name	Belcrest Rd				Belcrest Rd				Toledo Rd			Toledo Rd		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	1	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	400.0	100.0	100.0	100.0	200.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00				30.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Crosswalk	Yes				No				Yes			Yes		

Volumes

Name	Belcrest Rd				Belcrest Rd				Toledo Rd			Toledo Rd		
Base Volume Input [veh/h]	15	192	383	78	2	93	444	144	157	69	179	56	80	87
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.03	1.83	1.37	0.00	2.00	2.02	0.00	0.00	2.86	0.00	2.86	3.45	2.13
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	8	0	0	0	10	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	192	391	78	2	93	454	144	157	69	179	56	80	87
Peak Hour Factor	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	53	109	22	1	26	126	40	44	19	50	16	22	24
Total Analysis Volume [veh/h]	17	213	434	87	2	103	504	160	174	77	199	62	89	97
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	8				0				20			15		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	2	2	2	2	6	6	6	6	4	4	4	8	8	8
Auxiliary Signal Groups														
Lead / Lag	Lag	Lag	-	-	Lag	Lag	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Maximum Green [s]	40	40	40	40	40	40	40	40	30	30	30	30	30	30
Amber [s]	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	15	15	15	15	15	15	15	15	21	21	21	21	21	21
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall			No				No			No			No	
Maximum Recall			Yes				Yes			No			No	
Pedestrian Recall			No				No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	30.0	30.0	30.0	30.0	0.0	0.0	0.0	0.0	30.0	30.0	30.0	30.0	30.0	30.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	C
C, Cycle Length [s]	72	72	72	72	72	72	72	72	72	72
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	40	40	40	40	40	40	22	22	22	22
g / C, Green / Cycle	0.55	0.55	0.55	0.55	0.55	0.55	0.31	0.31	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.30	0.14	0.14	0.12	0.19	0.19	0.14	0.04	0.12	0.15
s, saturation flow rate [veh/h]	760	1866	1750	874	1862	1694	1217	1847	1602	1603
c, Capacity [veh/h]	414	1032	968	487	1031	937	328	570	494	557
d1, Uniform Delay [s]	17.81	8.42	8.43	12.72	8.85	8.88	27.85	18.04	19.74	20.24
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.30	0.61	0.66	1.01	0.88	0.99	1.34	0.11	0.53	0.56
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.56	0.26	0.26	0.22	0.34	0.34	0.53	0.14	0.40	0.45
d, Delay for Lane Group [s/veh]	23.11	9.03	9.09	13.74	9.73	9.87	29.19	18.15	20.27	20.80
Lane Group LOS	C	A	A	B	A	A	C	B	C	C
Critical Lane Group	Yes	No	No	No	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.54	2.08	1.98	1.13	2.83	2.64	2.85	0.90	2.57	3.28
50th-Percentile Queue Length [ft/ln]	88.47	51.89	49.42	28.14	70.76	66.03	71.23	22.53	64.33	82.09
95th-Percentile Queue Length [veh/ln]	6.37	3.74	3.56	2.03	5.09	4.75	5.13	1.62	4.63	5.91
95th-Percentile Queue Length [ft/ln]	159.24	93.40	88.95	50.66	127.37	118.86	128.22	40.55	115.79	147.77

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	23.11	23.11	9.05	9.09	13.74	13.74	9.77	9.87	29.19	18.15	20.27	20.80	20.80	20.80
Movement LOS	C	C	A	A	B	B	A	A	C	B	C	C	C	C
d_A, Approach Delay [s/veh]	13.36				10.33				23.36			20.80		
Approach LOS	B				B				C			C		
d_I, Intersection Delay [s/veh]	15.17													
Intersection LOS	B													
Intersection V/C	0.549													

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SG: 2 45s

SG: 4 35s

SG: 102 22s

SG: 104 28s

SG: 6 45s

SG: 8 35s

SG: 106 22s

Intersection Level Of Service Report

Intersection 30: Adelphi Rd/Belcrest Rd

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 35.2
 Level Of Service: D
 Volume to Capacity (v/c): 0.873

Intersection Setup

Name	Belcrest Rd			Underwood St			Adelphi Rd				Adelphi Rd		
Approach	Northeastbound			Southwestbound			Northwestbound				Southeastbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	150.0	100.0	100.0	100.0	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Crosswalk	No			Yes			Yes				Yes		

Volumes

Name	Belcrest Rd			Underwood St			Adelphi Rd				Adelphi Rd		
Base Volume Input [veh/h]	693	0	68	10	8	1	2	17	1150	0	0	819	650
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.98	0.00	0.00	1.99	1.94
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	8	0	0	0	0	0	0	0	7	0	0	18	10
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	701	0	68	10	8	1	2	17	1157	0	0	837	660
Peak Hour Factor	0.9000	1.0000	1.0000	0.9000	0.9000	0.9000	0.900	0.900	0.900	1.000	1.0000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	195	0	17	3	2	0	1	5	321	0	0	233	183
Total Analysis Volume [veh/h]	779	0	68	11	9	1	2	19	1286	0	0	930	733
Presence of On-Street Parking	No		No	No		No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			1				5		
Bicycle Volume [bicycles/h]	0			0			0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	122
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss
Signal group	4	4	0	8	8	8	5	5	2	0	0	6	6
Auxiliary Signal Groups													
Lead / Lag	Lead	-	-	Lag	-	-	Lead	Lead	-	-	-	-	-
Minimum Green [s]	4	4	0	4	4	4	4	4	4	0	0	4	4
Maximum Green [s]	30	30	0	17	17	17	11	11	60	0	0	46	46
Amber [s]	4.0	4.0	0.0	4.0	4.0	4.0	3.5	3.5	4.0	0.0	0.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	0.5	0.5	1.0	0.0	0.0	1.0	1.0
Split [s]	35	35	0	22	22	22	15	15	65	0	0	50	50
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	0.0	3.0	3.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk	No				No				No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	0.0	3.0	3.0	3.0	2.0	2.0	3.0	0.0	0.0	2.0	2.0
Minimum Recall	No				No			No	No			No	
Maximum Recall	No				No			No	Yes			Yes	
Pedestrian Recall	No				No			No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	30.0	30.0	30.0	0.0	0.0	30.0	30.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C
C, Cycle Length [s]	104	104	104	104	104	104	104
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	0.00	3.00	2.00	2.00
g_i, Effective Green Time [s]	27	27	2	60	60	55	55
g / C, Green / Cycle	0.26	0.26	0.02	0.58	0.58	0.53	0.53
(v / s)_i Volume / Saturation Flow Rate	0.24	0.24	0.01	0.05	0.36	0.45	0.52
s, saturation flow rate [veh/h]	1772	1775	1836	402	3547	1863	1612
c, Capacity [veh/h]	466	467	34	179	2038	982	850
d1, Uniform Delay [s]	37.18	37.30	50.87	24.18	14.84	21.07	24.09
k, delay calibration	0.31	0.31	0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.99	17.28	16.15	1.34	1.50	8.94	25.97
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.91	0.61	0.12	0.63	0.85	0.98
d, Delay for Lane Group [s/veh]	53.18	54.58	67.02	25.51	16.34	30.00	50.06
Lane Group LOS	D	D	E	C	B	C	D
Critical Lane Group	No	Yes	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	12.27	12.60	0.70	0.27	9.92	18.61	24.63
50th-Percentile Queue Length [ft/ln]	306.80	314.98	17.44	6.66	248.08	465.35	615.71
95th-Percentile Queue Length [veh/ln]	18.02	18.42	1.26	0.48	15.09	25.69	32.77
95th-Percentile Queue Length [ft/ln]	450.43	460.52	31.39	11.99	377.23	642.23	819.18

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	53.82	0.00	54.58	67.02	67.02	67.02	25.51	25.51	16.34	0.00	0.00	32.13	50.06
Movement LOS	D		D	E	E	E	C	C	B			C	D
d_A, Approach Delay [s/veh]	53.88			67.02			16.48			40.03			
Approach LOS	D			E			B			D			
d_I, Intersection Delay [s/veh]	35.22												
Intersection LOS	D												
Intersection V/C	0.873												

Sequence

Ring 1	-	2	-	4	-	8	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 31: Adelphi Rd/Campus Dr

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 180.6
 Level Of Service: F
 Volume to Capacity (v/c): 1.208

Intersection Setup

Name	Adelphi Rd.			Adelphi Rd.			Campus Dr.			Campus Dr.		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	0	0	1	0	0	0
Pocket Length [ft]	350.00	100.00	500.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Adelphi Rd.			Adelphi Rd.			Campus Dr.			Campus Dr.		
Base Volume Input [veh/h]	242	1536	43	174	1132	0	0	111	340	125	169	355
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.27	2.08	2.27	2.00	2.05	0.00	0.00	2.00	2.21	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	15	0	0	28	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	242	1551	43	174	1160	0	0	111	340	125	169	355
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	1.0000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	67	431	12	48	322	0	0	31	94	35	47	99
Total Analysis Volume [veh/h]	269	1723	48	193	1289	0	0	123	378	139	188	394
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	248
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Overlap	Permiss	Permiss	Overlap	Overlap	Permiss	Permiss	Split	Split	Split	Split	Split
Signal group	3	8	8	1	1	0	0	2	2	6	6	6
Auxiliary Signal Groups	3,8			1,7	1,4							
Lead / Lag	Lag	-	-	Lag	-	-	-	-	-	Lag	-	-
Minimum Green [s]	5	8	8	15	15	0	0	25	25	5	5	5
Maximum Green [s]	30	60	60	40	40	0	0	60	60	30	30	30
Amber [s]	4.0	4.0	4.0	4.0	4.0	0.0	0.0	4.5	4.5	4.5	4.5	4.5
All red [s]	1.0	2.0	2.0	1.0	1.0	0.0	0.0	1.5	1.5	1.5	1.5	1.5
Split [s]	35	66	66	50	50	0	0	66	66	36	36	36
Vehicle Extension [s]	3.0	3.5	3.5	3.0	3.0	0.0	0.0	4.0	4.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	4.0	4.0	3.0	3.0	0.0	0.0	4.0	4.0	4.0	4.0	4.0
Minimum Recall	Yes	Yes		Yes	Yes			Yes			Yes	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	30.0	30.0	30.0	30.0	30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	R	C	C	R
C, Cycle Length [s]	215	215	215	215	215	215	215	215	215	215
L, Total Lost Time per Cycle [s]	5.50	6.00	6.00	5.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.00	4.00	0.00	0.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	94	60	60	108	115	54	54	30	30	30
g / C, Green / Cycle	0.44	0.28	0.28	0.50	0.53	0.25	0.25	0.14	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.38	0.34	0.03	0.06	0.36	0.03	0.24	0.00	0.11	0.25
s, saturation flow rate [veh/h]	702	5070	1579	3445	3545	3547	1580	0	1695	1583
c, Capacity [veh/h]	323	1414	440	1732	1891	893	398	33	236	221
d1, Uniform Delay [s]	83.05	77.56	57.68	28.19	36.82	62.40	79.17	107.56	89.59	92.56
k, delay calibration	0.50	0.13	0.13	0.11	0.50	0.15	0.36	0.11	0.27	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	21.43	100.14	0.13	0.03	2.01	0.10	28.05	1434.06	13.71	370.65
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	1.22	0.11	0.11	0.68	0.14	0.95	4.15	0.80	1.78
d, Delay for Lane Group [s/veh]	104.48	177.70	57.81	28.22	38.83	62.50	107.22	1541.62	103.30	463.21
Lane Group LOS	F	F	E	C	D	E	F	F	F	F
Critical Lane Group	No	Yes	No	Yes	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	11.54	39.07	1.98	2.70	25.36	2.66	23.76	15.23	11.11	35.12
50th-Percentile Queue Length [ft/ln]	288.61	976.64	49.54	67.60	634.12	66.53	593.91	380.66	277.66	877.94
95th-Percentile Queue Length [veh/ln]	17.12	55.45	3.57	4.87	33.62	4.79	31.75	26.99	16.57	54.64
95th-Percentile Queue Length [ft/ln]	427.92	1386.21	89.17	121.68	840.61	119.75	793.75	674.69	414.29	1366.10

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	104.48	177.70	57.81	28.22	38.83	0.00	0.00	62.50	107.22	1541.62	103.30	463.21
Movement LOS	F	F	E	C	D			E	F	F	F	F
d_A, Approach Delay [s/veh]	165.23			37.45			96.24			577.27		
Approach LOS	F			D			F			F		
d_I, Intersection Delay [s/veh]	180.65											
Intersection LOS	F											
Intersection V/C	1.208											

Sequence

Ring 1	1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	-	8	7	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report Intersection 32: Adelphi Rd/Toledo Rd

Control Type: Signalized
Analysis Method: HCM 2010
Analysis Period: 15 minutes

Delay (sec / veh): 9.7
Level Of Service: A
Volume to Capacity (v/c): 0.501

Intersection Setup

Name	Adelphi Rd			Adelphi Rd		Toledo Rd	
Approach	Northbound			Southbound		Eastbound	
Lane Configuration							
Turning Movement	U-turn	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	1	0	1
Pocket Length [ft]	150.00	100.00	100.00	100.00	100.00	100.00	200.00
Speed [mph]	45.00			30.00		30.00	
Grade [%]	0.00			0.00		0.00	
Crosswalk	Yes			No		Yes	

Volumes

Name	Adelphi Rd			Adelphi Rd		Toledo Rd	
Base Volume Input [veh/h]	6	122	1087	758	118	169	90
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.97	2.01	2.05	1.88	2.38	1.96
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	7	18	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	122	1094	776	118	169	90
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	34	304	216	33	47	25
Total Analysis Volume [veh/h]	7	136	1216	862	131	188	100
Presence of On-Street Parking	No		No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	6			0		6	
Bicycle Volume [bicycles/h]	0			0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	20.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	ProtectedP	Permissive	Permissive	Permissive	Split	Split
Signal group	5	5	2	6	6	4	4
Auxiliary Signal Groups							
Lead / Lag	Lead	Lead	-	-	-	Lag	-
Minimum Green [s]	4	4	4	4	4	4	4
Maximum Green [s]	15	15	65	45	45	25	25
Amber [s]	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	30	30	30	30	30	30	30
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	0	7	7	7	7	7
Pedestrian Clearance [s]	0	0	6	6	6	13	13
Rest In Walk			No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall		No	No	No		No	
Maximum Recall		No	Yes	Yes		No	
Pedestrian Recall		No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	30.0	30.0	30.0	30.0	30.0	30.0	30.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	87	87	87	87	87	87
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	65	65	56	56	12	12
g / C, Green / Cycle	0.74	0.74	0.64	0.64	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.19	0.34	0.24	0.08	0.11	0.06
s, saturation flow rate [veh/h]	766	3546	3545	1578	1767	1564
c, Capacity [veh/h]	612	2637	2261	1006	251	222
d1, Uniform Delay [s]	4.02	4.38	7.57	6.25	36.00	34.37
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.89	0.58	0.49	0.27	4.43	1.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.23	0.46	0.38	0.13	0.75	0.45
d, Delay for Lane Group [s/veh]	4.91	4.96	8.06	6.52	40.43	35.79
Lane Group LOS	A	A	A	A	D	D
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.56	2.66	3.50	0.91	4.09	2.01
50th-Percentile Queue Length [ft/ln]	14.10	66.62	87.50	22.86	102.14	50.13
95th-Percentile Queue Length [veh/ln]	1.02	4.80	6.30	1.65	7.35	3.61
95th-Percentile Queue Length [ft/ln]	25.38	119.92	157.50	41.14	183.85	90.24

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	4.91	4.91	4.96	8.06	6.52	40.43	35.79
Movement LOS	A	A	A	A	A	D	D
d_A, Approach Delay [s/veh]	4.95			7.86		38.82	
Approach LOS	A			A		D	
d_I, Intersection Delay [s/veh]	9.74						
Intersection LOS	A						
Intersection V/C	0.501						

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 33: Hamilton St/40th Pl/39th Ave

Control Type: All-way stop
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 21.3
 Level Of Service: C
 Volume to Capacity (v/c): 0.771

Intersection Setup

Name	Magruder Park Ent				39th Ave				Hamilton St			
Approach	Northbound				Southbound				Eastbound			
Lane Configuration												
Turning Movement	Left	Thru	Right	Right2	Left2	Left	Thru	Right	Left2	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00				30.00				35.00			
Grade [%]	0.00				0.00				0.00			
Crosswalk	Yes				Yes				Yes			

Volumes

Name	Magruder Park Ent				39th Ave				Hamilton St			
Base Volume Input [veh/h]	18	8	0	2	0	21	16	46	22	0	418	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.85	0.00	2.15	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	7	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	8	0	2	0	21	16	46	22	0	425	25
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	2	0	1	0	6	4	13	6	0	118	7
Total Analysis Volume [veh/h]	20	9	0	2	0	23	18	51	24	0	472	28
Pedestrian Volume [ped/h]	0				0				0			

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	522	571	680
Degree of Utilization, x	0.06	0.16	0.77

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.19	0.57	7.33
95th-Percentile Queue Length [ft]	4.72	14.27	183.17
Approach Delay [s/veh]	10.33	10.51	23.77
Approach LOS	B	B	C
Intersection Delay [s/veh]	21.28		
Intersection LOS	C		

Intersection Setup

Name	Hamilton St				Gallatin St			
Approach	Westbound				Northwestbound			
Lane Configuration								
Turning Movement	Left2	Left	Thru	Right	Left	Thru	Right	Right2
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00				35.00			
Grade [%]	0.00				0.00			
Crosswalk	Yes				Yes			

Volumes

Name	Hamilton St				Gallatin St			
Base Volume Input [veh/h]	0	0	67	5	10	431	8	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.20	0.00	0.00	2.18	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	12	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	67	5	10	443	8	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	19	1	3	123	2	0
Total Analysis Volume [veh/h]	0	0	74	6	11	492	9	0
Pedestrian Volume [ped/h]	0				0			

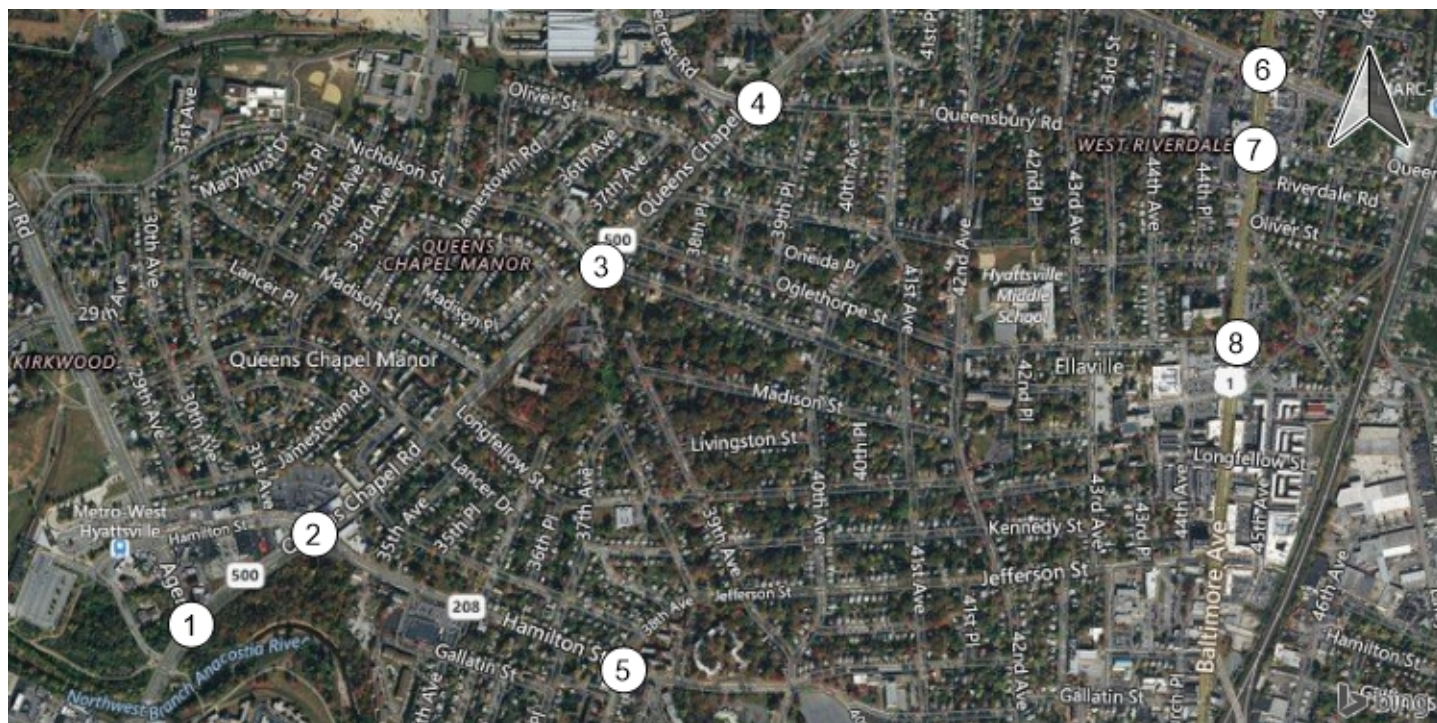
Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	544	676
Degree of Utilization, x	0.15	0.76

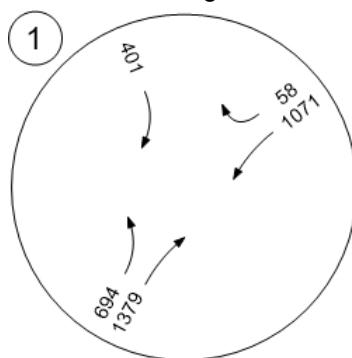
Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.51	6.98
95th-Percentile Queue Length [ft]	12.81	174.57
Approach Delay [s/veh]	10.75	22.97
Approach LOS	B	C
Intersection Delay [s/veh]	21.28	
Intersection LOS	C	

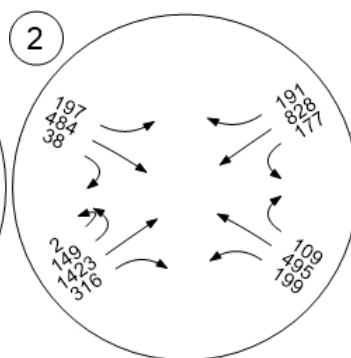
Traffic Volume - Future Total Volume



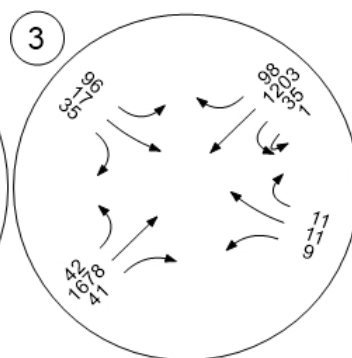
MD 500/Ager Rd



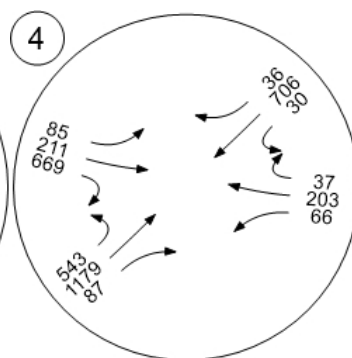
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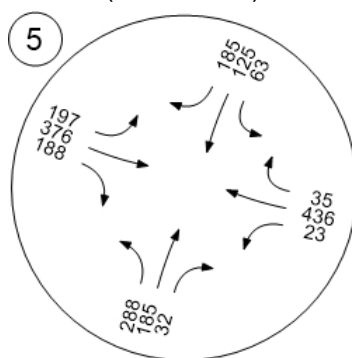
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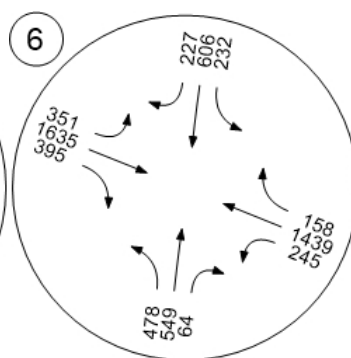
MD 500/Belcrest Rd/Queens



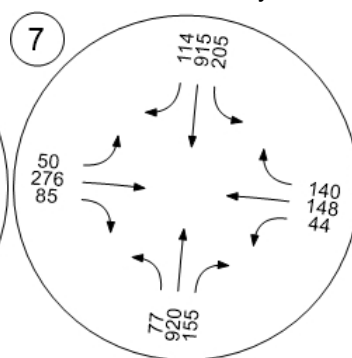
MD 208(Hamilton St)/38th Av



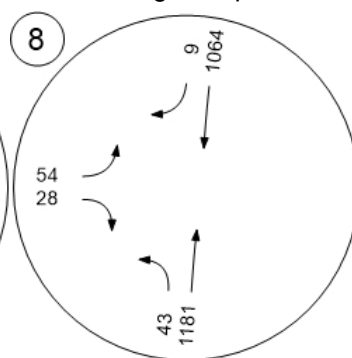
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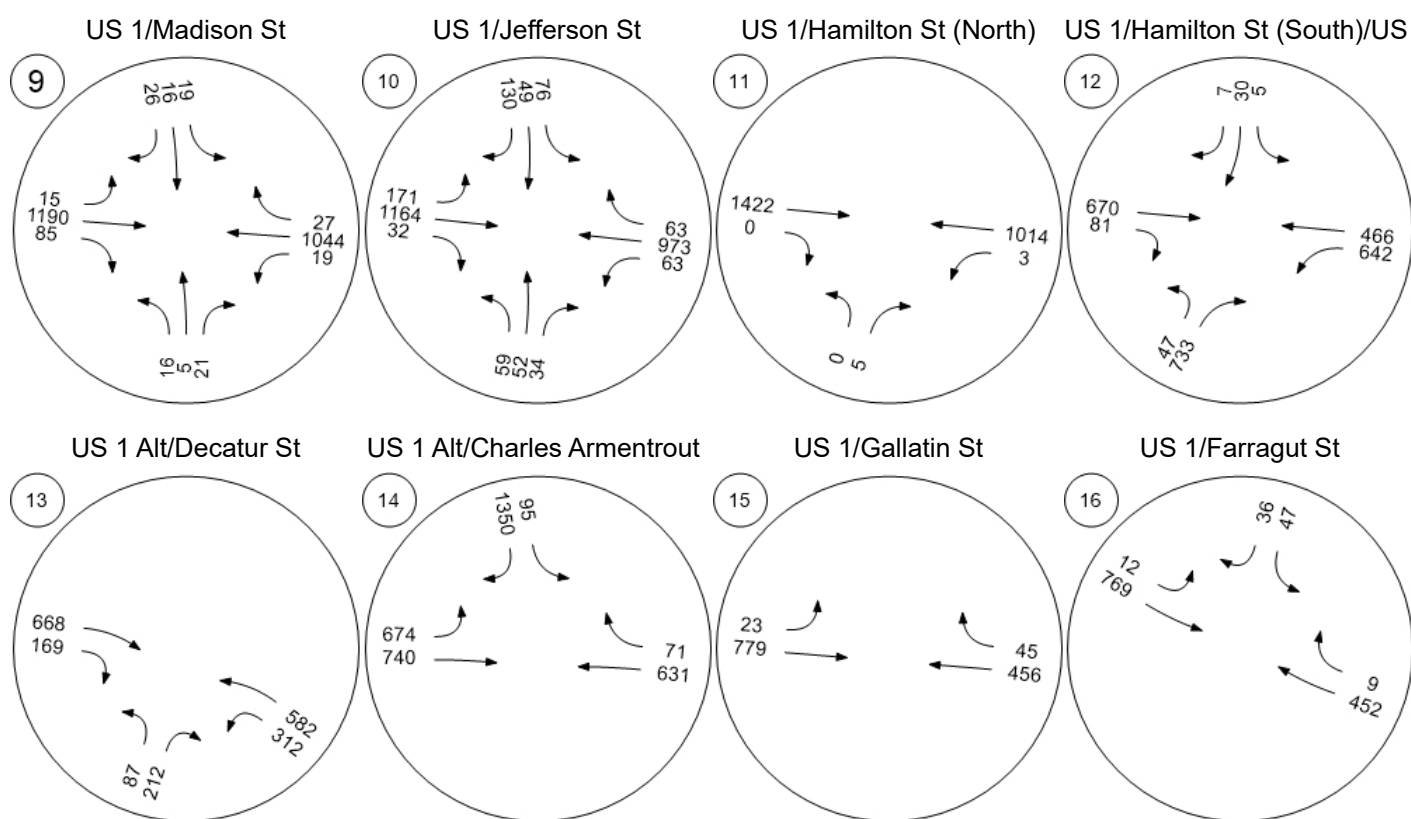
US 1/Queensbury Rd



US 1/Oglethorpe Rd

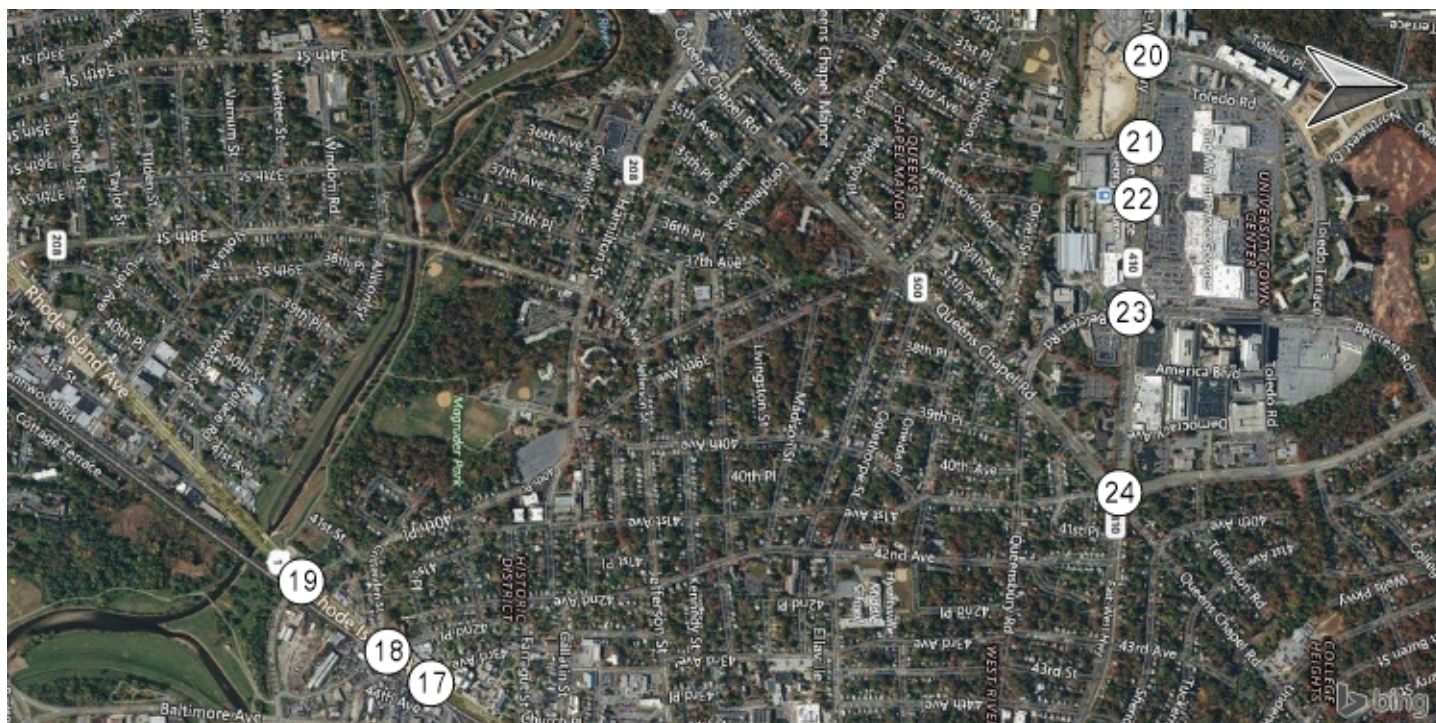


Traffic Volume - Future Total Volume

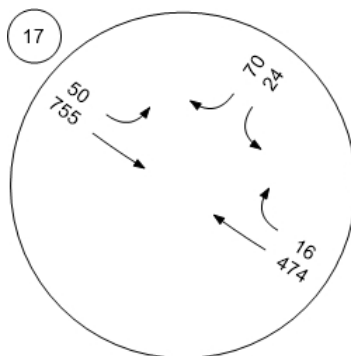


Version 6.00-00

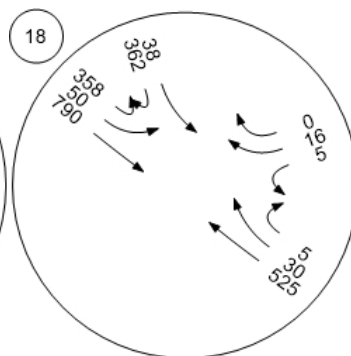
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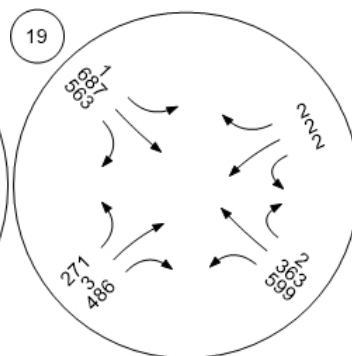
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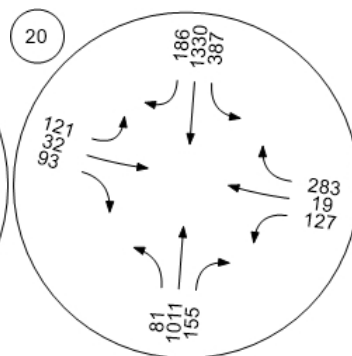
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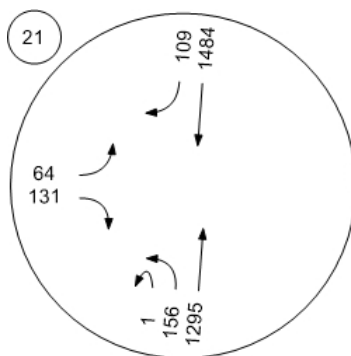
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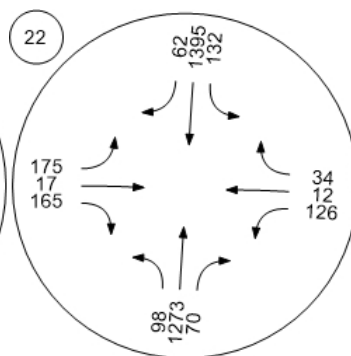
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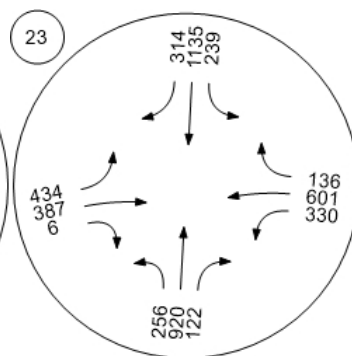
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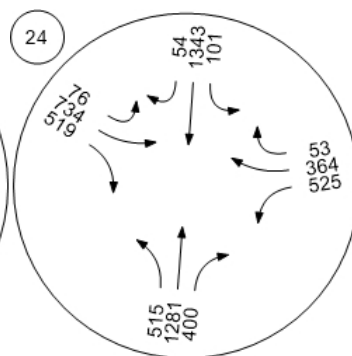
MD 410/Prince George's Plaz



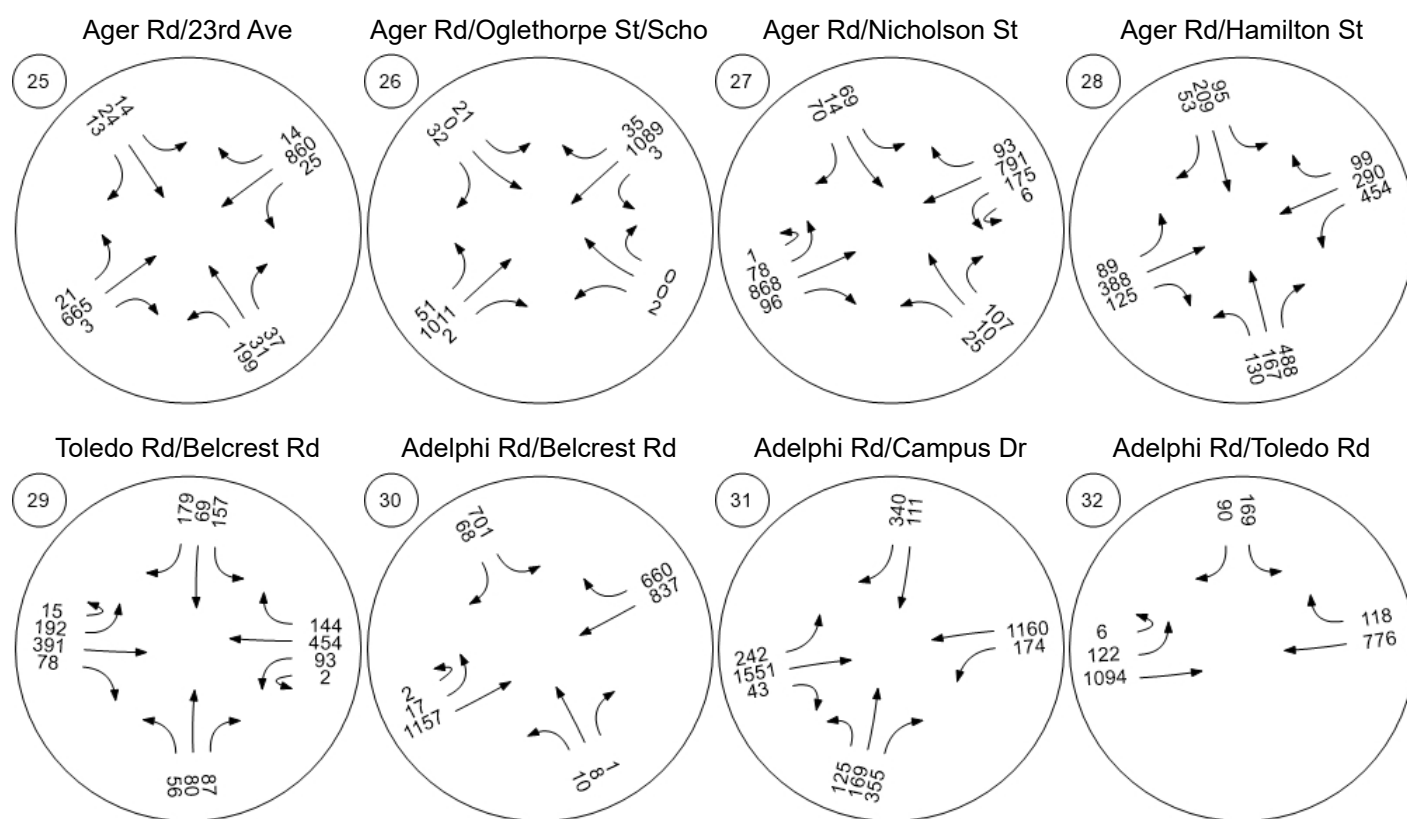
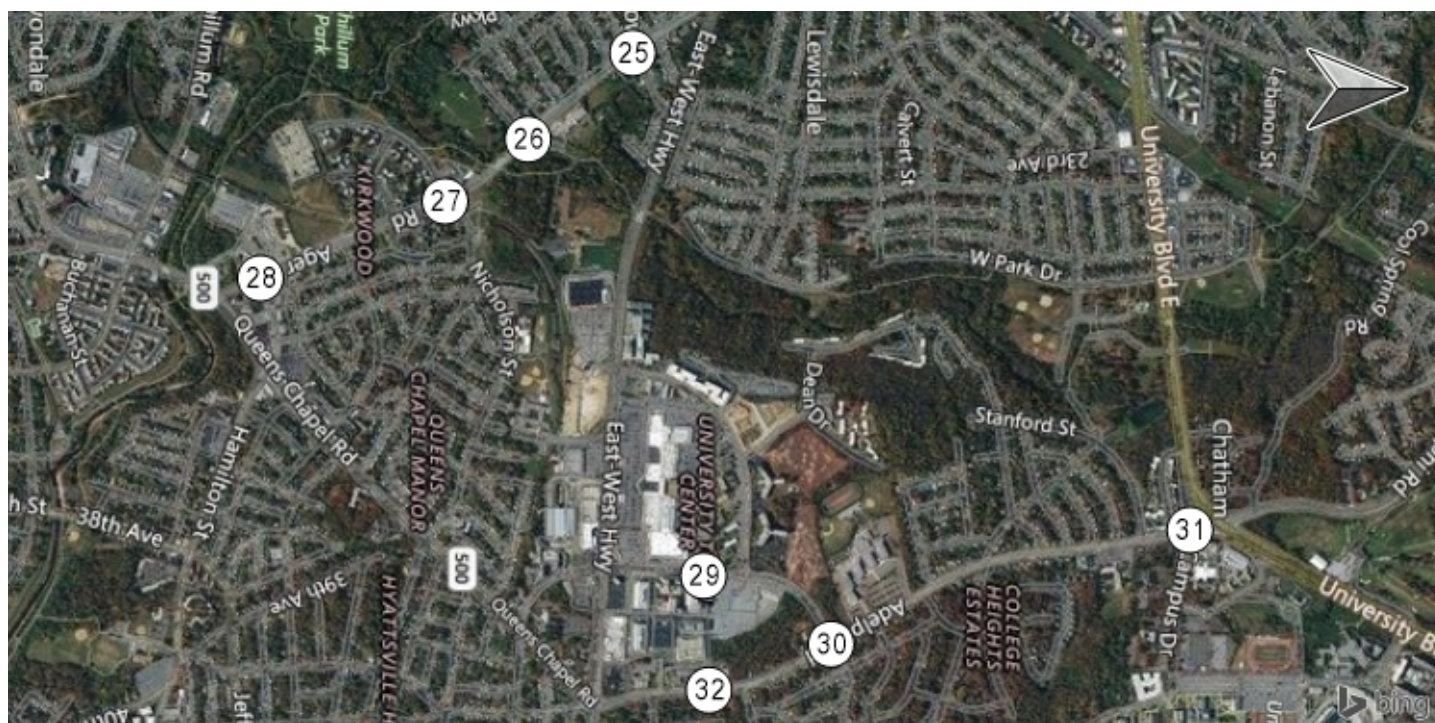
MD 410/Belcrest Rd



MD 410/MD 500/Adelphi Rd



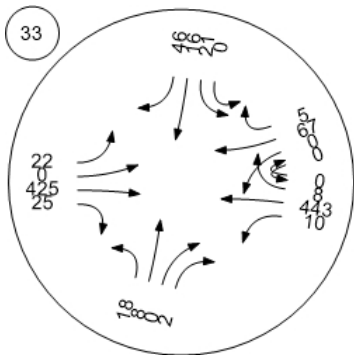
Traffic Volume - Future Total Volume



Traffic Volume - Future Total Volume



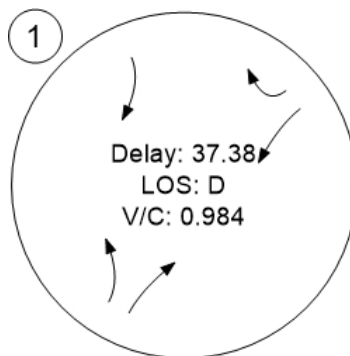
Hamilton St/40th Pl/39th Ave



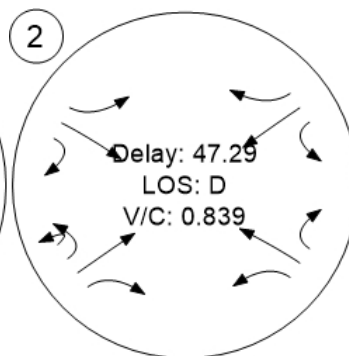
Traffic Conditions



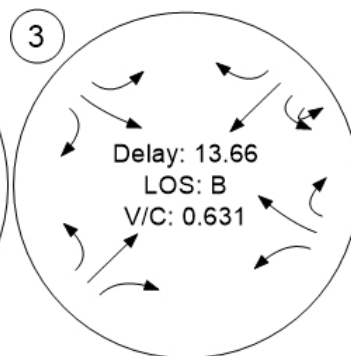
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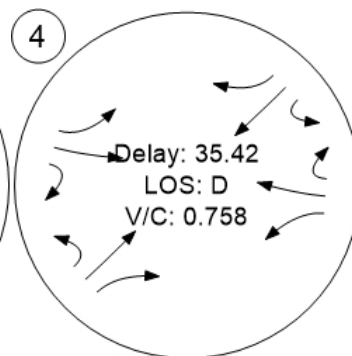
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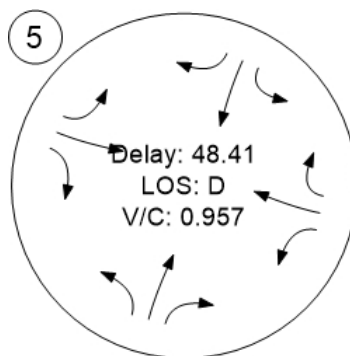
MD 500/Nicholson St



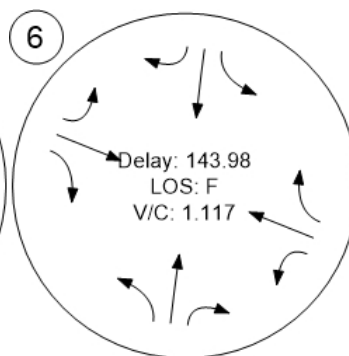
MD 500/Belcrest Rd/Queens



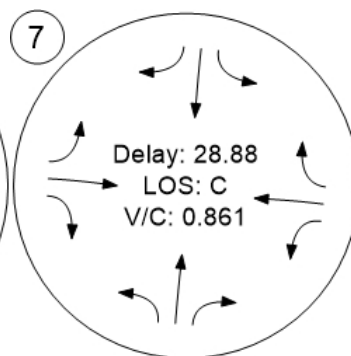
MD 208(Hamilton St)/38th Av



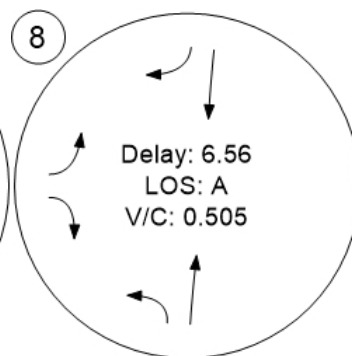
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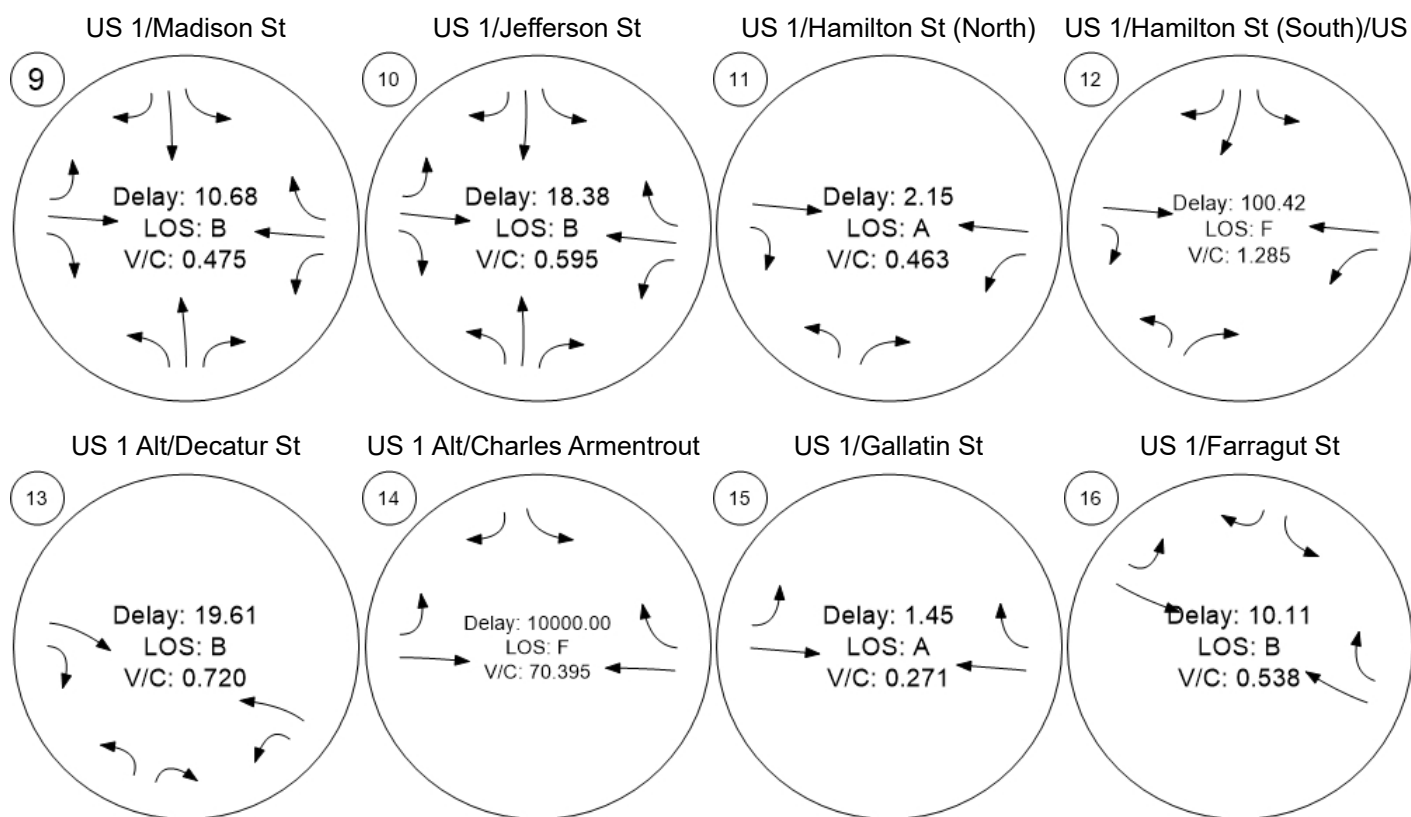
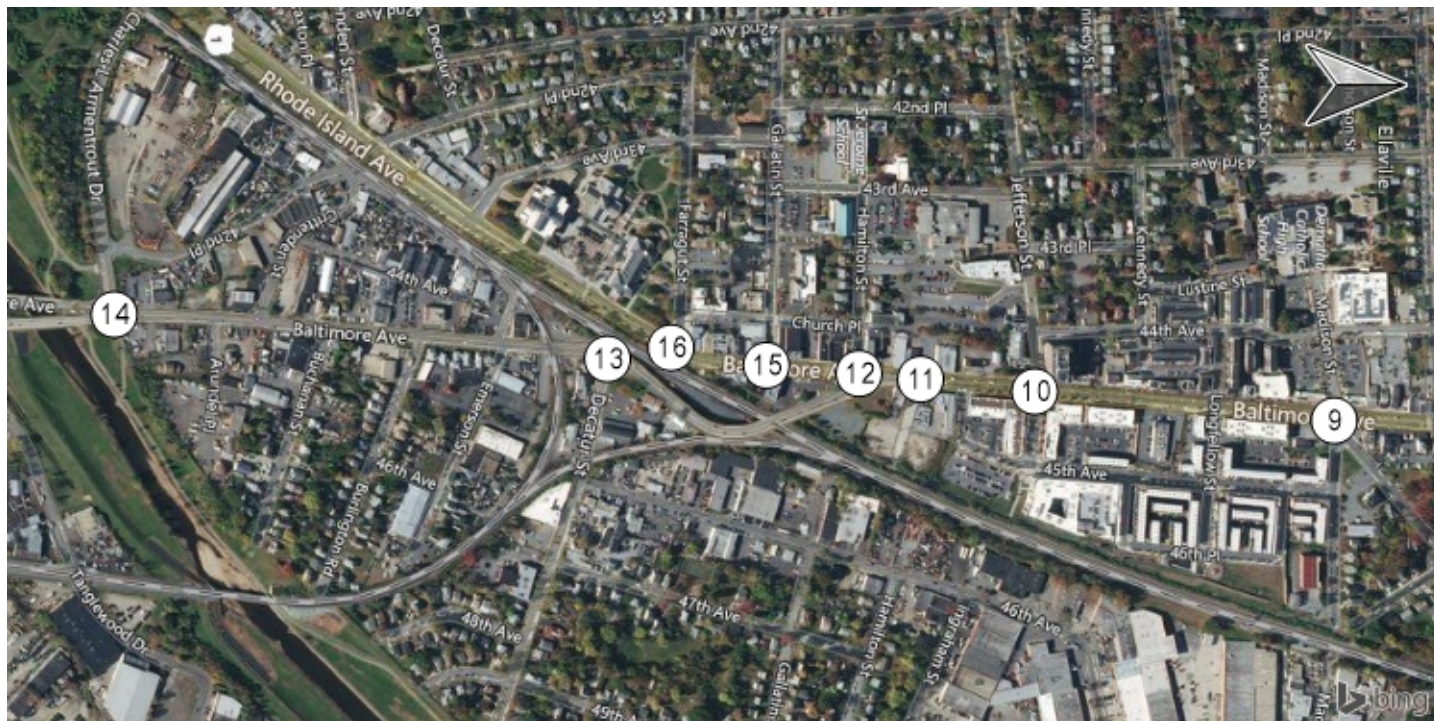
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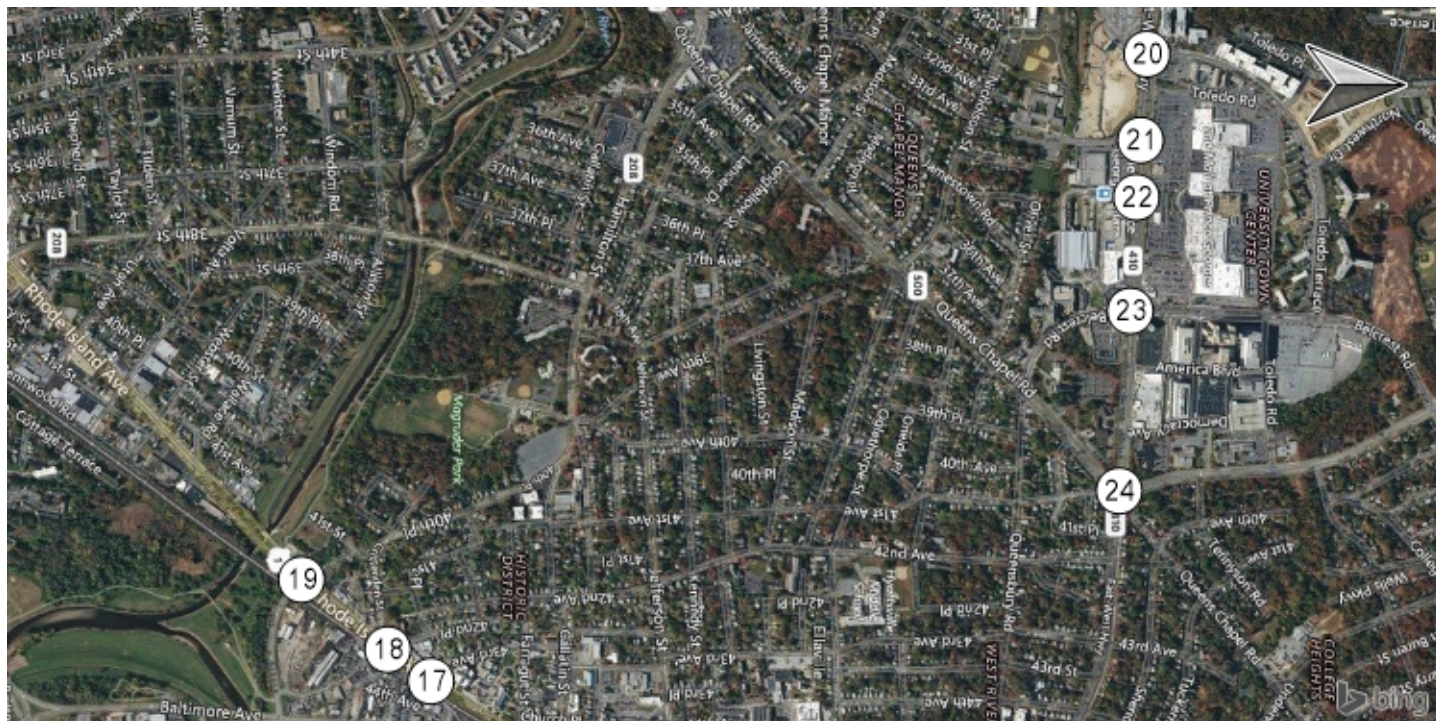
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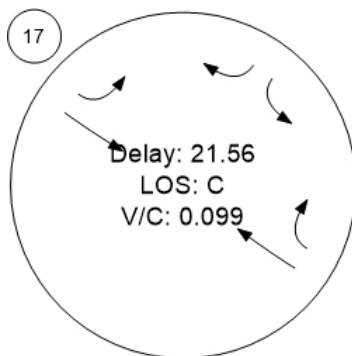
Traffic Conditions



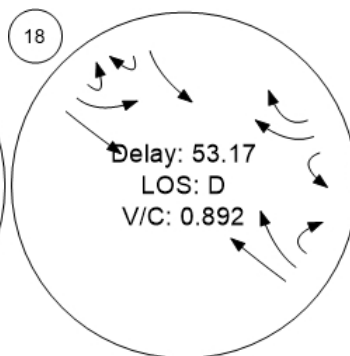
Traffic Conditions



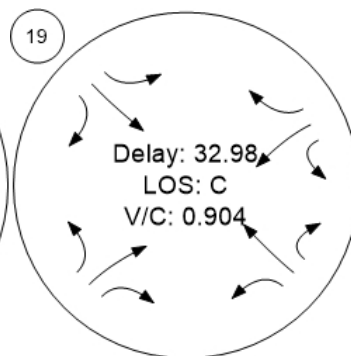
US 1/43rd Ave



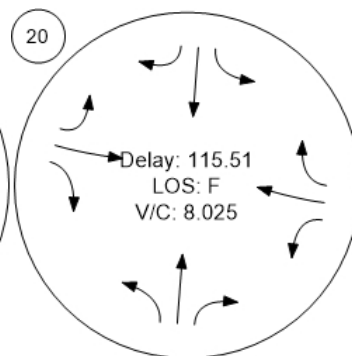
US 1/42nd Place/Crittendon



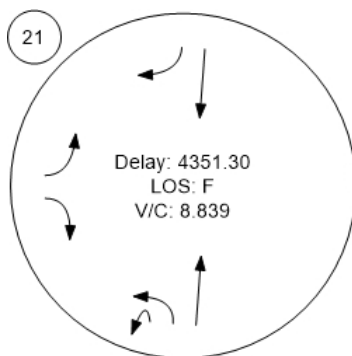
US 1/41st Place/Charles Arm



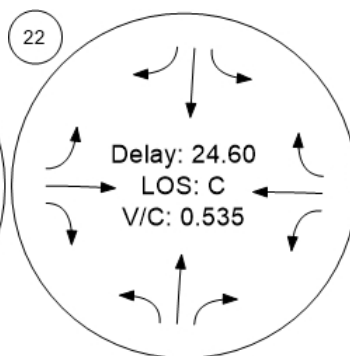
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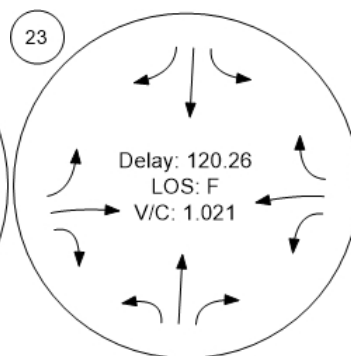
MD 410/Editors Park Dr



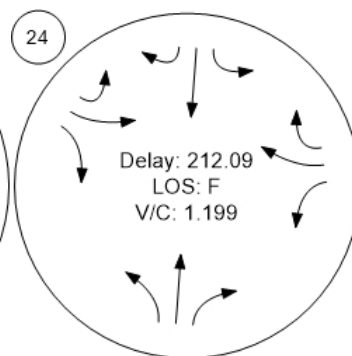
MD 410/Prince George's Plaz



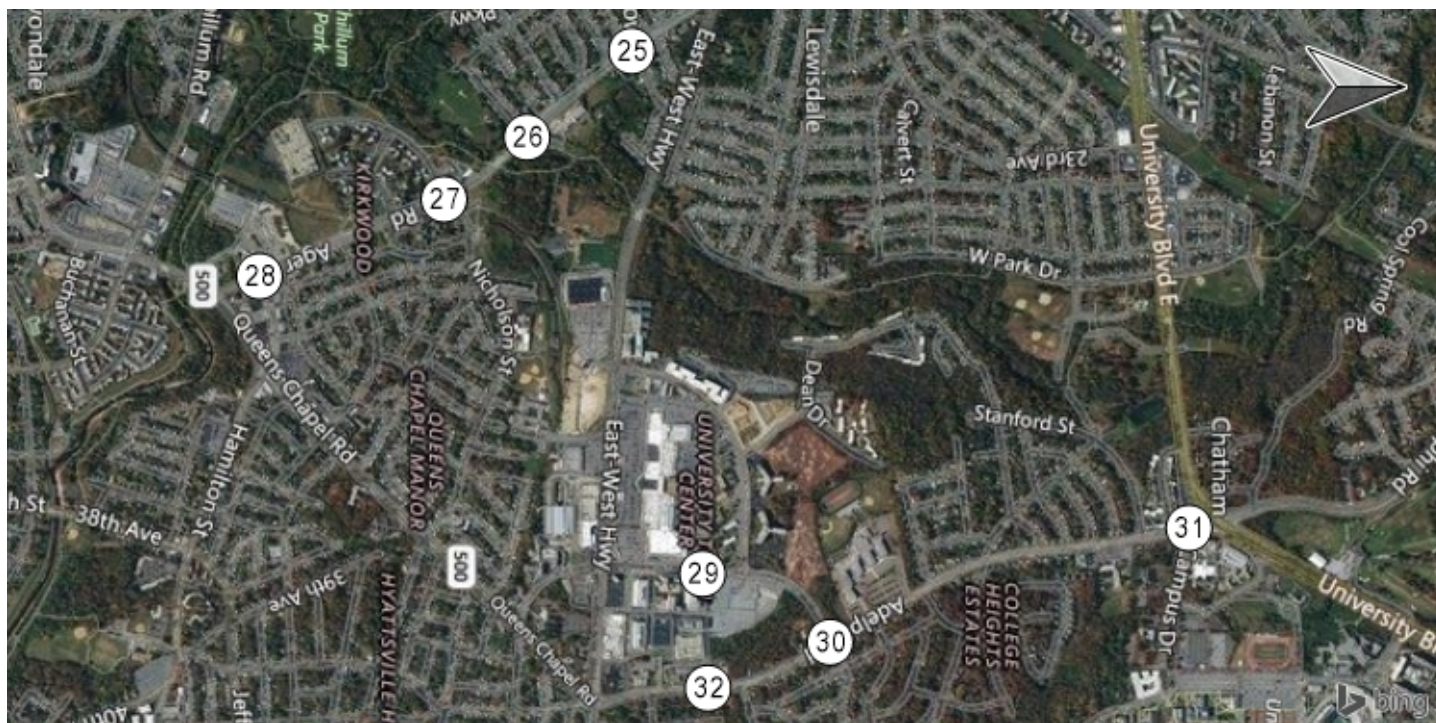
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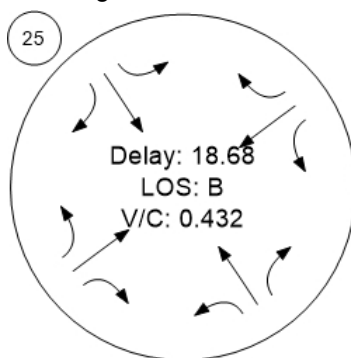
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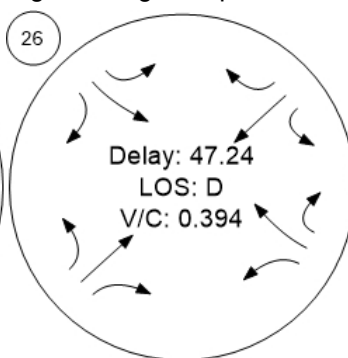
Traffic Conditions



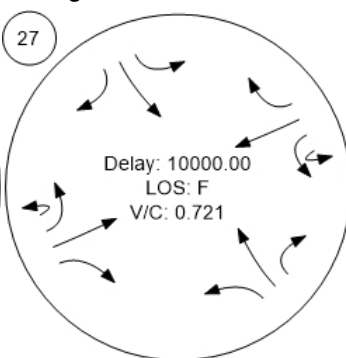
Ager Rd/23rd Ave



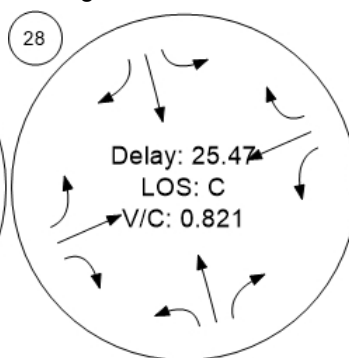
Ager Rd/Oglethorpe St/Scho



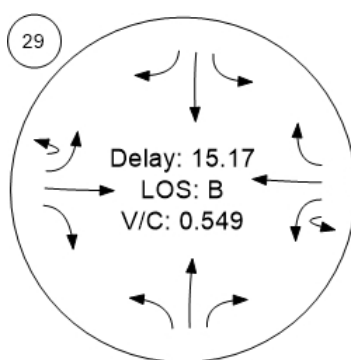
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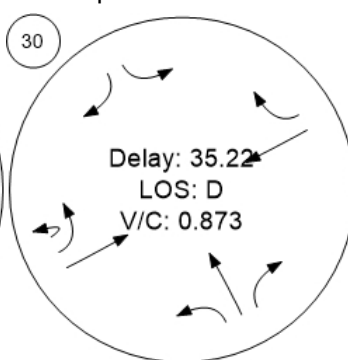
Ager Rd/Hamilton St



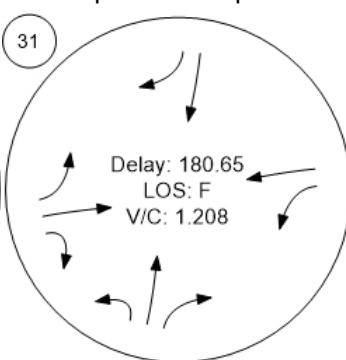
Toledo Rd/Belcrest Rd



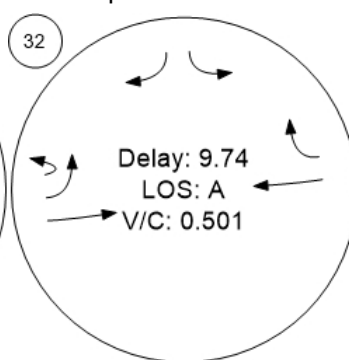
Adelphi Rd/Belcrest Rd



Adelphi Rd/Campus Dr



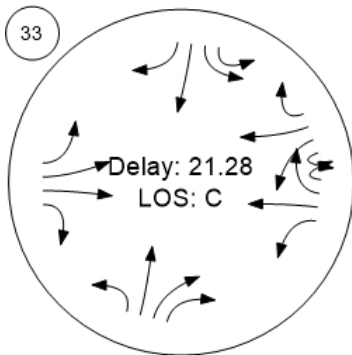
Adelphi Rd/Toledo Rd



Traffic Conditions



Hamilton St/40th Pl/39th Ave



APPENDIX C: WAYFINDING SUBMITTAL

INCLUDES:

1. Wayfinding Memorandum
2. Wayfinding Reference Guides: Bicycle, Vehicle, Pedestrian
3. General Notes and Installation Details
4. Fabrication Details: Bicycle, Vehicle, Pedestrian
5. Wayfinding Cost Estimate

SUBMITTED SEPARATELY:

1. 3 KML files containing all sign locations: Bicycle, Vehicle, Pedestrian
2. Maps for the 5 Pedestrian Kiosks



Date: August 8, 2018
To: Hal Metzler, Jr.
Organization: City of Hyattsville
From: Clea Baumhofer, EIT; Megan McCarty, EIT; Laura Barna, PE
Project: Hyattsville Transportation Plan
Re: Hyattsville Wayfinding Report

HYATTSVILLE WAYFINDING REPORT

As part of the comprehensive Hyattsville Transportation Plan, Toole Design Group has prepared a wayfinding implementation plan, with content and fabrication details for wayfinding directed at pedestrians, bicyclists, and motor vehicle operators. This Wayfinding Report lays out both the methodology used to develop that plan and recommendations for its implementation.

OBJECTIVES

Together with TDG, the City of Hyattsville identified and prioritized the objectives of this plan. These include:

- A cohesive system of wayfinding signage throughout the City of Hyattsville
- A custom design that reflects the City of Hyattsville and its history
- An MUTCD-compliant design
- A plan that can be implemented over time and will adapt well to future expansion.

The decision-making throughout the process of creating a wayfinding plan was centered around achieving these objectives.

GUIDANCE ON CURRENT REGULATIONS

TDG researched current local and regional regulations that could potentially restrict the ability to implement the new wayfinding signs, or could impede their efficacy. These laws are noted below, along with recommendations on how to implement wayfinding signs and bicycle routes within the current laws, and on how to amend the existing laws to prevent conflicts with implementation.

SIGNS AND SIDEWALKS

From the Hyattsville Charter and Code, Chapter 105—Streets and Sidewalks:

“§ 105-7. Projecting signs. [Amended 3-3-80 by HB No. 9-80] No sign or board shall project over any sidewalk without permission from the City Council.”

While the wayfinding signs are to be placed adjacent to the roadway and in a landscaped buffer where it exists, there are locations where the sidewalks in Hyattsville are directly adjacent to the roadway where wayfinding signage will project over the sidewalk, such as in the Gateway Arts District. To comply with MUTCD standards, all signs will be installed a minimum of 7' above the roadway and sidewalk to promote pedestrian safety.

However, the five pedestrian kiosk signs are to be placed on the sidewalk in commercial centers. This is not governed by the MUTCD and should follow the Hyattsville Charter and Code, which requires permission from the City Council.

SIDEWALK BICYCLE RIDING

In order to create a connected network of bicycle routes that serve the desired destinations, there are specific routes that direct bicyclists to use the sidewalk to make brief connections.

The current law states:

“§ 105-18. Riding bicycles upon sidewalks prohibited; exception. It shall be unlawful for any person to ride a bicycle upon any sidewalk in the City; provided, however, that this shall not be construed to apply to small children’s toy velocipedes or other light toy vehicles.”

Without using the sidewalk, some of the crossings or connections required may not be comfortable for most bicyclists to ride on, due to high speeds and/or volumes of vehicles, but these streets include key sections of the route. For this reason, TDG recommends that this law be changed to, at a minimum, exclude sidewalks along these key connections. In order of importance:

1. Queens Chapel Road, near the intersection with Hamilton Street
2. Adelphi Road
3. Hamilton Street between Queens Chapel Road and the West Hyattsville Metro
4. Belcrest Road

DETERMINING DESTINATIONS

In order to develop a useful and practical wayfinding system, the first step was to determine key destinations throughout the City of Hyattsville. The following is a list of priorities identified by the City of Hyattsville for selecting destinations:

- Existing public transportation (Metro stations)
- Developed hubs, such as the Gateway Arts District and the Mall
- Trail networks surrounding Hyattsville
- Schools
- Parks

Using these priorities, TDG and the City of Hyattsville developed a list of destinations to be used in the wayfinding system. These destinations were sorted into a hierarchy of regional destinations, major local destinations, and other local destinations to prioritize frequency and placement of wayfinding signs along each route and for each mode. The destinations identified include:

Regional Destinations:

- Northwest Branch Trail
- University of Maryland
- Gateway Arts District
- Mall at Prince George's

Major Local Destinations:

- West Hyattsville Metro Station
- Prince George's Plaza Metro Station
- Historic District
- Magruder Park
- Queens Chapel Town Center
- Rhode Island Avenue Trolley Trail
- University Town Center

Other Local Destinations:

- Heurich Park
- University Hills Duck Pond Park
- Hyattsville Elementary
- Edward M. Felegy Elementary
- Nicholas Orem Middle
- Hyattsville Middle
- Northwestern High
- Hyattsville Branch Library
- Hyattsville Municipal Building
- Heritage Center
- Police Department
- Parking (Gateway Arts District, University Town Center, Queens Chapel Town Center)

ROUTE DEVELOPMENT METHODOLOGY

After determining which specific destinations were to be served, TDG developed routes to connect destinations on bicycle, on foot, or by car.

BICYCLE WAYFINDING

For bicycle wayfinding, comfort and safety of the bicyclist were the most important factors in identifying routes between destinations. Directness of route also played an important role. Bicyclists will be most willing to use short, lower-stress routes.

To identify lower-stress routes, the streets connecting the identified destinations were reviewed using Google Earth and Google Streetview. Particularly challenging intersections to traverse by bicycle were studied in person. Additionally, data was collected from the Hyattsville community through an online Wikimap and used to identify preferred routes throughout Hyattsville. This data is displayed in heat maps below.

Streets with multiple lanes of traffic and higher posted speeds were avoided where possible. Routes identified by the community as difficult for walking and biking or as carrying high volumes of traffic were also avoided where possible. See Figure 1: Difficult Routes for Walking and Biking and Figure 2: High Traffic Corridors, below.

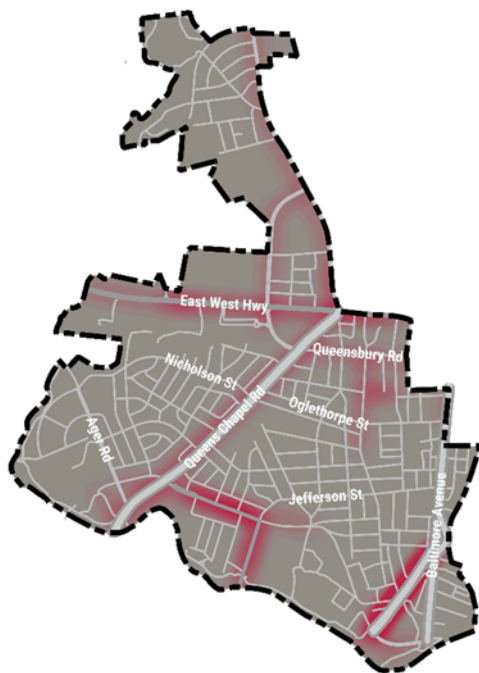


Figure 1: Difficult Routes for Walking and Biking

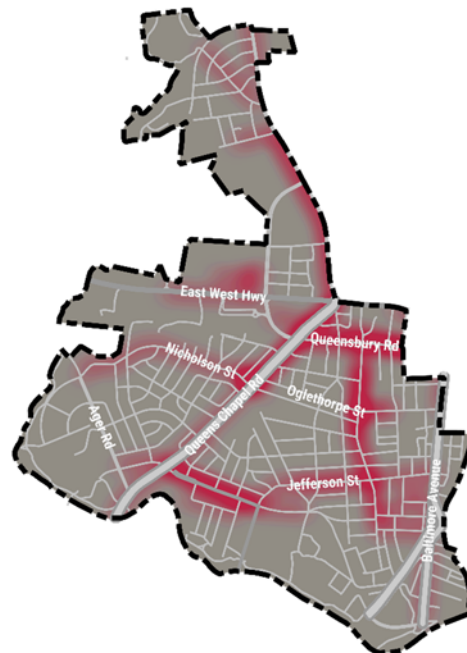


Figure 2: High Traffic Corridors

In the Google Earth and Google Streetview review, streets currently supported by bicycle signage and pavement markings were preferred. Streets currently used by bicyclists, as identified in the Wikimap survey, were also preferred. See Figure 3: Routes Users Walk and Bike, below.

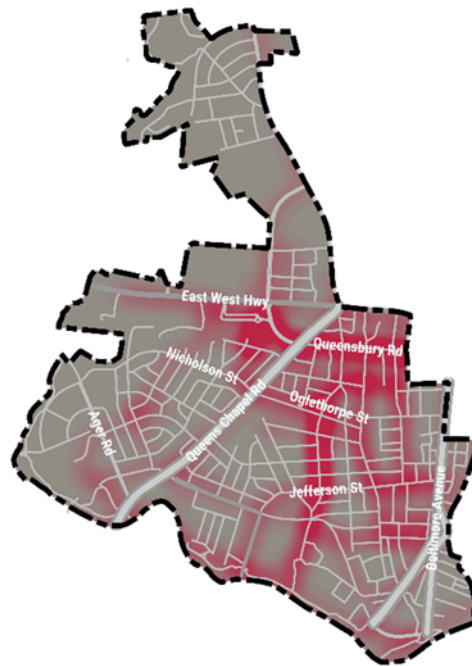


Figure 3: Routes Users Walk and Bike

Overall, the Bicycle Wayfinding Signage was designed to be the most comprehensive of the mode types. Bicyclists have more difficulty in accessing GPS or other mapping technologies than other modes, and must therefore have each turn mapped out along a route. Additionally, while a pedestrian has a limited distance he or she is willing to travel, a bicyclist can reasonably traverse the city of Hyattsville in a single trip. Therefore, the scope of bicycle wayfinding signage is larger and frequency of signage is higher than in pedestrian wayfinding.

PEDESTRIAN WAYFINDING

The existing pedestrian wayfinding is concentrated in the most highly developed areas of Hyattsville, where pedestrians have many destinations within a half-mile distance. Existing pedestrian wayfinding in the Gateway Arts District was found to be adequate and functional. When it comes time to replace the existing signage, TDG recommends the sign locations be moved directly onto Baltimore Ave where the sidewalk is wide enough to allow it. Existing signs belong to the Anacostia Trail Heritage Area, Inc. (ATHA) and modifications would need approval. TDG recommends that these signs remain in place until their normal replacement cycle.

New pedestrian kiosks at five key areas will supplement existing wayfinding. These kiosks will be both functional and statement pieces highlighting the new wayfinding design throughout Hyattsville. The kiosks will be placed at dense areas of high pedestrian use and at pedestrian entrance points to Hyattsville. Kiosk locations include:

- The heart of the Gateway Arts District
- Between the Mall at Prince George's and University Town Center
- The Trolley Trail entrance at the southern end of the Gateway Arts District
- West Hyattsville Metro Station

- Prince George’s Plaza Metro Station

Additionally, the new bicycle signage will be accessible to pedestrians, and will supplement the existing pedestrian wayfinding and the new kiosk signs.

VEHICULAR WAYFINDING

Overall, existing vehicular wayfinding signage in Hyattsville was found to provide good information, but did not have a cohesive look. Some locations need additional signage to guide users, especially around one-way streets. A combined treatment of adding key signage and identifying other signs for replacement over time will create the most economical path to a comprehensive wayfinding system with a cohesive style.

Additional signs are necessary at key destinations, including entrances to metro stations, schools, and parking lots. These have been included in the current wayfinding design.

TDG recommends the following existing signage be highlighted for future replacement by signage with the same content but using Hyattsville’s new signature wayfinding design:

- School signs
- Some Metro signs
- Parking signs

Currently, there are multiple styles of signage in use throughout the city. As other signage needs replacement with time, it should be replaced with basic, MUTCD-compliant signage. TDG recommends that Hyattsville standardize its requirements so that signage will become more cohesive over time. Signs for basic vehicle guidance, such as signs leading to highways or other local roads, should get a standard MUTCD-compliant treatment.

FUTURE EXPANSION

As the City of Hyattsville changes over time, a corresponding update of the wayfinding system may be required. By following the principals in this report and using the new wayfinding design details, the wayfinding system can be expanded and adapted over time to continue to meet the needs of the City of Hyattsville.

Bicycle Wayfinding Sign Reference Guide

Sign Point	Intersection- See KML for Exact Location	Sign Face Orientation	Sign Type	Destination 1				Destination 2				Destination 3				Destination 4				Sign Text Block Height (Inches)	Notes
				Arrow Direc	Symbol	Text	Detail Number	Arrow Direc	Symbol	Text	Detail Number	Arrow Direc	Symbol	Text	Detail Number	Arrow Direc	Symbol	Text	Detail Number		
↑ ← ↙ - THROUGH (T) - LEFT (L) - DIAGONAL LEFT (DL) ↖ → ↘ - ADVANCE TURN ARROW "THROUGH-LEFT" (TL) - RIGHT (R) - DIAGONAL RIGHT (DR) ADVANCE TURN ARROW "THROUGH-RIGHT" (TR)																					
B1	Wells Blvd and Stanford St	NW	Destination	T		Mall at Prince George's	1/2/3	T		Gateway Arts Dist	1/2/3									13	
B2	Wells Blvd and Stanford St	SE	Destination	T		University Hills Duck Pond Park	1/2/3	TL		NW Branch Trail	1/2/3									13	
B3	Wells Blvd and Adelphi Rd	NW	Destination	R		Mall at Prince George's	1/2/3	R		Gateway Arts Dist	1/2/3									13	
B4	Adelphi Rd and Wells Blvd	SE	Destination	T		Univ of Maryland	1/2/3	L		University Hills Duck Pond Park	1/2/3	L		NW Branch Trail	1/2/3					28	
B5	Adelphi Rd and Van Buren St	SE	Destination	T		NW Branch Trail	1/2/3	T		Univ of Maryland	1/2/3									13	
B6	Adelphi Rd and Belcrest Rd	NW	Destination with Metro Symbol	R		Mall at Prince George's	1/2/3	R	Metro	Pr George's Pl	1/2/4	R		Gateway Arts Dist	1/2/3					28	
B7	Belcrest Rd and Adelphi Rd	SW	Destination	L		NW Branch Trail	1/2/3	L		Univ of Maryland	1/2/3									13	
B8	Belcrest Rd and Toledo Rd	N	Destination with Metro Symbol	T		Mall at Prince George's	1/2/3	T	Metro	Pr George's Pl	1/2/4	L		Library	1/2/3					28	
B9	Belcrest Rd and Toledo Rd	S	Destination	T		Univ of Maryland	1/2/3	R		Library	1/2/3									13	
B10	Belcrest Rd and Liberty Ln	N	Destination with Metro Symbol	T	Metro	Pr George's Pl	1/2/4	TL		Univ Town Center	1/2/3	R		Mall at Prince George's	1/2/3					28	
B11	Belcrest Rd and Liberty Ln	S	Destination	TL		Mall at Prince George's	1/2/3	R		Univ Town Center	1/2/3									13	
B12	Metro Driveway and Belcrest Rd	W	Destination	L		Mall at Prince George's	1/2/3	R		Gateway Arts Dist	1/2/3									13	May need to move off Metro property. Confirm with City of Hyattsville before installation.
B13	Belcrest Rd and Metro Driveway	SE	Destination with Metro Symbol	T		Mall at Prince George's	1/2/3	T		Univ Town Center	1/2/3	L	Metro	Pr George's Pl	1/2/4					28	
B14	Queensbury Rd and Queens Chapel Rd	SE	Destination with Metro Symbol	T	Metro	Pr George's Pl	1/2/4													13	
B15	Belcrest Rd and Queens Chapel Rd	W	Bike Route	T	Bicycle		1/6													13	
B16	Queensbury Rd and 41st Ave	W	Destination Double Arrow	T		Trolley Trail	1/2/3	T		Hyattsville Middle School	1/2/3	T&R		Gateway Arts Dist	1/2/5					28	
B17	41st Ave and Queensbury Rd	S	Destination with Metro Symbol	L	Metro	Pr George's Pl	1/2/4	L		Mall at Prince George's	1/2/3	R		Trolley Trail	1/2/3					28	
B18	Queensbury Rd and 41st Ave	E	Destination with Metro Symbol	T	Metro	Pr George's Pl	1/2/4	T		Mall at Prince George's	1/2/3	L		Gateway Arts Dist	1/2/3					28	
B19	Queensbury Rd and 42nd Ave	W	Destination	T		Trolley Trail	1/2/3	R		Hyattsville Middle School	1/2/3									13	
B20	Queensbury Rd and 43rd Ave	W	Destination	T		Trolley Trail	1/2/3	R		Gateway Arts Dist	1/2/3									13	
B21	43rd Ave and Queensbury Rd	S	Destination with Metro Symbol	L	Metro	Pr George's Pl	1/2/4	L		Mall at Prince George's	1/2/3									13	
B22	43rd Ave and Oglethorp St	N	Bike Route	T	Bicycle		1/6													13	
B23	43rd Ave and Oglethorp St	S	Bike Route	T	Bicycle		1/6													13	
B24	43rd Ave and Jefferson St	N	Destination with Metro Symbol	L		Gateway Arts Dist	1/2/3	R	Metro	W Hyattsville	1/2/4									13	
B25	Jefferson St and 43rd Ave	W	Destination	T		Gateway Arts Dist	1/2/3	R		Hyattsville Elementary	1/2/3									13	
B26	Jefferson St and 43rd Ave	E	Destination with Metro Symbol	T	Metro	W Hyattsville	1/2/4	R		Pr George's Pl	1/2/3	R		Mall at Prince George's	1/2/3					28	

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Sign Point	Intersection- See KML for Exact Location	Sign Face Orientation	Sign Type	Destination 1				Destination 2				Destination 3				Destination 4				Sign Text Block Height (Inches)	Notes
				Arrow Direc	Symbol	Text	Detail Number	Arrow Direc	Symbol	Text	Detail Number	Arrow Direc	Symbol	Text	Detail Number	Arrow Direc	Symbol	Text	Detail Number		
↑ ← ↙ - THROUGH (T) - LEFT (L) - DIAGONAL LEFT (DL) ↖ → ↘ - ADVANCE TURN ARROW "THROUGH-LEFT" (TL) - RIGHT (R) - DIAGONAL RIGHT (DR) ADVANCE TURN ARROW "THROUGH-RIGHT" (TR)																					
B27	Jefferson St and 42nd Ave	E	Destination with Metro Symbol	T		Magruder Park TO NW Branch Trail	1/2/3	T	Metro	W Hyattsville	1/2/4	L		Historic District	1/2/3					28	
B28	42nd Ave and Jefferson St	S	Destination with Metro Symbol	T		Hyattsville Middle School	1/2/3	L	Metro	W Hyattsville	1/2/4	R		Gateway Arts Dist	1/2/3					28	
B29	42nd Ave and Jefferson St	N	Destination	T		Trolley Trail	1/2/3	T		Gateway Arts Dist	1/2/3	L		Magruder Park TO NW Branch Trail	1/2/3					28	
B30	42nd Ave and Hamilton St	S	Destination with Metro Symbol	T		Gateway Arts Dist	1/2/3	L		Magruder Park	1/2/3	L	Metro	W Hyattsville	1/2/4					28	
B31	Gallatin St and 42nd Ave	E	Destination with Metro Symbol	R	Metro	W Hyattsville	1/2/4													13	
B32	Church Pl and Gallatin St	S	Destination with Metro Symbol	T		Heritage Center	1/2/3	L		Municipal Bldg	1/2/3	L		Historic District	1/2/3	L	Metro	W Hyattsville	1/2/4	28	
B33	Farragut St and Baltimore Ave	W	Destination	T		Trolley Trail Use Crosswalk	1/2/3	L		Heritage Center	1/2/3	L		Municipal Bldg	1/2/3					28	
B34	Farragut St and Baltimore Ave	E	Destination with Metro Symbol	R		Heritage Center	1/2/3	R		Municipal Bldg	1/2/3	R	Metro	W Hyattsville	1/2/4					28	
B35	Baltimore Ave and Trolley Trail	W	Destination	L		Univ of Maryland Via Trolley Trail	1/2/3	L		College Park Via Trolley Trail	1/2/3									28	
B36	42nd Ave and Farragut St	N	Destination	T		NW Branch Trail	1/2/3	L		Trolley Trail	1/2/3	L		Gateway Arts Dist	1/2/3					28	
B37	42nd St and Farragut St	S	Destination with Metro Symbol	T		Historic District	1/2/3	T	Metro	W Hyattsville	1/2/4	R		Gateway Arts Dist	1/2/3					28	
B38	42nd Ave and Decatur St	N	Destination	R		NW Branch Trail	1/2/3													13	
B39	Decatur St and 42nd Ave	W	Destination with Metro Symbol	L		Gateway Arts Dist	1/2/3	L	Metro	W Hyattsville	1/2/4									13	
B40	Decatur St and 42nd Ave	E	Destination	L		NW Branch Trail	1/2/3													13	
B41	42nd Ave and Decatur St	S	Destination with Metro Symbol	R		Gateway Arts Dist	1/2/3	R	Metro	W Hyattsville	1/2/4									13	
B42	42nd Ave and Crittendon St	N	Destination	R		NW Branch Trail	1/2/3													13	
B43	Crittendon St and 42nd Ave	W	Destination with Metro Symbol	L		Gateway Arts Dist	1/2/3	L	Metro	W Hyattsville	1/2/4									13	
B44	Crittendon St and Trail Connection	E	Destination	L		NW Branch Trail	1/2/3													13	
B45	Trail Connection and Crittendon St	SW	Destination with Metro Symbol	R		Gateway Arts Dist	1/2/3	R	Metro	W Hyattsville	1/2/4									13	
B46	41st Ave and Oliver St	N	Destination	DR		Gateway Arts Dist	1/2/3													13	
B47	40th Ave and Nicholson St	NE	Destination	T		Gateway Arts Dist	1/2/3	L		Hyattsville Middle School	1/2/3									13	
B48	Nicholson St and 40th Ave	SE	Destination with Metro Symbol	L		Gateway Arts Dist	1/2/3	R		Mall at Prince George's	1/2/3	R	Metro	Pr George's Pl	1/2/4					28	
B49	40th Ave and Nicholson St	SW	Destination with Metro Symbol	T	Metro	Pr George's Pl	1/2/4	T		Mall at Prince George's	1/2/3	R		Hyattsville Middle School	1/2/3					28	
B50	Nicholson St and 42nd Ave	NW	Destination	L		Hyattsville Middle School	1/2/3													13	
B51	40th St and Longfellow Ave	N	Bike Route	T	Bicycle		1/6													13	
B52	40th St and Longfellow Ave	S	Bike Route	T	Bicycle		1/6													13	
B53	40th Ave and Jefferson St	N	Destination with Metro Symbol	T		Magruder Park	1/2/3	L		Historic District	1/2/3	L		Gateway Arts Dist	1/2/3	R	Metro	W Hyattsville	1/2/4	28	
B54	Jefferson St and 40th Ave	E	Destination with Metro Symbol	T	Metro	W Hyattsville	1/2/4	L		Magruder Park	1/2/3	R		Mall at Prince George's	1/2/3					28	

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				Arrow Direc	Symbol	Text	Detail Number	Arrow Direc	Symbol	Text	Detail Number	Arrow Direc	Symbol	Text	Detail Number	Arrow Direc	Symbol	Text	Detail Number		
- THROUGH (T) - LEFT (L) - DIAGONAL LEFT (DL) -ADVANCE TURN ARROW "THROUGH-LEFT" (TL) - RIGHT (R) - DIAGONAL RIGHT (DR) ADVANCE TURN ARROW "THROUGH-RIGHT" (TR)																					
B55	40th Ave and Jefferson St	S	Destination with Metro Symbol	T		Mall at Prince George's	1/2/3	L	Metro	W Hyattsville	1/2/4	R		Historic District	1/2/3	R		Gateway Arts Dist	1/2/3	28	
B56	Jefferson St and 40th Ave	W	Destination	T		Historic District	1/2/3	T		Gateway Arts Dist	1/2/3	L		Mall at Prince George's	1/2/3	R		Magruder Park TO NW Branch Trail	1/2/3	28	
B57	Hamilton St and 40th Ave	S	Destination with Metro Symbol	T		Gateway Arts Dist	1/2/3	L	Metro	W Hyattsville	1/2/4									13	
B58	38th St and Gaines Alley	N	Destination	L&R		NW Branch Trail	1/2/5	T		Brentwood	1/2/3									13	
B59	Hamilton St and 38th St	SE	Destination with Metro Symbol	T		Police Dept	1/2/3	L		NW Branch Trail	1/2/3	R	Metro	W Hyattsville	1/2/4					28	
B60	38th St and Jefferson St	NE		T		NW Branch Trail	1/2/3	L		Magruder Park	1/2/3	R		Police Dept	1/2/3					28	
B61	38th St and Jefferson St	SW	Destination with Metro Symbol	L	Metro	W Hyattsville	1/2/4													13	
B62	38th St and Jefferson St	NE	Destination with Metro Symbol	T		Police Dept	1/2/3	R	Metro	W Hyattsville	1/2/4									13	
B63	Jefferson St and 38th St	NW	Destination	L		Gateway Arts Dist	1/2/3	R		Magruder Park	1/2/3									13	
B64	Jefferson St and Queens Chapel Rd	SE	Destination with Metro Symbol	L		Queens Chapel Town Center Use Sidewalk	1/2/3	L	Metro	W Hyattsville	1/2/4									28	
B65	Queens Chapel Rd and Jefferson Dr	SW	Destination	R		Magruder Park	1/2/3	R		Gateway Arts Dist	1/2/3									13	
B66	Hamilton St and Queens Chapel Rd	NE	Destination with Metro Symbol	R	Metro	W Hyattsville Use Crosswalk	1/2/4													13	Note: back to back with B67
B67	Hamilton St and Queens Chapel Rd	SW	Bike Route	T	Bicycle		1/6													13	Note: back to back with B66
B68	Hamilton St and Queens Chapel Rd	SW	Destination	R		Gateway Arts Dist Use Crosswalk	1/2/3													13	
B69	Hamilton St and Queens Chapel Rd	NW	Destination	TL		Gateway Arts Dist Use Crosswalks	1/2/3													13	
B70	Hamilton St and 31st Ave	E	Destination with Metro Symbol	T	Metro	W Hyattsville	1/2/4	T		NW Branch Trail	1/2/3	R		Heurich Park	1/2/3					28	
B71	31st Ave and Hamilton St	N	Destination with Metro Symbol	L		Gateway Arts Dist	1/2/3	R	Metro	W Hyattsville	1/2/4									13	
B72	Hamilton St and Metro Driveway	NE	Destination with Metro Symbol	T	Metro	W Hyattsville	1/2/4	T		NW Branch Trail	1/2/3									13	Location: Could be blocking the pedestrian warning sign. Would it be acceptable to replace one of the two "1 Hour Parking" Signs at this group of 5 parking spaces?
B73	Hamilton St and 31st Ave	W	Destination	T		Gateway Arts Dist	1/2/3	TL		Mall at Prince George's	1/2/3	TL		Heurich Park	1/2/3					28	
B74	Jamestown Rd and 31st Ave	NE	Destination with Metro Symbol	L		Queens Chapel Town Center	1/2/3	L	Metro	W Hyattsville	1/2/4	L		Gateway Arts Dist	1/2/3					28	
B75	31st St and Lancer Dr	SE	Bike Route	T	Bicycle		1/6													13	

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Sign Point	Intersection- See KML for Exact Location	Sign Face Orientation	Sign Type	Destination 1				Destination 2				Destination 3				Destination 4				Sign Text Block Height (Inches)	Notes
				Arrow Direc	Symbol	Text	Detail Number	Arrow Direc	Symbol	Text	Detail Number	Arrow Direc	Symbol	Text	Detail Number	Arrow Direc	Symbol	Text	Detail Number		
- THROUGH (T) - LEFT (L) - DIAGONAL LEFT (DL) -ADVANCE TURN ARROW "THROUGH-LEFT" (TL) - RIGHT (R) - DIAGONAL RIGHT (DR) ADVANCE TURN ARROW "THROUGH-RIGHT" (TR)																					
B76	31st St and Lancer Dr	NW	Bike Route	T	Bicycle		1/6													13	
B77	31st Ave and Nicholson St	S	Destination	L		NW Branch Trail	1/2/3	R		Ed. Felegy ES	1/2/3	R		Nich. Orem MS	1/2/3	R		Mall at Prince George's	1/2/3	28	
B78	Nicholson St and 31st Ave	NE	Destination	T		NW Branch Trail	1/2/3	T		Heurich Park	1/2/3	L		Queens Chapel Town Center	1/2/3					28	
B79	Nicholson St and 31st Ave	SW	Destination with Metro Symbol	R		Queens Chapel Town Center	1/2/3	R	Metro	W Hyattsville	1/2/4	R		Gateway Arts Dist	1/2/3					28	
B80	Nicholson St and Heurich Park Rd	NE	Destination	R		Heurich Park	1/2/3	R		NW Branch Trail	1/2/3									13	
B81	Heurich Park Rd and Nicholson St	NW	Destination with Metro Symbol	L		Queens Chapel Town Center	1/2/3	L	Metro	W Hyattsville	1/2/4	L		Gateway Arts Dist	1/2/3					28	
B82	Heurich Park Parking Lot	S	Destination	DL		Heurich Park	1/2/3	L		NW Branch Trail	1/2/3									13	
B83	Nicholson St and 33rd Ave	NW	Destination	T		Gateway Arts Dist	1/2/3	L		Nich. Orem MS	1/2/3									13	
B84	Nicholson St and 33rd Ave	SE	Destination	T		NW Branch Trail	1/2/3	T		Heurich Park	1/2/3	R		Nich. Orem MS	1/2/3					28	
B85	Nicholson St and Jamestown Rd	NW	Destination with Metro Symbol	L	Metro	Pr George's Pl Via Stairs	1/2/4	R		Queens Chapel Town Center	1/2/3	R		Gateway Arts Dist	1/2/3					28	
B86	Jamestown Rd and Nicholson St	NE	Destination	T		Queens Chapel Town Center	1/2/3	T		Gateway Arts Dist	1/2/3	R		NW Branch Trail	1/2/3					28	
B87	Oliver St and Jamestown Rd	S	Destination with Metro Symbol	T	Metro	Pr George's Pl Use Stairs	1/2/4													13	Note: Back to back with B88
B88	Oliver St and Jamestown Rd	N	Destination	T		Queens Chapel Town Center	1/2/3	T		Gateway Arts Dist	1/2/3									13	Note: Back to back with B87

Vehicle Wayfinding Sign Reference Guide

Sign Point	Intersection- See KML for Exact Location	Sign Face Orientation	Destination 1				Destination 2				Destination 3				Notes	Text Block Height (Inches)
			Arrow Direc	Symbol	Text	Detail #	Arrow Direc	Symbol	Text	Detail #	Arrow Direc	Symbol	Text	Detail #		
- THROUGH (T) - LEFT (L) - DIAGONAL LEFT (DL) - ADVANCE TURN ARROW "THROUGH-LEFT" (TL) - RIGHT (R) - DIAGONAL RIGHT (DR) ADVANCE TURN ARROW "THROUGH-RIGHT" (TR)																
C1	Belcrest Rd and Toledo Rd	S	R	Parking		7/11										16
C2	Belcrest Rd and Liberty Ln/Freedom Wy	N	T	Metro	Pr George's Pl	7/8/10	L		Univ Town Center	7/8/9	R		Mall at Pr George's	7/8/9		24
C3	Ln/Freedom Wy	S	R		Univ Town Center	7/8/9	R		Parking	7/8/9						16
C4	Queensbury Rd and Queens Chapel Rd	E	T	Metro	Pr George's Pl	7/8/10										8
C5	Queensbury Rd and Queens Chapel Rd	E	T	Metro	Pr George's Pl	7/8/10										8
C6	Oglethorpe st and 42nd Ave	NW	T		Hyattsville MS	7/8/9										8
C7	42nd Ave and Oglethorpe St	S	R		Hyattsville MS	7/8/9										8
C8	Baltimore Ave at the limit of Hyattsville	S	T		Univ of Maryland	7/8/9	T		Mall at Pr George's Via East West Hwy	7/8/9						24
C9	Baltimore Ave and Jefferson St	N	R		Hyattsville ES	7/8/9	R	Metro	W Hyattsville	7/8/10						16
C10	Baltimore Ave and Jefferson St	S	L		Hyattsville ES	7/8/9	L	Metro	W Hyattsville	7/8/10						16
C11	Jefferson St and Baltimore Ave	W	T	Parking		7/11										16
C12	Jefferson St and 43rd Ave	E	L		Hyattsville ES	7/8/9										8
C13	Jefferson St and 43rd Ave	W	R		Hyattsville ES	7/8/9										8
C14	42nd Pl and Jefferson St	S	R		Hyattsville ES	7/8/9	R		Parking	7/8/9						16
C15	Jefferson St and 40th St	E	L		Magruder Park	7/8/9										8
C16	Baltimore Ave and Gallatin St	N	R		Municipal Bldg	7/8/9	R		Parking Lot 3	7/8/9	R	Metro	W Hyattsville	7/8/10		24
C17	Baltimore Ave and Gallatin St	S	L		Municipal Bldg	7/8/9	L		Parking Lot 3	7/8/9	L	Metro	W Hyattsville	7/8/10		24
C18	Baltimore Ave and Farragut St	N	T		Public Parking at Justice Center	7/8/9										16
C19	Gallatin St and 42nd Pl	E	R		Hyattsville ES	7/8/9										8
C20	Gallatin St and 42nd Ave	E	R		Queens Chapel Town Center	7/8/9	R	Metro	W Hyattsville	7/8/10						24
C21	42nd Ave and Hamilton St	S	L		Magruder Park	7/8/9	L		Queens Chapel Town Center	7/8/9	L	Metro	W Hyattsville	7/8/10		24
C22	Hamilton St and 39th Ave	NE	DR	Metro	W Hyattsville	7/8/10									Before installation, relocate existing stop signs into the existing curb extensions. May need to place sign after the intersection on Hamilton if it is obscuring the stop signs. In that case, change the directional arrow to plain "Through"	8
C23	40th Ave and Hamilton St	N	T		Magruder Park	7/8/9	T		Parking	7/8/9						16
C24	Hamilton St and 40th Ave	W	R		Magruder Park	7/8/9	R		Parking	7/8/9						16
C25	Jefferson St and Hamilton St	NE	R	Metro	W Hyattsville	7/8/10										8

Vehicle Wayfinding Sign Reference Guide

Sign Point	Intersection- See KML for Exact Location	Sign Face Orientation	Destination 1				Destination 2				Destination 3				Notes	Text Block Height (Inches)
			Arrow Direc	Symbol	Text	Detail #	Arrow Direc	Symbol	Text	Detail #	Arrow Direc	Symbol	Text	Detail #		
↑ ← ↙ - THROUGH (T) - LEFT (L) - DIAGONAL LEFT (DL) ↖ → ↘ -ADVANCE TURN ARROW "THROUGH-LEFT" (TL) - RIGHT (R) - DIAGONAL RIGHT (DR) ADVANCE TURN ARROW "THROUGH-RIGHT" (TR)																
C26	Hamilton St and Jefferson St	W	L		Gateway Arts Dist	7/8/9	T		Magruder Park	7/8/9						16
C27	Hamilton St and Queens Chapel Rd	SE	T	Metro	W Hyattsville	7/8/10	R		Mall at Pr George's	7/8/9						16
C28	Queens Chapel Rd and Ager Rd	NE	R	Metro	W Hyattsville	7/8/10										8
C29	Hamilton and 31st Ave	SE	R	Parking		7/11										16
C30	31st Ave N of Hamilton St	S	R	Parking		7/11										16
C31	Hamilton and 31st Ave	SW	L	Parking		7/11										16
C32	Ager Rd and Hamilton St	SE	L	Metro	W Hyattsville	7/8/10										8

Pedestrian Wayfinding Sign Reference Guide

Sign Point	Intersection- See KML for Exact Location	General Location	Location Title	Location Description
Kiosk 1	Baltimore Ave and Farragut St	Trolley Trail Entrance	Gateway Arts District	Recommended placement at the southern end of the Gateway Arts District, at the entrance to the Trolley Trail. This kioks is intended to serve as a 'gateway' / welcome feature for bicyclists and pedestrians using Trolley Trail.
Kiosk 2	Baltimore Ave and Jefferson St	NE corner of intersection	Gateway Arts District	Recommended placement at the “heart” of the Gateway Arts District, identified by the City as high pedestrian traffic area.
Kiosk 3	Belcrest Rd and Liberty Lane	East Side (UTC side)	University Town Center	Recommended placment is in area identified as having high pedestrian traffic in front of bus stop. It will serve as a 'gateway'/welcome feature to the University Town Center (UTC) and the Mall at Prince George's.
Kiosk 4	MD 410 and Metro Entrance	In plaza next to ped bridge	Hyattsville Crossing	Recommended location will serve as a 'gateway'/welcome feature to the City of Hyattsville via the Prince George’s Plaza Metro Station. Final location of kiosk will depend on right-of-way ownership, existing space, and other agreements with Metro/SHA. Another location north of the Metro exit may also be considered.
Kiosk 5	Hamilton and 31st Ave	NW corner of intersection	Queens Chapel Town Center	Recommended placement will serve as a 'gateway' feature to the Queens Chapel Town Center area for pedestrians and bicyclists coming from the West Hyattsville Metro Station.

Note: Kiosk signs to be installed such that the map panels are facing towards the south.

Kiosk Destination and Mileage Lists:

Kiosk	Destination	Distance (Miles)
Kiosk 1	Municipal Complex	0.1
	Heritage Center	0.1
	Historic District	0.3
	Hyattsville Elementary School	0.3
	Northwest Branch Trail	0.5
	Magruder Park	0.7
	Hyattsville Middle School	0.8
Kiosk 2	Hyattsville Elementary School	0.1
	Trolley Trail	0.1
	Heritage Center	0.2
	Municipal Complex	0.3
	Historic District	0.4
	Hyattsville Middle School	0.6
	Northwest Branch Trail	0.7
	Magruder Park	0.8
Kiosk 3	Mall at Prince George's	0.1
	Hyattsville Crossing	0.2
	Prince George's Plaza Metro Station	0.2
	Hyattsville Branch Library	0.3
	Northwestern High School	0.6
	Nicholas Orem Middle School	0.6
	Edward M. Felegy Elementary School	0.7
Kiosk 4	Mall at Prince George's	0.1
	Prince George's Plaza Metro Station	0.1
	University Town Center	0.2
	Nicholas Orem Middle School	0.4
	Hyattsville Branch Library	0.5
	Edward M. Felegy Elementary School	0.5
	Hyattsville Middle School	0.9
	Heurich Park	1.2
Kiosk 5	West Hyattsville Metro Station	0.3
	Northwest Branch Trail	0.3
	Nicholas Orem Middle School	0.8
	Heurich Park	0.9

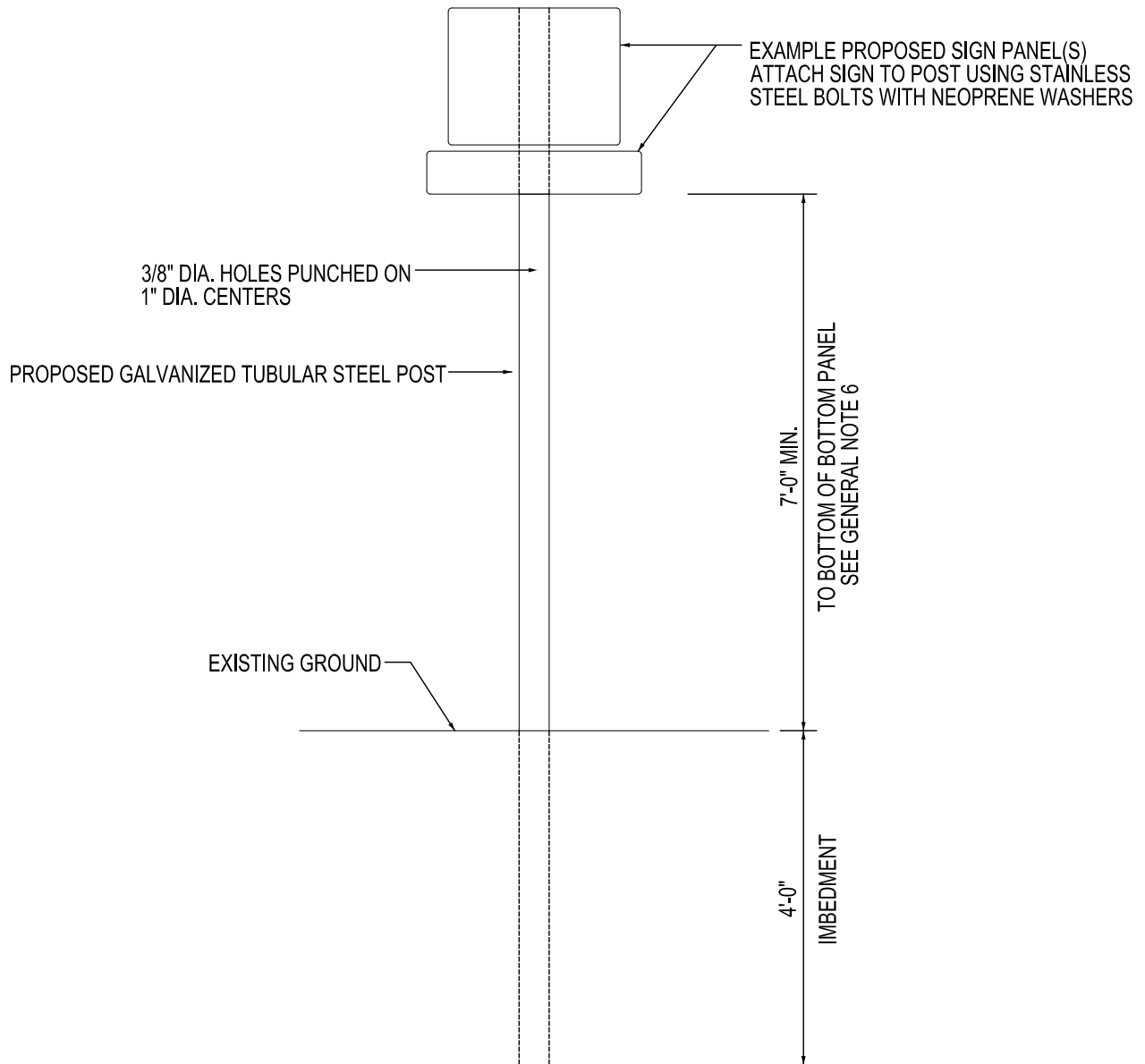
GENERAL NOTES

1. All work shall meet all applicable Prince George's County Department of Public Works and Transportation (DPW&T) latest standards and specifications. Work shall also meet all applicable requirements of the Manual of Uniform Traffic Control Devices (MUTCD).
2. Sign locations were developed based on information from Google Earth and field visits to key intersections. The Contractor shall verify all dimensions in the field prior to installing proposed work. When these plans are in conflict with actual site conditions, proposed work may be adjusted as directed by the City of Hyattsville (City). Costs are incidental to the appropriate pay items.
3. All sign panels shown are proposed unless otherwise noted.
4. All signs shall be high intensity sheeting meeting the requirements of AASHTO M268
5. Lateral clearance between proposed sign posts and edge of adjacent roadway shall be in accordance with Prince George's County DPW&T and MUTCD standards and specifications. In general, signs shall have a lateral offset of 2 feet from face of curb. In urban settings where space is restricted, signs shall have a lateral offset of 1 foot from face of curb. When installing sign posts adjacent to or within an existing sidewalk, a minimum clear width of 32" on the existing sidewalk shall be maintained, and a preferred clear width of 48" shall be maintained where feasible.
6. All signs shall have a minimum vertical clearance of 7 feet from the ground to the bottom of the sign. If the Contractor cannot meet the 7-foot clearance on an existing sign post, the Contractor shall extend the sign post and install both proposed and existing signs in order to meet the vertical clearance. All signs that are installed on existing traffic structures such as signal pole, light poles, etc. shall have the 7-foot minimum clearance from the ground to the bottom of the sign panel. If at any point the Contractor cannot meet the vertical clearance required, the Contractor shall contact the City for further instructions prior to installation of the sign in question.
7. Proposed sign panels for bicyclists shall be mounted so they are visible by a bicyclist at a minimum of 80 feet. Proposed sign panels for motor vehicle operators shall be mounted so they are visible by the operator at a minimum of 180 feet. Contractor shall bring any needed vegetation trimming or other obstructions to the attention of the City.
8. Proposed signs at new locations shall be installed so they do not block the visibility of any existing signs or signals and so they do not block sight lines at intersections, driveways, and bicycle and pedestrian crossings.
9. Proposed signs and posts shall be clear of existing fire hydrants, surface utility, and overhead utility equipment a minimum of 10 feet. If this clearance cannot be met, the Contractor shall contact the City for further instructions prior to installation.
10. For new post installation, the Contractor shall verify that there are no conflicting underground or overhead utilities, and shall call Miss Utility before beginning installations.

11. Square steel sign post installation, sign panel mounting and hardware shall be in accordance with MDSHA standards and specifications. Signs shall be mounted on proposed square steel metal posts unless otherwise noted in the plans. See sheets 3-6 for mounting details.
12. All signs shall be securely fastened so as to hold the sign in a permanent position and resist movement by the wind or displacement by vandals.
13. The Contractor shall submit proofs/shop drawings of the proposed sign content to the City for approval prior to fabrication and installation.
14. At the direction and approval of the City, sign panels to be mounted on new posts may be mounted on appropriate existing posts if available.
15. Signs mounted to existing light, signal or utility poles shall be fastened with a manufactured steel banding system. Poles shall not be drilled directly. The Contractor shall submit manufacturer information on the banding system to the City for approval prior to installation.
16. If sign installation is shown on a pole that is not owned by the City, written permission must be obtained from the owner (utility company, SHA, or property owner). The Contractor is responsible for obtaining required permission.
17. Existing signs (panels, hardware and/or posts) that are called for to be removed and not reused shall be disposed of.
18. All sign locations shown on the plans are schematic and may not reflect actual field locations. The Contractor shall verify each location prior to installing a sign. If at any point the Contractor finds a conflict, the Contractor shall contact the City prior to installing the proposed sign.
19. The Contractor shall verify all dimensions in the field prior to installing signing. Additional adjustments of existing signs beyond those called for in these plans may be necessary, as directed by the City.
20. The Contractor shall mark all sign locations in the field for City of Hyattsville to review prior to installation.

ELEVATION

PROPOSED POST AND SIGN INSTALLATION DETAIL



NOTE:

1. SIGN IS ASSOCIATED WITH SIGNAGE PLANS. SEE SIGN REFERENCE GUIDE, KMLS, DETAILS, AND GENERAL NOTES FOR SIGN LOCATIONS, PANEL, POST AND MOUNTING DETAIL.

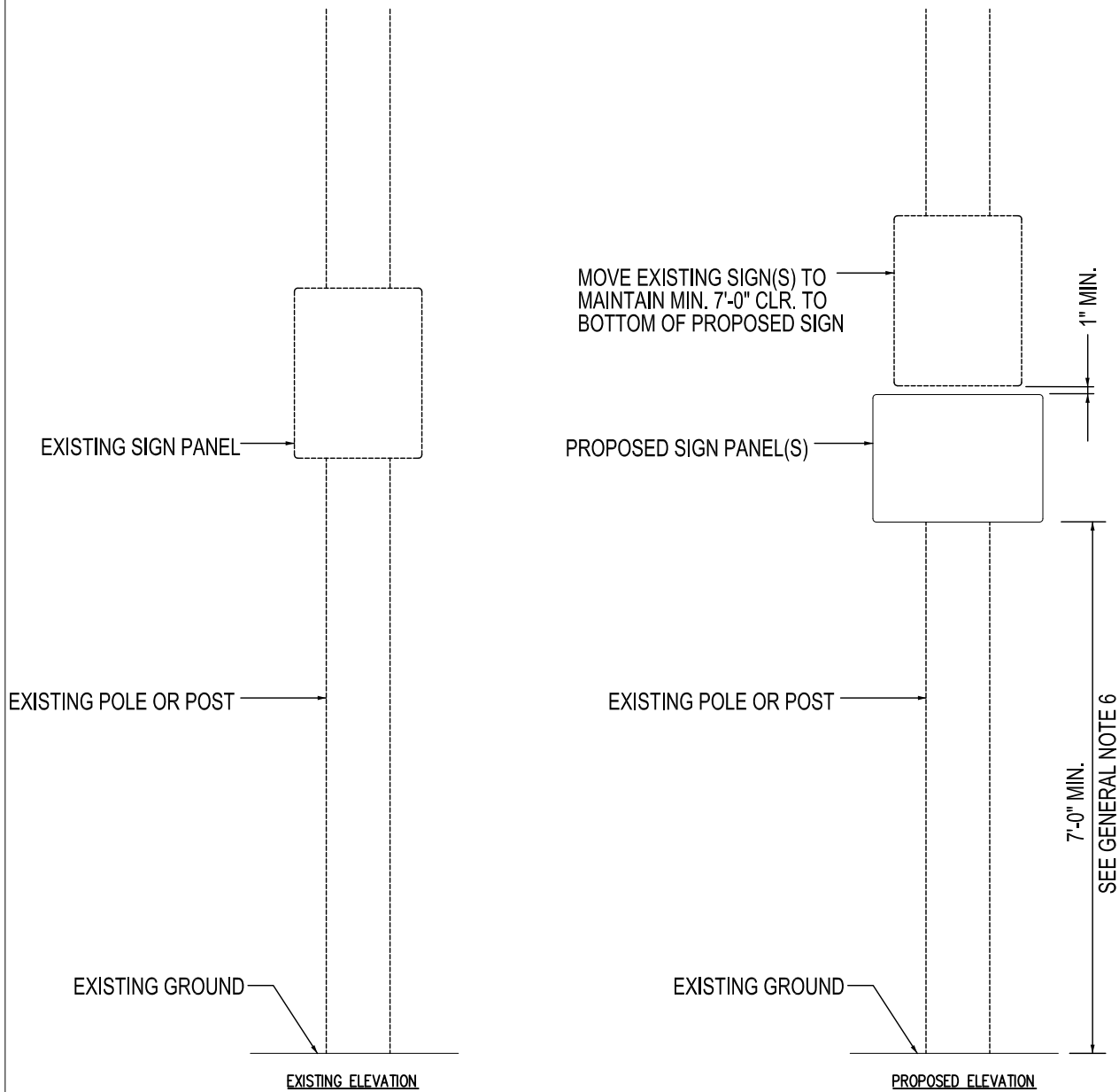
GENERAL NOTES

HYATTSTVILLE WAYFINDING
SIGN TYPICAL DETAIL - 1
PROPOSED MOUNTING OF SIGNS

SHEET 3 OF 6
N.T.S.

ELEVATION

EXAMPLE MOUNTING DETAIL BELOW AN EXISTING SIGN



NOTE:

1. SIGN IS ASSOCIATED WITH SIGNAGE PLANS. SEE SIGN REFERENCE GUIDE, DETAILS, AND GENERAL NOTES FOR SIGN LOCATIONS, PANEL, POST AND MOUNTING DETAIL.

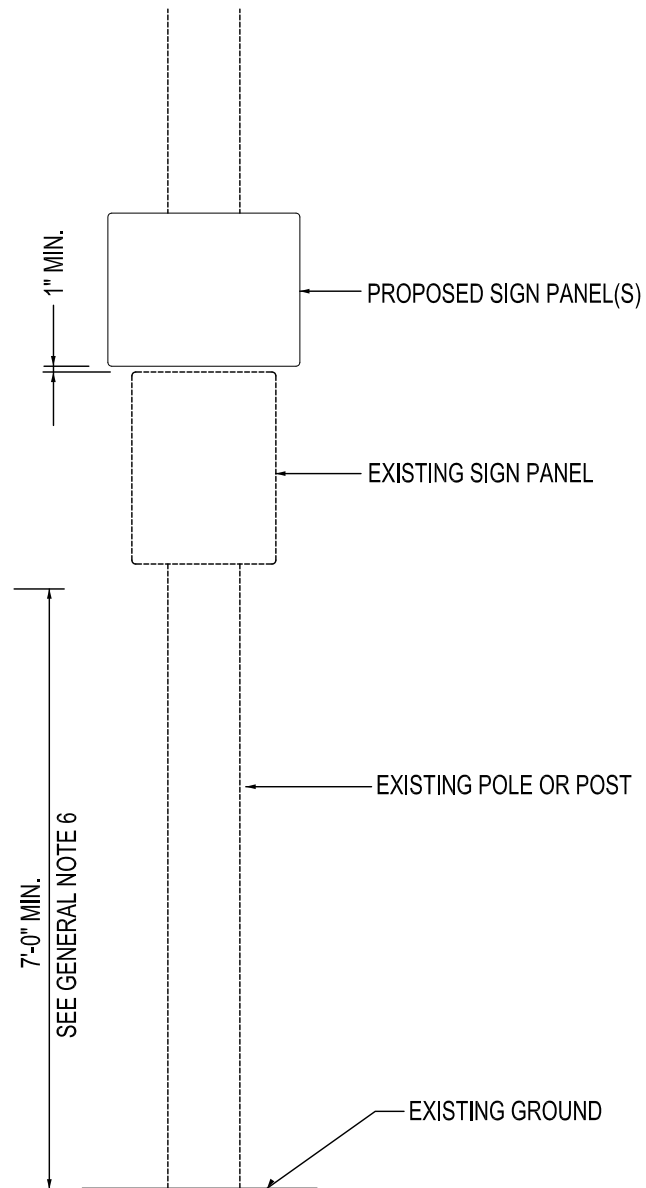
GENERAL NOTES

HYATTSVILLE WAYFINDING
SIGN TYPICAL DETAIL - 2
MOUNTING BELOW EXISTING SIGNS

SHEET 4 OF 6
N.T.S.

ELEVATION

EXAMPLE MOUNTING DETAIL ABOVE AN EXISTING SIGN



NOTE:

1. SIGN IS ASSOCIATED WITH SIGNAGE PLANS. SEE SIGN REFERENCE GUIDE, KMLS, DETAILS, AND GENERAL NOTES FOR SIGN LOCATIONS, PANEL, POST AND MOUNTING DETAIL.

GENERAL NOTES

HYATTSVILLE WAYFINDING
SIGN TYPICAL DETAIL - 3
MOUNTING ABOVE EXISTING SIGNS

SHEET 5 OF 6
N.T.S.

ELEVATION

PROPOSED TUBULAR
STEEL POST

DRILL HOLE 2" LARGER THAN
POST ON ALL SIDES, INSTALL
POST, FILL VOID WITH
CONCRETE (SEE NOTE 2)

EXISTING SIDEWALK

EXAMPLE PROPOSED SIGN PANEL(S)
ATTACH SIGN TO POST USING STAINLESS
STEEL BOLTS WITH NEOPRENE WASHERS

TO BOTTOM OF BOTTOM PANEL
SEE GENERAL NOTE 6

CLEAR SIDEWALK SPACE
32" MINIMUM
48" PREFERRED

2" TYP.

2'-6"

NOTE:
1. SIGN IS ASSOCIATED WITH SIGNAGE PLANS. SEE SIGN REFERENCE GUIDE, KMLS,
DETAILS, AND GENERAL NOTES FOR SIGN LOCATIONS, PANEL, POST AND MOUNTING
DETAIL.

GENERAL NOTES

719

SHEET 6 OF 6
N.T.S.

WAYFINDING SIGNAGE FABRICATION DETAILS

- 1. BICYCLE WAYFINDING SIGN FABRICATION DETAILS: SHEETS 2-5
- 2. VEHICLE WAYFINDING SIGN FABRICATION DETAILS: SHEETS 6-8
- 3. PEDESTRIAN KIOSK SIGN FABRICATION DETAILS: SHEETS 9-10



8484 GEORGIA AVENUE, SUITE 800, SILVER SPRING, MD 20910
PHONE: (301) 927-1900 FAX: (301) 927-2800
www.tooledesign.com

HYATTSVILLE WAYFINDING
FABRICATION DETAILS
HYATTSVILLE, MD

PREPARED: CB
CHECKED: MMG

DATE
8/3/18

REV. 1 -
REV. 2 -
REV. 3 -

SHEET NAME
COVER SHEET
SIGN DETAILS

DRAWING NUMBER
C-1

SHEET NUMBER
1 OF 10

HYATTSVILLE WAYFINDING
FABRICATION DETAILS
HYATTSVILLE, MD

PREPARED: CB
CHECKED: MMG

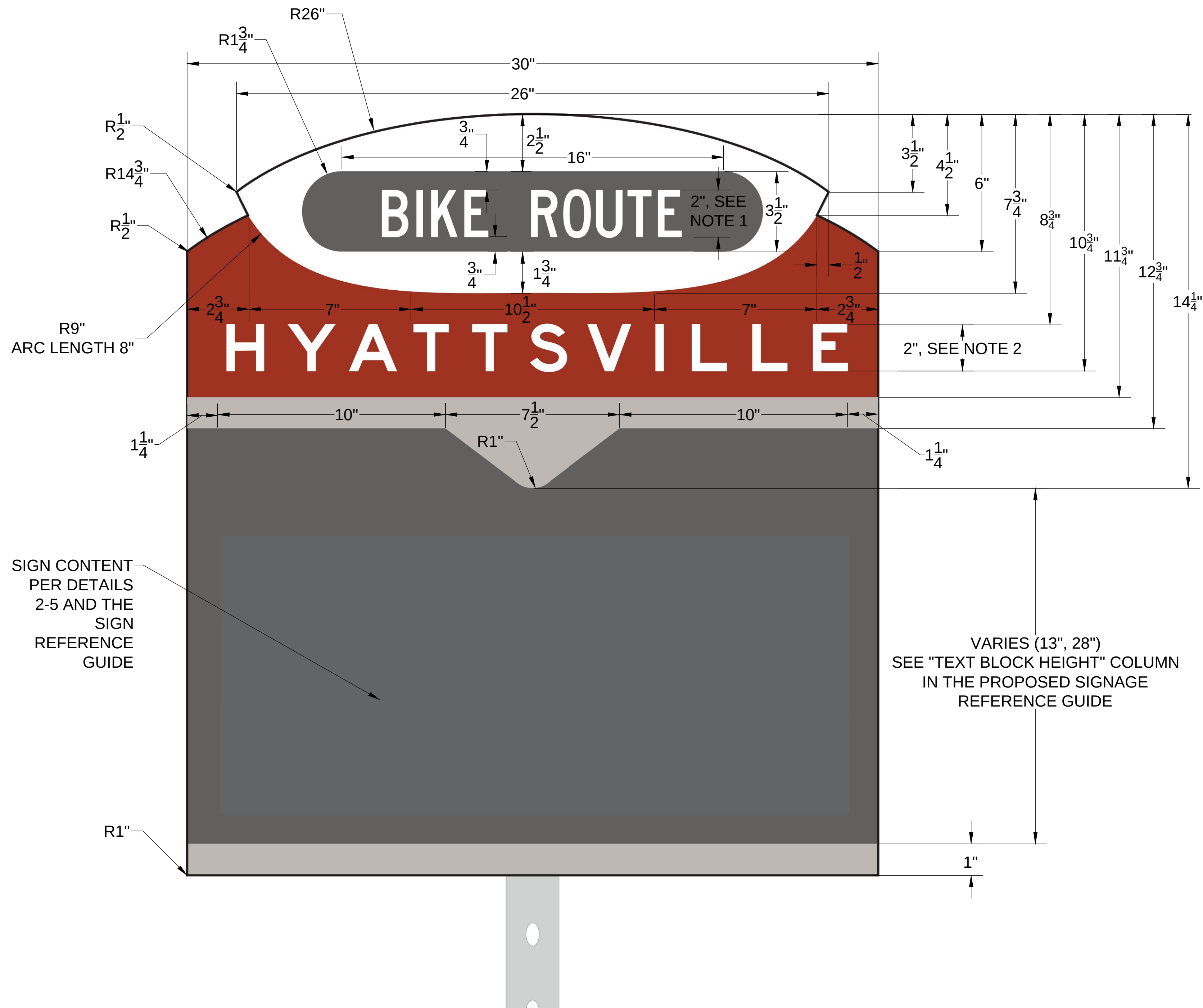
DATE
8/3/18

REV. 1 -
REV. 2 -
REV. 3 -

SHEET NAME
BICYCLE WAYFINDING
DETAILS

DRAWING NUMBER
B-1

SHEET NUMBER
2 OF **10**



DETAIL 1: BICYCLE WAYFINDING SIGN EXTERIOR LAYOUT

N.T.S.

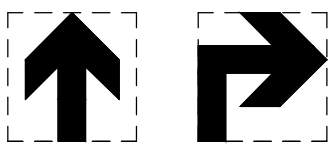
- NOTES:
1. FONT: HIGHWAY GOTHIC SERIES C
COLOR: WHITE
 2. FONT: HIGHWAY GOTHIC SERIES E
COLOR: WHITE
 3. SIGN COLORS AS SHOWN:
WHITE (R255, G255, B255)
LIGHT GRAY (R189, G196, B191)
DARK GRAY (R81, G92, B92)
RED (R151, G18, B4)
 4. EACH BICYCLE WAYFINDING SIGN TO BE INSTALLED ON A
SQUARE STEEL POST
 5. DETAIL 1 APPLIES TO ALL BICYCLE WAYFINDING SIGNAGE
 6. SEE SHEETS B-2 THROUGH B-4 AND THE BICYCLE WAYFINDING
SIGN REFERENCE GUIDE FOR CONTENT FOR EACH SIGN



DETAIL 2: BICYCLE WAYFINDING "DESTINATION" SIGN TYPE
VERTICAL LAYOUT ALIGNMENT
N.T.S.

- NOTES:
1. FONT: HIGHWAY GOTHIC SERIES C
COLOR: WHITE
 2. SIGN COLORS AS SHOWN:
WHITE (R255, G255, B255)
LIGHT GRAY (R189, G196, B191)
DARK GRAY (R81, G92, B92)
RED (R151, G18, B4)
 3. EACH BICYCLE WAYFINDING SIGN TO BE
INSTALLED ON A SQUARE STEEL POST
 4. WHITE DOTTED LINES ARE INTENDED TO BE
USED AS GUIDE LINES ONLY AND ARE NOT TO
BE PRINTED.
 5. DETAIL 2 APPLIES TO ALL VARIATIONS OF
BICYCLE "DESTINATION" SIGN TYPES.

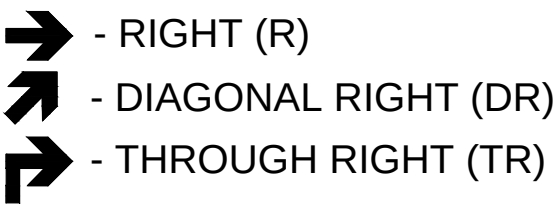
ARROW LAYOUT GUIDE



ARROWS TO BE PLACED IN 3"X3" DOTTED BOX,
CENTERED HORIZONTALLY AND VERTICALLY
(DOTTED BOX IS A GUIDE AND NOT TO BE PRINTED)

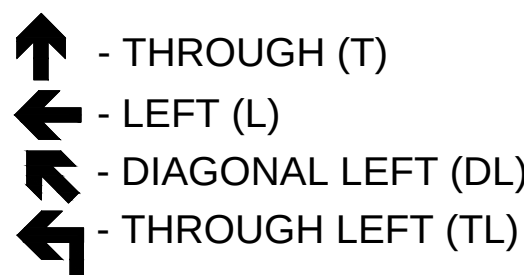
ARROW OPTIONS

PLACED TO THE RIGHT OF TEXT/SYMBOL

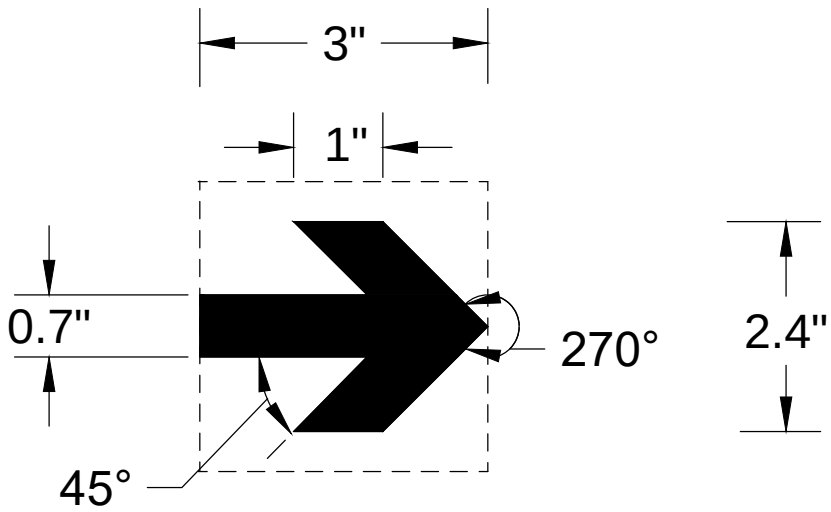


ARROW OPTIONS

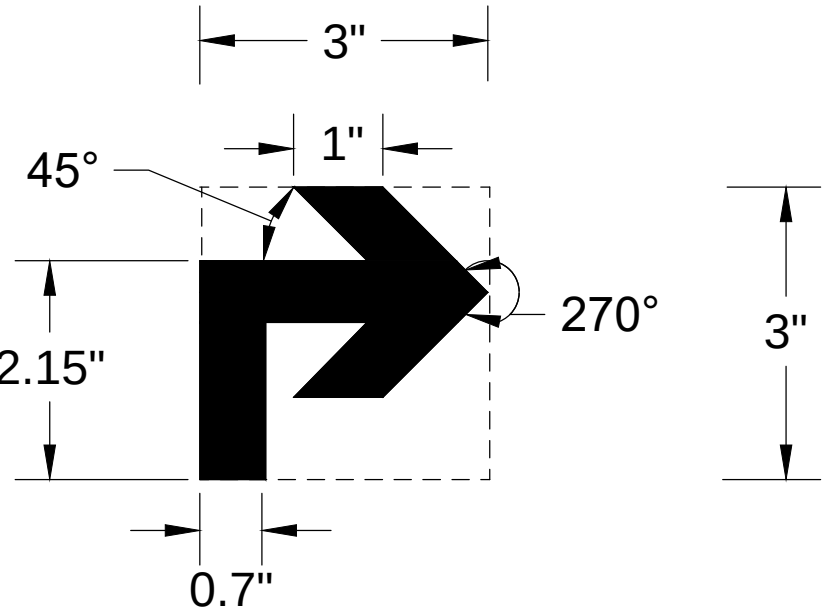
PLACED TO THE LEFT OF TEXT



LEFT/RIGHT, STRAIGHT,
DIAGONAL LEFT/RIGHT
ARROW



THROUGH LEFT/THROUGH RIGHT ARROW



HYATTSVILLE WAYFINDING
FABRICATION DETAILS
HYATTSVILLE, MD

PREPARED: CB
CHECKED: MMG
DATE
8/3/18
REV. 1 -
REV. 2 -
REV. 3 -

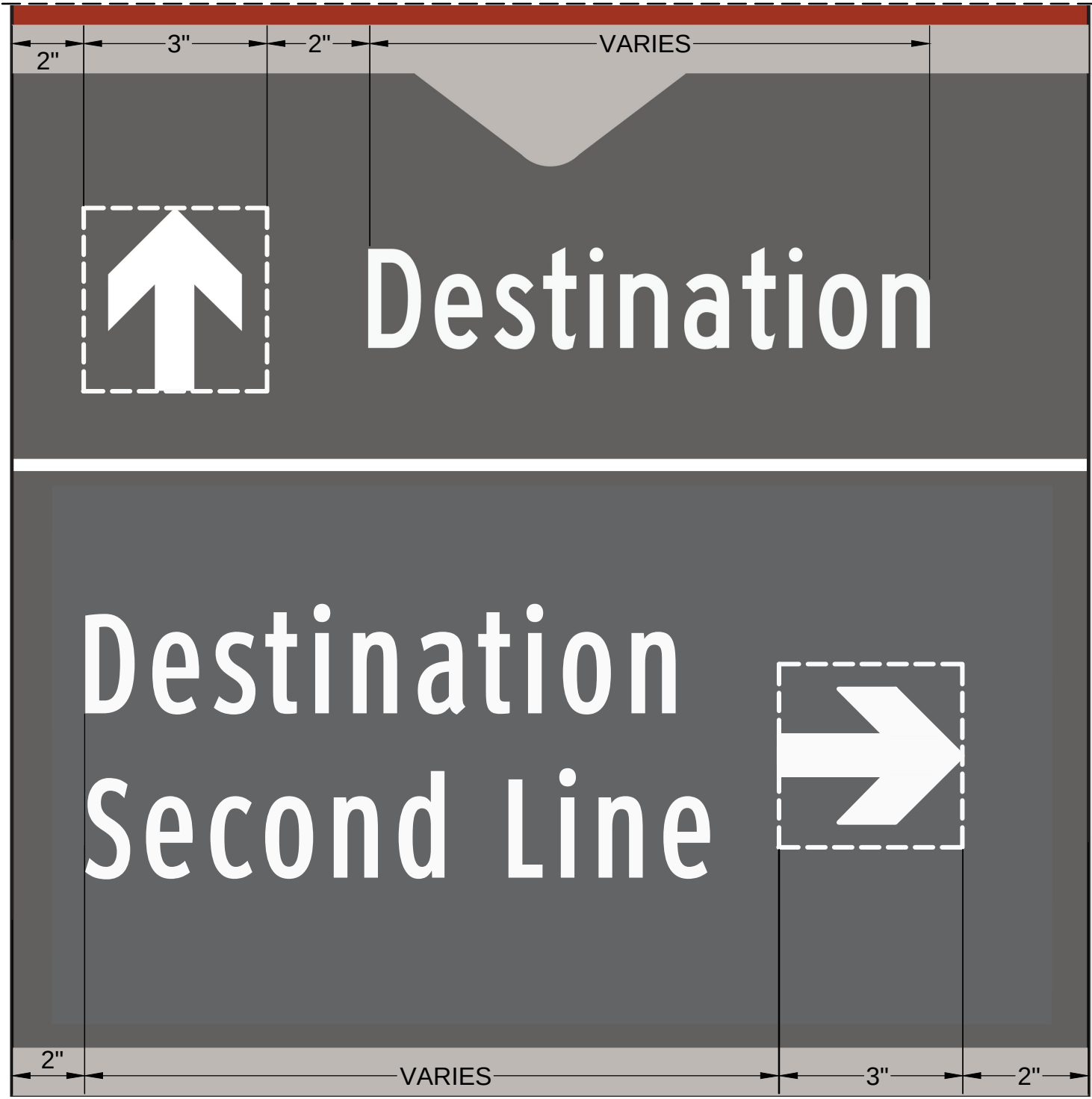
SHEET NAME
BICYCLE WAYFINDING
DETAILS

DRAWING NUMBER

B-2

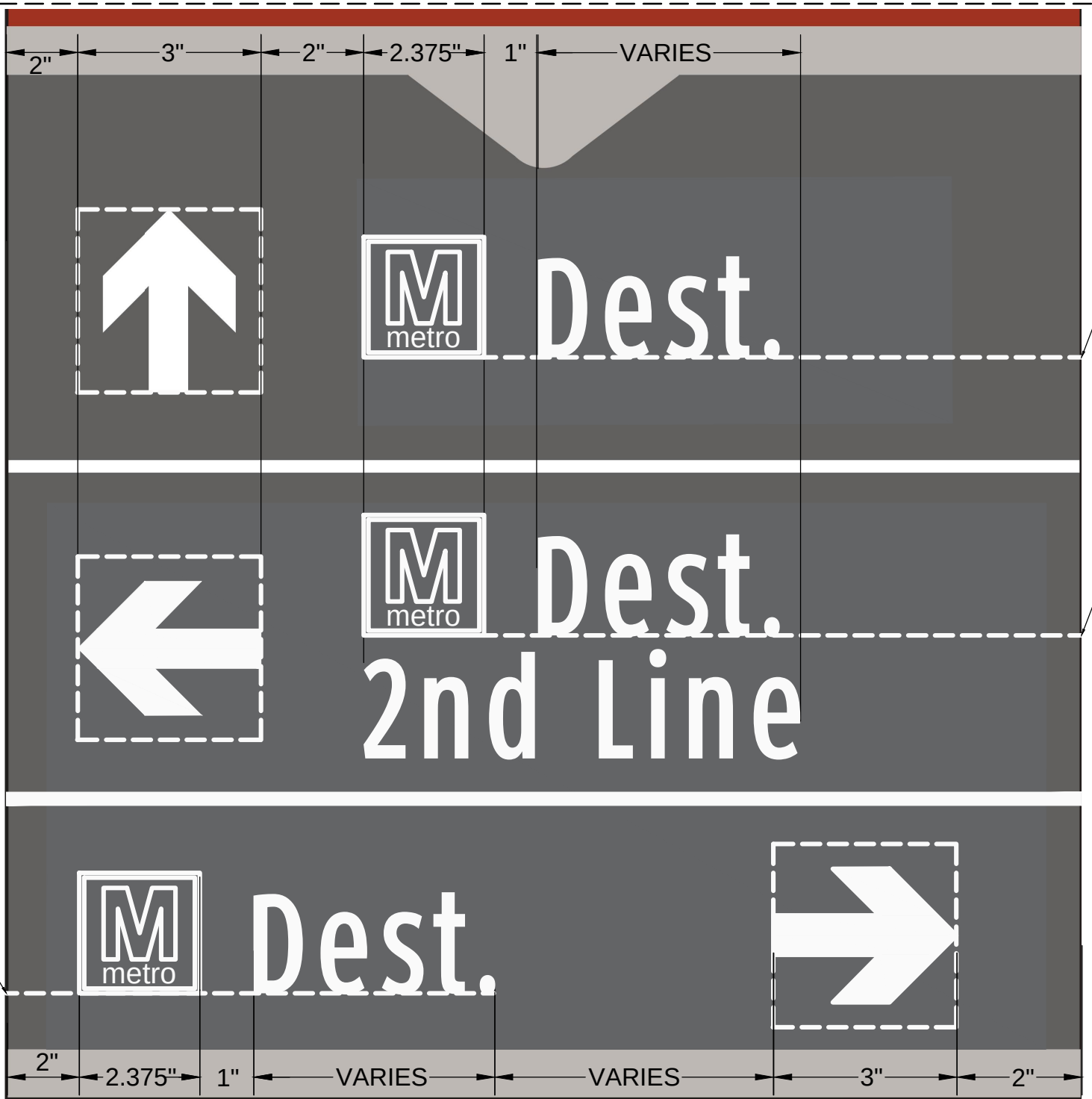
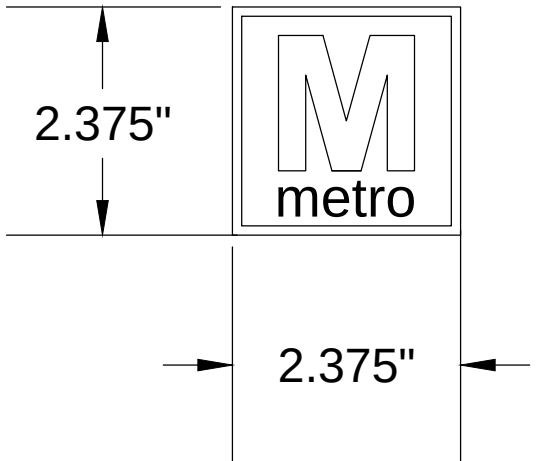
SHEET NUMBER

3 OF 10



DETAIL 3: BICYCLE WAYFINDING "DESTINATION" SIGN TYPE
HORIZONTAL LAYOUT ALIGNMENT
N.T.S.

METRO SYMBOL

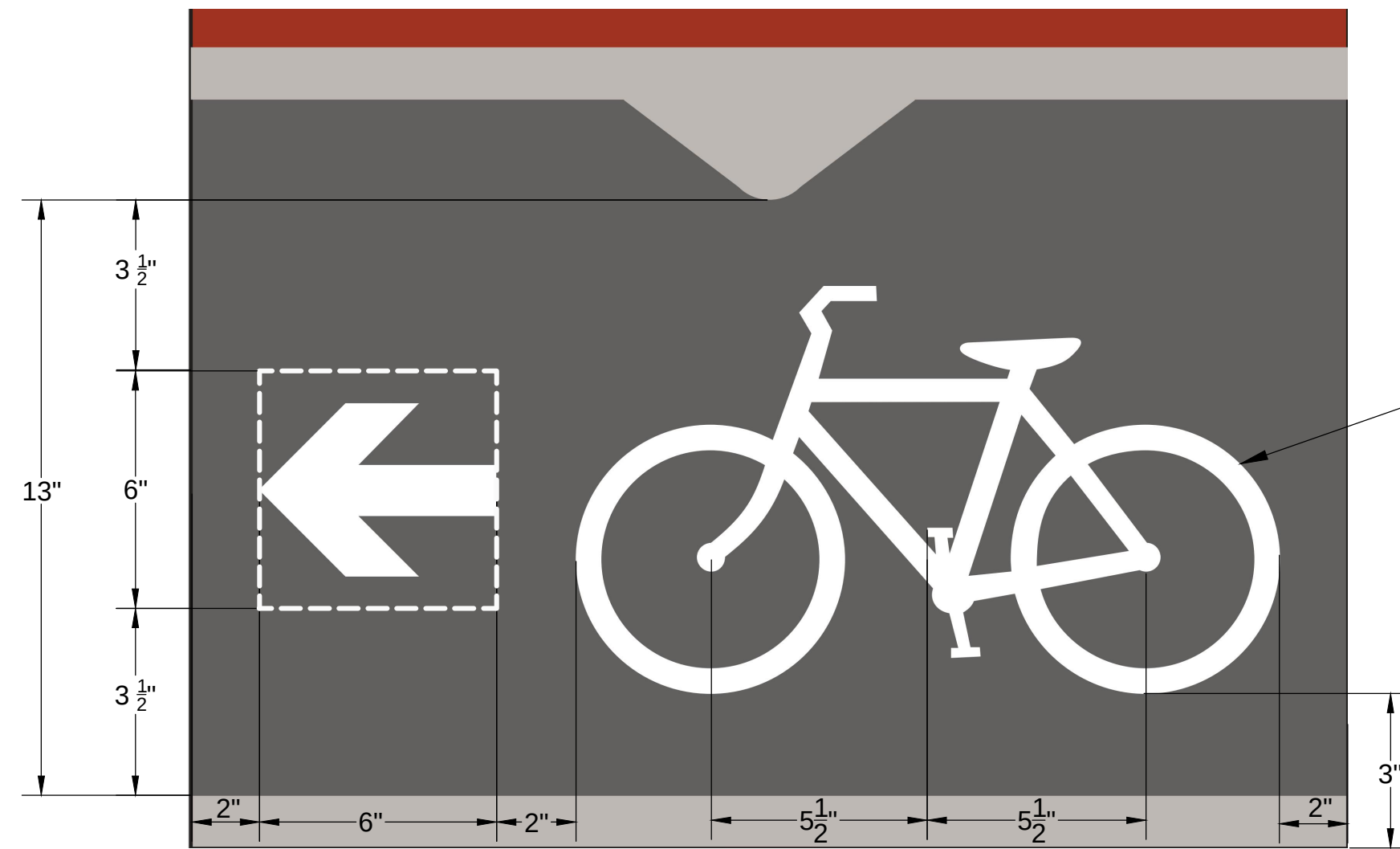
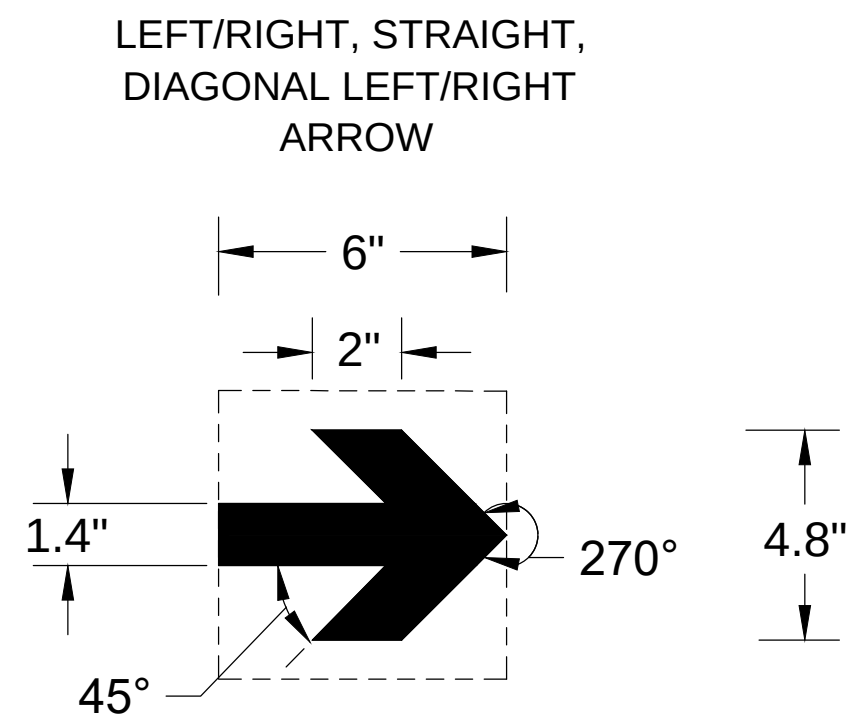


DETAIL 4: BICYCLE WAYFINDING "DESTINATION" SIGN TYPE
FOR DESTINATIONS WITH A METRO SYMBOL
HORIZONTAL LAYOUT ALIGNMENT
N.T.S.



DETAIL 5: BICYCLE WAYFINDING "DESTINATION" SIGN TYPE
FOR DESTINATIONS WITH TWO DIRECTIONAL ARROWS
HORIZONTAL LAYOUT ALIGNMENT
N.T.S.

- NOTES:
- 1. SEE SHEET B-2 FOR VERTICAL LAYOUT OF ALL "DESTINATION" SIGN TYPES
 - 2. SEE SHEET B-2 FOR FONT AND SYMBOL DETAILS
 - 3. SIGN COLORS AS SHOWN:
WHITE (R255, G255, B255)
LIGHT GRAY (R189, G196, B191)
DARK GRAY (R81, G92, B92)
RED (R151, G18, B4)
 - 4. EACH BICYCLE WAYFINDING SIGN TO BE INSTALLED ON A SQUARE STEEL POST
 - 5. DOTTED WHITE LINES ARE INTENDED TO BE USED AS GUIDE LINES ONLY AND ARE NOT TO BE PRINTED.
 - 6. HORIZONTAL LAYOUT ALIGNMENTS SHOWN IN DETAILS 3-5 APPLY TO BICYCLE WAYFINDING "DESTINATION" SIGN TYPES. DETAIL 3 APPLIES TO REGULAR DESTINATIONS. DETAIL 4 APPLIES TO DESTINATIONS THAT INCLUDE A METRO SYMBOL. DETAIL 5 APPLIES TO DESTINATIONS THAT REQUIRE TWO DIRECTIONAL ARROWS. SEE BICYCLE WAYFINDING SIGN REFERENCE GUIDE FOR WHICH DETAIL APPLIES TO WHICH DESTINATIONS.
 - 7. SEE DETAIL 1 ON SHEET B-1 FOR OVERALL SIGN SHAPE AND DETAIL.

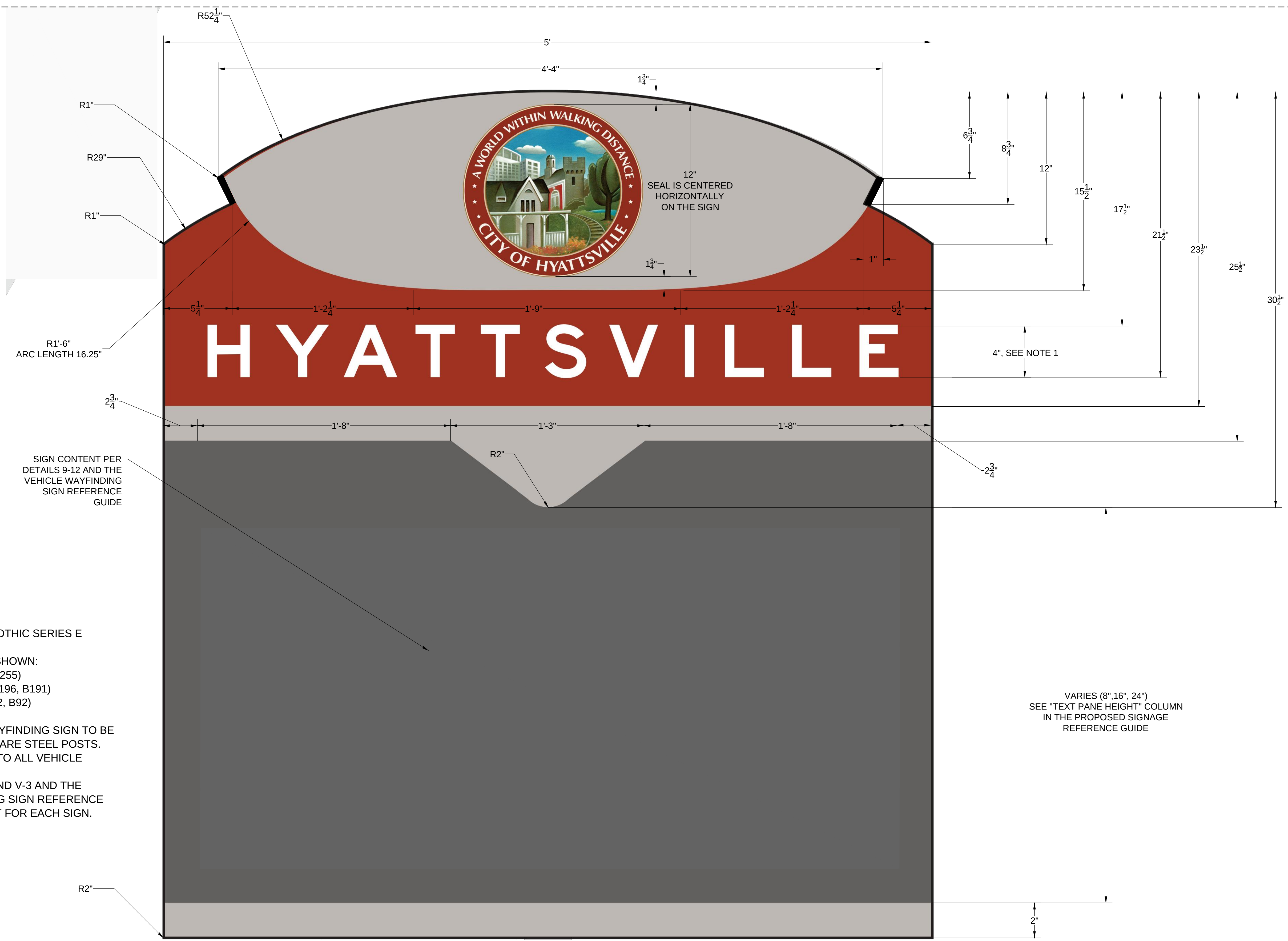


STANDARD MUTCD BICYCLE SYMBOL.
SEE 2004 STANDARD HIGHWAY SIGNS GUIDE,
APPENDIX, SHEET 6-7

DETAIL 6: BICYCLE WAYFINDING "BIKE ROUTE" SIGN TYPE
HORIZONTAL AND VERTICAL LAYOUT ALIGNMENTS

N.T.S.

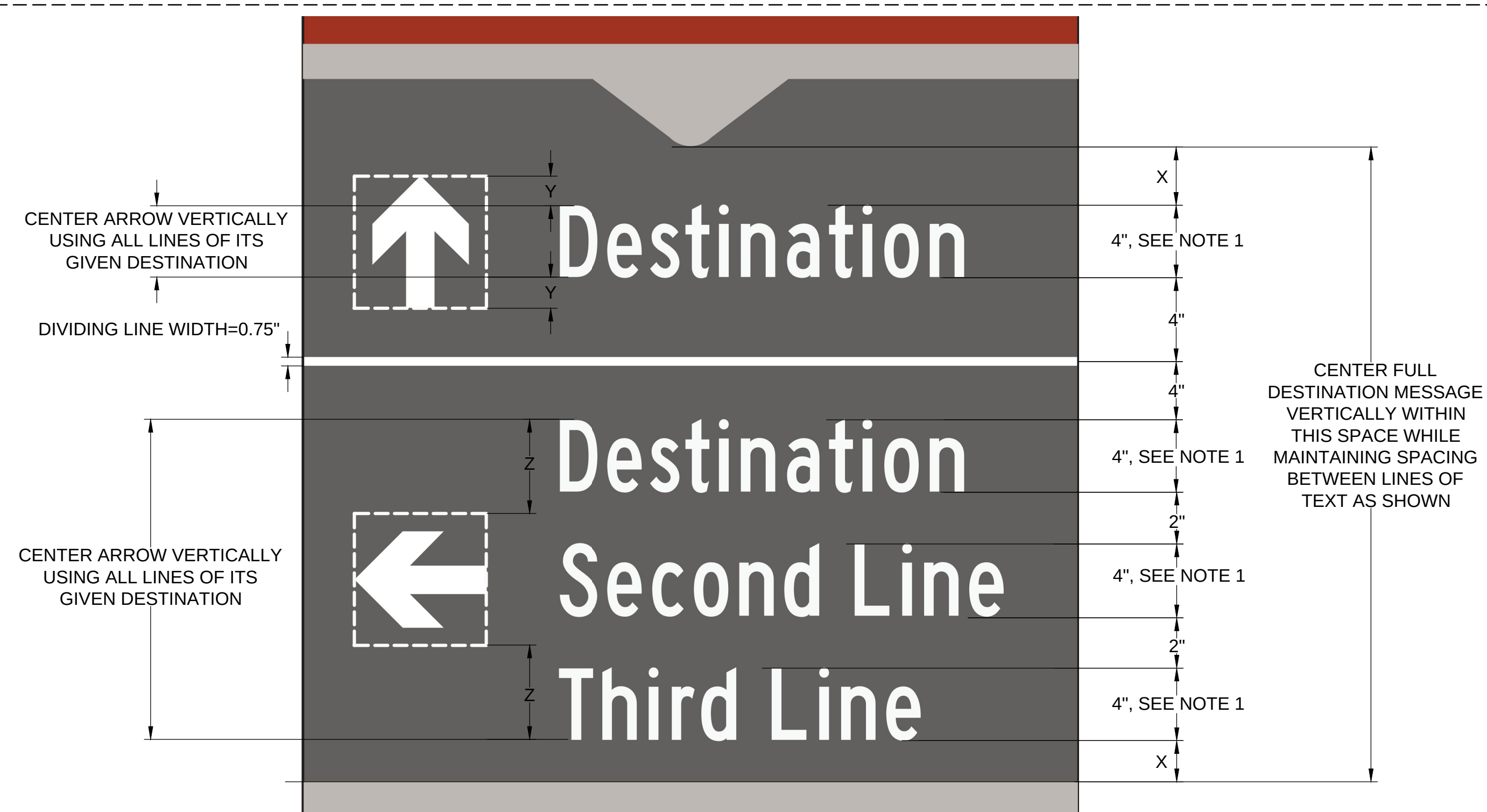
- NOTES:
- 1. SIGN COLORS AS SHOWN:
WHITE (R255, G255, B255)
LIGHT GRAY (R189, G196, B191)
DARK GRAY (R81, G92, B92)
RED (R151, G18, B4)
 - 2. DOTTED WHITE LINES ARE INTENDED TO BE USED AS GUIDE LINES ONLY AND ARE NOT TO BE PRINTED
 - 3. EACH BICYCLE WAYFINDING SIGN TO BE INSTALLED ON A SQUARE STEEL POST
 - 4. DETAIL 6 APPLIES TO BICYCLE WAYFINDING "BIKE ROUTE" SIGN TYPES. SEE BICYCLE WAYFINDING SIGN REFERENCE GUIDE FOR MORE DETAILS.
 - 5. SEE DETAIL 1 ON SHEET B-1 FOR OVERALL SIGN SHAPE AND DIMENSIONS.



- NOTES:
- 1. FONT: HIGHWAY GOTHIC SERIES E
 - COLOR: WHITE
 - 3. SIGN COLORS AS SHOWN:
WHITE (R255, G255, B255)
LIGHT GRAY (R189, G196, B191)
DARK GRAY (R81, G92, B92)
RED (R151, G18, B4)
 - 4. EACH VEHICLE WAYFINDING SIGN TO BE INSTALLED ON 2 SQUARE STEEL POSTS.
 - 5. DETAIL 7 APPLIES TO ALL VEHICLE WAYFINDING SIGNS.
 - 6. SEE SHEETS V-2 AND V-3 AND THE VEHICLE WAYFINDING SIGN REFERENCE GUIDE FOR CONTENT FOR EACH SIGN.

DETAIL 7: VEHICLE WAYFINDING SIGN EXTERIOR LAYOUT

N.T.S.



DETAIL 8: VEHICLE WAYFINDING SIGN
VERTICAL LAYOUT ALIGNMENT
N.T.S.

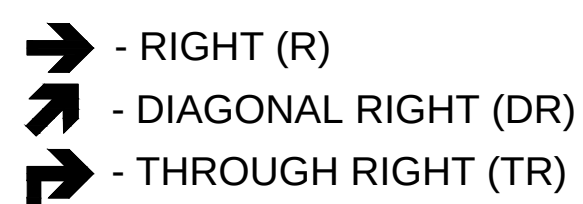


DETAIL 9: VEHICLE WAYFINDING SIGN
HORIZONTAL LAYOUT ALIGNMENT
N.T.S.

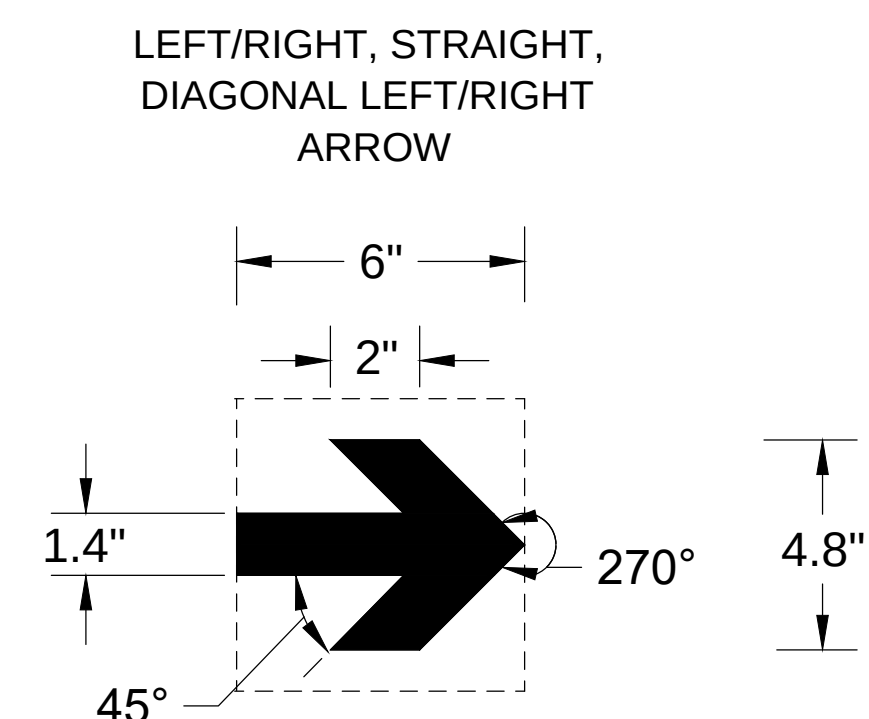
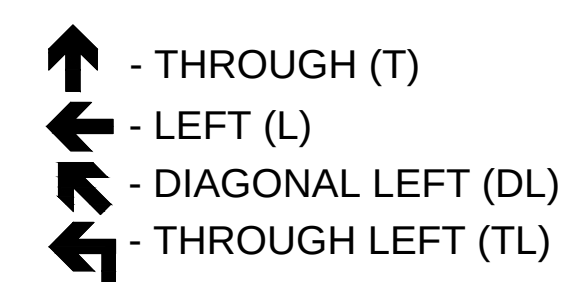


ARROWS TO BE PLACED IN 6"X6" DOTTED BOX,
CENTERED HORIZONTALLY AND VERTICALLY
(DOTTED BOX IS A GUIDE AND NOT TO BE PRINTED)

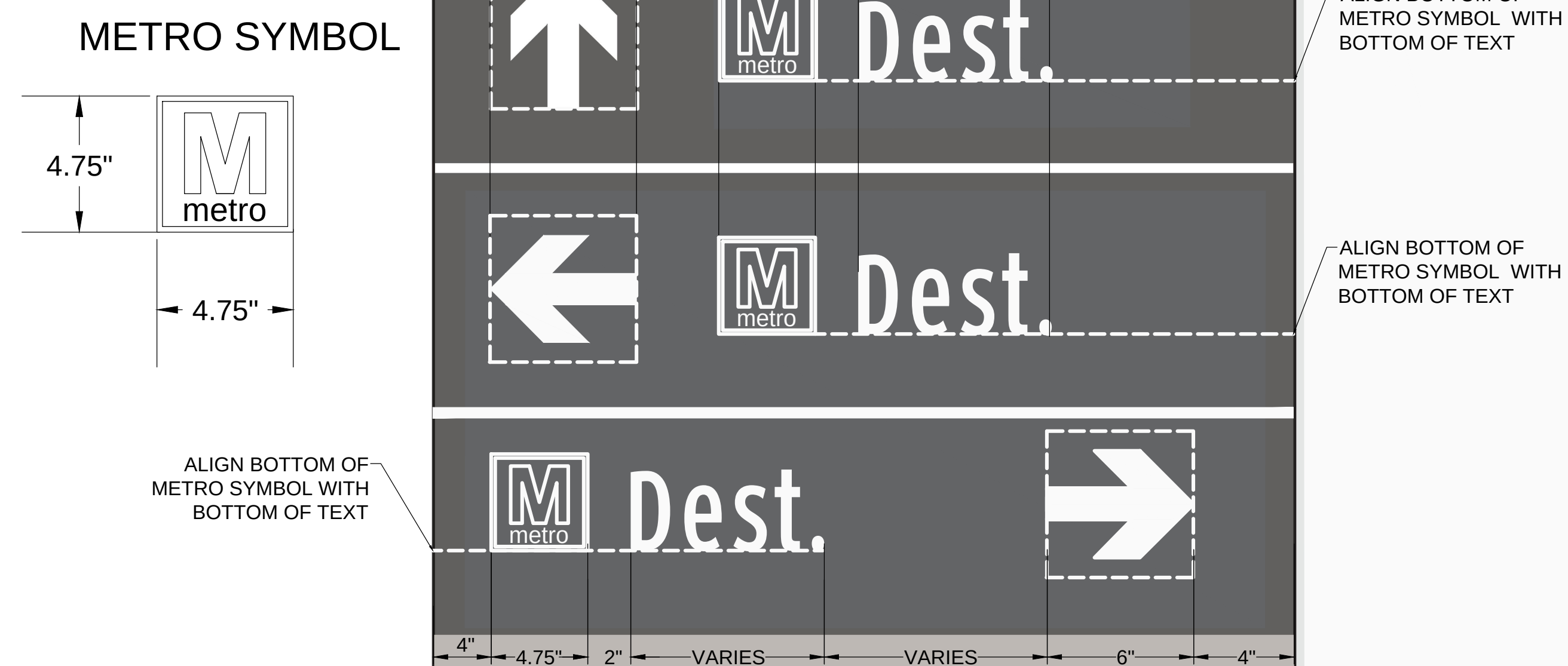
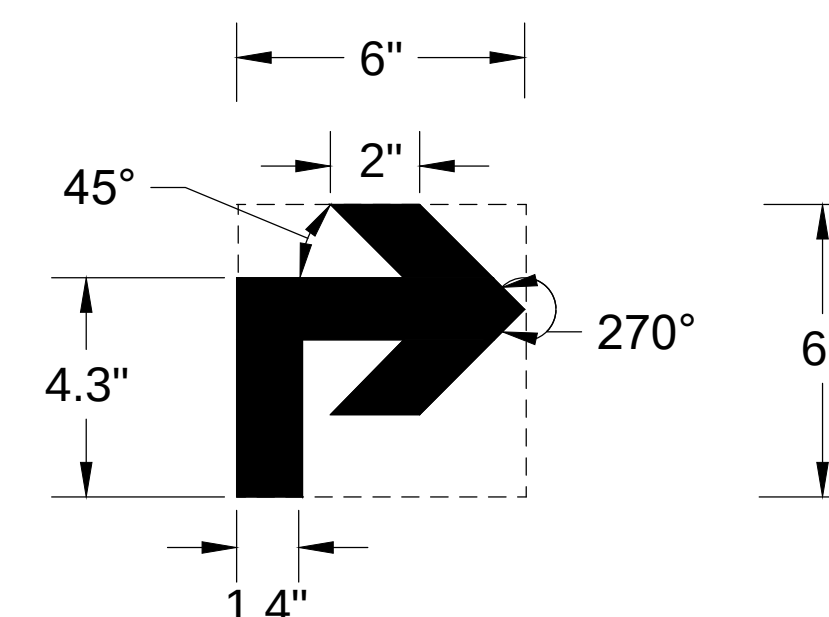
ARROW OPTIONS
PLACED TO THE RIGHT OF TEXT/SYMBOL



ARROW OPTIONS
PLACED TO THE LEFT OF TEXT

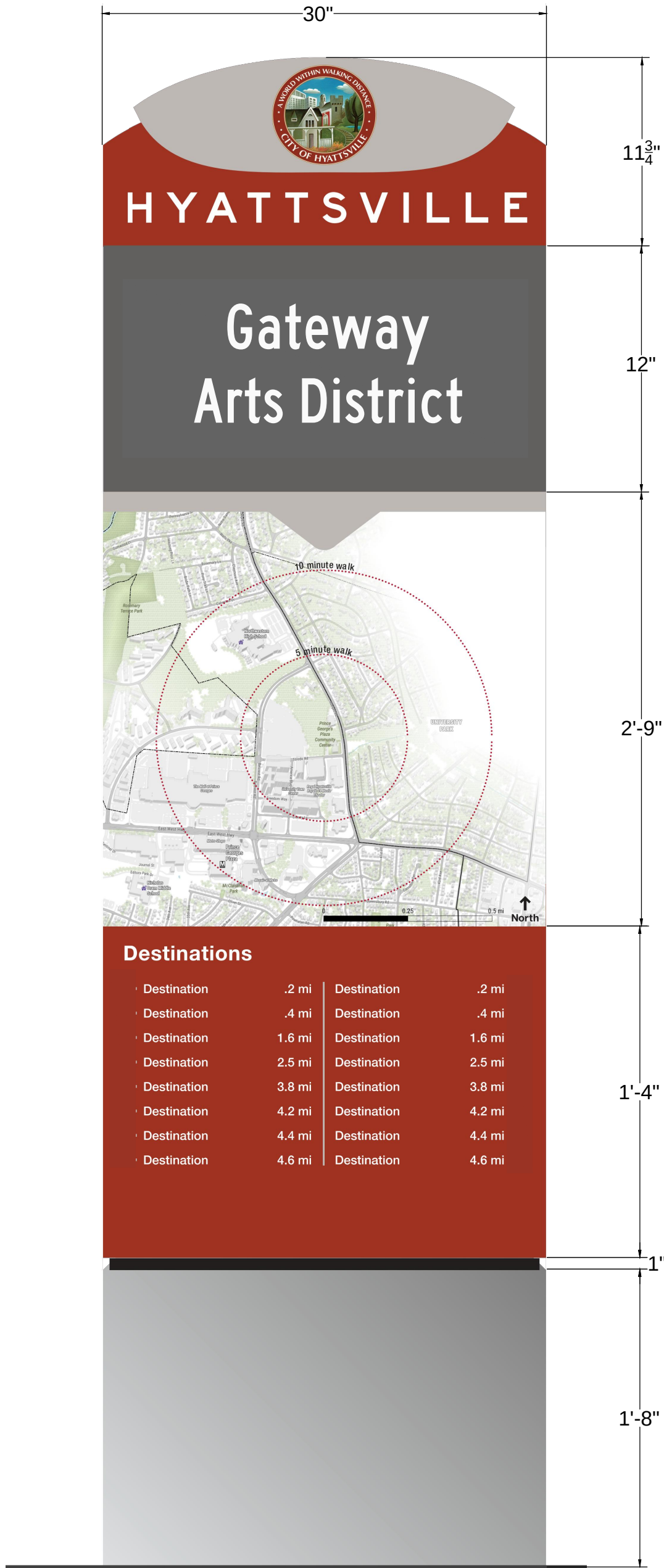


THROUGH LEFT/THROUGH RIGHT ARROW



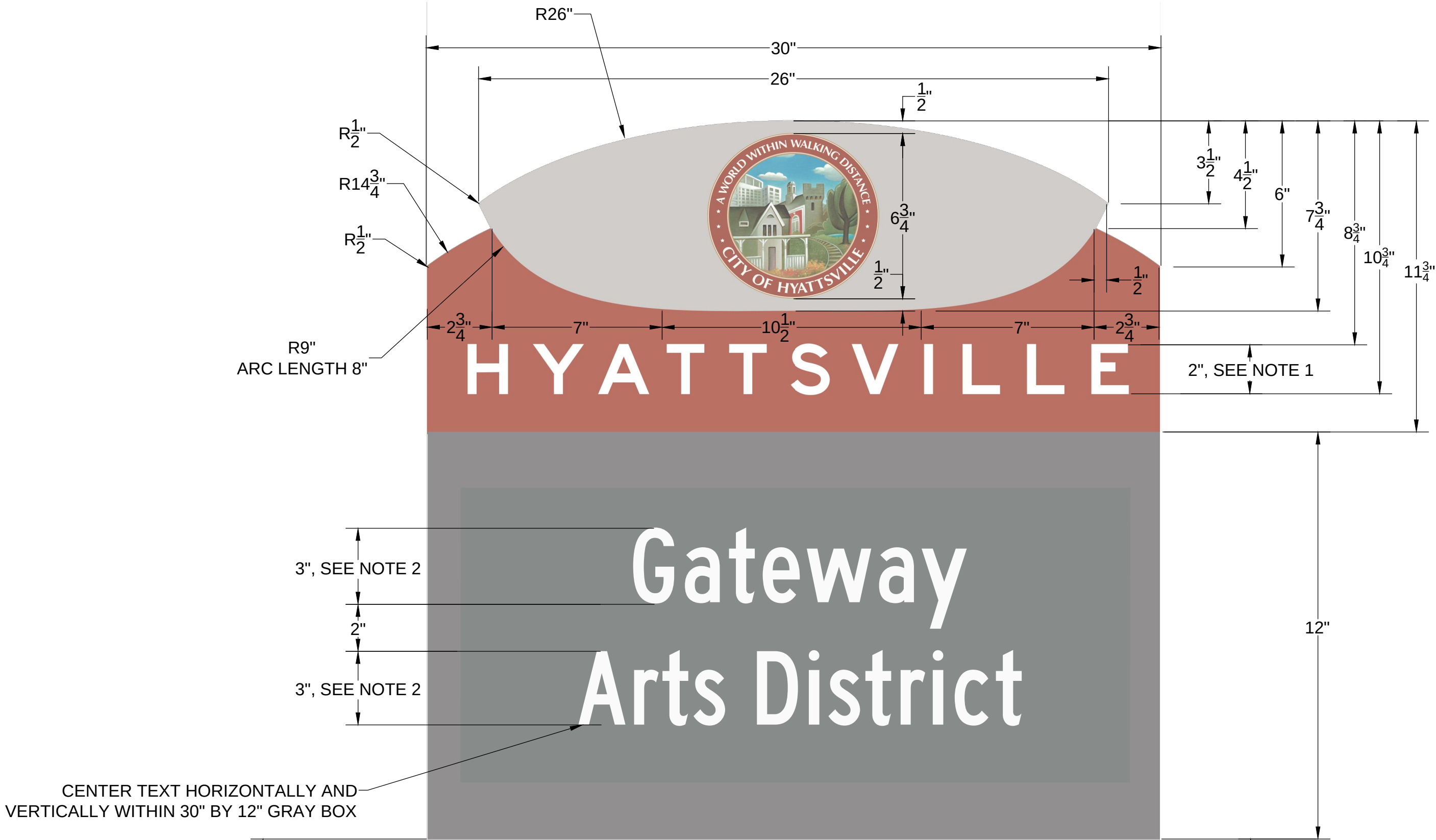
DETAIL 10: VEHICLE WAYFINDING SIGN
WHEN A METRO SYMBOL IS INCLUDED
HORIZONTAL LAYOUT ALIGNMENT
N.T.S.

- NOTES:
1. FONT: HIGHWAY GOTHIC SERIES C
COLOR: WHITE
2. SIGN COLORS AS SHOWN:
WHITE (R255, G255, B255)
LIGHT GRAY (R189, G196, B191)
DARK GRAY (R81, G92, B92)
RED (R151, G18, B4)
3. EACH VEHICLE WAYFINDING SIGN TO BE
INSTALLED ON 2 SQUARE METAL POSTS.
4. DOTTED WHITE LINES ARE INTENDED TO BE
USED AS GUIDE LINES ONLY AND ARE NOT TO
BE PRINTED.
5. DETAIL 8- VERTICAL LAYOUT APPLIES TO
ALL VEHICLE WAYFINDING SIGN
DESTINATIONS EXCEPT THOSE WITH A
PARKING SYMBOL INCLUDED. SEE VEHICLE
WAYFINDING GUIDE FOR WHICH
DESTINATIONS APPLY.
6. HORIZONTAL LAYOUT ALIGNMENTS SHOWN
IN DETAILS 9-10 APPLY TO DIFFERENT
VEHICLE WAYFINDING SIGN DESTINATIONS.
DETAIL 9 APPLIES TO ALL DESTINATIONS THAT
HAVE NO SYMBOL. DETAIL 10 APPLIES TO
DESTINATIONS THAT INCLUDE A METRO
SYMBOL. SEE VEHICLE WAYFINDING SIGN
REFERENCE GUIDE FOR WHICH DETAIL
APPLIES TO WHICH DESTINATIONS.
7. SEE DETAIL 7 ON SHEET V-1 FOR OVERALL
SIGN SHAPE AND DIMENSIONS FOR ALL SIGNS

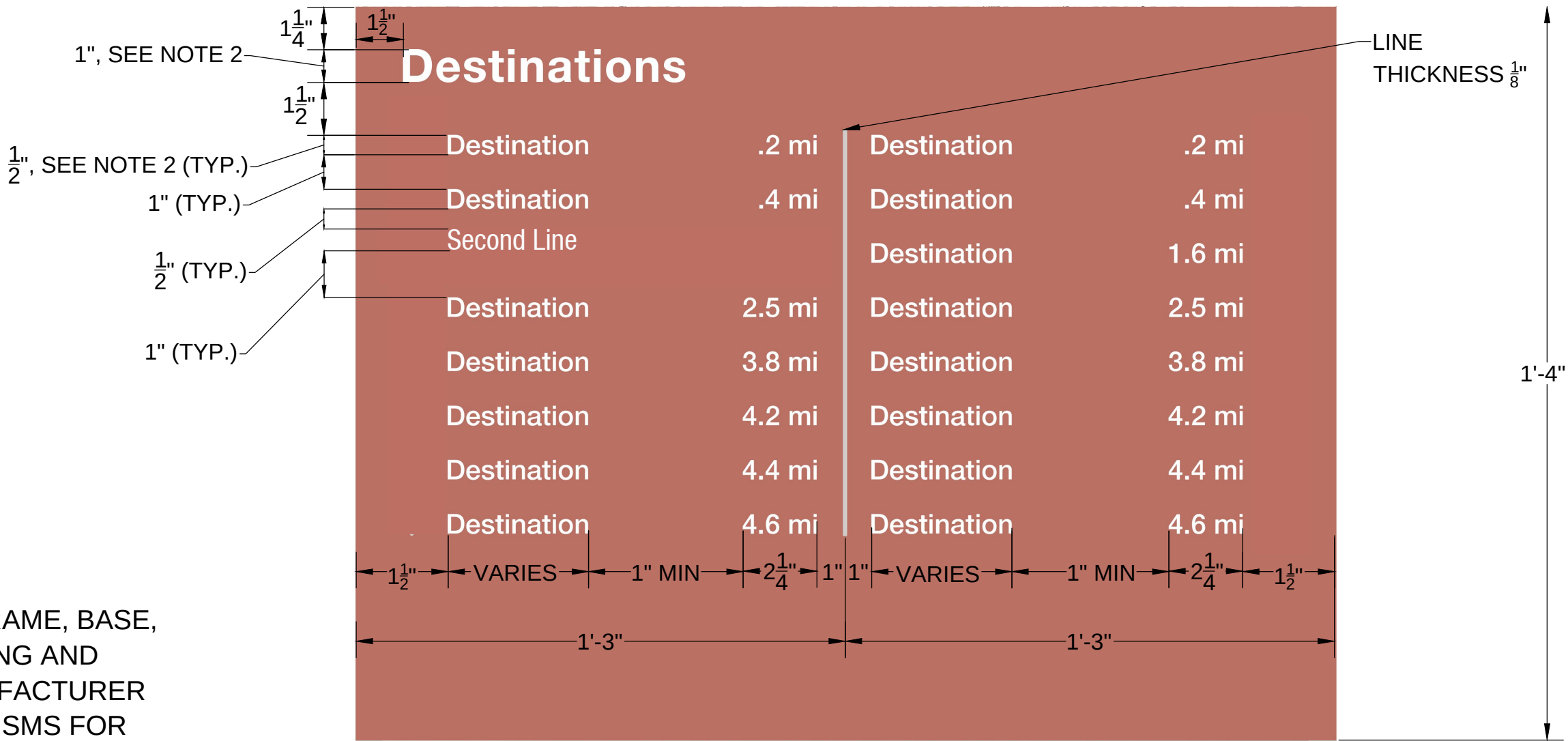


DETAIL 12: PEDESTRIAN KIOSK SIGN
FULL LENGTH LAYOUT
N.T.S.

- NOTES:
1. FONT: HIGHWAY GOTHIC SERIES E. COLOR: WHITE
 2. FONT: HIGHWAY GOTHIC SERIES C. COLOR: WHITE
 3. SIGN COLOR CODES: WHITE (255, 255, 255); LIGHT GRAY (R189, G196, B191); DARK GRAY (R81, G92, B92); RED (R151, G18, B4)
 4. PEDESTRIAN KIOSK TO CONSIST OF AN ALUMINUM FRAME MOUNTED ON A CONCRETE BASE, WITH EXTERIOR ALUMINUM PANELS. FRAME, BASE, ANCHOR BOLTS, AND PANEL FASTENERS TO BE MANUFACTURED AND ASSEMBLED TO WITHSTAND NORMAL EAST COAST WIND LOADING AND APPROPRIATE STRUCTURAL LOADING. ALUMINUM PANELS TO BE SECURELY FASTENED SO AS TO RESIST MOVEMENT BY WIND. MANUFACTURER TO SUBMIT SHOP DRAWINGS TO CITY OF HYATTSVILLE PRIOR TO FABRICATION, DETAILING FRAME, BASE, AND ATTACHMENT MECHANISMS FOR SECURING THE PANELS TO THE FRAME, AND SECURING THE FRAME TO THE BASE. SHOP DRAWINGS TO BE STAMPED BY STRUCTURAL ENGINEER REGISTERED IN THE STATE OF MARYLAND.
 5. ALL PANELS, (TOP PANEL, MAP PANEL, DESTINATION DIRECTORY PANEL, BOTH SIDE PANELS AND BACK PANEL) TO BE ALUMINUM SHEETS PRINTED WITH A POWDER COAT. DESTINATION DIRECTORY PANEL AND MAP PANEL TO BE EASILY REMOVEABLE AND REPLACEABLE. MANUFACTURER TO SUBMIT SAMPLES OF ALUMINUM PANELS TO THE CITY OF HYATTSVILLE FOR COLOR AND FINISH APPROVAL FOR ALL COLORS.
 6. FOR UNIQUE MAP FOR EACH KIOSK, REFER TO SIGN REFERENCE GUIDE AND FIVE ACCOMPANYING MAP IMAGE FILES.
 7. TWO SIDE PANELS AND BACK PANEL TO BE FINISHED WITH DARK GRAY POWDER COAT, SEE NOTE 3 ABOVE.



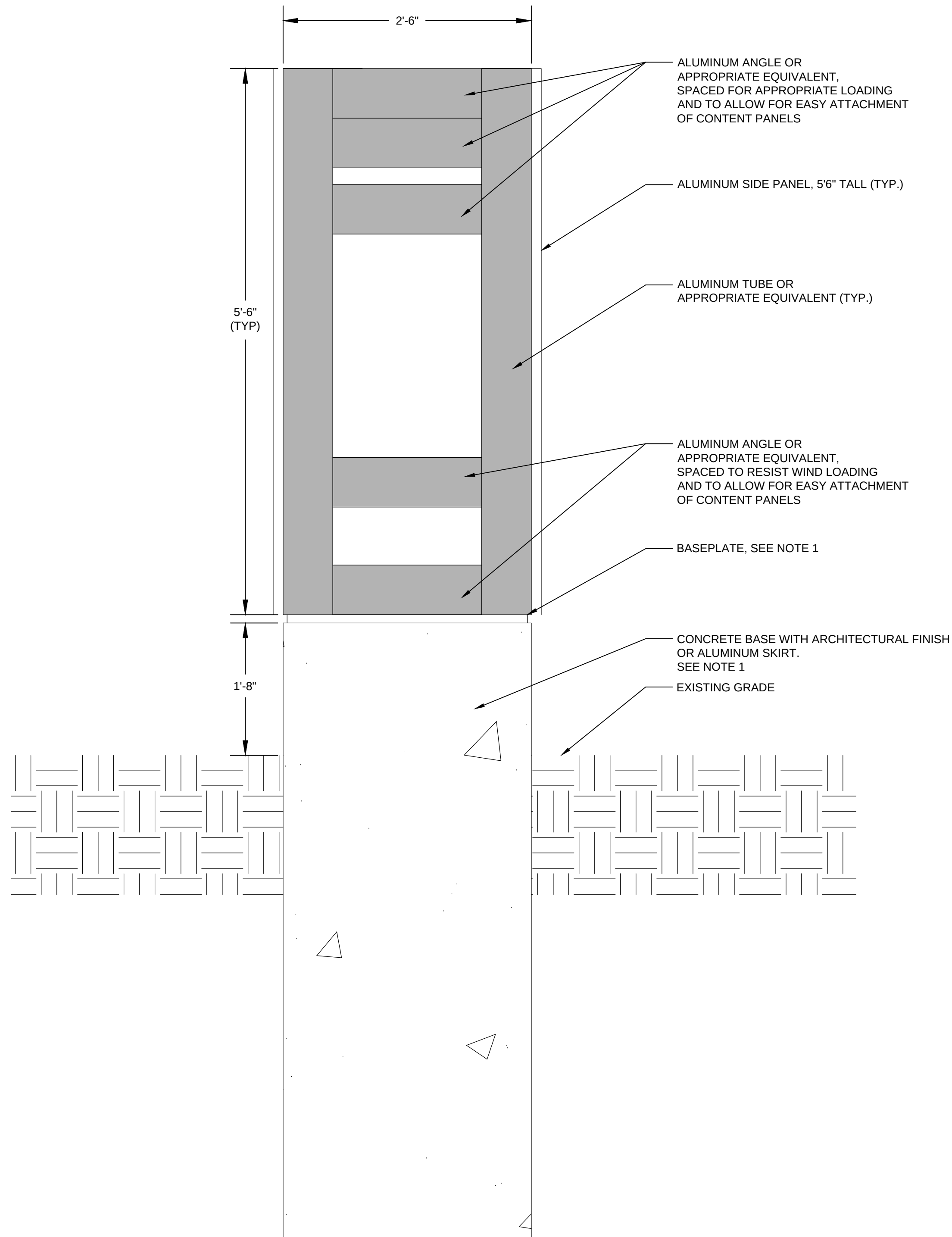
DETAIL 13: PEDESTRIAN KIOSK SIGN
TOP PANEL AND TEXT PANEL LAYOUT
N.T.S.



DETAIL 14: PEDESTRIAN KIOSK SIGN
DESTINATIONS PANEL LAYOUT
N.T.S.

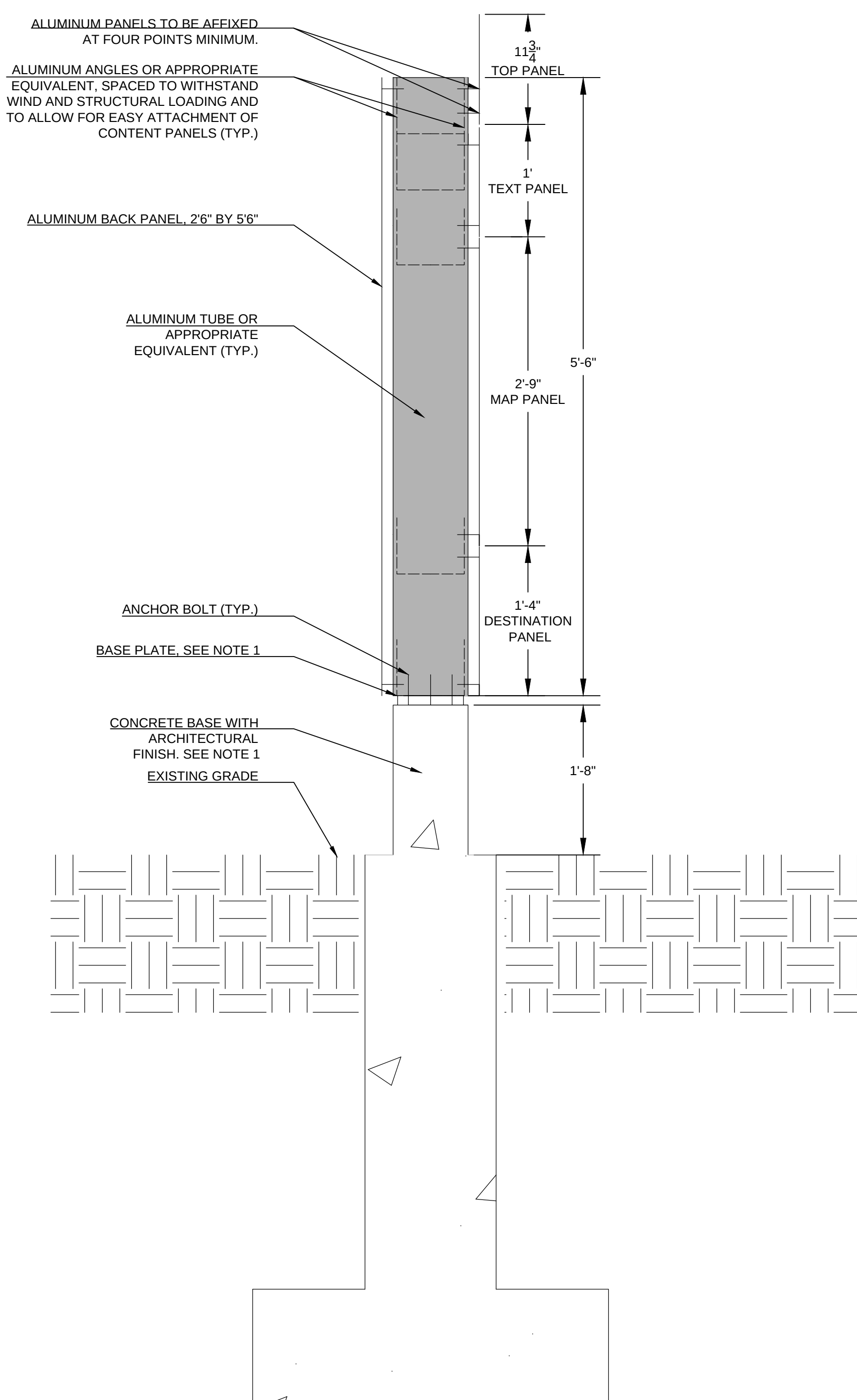
**HYATTSVILLE WAYFINDING
FABRICATION DETAILS**
HYATTSVILLE, MD

PREPARED: CB
CHECKED: MMG
DATE 8/3/18
REV. 1 -
REV. 2 -
REV. 3 -
SHEET NAME PEDESTRIAN KIOSK DETAILS
DRAWING NUMBER P-2
SHEET NUMBER 10 OF 10



DETAIL 15: PEDESTRIAN KIOSK FRAME AND BASE
ELEVATION 1

N.T.S.



DETAIL 16: PEDESTRIAN KIOSK FRAME AND BASE
ELEVATION 2

N.T.S.

NOTES:

1. PEDESTRIAN KIOSK TO CONSIST AN ALUMINUM FRAME MOUNTED ON A CONCRETE BASE, WITH EXTERIOR ALUMINUM PANELS. FRAME, BASE, ANCHOR BOLTS, AND PANEL FASTENERS TO BE MANUFACTURED AND ASSEMBLED TO WITHSTAND NORMAL EAST COAST WIND LOADING AND APPROPRIATE STRUCTURAL LOADING. ALUMINUM PANELS TO BE SECURELY FASTENED SO AS TO RESIST MOVEMENT BY WIND. MANUFACTURER TO SUBMIT SHOP DRAWINGS TO CITY OF HYATTSVILLE PRIOR TO FABRICATION, DETAILING FRAME, BASE, AND ATTACHMENT MECHANISMS FOR SECURING THE PANELS TO THE FRAME, AND SECURING THE FRAME TO THE BASE. SHOP DRAWINGS TO BE STAMPED BY STRUCTURAL ENGINEER REGISTERED IN THE STATE OF MARYLAND.
2. ALL PANELS, (TOP PANEL, MAP PANEL, DESTINATION DIRECTORY PANEL, BOTH SIDE PANELS, AND BACK PANEL) TO BE ALUMINUM SHEETS PRINTED WITH A POWDER COAT. DESTINATION DIRECTORY PANEL AND MAP PANEL TO BE EASILY REMOVEABLE AND REPLACEABLE. MANUFACTURER TO SUBMIT SAMPLES OF ALUMINUM PANELS TO THE CITY OF HYATTSVILLE FOR COLOR AND FINISH APPROVAL FOR ALL COLORS.

Hyattsville Wayfinding Cost Estimate August 3rd, 2018				
Item	Quantity	Unit	Unit Cost Range	Total Cost Range
Bicycle Wayfinding	88	EA	\$ 125	\$ 11,000
Vehicle Wayfinding	32	EA	\$ 250	\$ 8,000
2" Square Metal Post (Furnish and Install)	88	EA	\$ 100	\$ 8,800
5" Square Metal Post (Furnish and Install)	64	EA	\$ 200	\$ 12,800
Pedestrian Kiosk	5	EA	\$ 4,500 to \$ 14,500	\$ 22,500 to \$ 72,500
Kiosk Installation (Per Kiosk)	5	LS	\$ 1,800	\$ 9,000
Total:				\$ 72,100 to \$ 122,100

Note: Fabrication costs and end product can vary widely based upon materials and production methods chosen. For the pedestrian kiosk, different printing materials for the maps such as a layer of vinyl with a UV clear coat could be more expensive than paint directly on aluminum, but may appear brighter or last longer. Another example of material decisions that could affect costs include whether to leave the kiosk base as concrete with an architectural finish or to complete it with an aluminum skirt. Additionally, different construction methods such as fabricating the kiosk as one "box" piece may be more economical, but may not allow for easy updates of the map panel in the future. Toole Design suggests working more closely with a sign fabricator to find the right final product and associated cost desired by the City of Hyattsville. Costs are an estimate and could vary beyond this range.

City of Hyattsville Transportation Study
Project Recommendations - Planning Level Cost Estimate

Project ID	Project Category	Project Name	Qty/Len(Mi)	Cost Estimate
BB-1	Bike boulevard	Jefferson Street or Gallatin Street Bike Blvd (40th Ave to Trolley Trail)	0.58	\$26,225.38
BB-2	Bike boulevard	Nicholson Street Bike Blvd from Ager Rd to 40th Ave	1.10	\$49,940.00
BB-3	Bike boulevard	Jamestown Road Bike Blvd from Ager Rd to Oliver Rd	0.80	\$36,320.00
BB-4	Bike boulevard	40th/41st Avenue Bike Blvd	1.10	\$49,940.00
BB-5	Bike boulevard	Oglethorpe Street Bike Blvd	0.80	\$36,466.17
BP-1	Bike/Ped Crosssing	NW Branch Trail Crossing at 38th Street (MD 208) south of Gaines Alley	1	\$3,100.00
BP-2	Bike/Ped Crosssing	NW Branch Trail Crossing at Queens Chapel Road (MD 500) south of Jamestown Road	1	\$20,900.00
CC-1	Circulation Change	Gallatin Street two-way conversion	0.24	\$57,561.74
CC-2	Circulation Change	Hamilton Street one-way flip	0.30	\$1,294.89
CC-3	Circulation Change	Circulation Change Implementation	N/A	N/A
I-1	Intersection	Route 1, Route 1-Alt & Hamilton Street Improvement (major)	1	\$1,715,000.00
I-2	Intersection	40th Avenue, Gallatin Street, & Hamilton St. Roundabout	1	\$2,450,000.00
I-3	Intersection	East-West Highway & Toledo Terrace Improvement (major)	1	\$1,715,000.00
I-4	Intersection	East-West Highway, Queens Chapel Road, & Adelphi Rd Improvements (major)	1	\$1,715,000.00
I-5	Intersection	East-West Highway & Belcrest Road improvement (minor)	1	\$420,000.00
I-6	Intersection	East-West Highway, Queens Chapel Road, & Adelphi Rd Improvements (major)	1	\$1,715,000.00
I-7	Intersection	East-West Highway & Route 1 Improvement (minor)	1	\$420,000.00
I-8	Intersection	Queens Chapel Road & Queensbury Road-Belcrest Road (major)	1	\$1,715,000.00
I-9	Intersection	Route 1 and Farragut Street Reconfiguration (major)	1	\$1,715,000.00
I-10	Intersection	Ager Road & Hamilton Street Reconfiguration (major)	1	\$1,715,000.00
MU-1	Multiuse Path	East-West Highway Multiuse Path (Toledo Terrace to 23rd Avenue)	0.60	\$115,560.00
MU-2	Multiuse Path	East-West Highway Multiuse Path (Toledo Terrace to Adelphi Road)	0.70	\$134,820.00
MU-3	Multiuse Path	Northwestern High School Multiuse Trail Connection	0.28	\$54,715.91
NS-1	New street	Toledo Terrace to Heurich Park Road Connection	0.25	\$439,585.98
NS-2	New street	Editors Park Drive Connection from East-West Highway to Toledo Road	0.29	\$494,698.26
NS-3	New street	Freedom Way Connection from Toledo Terrace to Belcrest Road	0.42	\$735,486.40

City of Hyattsville Transportation Study

Project Recommendations - Planning Level Cost Estimate

Project ID	Project Category	Project Name	Qty/Len(Mi)	Cost Estimate
NS-4	New street	39th Avenue extension from Madison Street to Nicholson Street	0.11	\$198,141.74
NS-5	New street	Calverton Drive extension to Dean Drive	0.06	\$118,034.09
NS-6	New street	Oliver Street extension from 43rd Avenue to 42nd Place	0.07	\$114,817.23
NS-7	New street	New street network around the West Hyattsville Metro station	0.85	\$1,472,285.00
NS-8	New street	America Boulevard between East-West Highway and Queens Chapel Road	0.19	\$328,049.24
NS-9	New street	America Boulevard extension from Toledo Road to Belcrest Road	0.24	\$423,183.52
NS-10	New street	Toledo Terrace extension between Belcrest Road and Adelphi Road	0.24	\$421,871.33
NS-11	New street	Sentinel Drive between Editors Park Drive and Prince George's Plaza Metro entrance	0.09	\$152,542.90
PC-1	Pedestrian Crossings	Citywide pedestrian improvements (cost per intersection)	10	\$401,000.00
PP-1	Pedestrian Plaza	33rd Avenue to Editors Park Drive Plaza	1.00	\$6,700.00
PP-2	Pedestrian Plaza	Jamestown Road Plaza	1.00	\$6,700.00
R-1	Reconstruction	Hamilton Street Complete Street Design and Construction	0.60	\$766,080.00
R-2	Reconstruction	Toledo Road Complete Street Design and Construction	0.80	\$1,021,440.00
S-1	Sidewalk installation	East-West Highway to mall at Editors Park Drive	0.14	\$27,123.96
S-2	Sidewalk installation	34th Avenue to Middle School Ped Connection	0.04	\$7,587.12
S-3	Sidewalk installation	38th Avenue Sidewalk from Hamilton St to Northwest Branch Trail	0.25	\$49,809.45
S-4	Sidewalk installation	Oliver Street Ped connection to NO Middle School	0.07	\$13,846.50
S-5	Sidewalk installation	41st Avenue Sidewalk from Nicholson Street to Oglethorpe St	0.05	\$9,977.06
S-6	Sidewalk installation	42nd Place to 42nd Ave Ped Connection near Macaroy Street	0.01	\$2,655.49
S-7	Sidewalk installation	Nicholson St Sidewalk installation	0.08	\$16,501.99
S-8	Sidewalk installation	Oliver Street Sidewalk between 42nd Avenue and 43rd Avenue	0.14	\$28,451.70
SBL-1	Separated Bike lanes	Adelphi Road Protected Bike Lanes	1.40	\$261,380.00
SBL-2	Separated Bike lanes	Belcrest Road Protected Bike Lanes	0.83	\$155,052.94
SBL-3	Separated Bike lanes	Toledo Terrace Protected Bike Lanes	0.60	\$112,408.96
SS-1	Streetscape	Various streets (City Wide)	N/A	N/A
TC-1	Traffic Calming	Revamp the traffic calming program	N/A	N/A

City of Hyattsville Transportation Study

Project Recommendations - Planning Level Cost Estimate

Project ID	Project Category	Project Name	Qty/Len(Mi)	Cost Estimate
TC-2	Traffic Calming	3900 Block of Jefferson Street Traffic Calming	1.00	\$27,800.00
TC-3	Traffic Calming	Queensbury Road Traffic Calming	1.00	\$140,800.00
TS-1	Traffic signal	Ager Road and Lancer Drive Traffic signal	1	\$ 367,500.00
TS-2	Traffic signal	Queens Chapel Road and Nicholson Street Traffic Signal	1	\$ 367,500.00
TS-3	Traffic signal	Ager Road and Nicholson Street Traffic Signal	1	\$ 367,500.00
TS-4	Traffic signal	Queens Chapel Road and Lancer Drive Traffic Signal	1	\$ 367,500.00
TS-5	Traffic signal	East-West Highway and America Boulevard Traffic Signal	1	\$ 367,500.00
TS-6	Traffic signal	Route 1 Alternate and Armentrout Drive Traffic Signal	1	\$ 367,500.00
WF-1	Wayfinding	Wayfinding Overhaul	LS	117342.75

Cost estimates were developed by identifying pay items and establishing rough quantities, including a 35% contingency. Please note that the estimates include approximate costs for asphalt, concrete, drainage improvements, limited utility relocation, pavement markings, signs and traffic signal adjustments. The estimate does not include easement, right-of-way acquisition, environmental permitting or the cost for ongoing maintenance. A 40% contingency has been added for soft costs (engineering, survey, permitting, inspection, etc). A cost has been assigned to some general categories such as utility relocations; however, these costs can vary widely depending on the exact details and nature of the work. The overall estimates are intended to be general and used for planning purposes. Construction costs will vary based on the ultimate project scope (i.e. potential combination of projects), schedule, and economic conditions at the time of construction.

Bike Boulevard (per mile)

Assumes a shared lane marking symbol pair every 200 feet, along with regulatory signs with posts every 1000 feet.

Assumes shared lane marking symbols can be added without the need for modifications to existing roadway pavement markings.

Assumes additional traffic calming project types can be implemented in conjunction with Neighborhood Bikeway.

Unit prices are based on Prince George's County DPWT or MSHA

Item	Unit	Quantity	Unit Cost	Opinion of Probable Construction Costs
Regulatory Signs/Posts	EA	5	\$330.00	\$1,742
Bikeway Sign	EA	8	\$420.00	\$3,360
Shared Lane Marking Symbol	EA	53	\$350.00	\$18,480
Subtotal				\$23,582

Lump Sum Items	\$2,358.24
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Maintenance of Traffic (5%)

Mobilization (5%)

Subtotal	\$25,940.64
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35% Contingency \$9,079.22

40% Project Soft Costs \$10,376.26

Estimated Total Cost	\$45,400.00
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Actual costs may vary based on project scope and current market conditions.

Costs do not include environmental permitting, easement or property acquisition.

Project Soft Costs assume engineering, surveying, permitting, project management, and inspection services.

Lump sum items includes anticipated work associated with implementation of project type.

Bike / Pedestrian Crossing (BP-1)

Assumes installation of standard raised crosswalk DPWT Standard 700.02

Assumes 26' wide, two-lane roadway.

Assume 4 signs per raised crosswalk.

Unit prices are based on Prince George's County DPWT or MSHA

Item	Unit	Quantity	Unit Cost	Opinion of Probable Construction Costs
2" Mill Notch in Existing Pavement	SY	9	5	\$43
2" Hot Mix Asphalt, 9.5mm PG 64-22	SY	35	8	\$277
3" Hot Mix Asphalt, 9.5mm PG 64-23	SY	29	11	\$318
High Visibility Crosswalk	EA	1	2,500	\$2,500
Regulatory Signs/Posts	EA	4	\$330	\$1,320
Subtotal				\$1,320

Lump Sum Items	\$462.00
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Drainage/Erosion & Sediment Control (10%)

Landscaping (5%)

Maintenance of Traffic (5%)

Mobilization (5%)

Utility Adjustments (10%)

Subtotal	\$1,782.00
35% Contingency	\$623.70
40% Project Soft Costs	\$712.80

Estimated Total Cost	\$3,100.00
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Actual costs may vary based on project scope and current market conditions.

Costs do not include environmental permitting, easement or property acquisition.

Project Soft Costs assume engineering, surveying, permitting, project management, and inspection services.

Lump sum items includes anticipated work associated with implementation of project type.

Bike / Pedestrian Crossing (BP-2)

Assumes installation of standard raised crosswalk DPWT Standard 700.02

Assumes 100' wide crossing with 6 lanes and median refuge.

Assume 4 signs per raised crosswalk.

Unit prices are based on Prince George's County DPWT or MSHA

Item	Unit	Quantity	Unit Cost	Opinion of Probable Construction Costs
2" Mill Notch in Existing Pavement	SY	26	5	\$130
2" Hot Mix Asphalt, 9.5mm PG 64-22	SY	140	8	\$1,120
3" Hot Mix Asphalt, 9.5mm PG 64-23	SY	116	11	\$1,276
High Visibility Crosswalk	EA	2	2,500	\$5,000
Regulatory Signs/Posts	EA	4	\$330	\$1,320
Subtotal				\$8,846

Lump Sum Items	\$3,096.10
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Drainage/Erosion & Sediment Control (10%)

Landscaping (5%)

Maintenance of Traffic (5%)

Mobilization (5%)

Utility Adjustments (10%)

Subtotal	\$11,942.10
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35% Contingency \$4,179.74

40% Project Soft Costs \$4,776.84

Estimated Total Cost	\$20,900.00
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Actual costs may vary based on project scope and current market conditions.

Costs do not include environmental permitting, easement or property acquisition.

Project Soft Costs assume engineering, surveying, permitting, project management, and inspection services.

Lump sum items includes anticipated work associated with implementation of project type.

Circulaton Change (CC-1 per mile)

Assume eradication of existing markings only; repaving not included.

Unit prices are based on Prince George's County DPWT or MSHA

Item	Unit	Quantity	Unit Cost	Opinion of Probable Construction Costs
Regulatory Signs/Posts	EA	5	\$330.00	\$1,742
Thermoplastic Yellow Lane Line (4")	LF	5280	\$3.00	\$15,840
Erradicate Ex Pave Mark Symbols	EA	6	\$75.00	\$450
Erradicate Ex linear Pave Markings	LF	5280	\$20.00	\$105,600
Subtotal				\$123,632

Lump Sum Items	\$12,363.24
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Maintenance of Traffic (5%)

Mobilization (5%)

Subtotal	\$135,995.64
35% Contingency	\$47,598.47
40% Project Soft Costs	\$54,398.26

Estimated Total Cost	\$238,000.00
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Actual costs may vary based on project scope and current market conditions.

Costs do not include environmental permitting, easement or property acquisition.

Project Soft Costs assume engineering, surveying, permitting, project management, and inspection services.

Lump sum items includes anticipated work associated with implementation of project type.

Circulation Change (CC-2 per mile)

Assume 5 intersections per mile.

Unit prices are based on Prince George's County DPWT or MSHA

Item	Unit	Quantity	Unit Cost	Opinion of Probable Construction Costs
Regulatory Signs/Posts	EA	5	\$330.00	\$1,742
Thermoplastic Stop Bar, 24 inch	LF	80	\$6.00	\$480
Subtotal				\$2,222

Lump Sum Items	\$222.24
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Maintenance of Traffic (5%)

Mobilization (5%)

Subtotal	\$2,444.64
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35% Contingency \$855.62

40% Project Soft Costs \$977.86

Estimated Total Cost	\$4,300.00
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Actual costs may vary based on project scope and current market conditions.

Costs do not include environmental permitting, easement or property acquisition.

Project Soft Costs assume engineering, surveying, permitting, project management, and inspection services.

Lump sum items includes anticipated work associated with implementation of project type.

Intersection Reconfiguration (Major)

Assumes major construction to intersection (re-aligning legs, removal of slip lanes, changes in curb and radi, medians, etc)

Assumes reconstruction of sidewalks and handicap ramps

Assume lump sum for lighting and traffic signal modifications per intersections.

Unit prices are based on similar project recommendations

Item	Unit	Quantity	Unit Cost	Opinion of Probable Construction Costs
Major Intersection Reconstruction	EA	1	\$700,000.00	\$700,000
Subtotal				\$700,000

Lump Sum Items	\$280,000.00
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Drainage/Erosion & Sediment Control (10%)

Landscaping (5%)

Maintenance of Traffic (5%)

Mobilization (10%)

Utility Adjustments (10%)

Subtotal	\$980,000.00
35% Contingency	\$343,000.00
40% Project Soft Costs	\$392,000.00
Estimated Total Cost	\$1,715,000.00

Actual costs may vary based on project scope and current market conditions.

Costs do not include environmental permitting, easement or property acquisition.

Project Soft Costs assume engineering, surveying, permitting, project management, and inspection services.

Lump sum items includes anticipated work associated with implementation of project type.

Intersection Reconfiguration (Minor)

Assumes only minor constuction to curb ramps

Assumes realignment and space allocation of travel lanes (Pavement Marking)

Assumes no changes to traffic signals (if applicable) and minimal utility work

Assume minimal lighting modifications

Unit prices are based on similar project recommendations

Item	Unit	Quantity	Unit Cost	Opinion of Probable Construction Costs
Minor Intersection Reconfiguration	EA	1	\$200,000.00	\$200,000
Subtotal				\$200,000

Lump Sum Items	\$40,000.00
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Maintenance of Traffic (5%)

Mobilization (10%)

Utility Adjustments (5%)

Subtotal	\$240,000.00
35% Contingency	\$84,000.00
40% Project Soft Costs	\$96,000.00

Estimated Total Cost	\$420,000.00
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Actual costs may vary based on project scope and current market conditions.

Costs do not include environmental permitting, easement or property acquisition.

Project Soft Costs assume engineering, surveying, permitting, project management, and inspection services.

Lump sum items includes anticipated work associated with implementation of project type.

Intersection Reconfiguration (Roundabout)

Assume 100' diameter single lane roundabout

Assume 5 leg intersection

Assumes sidewalk is 5 feet wide

Assume lump sum for lighting and traffic signal modifications per intersections.

Unit prices are based on similar project recommendations

Item	Unit	Quantity	Unit Cost	Opinion of Probable Construction Costs
100' dia. Single Lane Roundabout	EA	1	\$1,000,000.00	\$1,000,000
Subtotal				\$1,000,000

Lump Sum Items	\$400,000.00
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Drainage/Erosion & Sediment Control (10%)

Landscaping (5%)

Maintenance of Traffic (5%)

Mobilization (10%)

Utility Adjustments (10%)

Subtotal	\$1,400,000.00
35% Contingency	\$490,000.00
40% Project Soft Costs	\$560,000.00

Estimated Total Cost	\$2,450,000.00
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Actual costs may vary based on project scope and current market conditions.

Costs do not include environmental permitting, easement or property acquisition.

Project Soft Costs assume engineering, surveying, permitting, project management, and inspection services.

Lump sum items includes anticipated work associated with implementation of project type.

Multituse Path (per mile)

Assumes a 12' wide multituse path.

Assumes 16' of grading, 1' down.

Assumes standard pavement from Prince George's County Standard DPWT 100.17

Unit prices are based on Prince George's County DPWT or MSHA

Item	Unit	Quantity	Unit Cost	Opinion of Probable Construction Costs
Earthwork/Excavation/Grading	CY	3129	\$10.00	\$31,289
3" Hot Mix Asphalt (12.5mm)	SY	1760	\$11.00	\$19,360
4" Graded Aggregate Subbase	SY	2323	\$5.00	\$11,616
Regulatory Signs/Posts	EA	5	\$330.00	\$1,742
Bike Signs	EA	4	\$420.00	\$1,680
Thermoplastic Yellow 4" (Dashed)	LF	5280	\$3.00	\$15,840
Subtotal				\$81,527

Lump Sum Items	\$28,534.55
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Drainage/Erosion & Sediment Control (10%)

Landscaping (5%)

Maintenance of Traffic (5%)

Mobilization (5%)

Utility Adjustments (10%)

Subtotal	\$110,061.84
35% Contingency	\$38,521.64
40% Project Soft Costs	\$44,024.74

Estimated Total Cost	\$192,600.00
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Actual costs may vary based on project scope and current market conditions.

Costs do not include environmental permitting, easement or property acquisition.

Project Soft Costs assume engineering, surveying, permitting, project management, and inspection services.

Lump sum items includes anticipated work associated with implementation of project type.

New Street (per mile)

Assume 36' wide standard Prince George's County Urban Primary Residential Road.

Assumes one streetlight every 150' per DPW&T Standards

Assumes street trees are included in landscaping contingency.

Unit prices are based on Prince George's County DPWT of MSHA

Item	Unit	Quantity	Unit Cost	Opinion of Probable Construction Costs
Subgrade; CBR>7 (12" gravel)	CY	7040	\$ 40.00	\$281,600
6" Graded Aggregate Subbase Course	SY	10560	\$ 7.00	\$73,920
3" Hot Mix Asphalt Base Course; 19mm	SY	5280	\$ 11.00	\$58,080
1-1/2" Intermediate Surface Course; 9.5mm	SY	2640	\$ 6.00	\$15,840
1-1/2" Final Surface Course; 9.5mm	SY	2640	\$ 6.00	\$15,840
Street Lighting: Pendant or Colonial	EA	36	\$ 1,450.00	\$52,200
Thermoplastic White Pavement Marking, 4 inch	LF	10560	\$ 2.00	\$21,120
Thermoplastic Yellow Pavement Marking, 4 inch	LF	10560	\$ 2.00	\$21,120
5" Sidewalk	SF	31680	\$6.00	\$190,080
Subtotal				\$729,800

Lump Sum Items	\$255,430.00
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Drainage/Erosion & Sediment Control (10%)

Landscaping (5%)

Maintenance of Traffic (5%)

Mobilization (5%)

Utility Adjustments (10%)

Subtotal	\$989,800.00
35% Contingency	\$346,430.00
40% Project Soft Costs	\$395,920.00

Estimated Total Cost	\$1,732,100.00
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Actual costs may vary based on project scope and current market conditions.

Costs do not include environmental permitting, easement or property acquisition.

Project Soft Costs assume engineering, surveying, permitting, project management, and inspection services.

Lump sum items includes anticipated work associated with implementation of project type.

New Street with Bike Lanes (per mile)

Assume 46' wide standard Prince George's County Urban Primary Residential Road.

Assumes one-way, 5' wide bike lanes on either side.

Assumes one streetlight every 150' per DPW&T Standards

Unit prices are based on Prince George's County DPWT or MSHA

Item	Unit	Quantity	Unit Cost	Opinion of Probable Construction Costs
Subgrade; CBR>7 (12" of gravel)	CY	8,996	\$ 40.00	\$359,822
6" Graded Aggregate Subbase Course	SY	13,493	\$ 7.00	\$94,453
3" Hot Mix Asphalt Base Course; 19mm	SY	6,747	\$ 11.00	\$74,213
1-1/2" Intermediate Surface Course; 9.5mm	SY	3,373	\$ 6.00	\$20,240
1-1/2" Final Surface Course; 9.5mm	SY	3,373	\$ 6.00	\$20,240
Street Lighting: Pendant or Colonial	EA	36	\$ 1,450.00	\$52,200
Thermoplastic White Pavement Marking, 4 inch	LF	21,120	\$ 2.00	\$42,240
Thermoplastic Yellow Pavement Marking, 4 inch	LF	10,560	\$ 2.00	\$21,120
Bicycle Lane Symbol	EA	10	\$ 250.00	\$2,500
5" Sidewalk	SF	31,680	\$6.00	\$190,080
Subtotal				\$877,109

Lump Sum Items	\$306,988.11
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Drainage/Erosion & Sediment Control (10%)

Landscaping (5%)

Maintenance of Traffic (5%)

Mobilization (5%)

Utility Adjustments (10%)

Subtotal	\$1,187,108.89
35% Contingency	\$415,488.11
40% Project Soft Costs	\$474,843.55

Estimated Total Cost	\$2,077,400.00
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Actual costs may vary based on project scope and current market conditions.

Costs do not include environmental permitting, easement or property acquisition.

Project Soft Costs assume engineering, surveying, permitting, project management, and inspection services.

Lump sum items includes anticipated work associated with implementation of project type.

Pedestrian Crossings (per intersection)

Assume 6 foot wide by 20 feet long by 6 inch depth per curb extension.

Assume 35 feet of 24" curb and gutter on each curb extension

Assumes sidewalk is 5 feet wide by 20 feet long and 4 inches deep.

Assume one ADA-compliant curb ramp (Type A) per curb extension.

Assumes standard pedestrian crosswalk at all legs of 4-leg intersection.

Unit prices are based on Prince George's County DPWT or MSHA

Item	Unit	Quantity	Unit Cost	Opinion of Probable Construction Costs
Earthwork/Excavation/Grading	CY	9	\$10.00	\$90
Remove Pavement	SY	60	\$4.00	\$240
Remove curb and gutter	LF	100	\$4.00	\$400
Remove sidewalk	LF	80	\$2.00	\$160
Concrete sidewalk 4"	LF	80	\$20.00	\$1,600
Concrete Curb & Gutter	LF	140	\$15.00	\$2,100
ADA-compliant ramp (type Ramp A)	EA	4	\$600.00	\$2,400
Standard high-visibility Pedestrian Crosswalk	EA	4	\$ 2,500.00	\$10,000
Subtotal				\$16,990

Lump Sum Items	\$5,946.50
-----------------------	-------------------

Drainage/Erosion & Sediment Control (10%)

Landscaping (5%)

Maintenance of Traffic (5%)

Mobilization (5%)

Utility Adjustments (10%)

Subtotal	\$22,936.50
35% Contingency	\$8,027.78
40% Project Soft Costs	\$9,174.60

Estimated Total Cost	\$40,100.00
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Actual costs may vary based on project scope and current market conditions.

Costs do not include environmental permitting, easement or property acquisition.

Project Soft Costs assume engineering, surveying, permitting, project management, and inspection services.

Lump sum items includes anticipated work associated with implementation of project type.

Pedestrian Plaza

Assumes decorative pavers, grading and signs

Unit prices are based on Prince George's County DPWT or MSHA

Item	Unit	Quantity	Unit Cost	Opinion of Probable Construction Costs
Signs/Posts	EA	2	\$330.00	\$660
Concrete removal	SF	100	\$2.00	\$200
Mild Grading	EA	1	\$1,000.00	\$1,000
Concrete Pavers	SF	100	\$18.00	\$1,800
Subtotal				\$3,660

Lump Sum Items	\$183.00
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Mobilization (5%)

Subtotal	\$3,843.00
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35% Contingency \$1,345.05

40% Project Soft Costs \$1,537.20

Estimated Total Cost	\$6,700.00
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Actual costs may vary based on project scope and current market conditions.

Costs do not include environmental permitting, easement or property acquisition.

Project Soft Costs assume engineering, surveying, permitting, project management, and inspection services.

Lump sum items includes anticipated work associated with implementation of project type.

Reconstruction- Complete Street (per mile)

Assume road diet and bike lanes

Assumes one-way, 5' wide bike lanes on either side.

Assumes one streetlight every 150' per DPW&T Standards

Unit prices are based on Prince George's County DPWT or MSHA

Item	Unit	Quantity	Unit Cost	Opinion of Probable Construction Costs
Street Lighting: Pendant or Colonial	EA	36	\$1,450	\$52,200
Thermoplastic White Pavement Marking, 4 inch	LF	21120	\$2	\$42,240
Thermoplastic Yellow Pavement Marking, 4 inch	LF	10560	\$2	\$21,120
Bicycle Lane Symbol	EA	10	\$250	\$2,500
8' Sidewalk with concrete pavers	LF	10560	\$40	\$422,400
Subtotal				\$540,460

Lump Sum Items	\$189,161
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Drainage/Erosion & Sediment Control (10%)

Landscaping (5%)

Maintenance of Traffic (5%)

Mobilization (5%)

Utility Adjustments (10%)

Subtotal	\$729,621
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35% Contingency \$255,367

40% Project Soft Costs \$291,848

Estimated Total Cost	\$1,276,800
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Actual costs may vary based on project scope and current market conditions.

Costs do not include environmental permitting, easement or property acquisition.

Project Soft Costs assume engineering, surveying, permitting, project management, and inspection services.

Lump sum items includes anticipated work associated with implementation of project type.

Sidewalk Installation (per mile)

Assume concrete sidewalk is a minimum 5 feet wide and 4 inches in depth.

Assumes no right of way acquisition.

Unit prices are based on Prince George's County DPWT or MSHA

Item	Unit	Quantity	Unit Cost	Opinion of Probable Construction Costs
Concrete Sidewalk	LF	5280	\$16.00	\$84,480
Subtotal				\$84,480

Lump Sum Items	\$29,568.00
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Drainage/Erosion & Sediment Control (10%)

Landscaping (5%)

Maintenance of Traffic (5%)

Mobilization (5%)

Utility Adjustments (10%)

Subtotal	\$114,480.00
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35% Contingency \$40,068.00

40% Project Soft Costs \$45,792.00

Estimated Total Cost	\$200,300.00
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Actual costs may vary based on project scope and current market conditions.

Costs do not include environmental permitting, easement or property acquisition.

Project Soft Costs assume engineering, surveying, permitting, project management, and inspection services.

Lump sum items includes anticipated work associated with implementation of project type.

Separated Bike Lanes (per mile)

Assume flexposts and pavement markings to create bike lane protection.

Assumes diagonal pavement marking buffer with flex posts; 20' o.c.

Assumes one-way, 5' wide bike lanes on either side with 2' painted buffer.

Unit prices are based on Prince George's County DPWT or MSHA

Item	Unit	Quantity	Unit Cost	Opinion of Probable Construction Costs
Thermoplastic White Pavement Marking, 4 inch	LF	14784	\$ 2.00	\$29,568
Thermoplastic White Pavement Marking, 5 inch	LF	10560	\$ 3.00	\$31,680
Regulatory Signs	EA	5	\$ 330.00	\$1,650
Bikeway Signs	EA	8	\$ 420.00	\$3,360
Flexible Delineators	EA	264	\$ 30.00	\$7,920
Bicycle Lane Symbol	EA	10	\$ 250.00	\$2,500
Subtotal				\$76,678

Lump Sum Items	\$26,837.30
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Drainage/Erosion & Sediment Control (10%)

Landscaping (5%)

Maintenance of Traffic (5%)

Mobilization (5%)

Utility Adjustments (10%)

Subtotal	\$106,678.00
35% Contingency	\$37,337.30
40% Project Soft Costs	\$42,671.20

Estimated Total Cost	\$186,700.00
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Actual costs may vary based on project scope and current market conditions.

Costs do not include environmental permitting, easement or property acquisition.

Project Soft Costs assume engineering, surveying, permitting, project management, and inspection services.

Lump sum items includes anticipated work associated with implementation of project type.

Traffic Calming (TC-1)

Assume 4 legged intersections.

Unit prices are based on Prince George's County DPWT or MSHA

Item	Unit	Quantity	Unit Cost	Opinion of Probable Construction Costs
Traffic Signal - 4 Legged Intersection	EA	1	\$150,000.00	\$150,000
Subtotal				\$150,000

Lump Sum Items	\$52,500.00
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Drainage/Erosion & Sediment Control (10%)

Landscaping (5%)

Maintenance of Traffic (5%)

Mobilization (5%)

Utility Adjustments (10%)

Subtotal	\$210,000.00
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35% Contingency	\$73,500.00
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40% Project Soft Costs	\$84,000.00
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Estimated Total Cost	\$367,500.00
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Actual costs may vary based on project scope and current market conditions.

Costs do not include environmental permitting, easement or property acquisition.

Project Soft Costs assume engineering, surveying, permitting, project management, and inspection services.

Lump sum items includes anticipated work associated with implementation of project type.

Traffic Calming (TC-2)

Assume 3-legged intersection and two curb extensions

Curb Extensions at the intersection of 38th Street and Jefferson Street.

Assume 6 foot wide by 20 feet long by 6 inch depth per curb extension.

Assume 35 feet of curb and gutter.

Assumes sidewalk is 5 feet wide by 20 feet long and 4 inches deep.

Assume one ADA-compliant curb ramp per curb extension.

Unit prices are based on Prince George's County DPWT or MSHA

Item	Unit	Quantity	Unit Cost	Opinion of Probable Construction Costs
Pavement Removal	SY	27	4	\$108
Earthwork/Excavation/Grading	EA	1	\$3,000.00	\$3,000
Subbase	SY	27	\$7.00	\$189
Concrete sidewalk 4"	LF	40	\$20.00	\$800
Concrete Curb & Gutter	LF	70	\$15.00	\$1,050
ADA-compliant ramp	EA	2	\$600.00	\$1,200
Landscape modifications	LS	1	\$5,000.00	\$5,000
Subtotal				\$11,347

Lump Sum Items	\$4,538.80
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Drainage/Erosion & Sediment Control (10%)

Landscaping (5%)

Maintenance of Traffic (5%)

Mobilization (10%)

Utility Adjustments (10%)

Subtotal	\$15,885.80
35% Contingency	\$5,560.03
40% Project Soft Costs	\$6,354.32

Estimated Total Cost	\$27,800.00
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Actual costs may vary based on project scope and current market conditions.

Costs do not include environmental permitting, easement or property acquisition.

Project Soft Costs assume engineering, surveying, permitting, project management, and inspection services.

Lump sum items includes anticipated work associated with implementation of project type.

Traffic Calming (TC-3)

Assumes 4 curb extensions, two concrete islands and two neighborhood mini circles

Assume 6 foot wide by 20 feet long by 6 inch depth per curb extension.

Assume 35 feet of curb and gutter.

Assumes sidewalk is 5 feet wide by 20 feet long and 4 inches deep.

Assume one ADA-compliant curb ramp per curb extension.

Assume concrete islands are 120 SF or smaller

Neighborhood mini circle assumes 4 way intersection, a concrete circle 16' diameter and all associated pavement markings and signage

Unit prices are based on Prince George's County DPWT, MSHA or similar project information

Item	Unit	Quantity	Unit Cost	Opinion of Probable Construction Costs
Pavement Removal	SY	54	\$4.00	\$216
Earthwork/Excavation/Grading	EA	1	\$5,000.00	\$5,000
Subbase	SY	54	\$7.00	\$378
Concrete sidewalk 4"	LF	80	\$20.00	\$1,600
Concrete Curb & Gutter	LF	140	\$15.00	\$2,100
ADA-compliant ramp	EA	4	\$600.00	\$2,400
Concrete Islands (2)	SY	13	\$60.00	\$780
Neighborhood Mini Circle	EA	2	\$20,000.00	\$40,000
Landscape modifications	LS	1	\$5,000.00	\$5,000
Subtotal				\$57,474

Lump Sum Items	\$22,989.60
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Drainage/Erosion & Sediment Control (10%)

Landscaping (5%)

Maintenance of Traffic (5%)

Mobilization (10%)

Utility Adjustments (10%)

Subtotal	\$80,463.60
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35% Contingency \$28,162.26

40% Project Soft Costs \$32,185.44

Estimated Total Cost	\$140,800.00
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Actual costs may vary based on project scope and current market conditions.

Costs do not include environmental permitting, easement or property acquisition.

Project Soft Costs assume engineering, surveying, permitting, project management, and inspection services.

Lump sum items includes anticipated work associated with implementation of project type.

Traffic Signal

Assume 4 legged intersections.

Unit prices are based on similar projects

Item	Unit	Quantity	Unit Cost	Opinion of Probable Construction Costs
Traffic Signal - 4 Legged Intersection	EA	1	\$150,000.00	\$150,000
Subtotal				\$150,000

Lump Sum Items	\$52,500.00
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Drainage/Erosion & Sediment Control (10%)

Landscaping (5%)

Maintenance of Traffic (5%)

Mobilization (5%)

Utility Adjustments (10%)

Subtotal	\$210,000.00
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35% Contingency	\$73,500.00
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40% Project Soft Costs	\$84,000.00
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Estimated Total Cost	\$367,500.00
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Actual costs may vary based on project scope and current market conditions.

Costs do not include environmental permitting, easement or property acquisition.

Project Soft Costs assume engineering, surveying, permitting, project management, and inspection services.

Lump sum items includes anticipated work associated with implementation of project type.

Wayfinding

Unit prices are based on MDSHA Historic Pricing Data and fabricator estimates.

Item	Unit	Quantity	Unit Cost	Opinion of Probable Construction Costs
Bicycle Wayfinding	EA	88	\$ 125	\$11,000
Vehicle Wayfinding	EA	32	\$ 250	\$8,000
2" Square Metal Post (Furnish and Install)	EA	88	\$ 100	\$8,800
5" Square Metal Post (Furnish and Install)	EA	64	\$ 200	\$12,800
Pedestrian Kiosk	EA	5	\$ 4,500	\$22,500
Kiosk Installation (Per Kiosk)	EA	5	\$ 1,800	\$9,000
Subtotal				\$72,100

Lump Sum Items	\$3,605.00
Mobilization (5%)	

Subtotal	\$75,705.00
35% Contingency	\$26,496.75
20% Project Soft Costs	\$15,141.00

Estimated Total Cost	\$117,342.75
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Actual costs may vary based on project scope and current market conditions.

Project Soft Costs include permitting, project management, and inspection services.

Lump sum items includes anticipated work associated with implementation of project type.

Note: Fabrication costs and end product can vary widely based upon materials and production methods chosen. For the pedestrian kiosk, different printing materials for the maps such as a layer of vinyl with a UV clear coat could be more expensive than paint directly on aluminum, but may appear brighter or last longer. Another example of material decisions that could affect costs include whether to leave the kiosk base as concrete with an architectural finish or to complete it with an aluminum skirt. Additionally, different construction methods such as fabricating the kiosk as one "box" piece may be more economical, but may not allow for easy updates of the map panel in the future. Toole Design suggests working more closely with a sign fabricator to find the right final product and associated cost desired by the City of Hyattsville. Costs are an estimate and could vary beyond this range.



HYATTSVILLE

TRANSPORTATION STUDY

City Council Update – October 1, 2018



TOOLE
DESIGN

Agenda

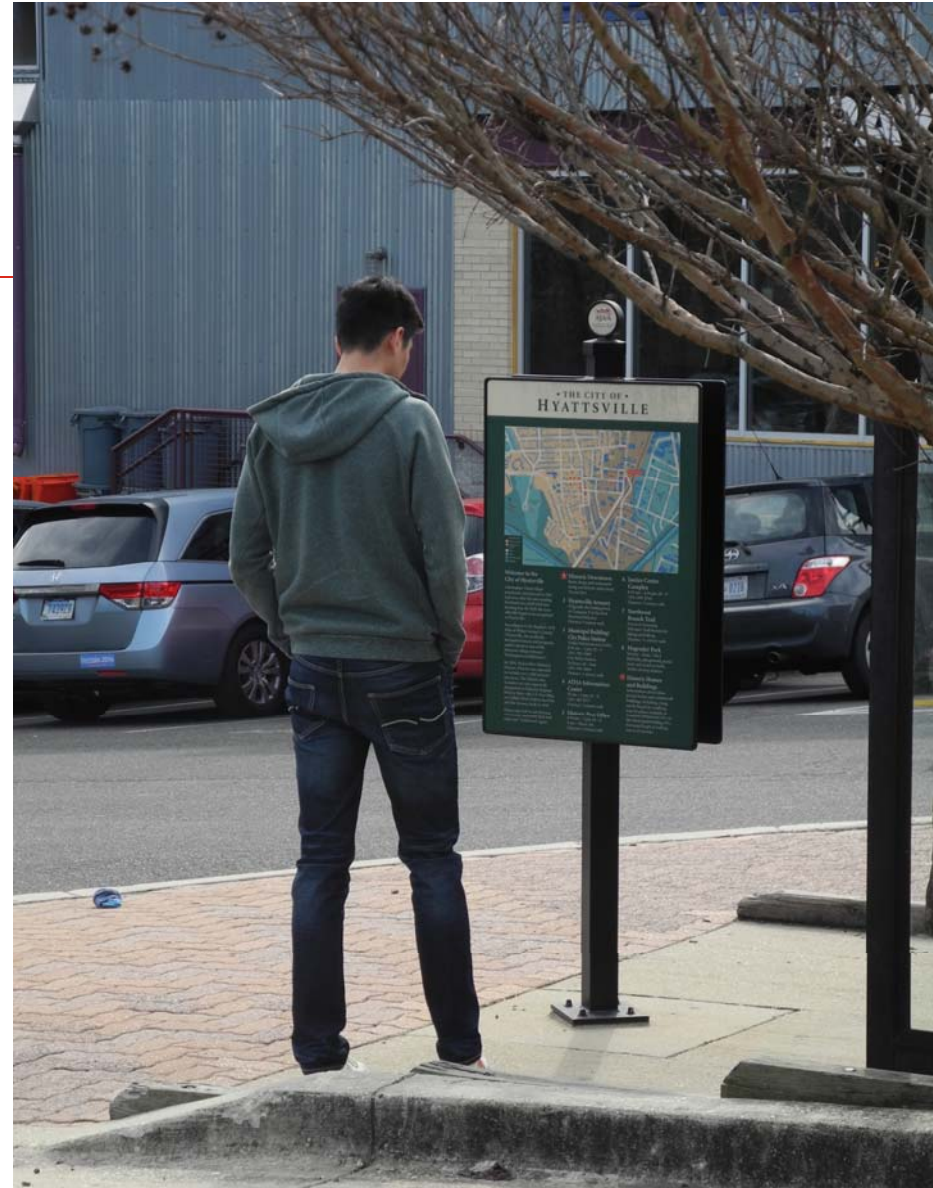
- Project Goals
- Future Needs
- Vision
- Planning Process
- Project Scoring



Project Goals

- Identify **bicycle** and **pedestrian** needs of the city
- Evaluate existing and future **roadway needs**
- Evaluate **traffic calming** and one-way streets
- Evaluate **parking issues** in target areas
- Prepare a **wayfinding plan**
- Evaluate **school traffic** and infrastructure

Develop implementation-oriented
Sequential Action Plan



Future Needs

- **Increasing vehicle traffic** through the City may require revisiting intersection design and signal timing
- **Growing/changing commercial areas** require strategic approach to parking
- **Increasing pedestrian and bicycle traffic** require making the best use of limited space and consideration of community priorities
- **Critical street connections:** Investigate completing missing links and change street circulation



Vision

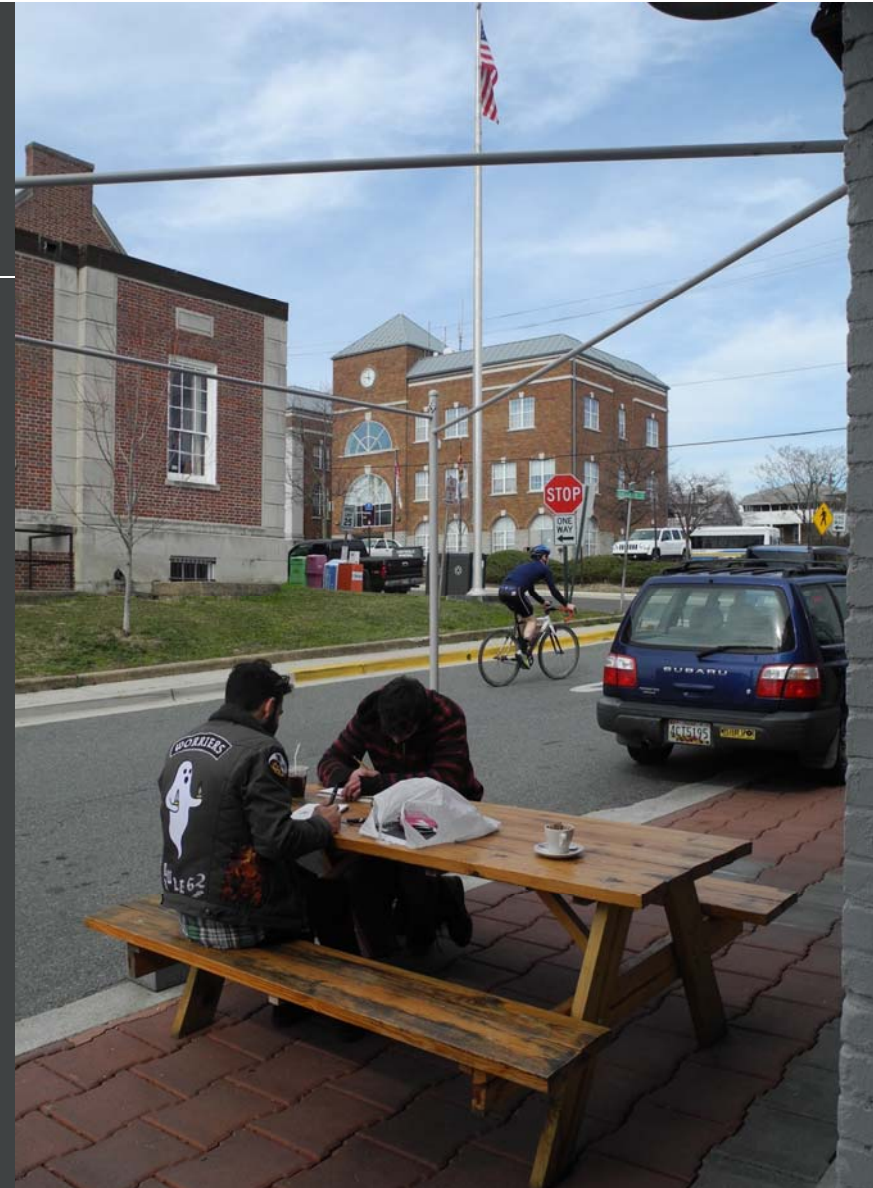
- In the very near future, Hyattsville will be a place where anyone, regardless of age, background, or ability, can travel safely, comfortably, and affordably.
- Its transportation network will prioritize people-friendly streets that add energy and vitality to their surroundings while accommodating the inevitable flow of traffic into and out of the City.

TOOLE
DESIGN

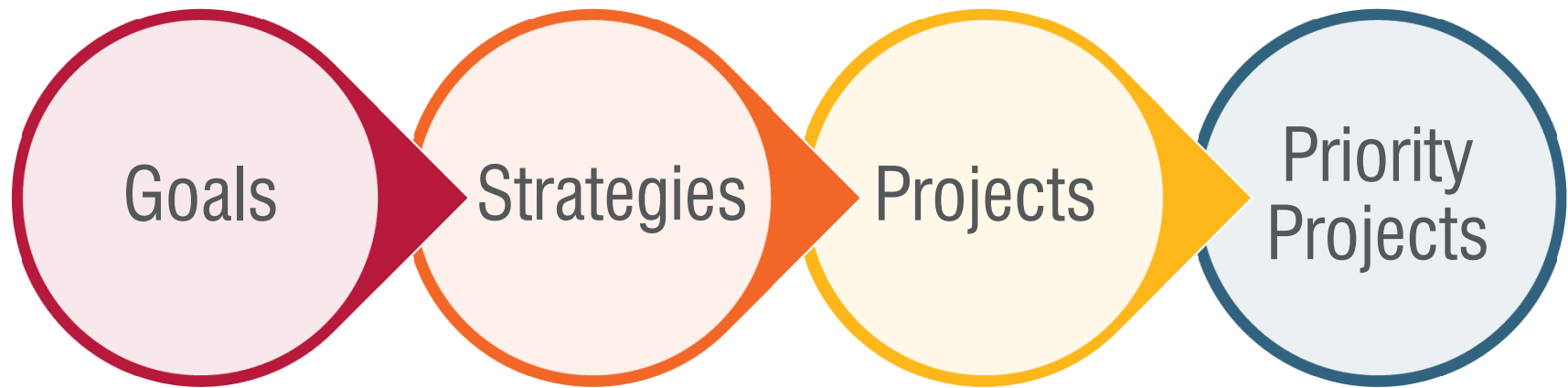


Vision

- The transportation system will support its sustainability goals, prioritizing active transportation for shorter trips and access to rapid transit for longer trips.
- Hyattsville's streets will serve as the backdrop for community events and festivals, as well as the rhythms of everyday life.



Planning Process



Goals

Six Speak Up HVL! Goals

- Improve safety along major roads
- Improve traffic flow within neighborhoods
- Enhance and increase safe connectivity for pedestrians
- Strengthen connectivity for cyclists
- Support development around the Metro stations and Gateway Arts District
- Support environmentally friendly, sustainable growth

Key Inputs

- Review of previous plans
- Public input
 - Project website
 - Wikimap
 - Several community meetings and events
- Stakeholder conversations
- Field inventory
- Data analysis



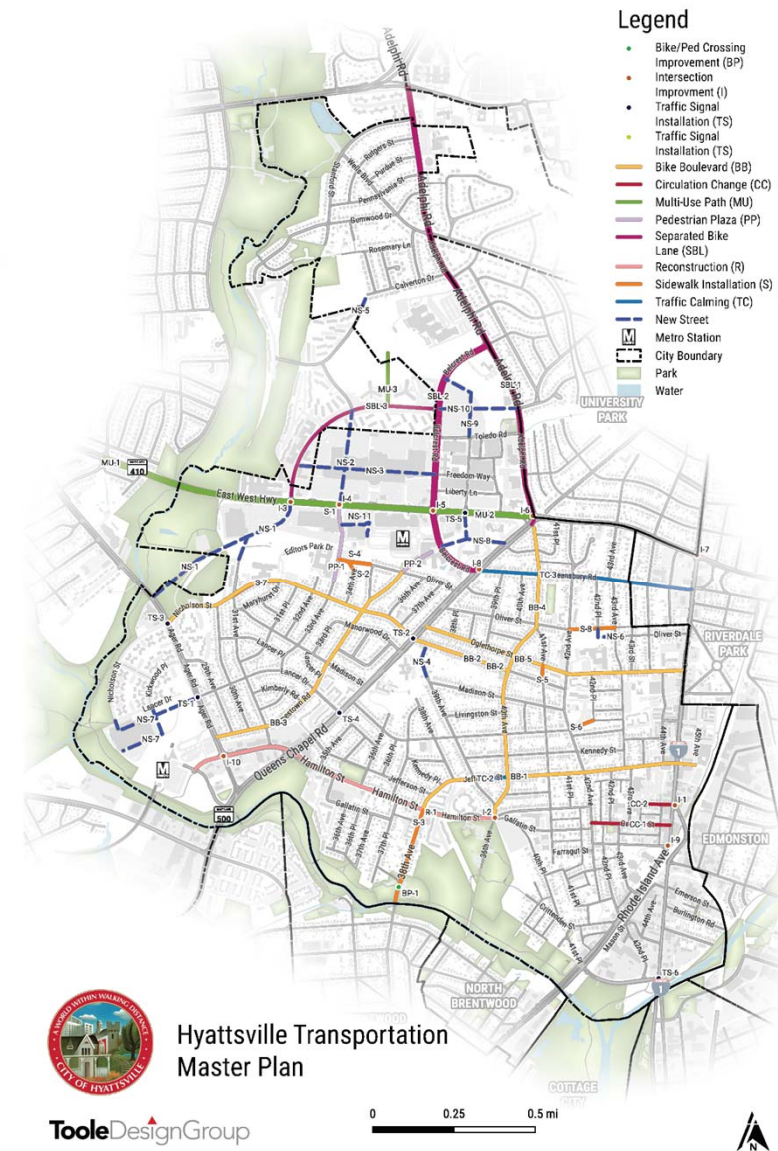
Strategies

Derived from Goals and Key Inputs

1. Design streets for lower speeds
2. Prioritize people on foot in street design
3. Where appropriate, change traffic circulation
4. Prioritize the comfort of people on bikes in street design
5. Design intersections to prioritize local connections
6. Prioritize connections to and from the Metro stations and Arts District
7. Integrate trails into the local transportation network
8. Complete the City's street grid with new street connections

Recommendation Categories

- Improved trail crossings
- Shared-use paths and sidewalks
- Bike lanes
- Signal timing improvements
- Limited new street connections
- Pedestrian plazas
- New traffic signals



Project Scoring

- Six Speak Up HVL! Goals, each assigned a point value
- These six principles were used to rate each of 51 proposed projects around the City
- 23-point scale used to score projects

	Improve safety on major roads	Safe connectivity for pedestrians	Traffic flow in neighborhoods	Strengthen connectivity for cyclists	Support Metro/Arts District	Sustainable growth	
	4	5	3	5	4	2	SUM
	1	0	1	1	1	0	16
	0	0	1	1	1	0	12
	0	0	1	1	1	0	12
	0	0	1	1	0	0	8
	0	0	1	1	0	0	8

Project Scoring

Speak Up HVL! Goal	Points
Improve safety along major roads	4
Improve traffic flow within neighborhoods	3
Enhance and increase safe connectivity for pedestrians	5
Strengthen connectivity for cyclists	5
Support development around the Metro stations and Gateway Arts District	4
Support environmentally friendly, sustainable growth (Points assigned if project meets the prior three goals)	2

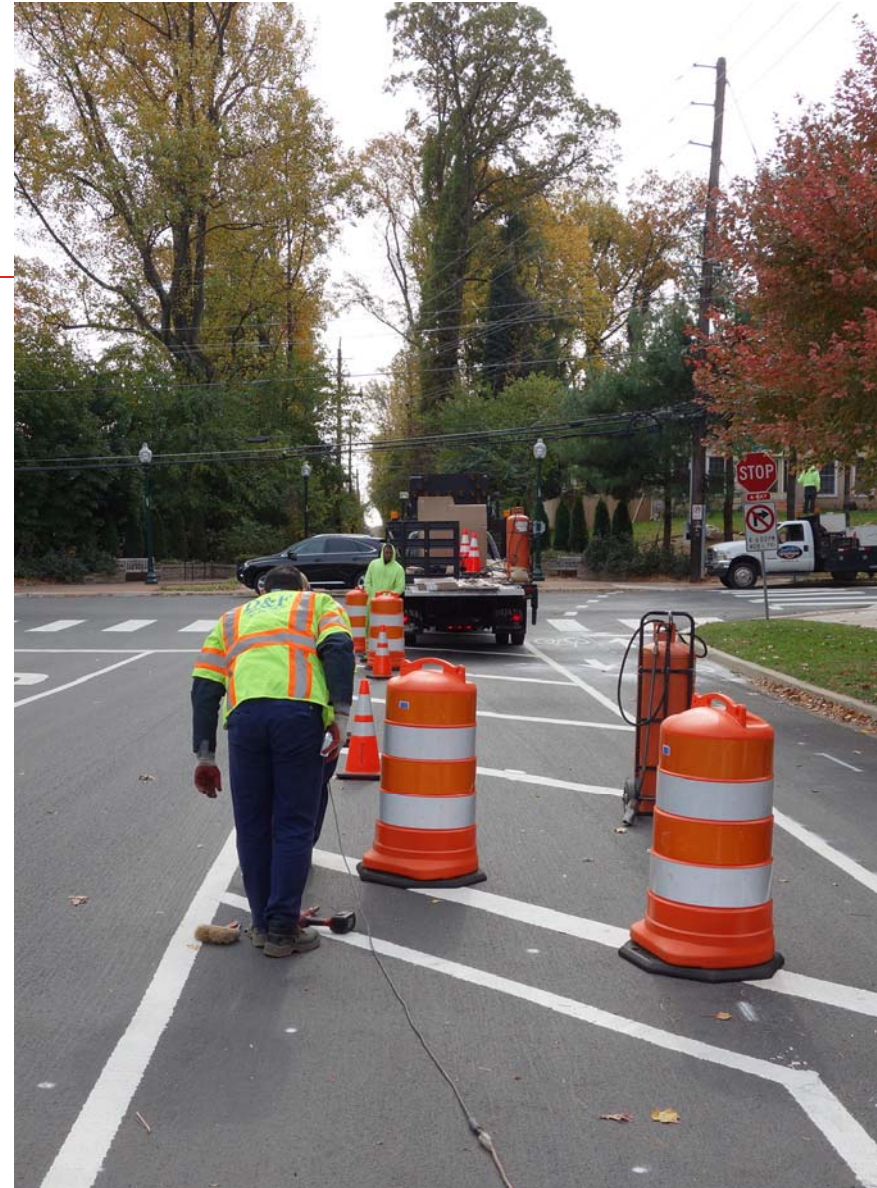
Sequential Action Plan

- Groups of projects that can be implemented as a package
 - Projects from the same neighborhood
 - Project type (e.g. sidewalks, wayfinding)
 - Key corridor projects with multiple elements
 - Operationally-linked projects (e.g. intersection improvements)



Next Steps

- Finalize Transportation Study
- Select priority projects for implementation
- Identify and secure funding (local funding, grants, partnerships)
- Collaborate with partners (PG DPWT, MD SHA, MNCPPC-PG, developers, etc.)





THANK YOU



TOOLE
DESIGN



Hyattsville City Council Agenda Item Report

Meeting Date: October 1, 2018

Submitted by: Katie Gerbes

Submitting Department: Community & Economic Development

Item Type: Presentation

Agenda Section: Presentations (8:20 p.m. - 9:05 p.m.)

SUBJECT

Rhode Island Avenue Trolley Trail Extension Update (15 minutes)

HCC-78-FY19

Recommendation:

Sponsor(s):

At the Request of the City Administrator

Co-Sponsor(s):

N/A

ATTACHMENTS

[Memo_-_Rhode_Island_Avenue_Trolley_Trail.doc](#)

[Rhode Island Trolley Trail Presentation.pdf](#)

Summary Background:

Luis Gonzales, from the State Highway Administration District 3, will be presenting an update on the extension of the Rhode Island Avenue Trolley Trail from Farragut Street to Charles Armentrout Drive.

Next Steps:

SHA is continuing their engineering of the trolley trail extension. If the planning stages continue on the anticipated track, the project will be funded in SHA's FY20 budget, and construction is likely to begin in spring 2020.

Fiscal Impact:

TBD

City Administrator Comments:

Presentation

Community Engagement:

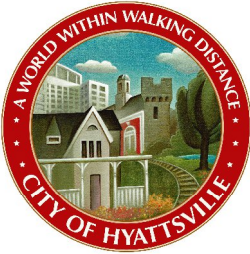
Maryland SHA is tentatively scheduled to present the 30% project design at the next Hyattsville Planning Committee meeting, scheduled for 7:30 PM on Tuesday, October 16, 2018.

Strategic Goals:

Goal 3 – Promote a Safe and Vibrant Community

Legal Review Required?

N/A



Memo

To: Mayor and City Council

From: Jim Chandler, Director of Community & Economic Development, Assistant City Administrator

CC: Tracey Nicholson, City Administrator
Lesley Riddle, Director, Department of Public Works

Date: September 18, 2018

Re: Rhode Island Avenue Trolley Trail – SHA Project Update

Summary

Maryland State Highway Administration will present the City of Hyattsville with the 30% design of the Rhode Island Avenue Trolley Trail extension and will discuss project timeline and milestones for moving forward with completion of design and construction.

Project History

On May 9, 2016, the City of Hyattsville formally requested Maryland State Highway Administration (SHA) fund the design and construction of an extension of the Rhode Island Avenue Trolley Trail, connecting the existing terminus at Farragut Street to the existing Northwest Branch Trail System at 41st Avenue/Charles Armentrout Drive, Hyattsville.

In July 2016, Maryland SHA responded to the City of Hyattsville's request and on December 9, 2016 confirmed funding for the design of the project through the Bicycle Retrofit Program. The project was assigned to Mr. Luis Gonzalez, SHA Office of Highway Development Project Manager and he and his team have been working with City of Hyattsville and Maryland-National Capital Park & Planning (M-NCPPC) on the design of the trail extension.

Traffic data analysis, site survey and topographical work commenced in Spring 2017. The project design is tentatively scheduled to be completed in mid-2019. Construction funding may be requested

once design is complete, depending on the design timeline, the construction would be funded in either FY2020 or FY2021.

The City was recently advised by Mr. Gonzalez that that additional right-of-way acquisition is required to create adequate stormwater management. The subject property is owned by CSX. SHA will coordinate the acquisition of parcels, which will be detailed during the presentation to the City Council. The City and/or M-NCPPC will be required to secure any ROW necessary to complete the project. The RIA Trolley Trail project is one of five priority projects in the Commission's Purple Line funding program.

M-NCPPC Deputy Director for Administration & Development Darin Conforti has confirmed with the Director that M-NCPPC's acquisition team is prepared to fund the acquisition of the parcels necessary to support stormwater management for the construction of the Rhode Island Avenue Trolley.

Maryland SHA is tentatively scheduled to present the 30% project design at the next Hyattsville Planning Committee meeting, scheduled for 7:30 PM on Tuesday, October 16, 2018.



RHODE ISLAND TROLLEY TRAIL

From Charles Armentrout Dr to Farragut St



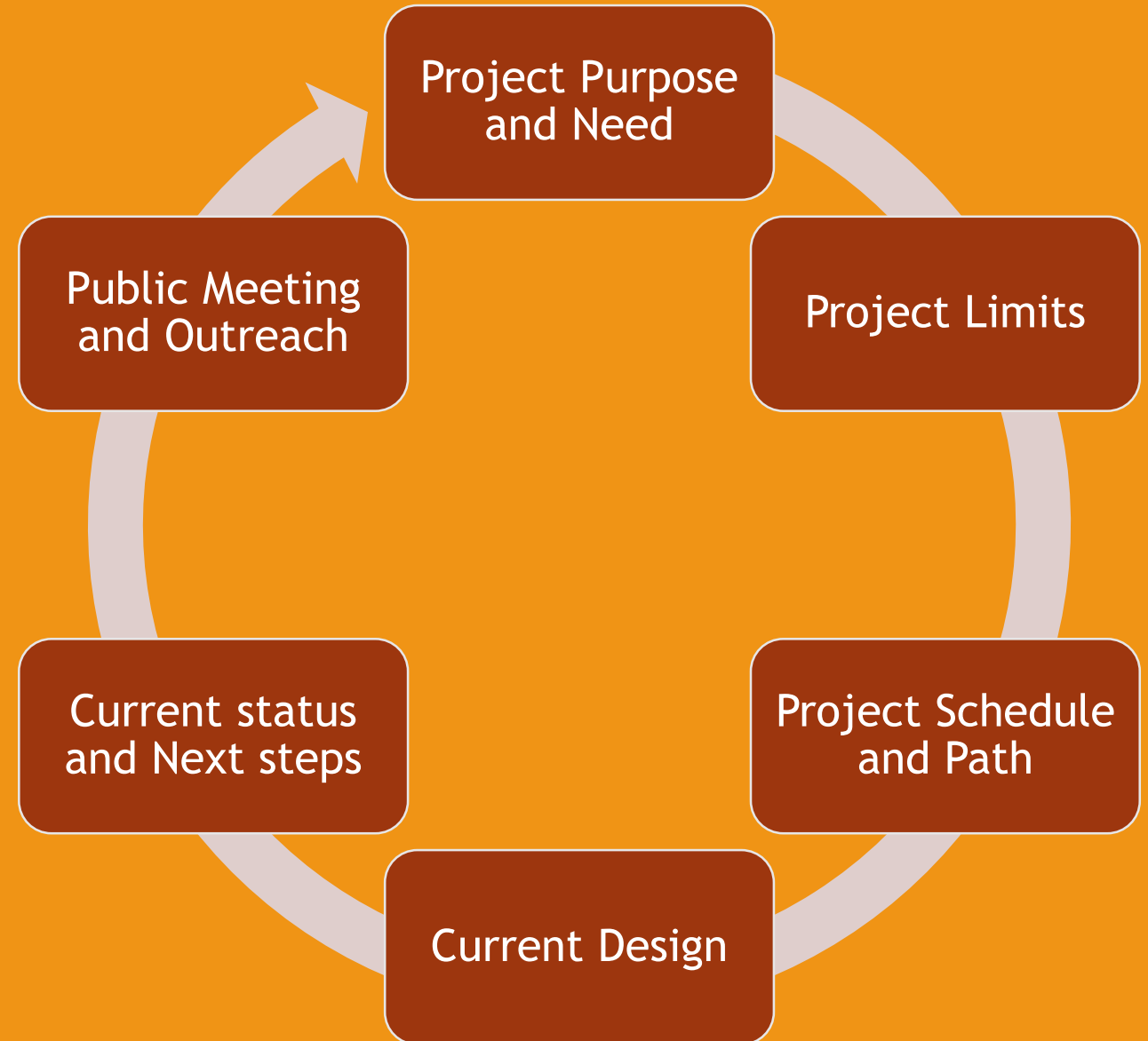
Kidus Debasu

Transportation Engineer, Office of Highway Development 774

MDOT State Highway Administration

Kdebasu@sha.state.md.us

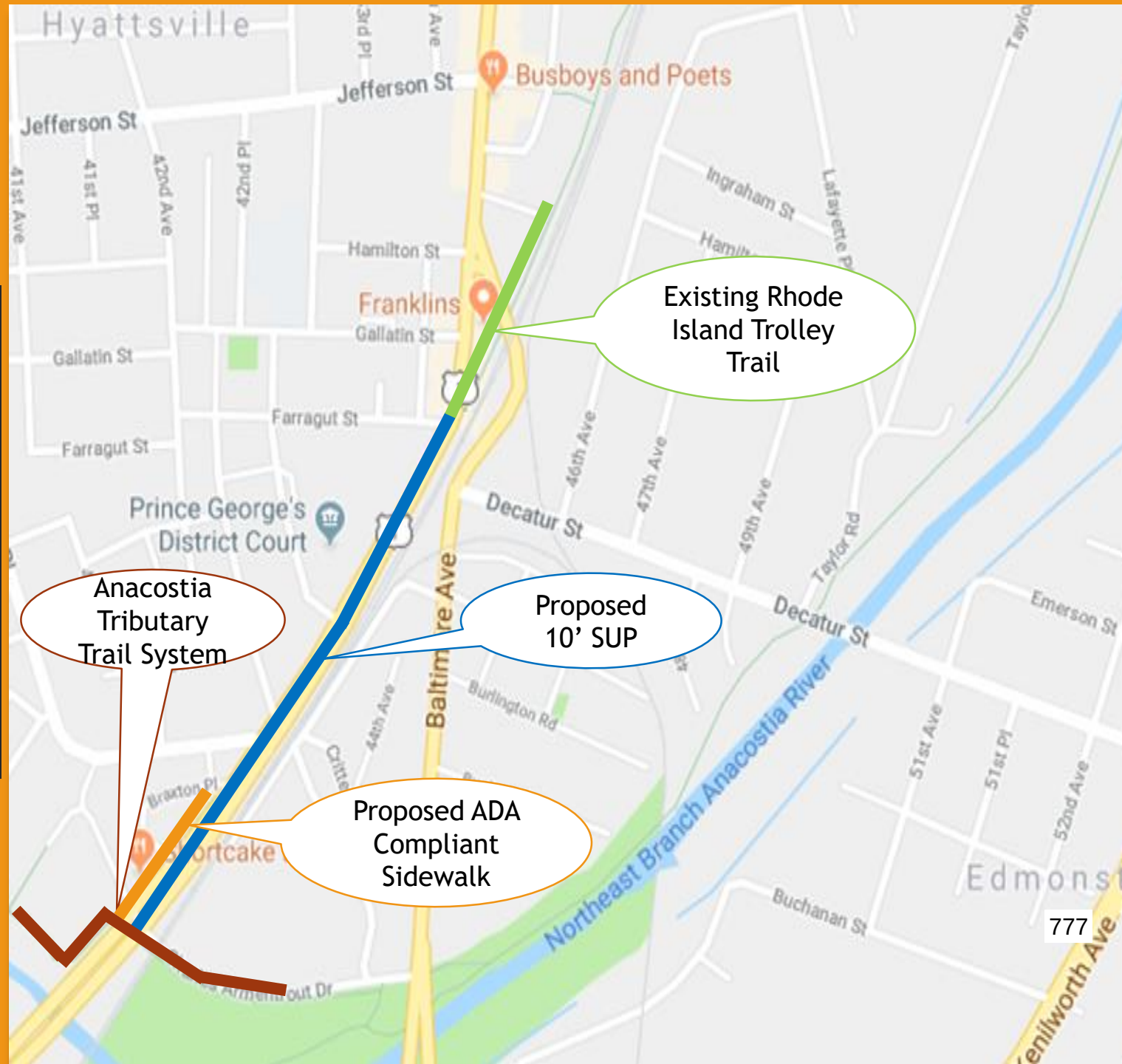
Topics



Purpose and Need

- The project aims to construct a shared use path for both pedestrians and bicyclist that connects to two trails namely, the Existing Rhode Island Trolley Trail and the Anacostia Tributary Trail system.
- While the primary aim of this project is to improve the connectivity amongst the existing trail systems it will also further enhance connectivity between neighboring towns.

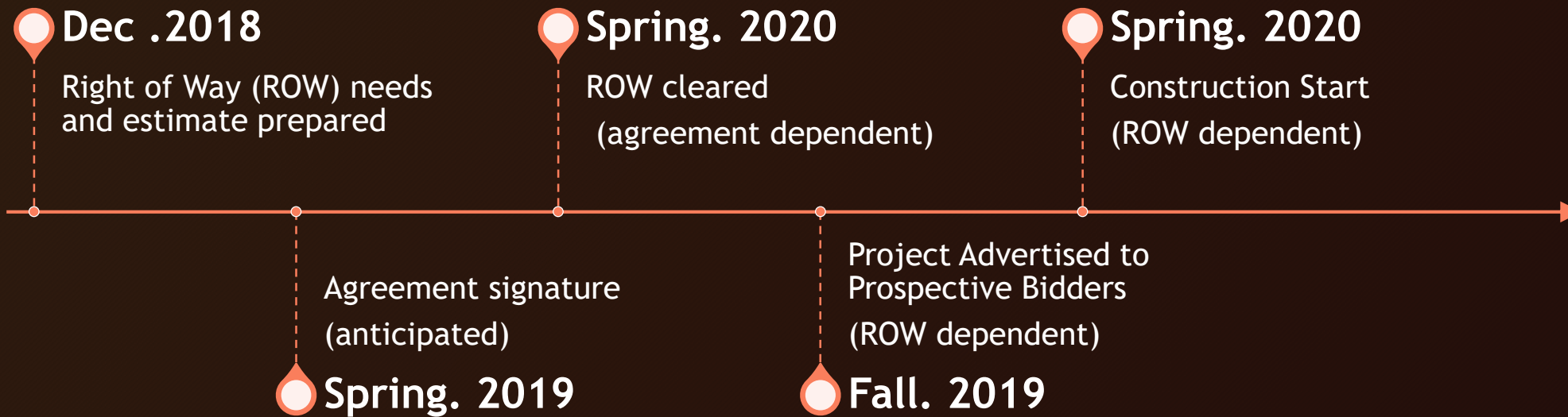
Project Limits



Milestones to Date



Project Schedule



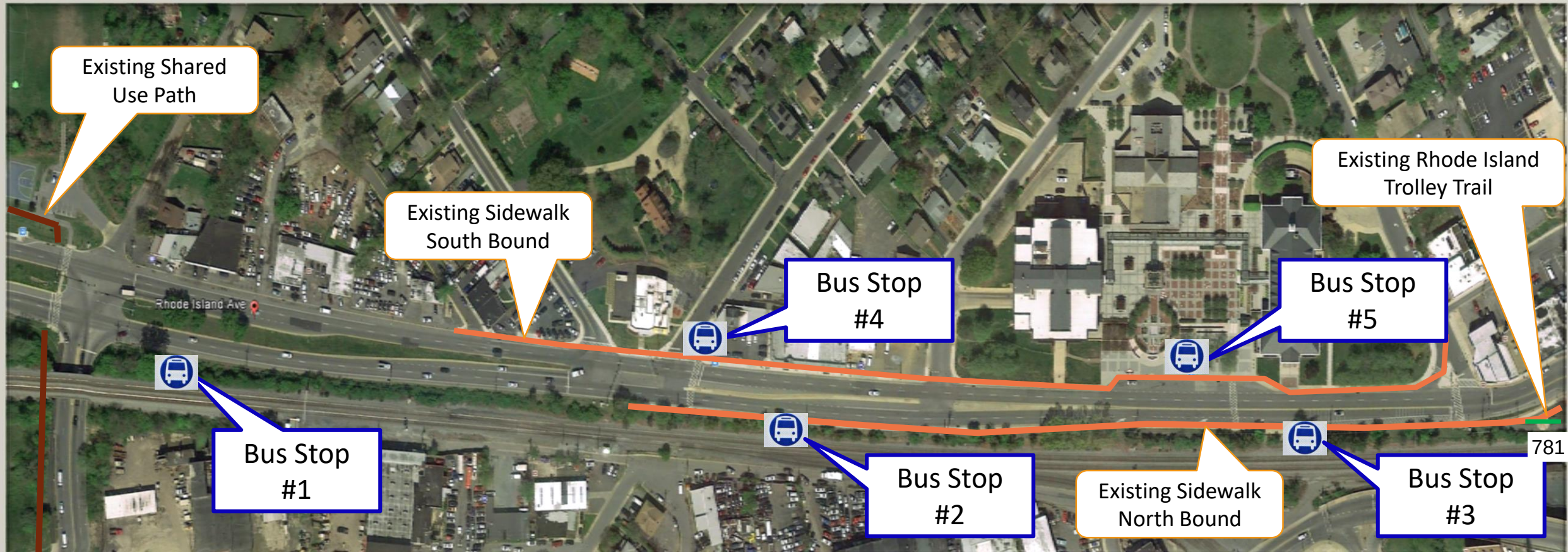
Existing Condition

Existing Condition :-

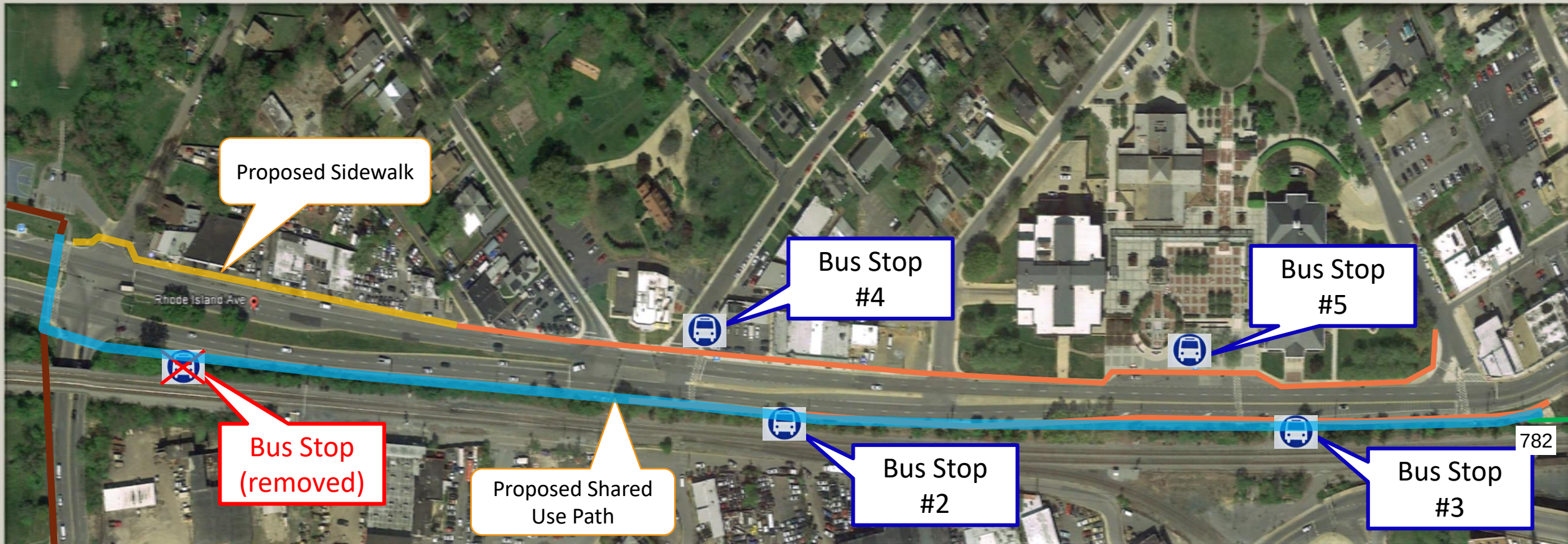
- 4-Lane high way, two lanes on each direction.
- Intersection of Charles Armentrout Dr with Rhode Island Ave
- Adjacent to North Bound lane is the CSX trainline.



Existing Bicycle and Pedestrian Facilities



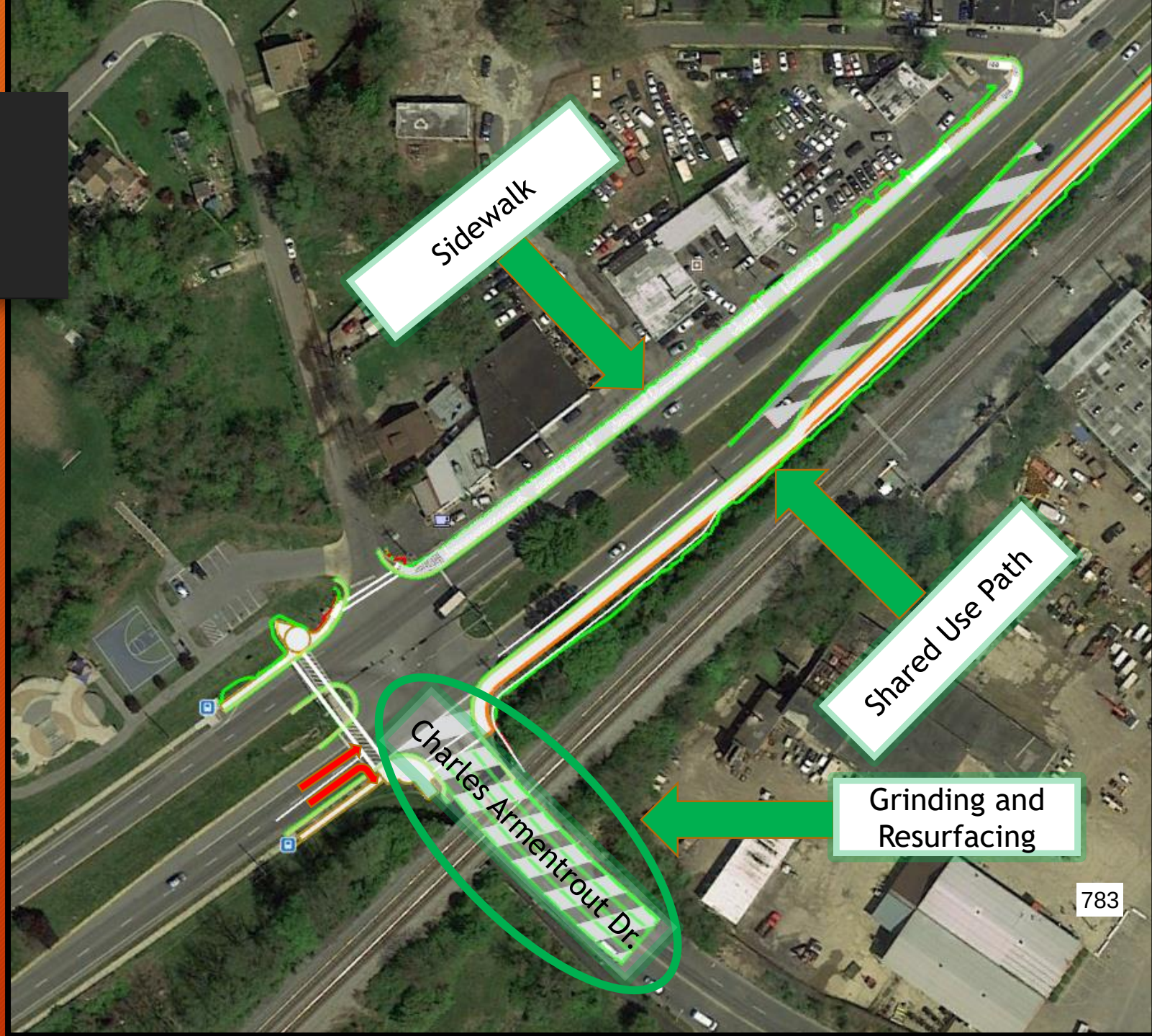
Proposed Bicycle and Pedestrian Facilities

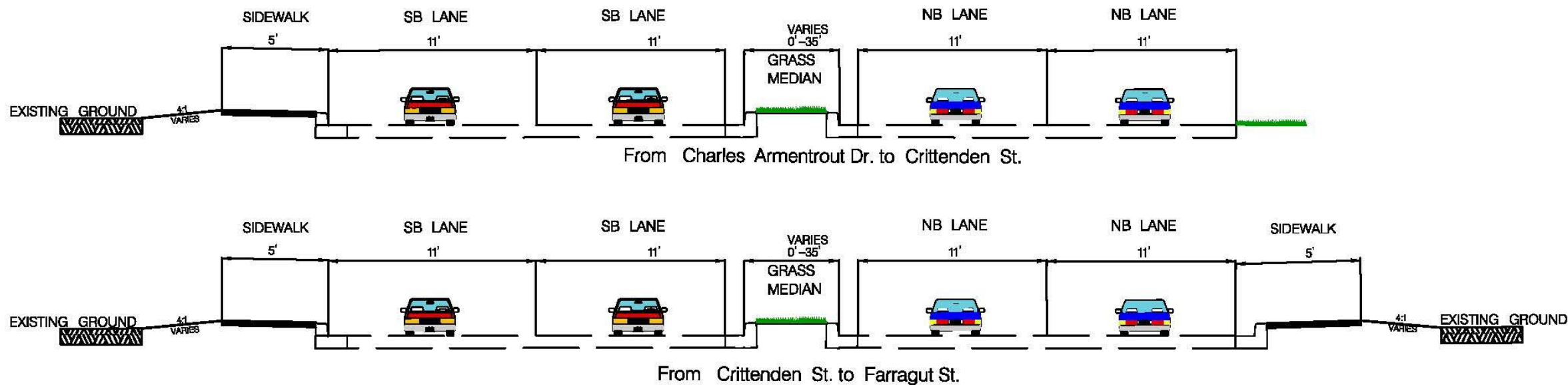


Current Design

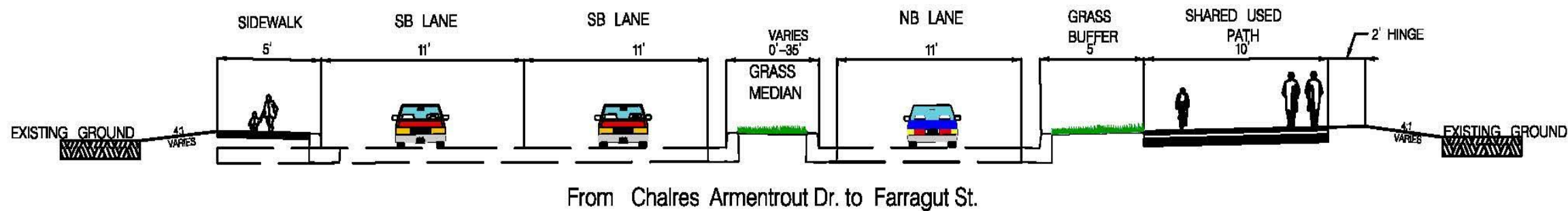
- Proposed:-

- Resurfacing on Charles Armentrout Dr. to increase separation between vehicular traffic and the existing Shared Use Path.
- Construct a Shared Use Path from Charles Armentrout to Farragut Street NB side.
- Construct ADA Compliant Sidewalk from 41st St. up until Braxton Pl.
- A road diet on US 1 is proposed to accommodate these improvements.





Existing Typical Section

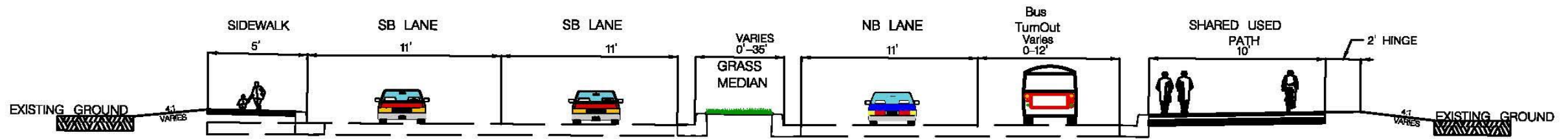


Proposed Design Typical Section (Road Diet)

Traffic Analysis

- Road Diet Analysis
- Traffic analysis was completed by MDOT SHA.
- Traffic analysis numbers predict future traffic conditions with a road diet will be comparable to the existing traffic condition.
- Traffic signals will be optimized throughout the corridor to minimize exasperating vehicular traffic operations.

Intersection	2040 AM		2040 PM		
	No Build	Road Diet	No Build	Road Diet	Road Diet (Optimiz ed)
US 1 at 41 st Pl/Charles Armentrout Dr	E 66.6	E 67.4	E 74.1	F 88.3	E 77.5
US 1 at Crittenden St/ 42 nd St	B 13.9	B 14.1	C 32.4	C 30	C 28.2
US 1 at Farragut St	A 3.8	A 3.7	A 6.7	A 5.2	A 4.9
US 1 at Gallatin St	A 4.3	A 4.2	A 3.6	A 3.6	A 3



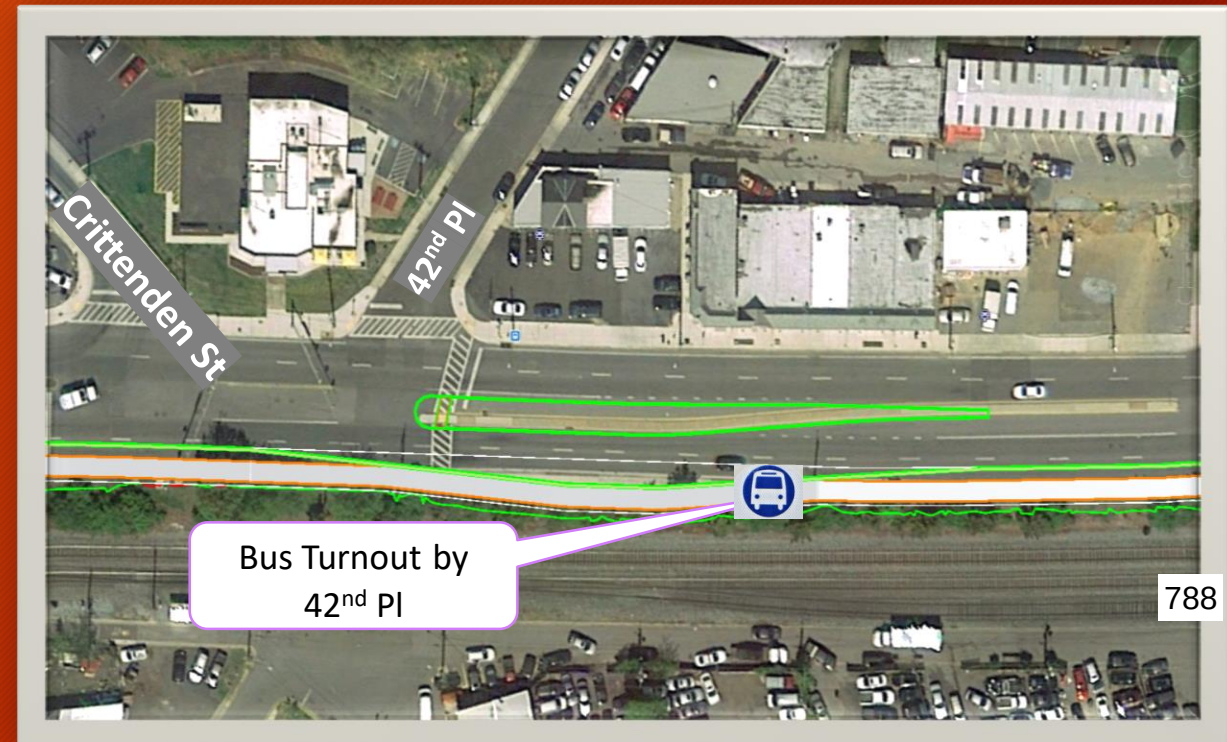
Proposed Design Bus Turnouts

Bus Turnout Design

Existing

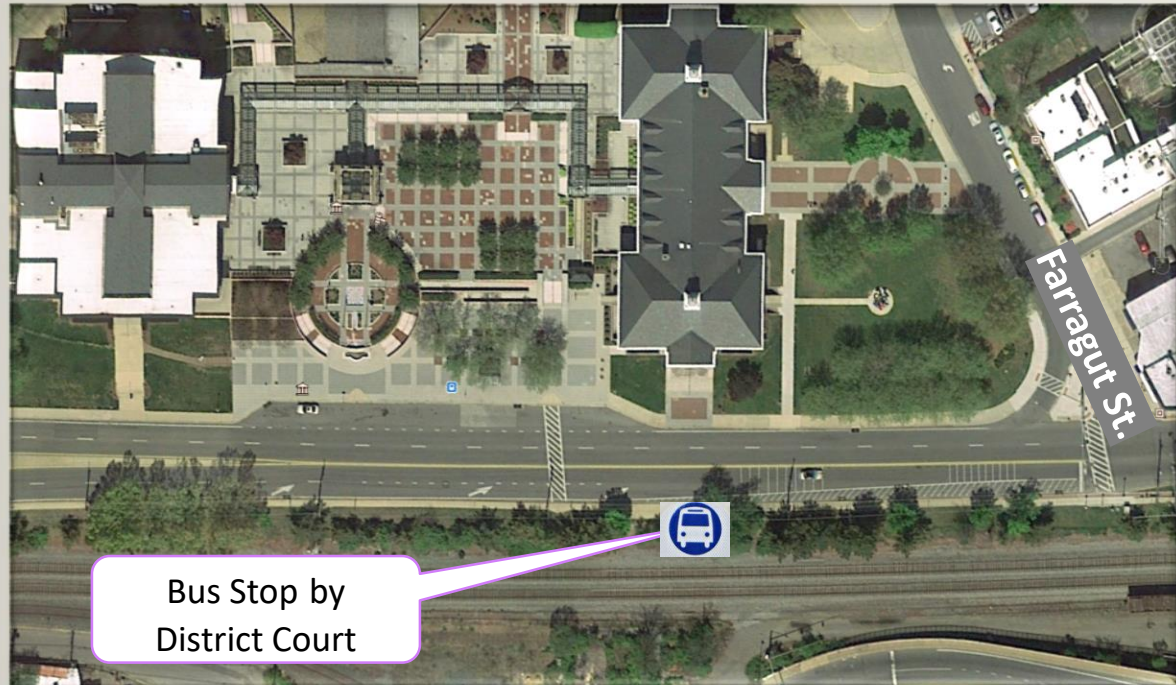


Proposed

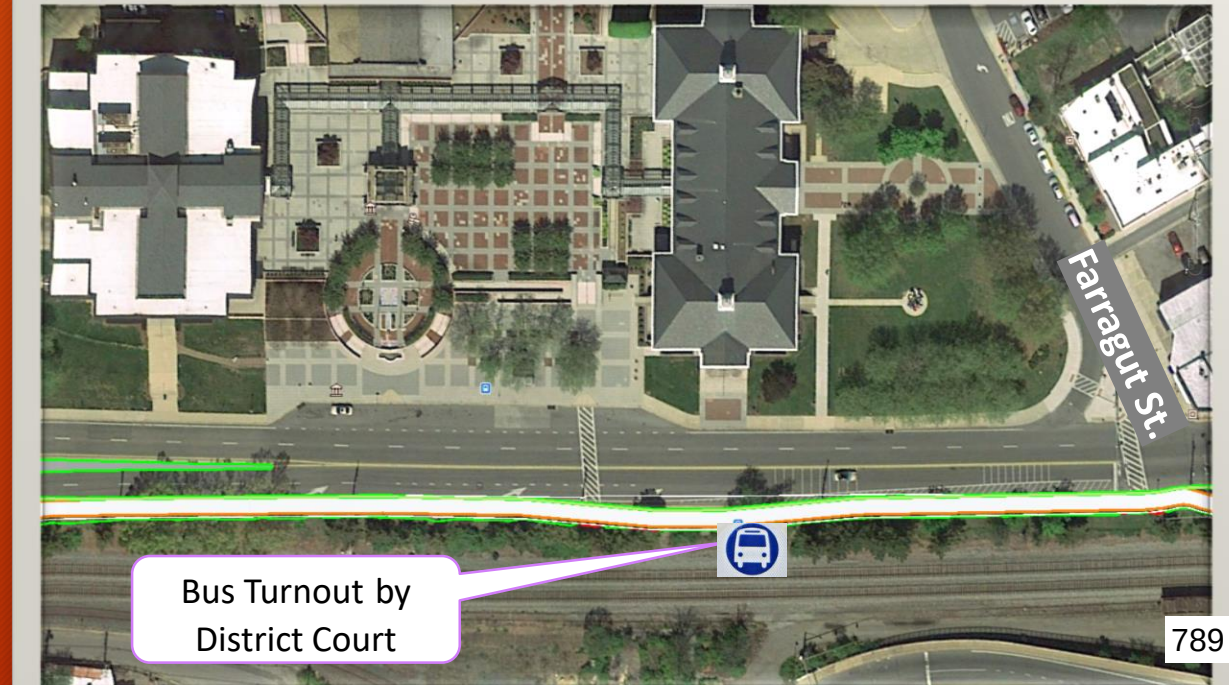


Bus Turnout Design

Existing



Proposed



Other Road Diet treatments

Left turn lanes



- Increasing Storage on left turn onto Crittenden St.

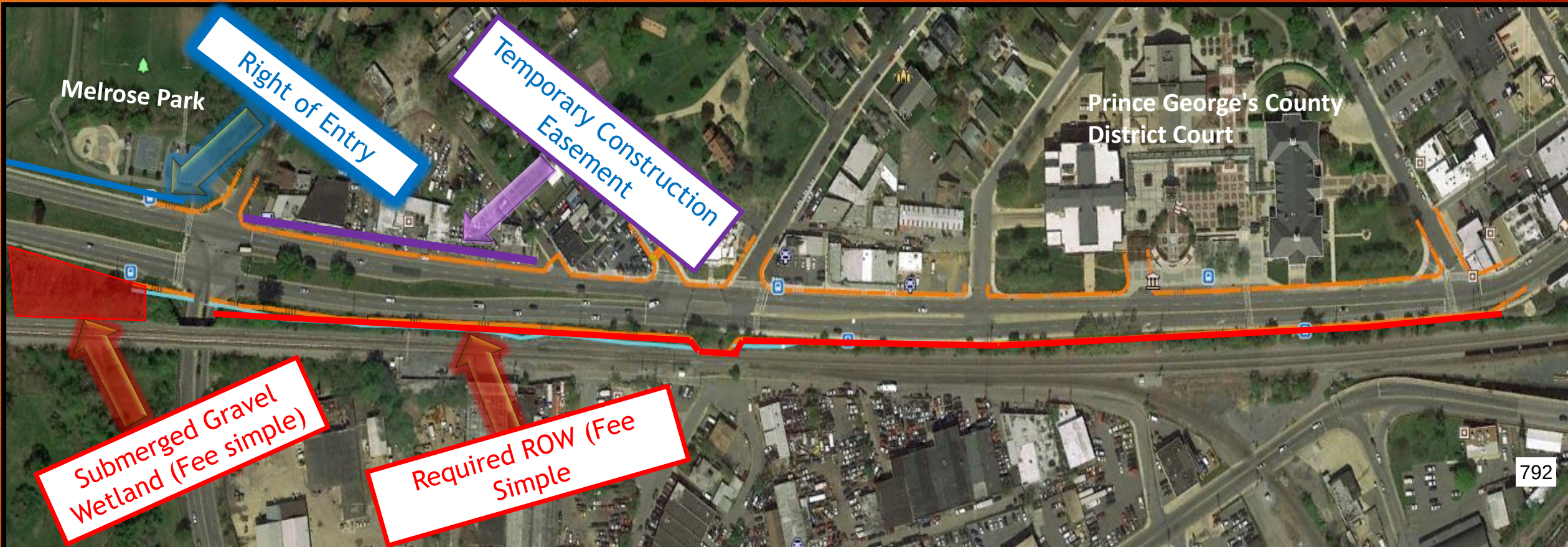
Other Road Diet treatments

Provisions for stalled vehicles



- Removing Median at US 1 north of 43rd Ave.
- Restricting Left Turn from 43rd Ave onto US 1.

ROW (Right of Way) Information



Current Status and Next Steps

- Design has reached 30% design completion.
- Additional Right of way (ROW) will be required for Storm Water Management.
- The extent of right of way need will be finalized after supplemental metes and bounds surveys are complete. Anticipated to be done by the end of October.
- Coordination with CSX transportation will be required to ensure smooth ROW transaction.
- Estimated construction date would be based on right of way.



Public Meeting and Outreach



- A mandatory referral in partnership with the city of Hyattsville and M-NCPPC (Maryland-National Capital Park and Planning Commission) will be scheduled prior to the end of the year.
- A public meeting will be coordinated with City officials subsequent to the Mandatory referral.

Need information /Have Questions

US 1 from Chapman Avenue to Farragut Street Bicycle Retrofit
(Rhode Island Trolley Trail)

Kidus Debasu- MDOT SHA

Project Manager

Phone: 410-545-8824

Email: Kdebasu@sha.state.md.us

Questions



Hyattsville City Council Agenda Item Report

Meeting Date: October 1, 2018

Submitted by: Amal Awad

Submitting Department: Police Department

Item Type: Grant

Agenda Section: Consent Items (9:05 p.m. - 9:10 p.m.)

SUBJECT

FY19 Budget Appropriation - MPCTC Grant: Emergency Response Team (ERT) Training Conference

HCC-79-FY19

Recommendation:

I move that the Mayor and Council accept and appropriate into the FY19 budget a grant award from the Maryland Police and Correctional Training Commissions in the amount of \$1,500 for an Emergency Response Team Training Conference.

Sponsor(s):

At the Request of the City Administrator

Co-Sponsor(s):

N/A

ATTACHMENTS

Summary Background:

The HCPD has been awarded a grant from the Maryland Police and Corrections Training Commissions in the amount of \$1,500 for professional development training. The grant provides for one sergeant and three officers to attend a conference in Northern Virginia on responding to active or mass shooter incidents as well as other critical emergencies. Our Emergency Response Team has the responsibility of responding to and stabilizing emergency situations. This conference offers training from subject matter experts and will provide them with necessary and valuable skills to respond to a wide array of emergencies.

Next Steps:

N/A

Fiscal Impact:

N/A

City Administrator Comments:

Recommend Approval

Community Engagement:

N/A

Strategic Goals:

Goal 3 – Promote a Safe and Vibrant Community

Legal Review Required?

N/A



Hyattsville City Council Agenda Item Report

Meeting Date: October 1, 2018

Submitted by: Anthony DeSantis

Submitting Department: Community Services

Item Type: Proclamation

Agenda Section: Consent Items (9:05 p.m. - 9:10 p.m.)

SUBJECT

Proclamation: Breast Cancer Awareness Month

HCC-81-FY19

Recommendation:

I move that the Mayor and Council recognize October 2018 as Breast Cancer Awareness Month in the City of Hyattsville

Sponsor(s):

At the Request of the City Administrator

Co-Sponsor(s):

N/A

ATTACHMENTS

[Breast Cancer Awareness Month Proclamation 2018.docx](#)

Summary Background:

October is Breast Cancer Awareness Month nationwide.

Next Steps:

Recognize October 2018 as Breast Cancer Awareness Month in the City of Hyattsville.

Fiscal Impact:

N/A

City Administrator Comments:

Recommend Approval

Community Engagement:

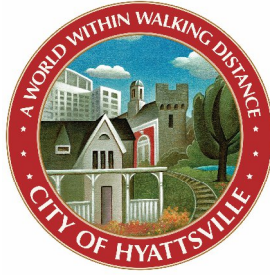
Recognition of Breast Cancer Awareness Month has been planned.

Strategic Goals:

Goal 5 – Strengthen the City's Identity as a Diverse, Creative, and Welcoming Community

Legal Review Required?

N/A



**PROCLAMATION RECOGNIZING OCTOBER 2018
AS BREAST CANCER AWARENESS MONTH
IN THE CITY OF HYATTSVILLE**

This proclamation recognizes the courage of those who have fought, are fighting, or will fight breast cancer in their lifetime. It also honors those who have lost their lives to the disease. For these individuals, and for the loved ones who give them unending support through the most trying times, the City of Hyattsville recommits itself to raising breast cancer awareness in our community.

WHEREAS, the City of Hyattsville is committed to raising awareness about breast cancer and the impact it has on our loved ones, friends, colleagues and community members;

WHEREAS, thousands of women and men in our country take on the fight against breast cancer each year;

WHEREAS, screening and early detection can make a tremendous difference in overcoming breast cancer;

NOW, THEREFORE BE IT RESOLVED, that we acknowledge the importance of raising awareness of breast cancer in our community as we work to support survivors, those currently battling breast cancer and those who might detect it in its early stages, and that we recognize October 2018 as Breast Cancer Awareness Month in the City of Hyattsville.

Candace B. Hollingsworth
Mayor
City of Hyattsville

October 1, 2018



Hyattsville City Council Agenda Item Report

Meeting Date: October 1, 2018
Submitted by: Anthony DeSantis
Submitting Department: Community Services
Item Type: Proclamation
Agenda Section: Consent Items (9:05 p.m. - 9:10 p.m.)

SUBJECT

Proclamation: Domestic Violence Awareness Month

HCC-82-FY19

Recommendation:

I move that the Mayor and Council recognize October 2018 as Domestic Violence Awareness Month in the City of Hyattsville

Sponsor(s):

At the Request of the City Administrator

Co-Sponsor(s):

N/A

ATTACHMENTS

[Domestic Violence Awareness Month Proclamation 2018.docx](#)

Summary Background:

October is Domestic Violence Awareness Month nationwide.

Next Steps:

Recognize October 2018 as Domestic Violence Awareness Month in the City of Hyattsville.

Fiscal Impact:

N/A

City Administrator Comments:

Recommend Approval

Community Engagement:

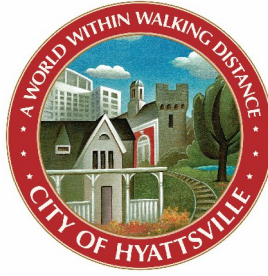
Recognition of Domestic Violence Awareness Month has been planned.

Strategic Goals:

Goal 5 – Strengthen the City's Identity as a Diverse, Creative, and Welcoming Community

Legal Review Required?

N/A



**PROCLAMATION RECOGNIZING OCTOBER 2018
AS DOMESTIC VIOLENCE AWARENESS MONTH
IN THE CITY OF HYATTSVILLE**

This proclamation recognizes that every one of our residents deserves to live a life free from violence and abuse. Through this proclamation, we pledge to ensure that victims of domestic violence know they are not alone, and that our community is here to support survivors of domestic violence as they courageously move forward to enjoy full and healthy lives.

WHEREAS, anyone can be a victim of domestic violence regardless of age, sex, ability, ethnicity, sexual orientation, socioeconomic status, or religion;

WHEREAS, children that grow up in violent homes are believed to be abused and neglected at a rate higher than the national average;

WHEREAS, Domestic Violence Awareness Month provides an excellent opportunity for our community to learn more about preventing domestic violence and to show support for the numerous organizations and individuals providing critical advocacy, services, and assistance to its victims;

NOW, THEREFORE BE IT RESOLVED, that our City Council, staff, and residents recognize October 2018 as Domestic Violence Awareness Month in the City of Hyattsville, as we work together to eliminate domestic violence from our community.

Candace B. Hollingsworth
Mayor
City of Hyattsville

October 1, 2018



Hyattsville City Council Agenda Item Report

Meeting Date: October 1, 2018
Submitted by: Anthony DeSantis
Submitting Department: Community Services
Item Type: Proclamation
Agenda Section: Consent Items (9:05 p.m. - 9:10 p.m.)

SUBJECT

Proclamation: National Disability Employment Awareness Month

HCC-83-FY19

Recommendation:

I move that the Mayor and Council recognize October 2018 as National Disability Employment Awareness Month in the City of Hyattsville.

Sponsor(s):

At the Request of the City Administrator

Co-Sponsor(s):

N/A

ATTACHMENTS

[Disability Employment Awareness Month 2018.docx](#)

Summary Background:

October is Disability Employment Awareness Month nationwide.

Next Steps:

Recognize October 2018 as National Disability Employment Awareness Month in the City of Hyattsville.

Fiscal Impact:

N/A

City Administrator Comments:

Recommend Approval

Community Engagement:

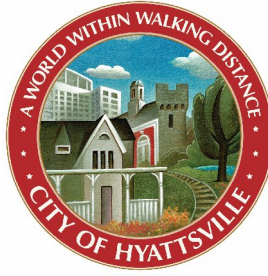
Recognition of National Disability Employment Awareness Month has been planned.

Strategic Goals:

Goal 5 – Strengthen the City's Identity as a Diverse, Creative, and Welcoming Community

Legal Review Required?

N/A



**PROCLAMATION CELEBRATING OCTOBER 2018
AS NATIONAL DISABILITY EMPLOYMENT AWARENESS MONTH
IN THE CITY OF HYATTSVILLE**

This proclamation shares the U.S. Department of Labor's vision of "empowering all," as we celebrate October 2018 as National Disability Employment Awareness Month. In this way, the City of Hyattsville celebrates the wide array of contributions that residents with disabilities make in our community daily.

WHEREAS, the City of Hyattsville is committed to raising awareness about Americans with disabilities and their many and varied contributions to the workforce and our community;

WHEREAS, our City is proud to be a welcoming community that strives to accommodate the needs of all residents, visitors, and employees;

WHEREAS, residents with disabilities strengthen our community's social fabric, as well as increase our knowledge of the human condition, and enrich our society and workforce at local and national levels;

NOW, THEREFORE BE IT RESOLVED, that City Council, staff, and residents acknowledge the many contributions that those with disabilities make to our City daily, and that we recognize and celebrate October 2018 as National Disability Employment Month in the City of Hyattsville.

Candace B. Hollingsworth
Mayor
City of Hyattsville

October 1, 2018



Hyattsville City Council Agenda Item Report

Meeting Date: October 1, 2018
Submitted by: Anthony DeSantis
Submitting Department: Community Services
Item Type: Proclamation
Agenda Section: Consent Items (9:05 p.m. - 9:10 p.m.)

SUBJECT

Proclamation: Energy Efficiency Day

HCC-84-FY19

Recommendation:

I move that the Mayor and Council proclaim October 5, 2018 to be Energy Efficiency Day in the City of Hyattsville.

Sponsor(s):

At the Request of the City Administrator

Co-Sponsor(s):

N/A

ATTACHMENTS

[Energy Efficiency Day 2018.docx](#)

Summary Background:

A nationwide network of energy efficiency groups and partners has designated October 5 as national annual Energy Efficiency Day.

Next Steps:

Recognize October 5, 2018 as Energy Efficiency Day in the City of Hyattsville.

Fiscal Impact:

N/A

City Administrator Comments:

Recommend Approval

Community Engagement:

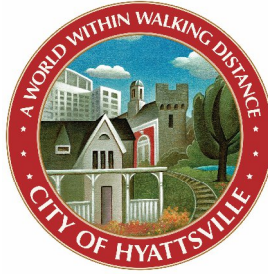
Recognition of Energy Efficiency Day has been planned.

Strategic Goals:

Goal 5 – Strengthen the City's Identity as a Diverse, Creative, and Welcoming Community

Legal Review Required?

N/A



**PROCLAMATION DECLARING OCTOBER 5, 2018
TO BE ENERGY EFFICIENCY DAY
IN THE CITY OF HYATTSVILLE**

This proclamation declares October 5, 2018, to be Energy Efficiency Day in the City of Hyattsville, recognizing that together we can all contribute to sustainability efforts by learning more about energy efficiency and practicing smarter energy use in our daily lives.

WHEREAS, energy efficiency is the art of getting the same or better performance using less energy – all while cutting utility bills for residential and business customers; and

WHEREAS, reliable, affordable energy is vital to our community's economic prosperity and energy efficiency is the most productive and cost-effective way to meet energy needs; and

WHEREAS, smarter energy use reduces the amount of electricity we need to power our lives, which helps avoid power plant emissions that can harm our health, pollute our air, and warm our climate; and

WHEREAS, a nationwide network of energy efficiency groups and partners has designated October 5 as the national annual Energy Efficiency Day;

NOW, THEREFORE BE IT RESOLVED, that our City Council recognizes October 5, 2018, as Energy Efficiency Day in the City of Hyattsville, and urges residents to join in supporting clean energy goals and moving toward more energy efficiency now and in the future

Candace B. Hollingsworth
Mayor
City of Hyattsville

October 1, 2018



Hyattsville City Council Agenda Item Report

Meeting Date: October 1, 2018

Submitted by: Laura Reams

Submitting Department: Community Services

Item Type: Legislative

Agenda Section: Consent Items (9:05 p.m. - 9:10 p.m.)

SUBJECT

Sonny Frazier Toy Drive

HCC-85-FY19

Recommendation:

I move that the Mayor & Council authorize a donation to the Sonny Frazier Toy Drive which benefits children and youth of Hyattsville. The donation will have two parts: (1) The City will donate \$500 directly to the Sonny Frazier Toy Drive, and (2) the City will provide a matching grant dollar for dollar for funds raised at the 8th annual Hyattsville Heroes Bowl, to a maximum of \$1,000. The Heroes Bowl is scheduled for October 27, 2018 at Magruder Park at 3:00 p.m.

Sponsor(s):

At the Request of the City Administrator

Co-Sponsor(s):

N/A

ATTACHMENTS

Summary Background:

The Sonny Frazier Toy Drive benefits children and youth of Hyattsville. \$1500 in funds are allocated in the City Council budget.

Next Steps:

Approval and donation.

Fiscal Impact:

Up to \$1,500

City Administrator Comments:

Recommend Approval

Community Engagement:

Outreach to residents promoting the Heroes Bowl.

Strategic Goals:

Goal 5 – Strengthen the City's Identity as a Diverse, Creative, and Welcoming Community

Legal Review Required?

N/A



Hyattsville City Council Agenda Item Report

Meeting Date: October 1, 2018

Submitted by: Jim Chandler

Submitting Department: Community & Economic Development

Item Type: Ordinance

Agenda Section: Action Items (9:10 p.m. - 9:20 p.m.)

SUBJECT

Hyattsville Ordinance 2018-05, Amendment to Chapter 114, Article IV: Residential Parking Zones (5 minutes)

HCC-87-FY19

Recommendation:

I move that the Mayor and Council introduce Hyattsville Ordinance 2018-05, an Ordinance whereby the City of Hyattsville amends Chapter 114 to refine the City's residential parking permit system (FIRST READING).

Sponsor(s):

At the Request of the City Administrator

Co-Sponsor(s):

N/A

ATTACHMENTS

[Ordinance 2018-05 Residential Parking \(Ch. 114\) FINAL.docx](#)

[MM Re Ordinance 2018 Residential Parking \(Ch. 114\) 5-7-2018 Comments.pdf](#)

Summary Background:

In accordance with Motion HCC-99-FY18, the City Attorney has drafted, in consultation with City staff, an ordinance amending Article IV, Residential Permit Parking Zones in the City of Hyattsville Charter and Code.

The Council discussed the ordinance on May 14 and June 4. A Public Hearing was held on July 16. The City Attorney has updated the Ordinance per the Council's recommendations.

Next Steps:

The ordinance is scheduled for a First Reading on October 1, 2018 and adoption on October 15, 2018. The ordinance will be effective 180 days after adoption, in April 2019 and be phased in over a 3-month period.

Fiscal Impact:

N/A

City Administrator Comments:

The new program will be thoroughly communicated throughout Fall/Winter 2018.

Community Engagement:

The City's Ad Hoc Residential Parking Zone Committee previously provided its comments to the City Council for consideration and incorporation into the revised ordinance.

Strategic Goals:

Goal 3 – Promote a Safe and Vibrant Community

Legal Review Required?

Complete

**CITY OF HYATTSVILLE
ORDINANCE 2018-05**

**An Ordinance whereby the City of Hyattsville amends Chapter
114 to refine the City's residential parking permit system.**

WHEREAS, Local Government Article § 5-202(1), (2) & (5) of the Maryland Code grants to municipalities the power to adopt ordinances to assure the good government of the municipality, to protect and preserve the municipality's rights, property and privileges, and to protect the health, comfort, and convenience of the residents of the municipality; and

WHEREAS, it is the sense of the Mayor and Council that the demand and availability of parking in certain City residential neighborhoods remains a perpetual problem; and

WHEREAS, it is the sense of the Mayor and Council that the City's existing residential parking permit system needs to be revised to better serve the parking needs in neighborhoods throughout the City; and

WHEREAS, on January 19, 2016, the Mayor and Council established a Residential Parking Zone Ad Hoc Committee to review the City's current program by exploring gaps in service, needs, and best practices; and to develop recommendations for modifying the program in order to better serve parking needs in neighborhoods throughout the City; and

WHEREAS, on September 29, 2016, the Residential Parking Zone Ad Hoc Committee issued recommendations to the City Council; and

WHEREAS, the Mayor and Council deem it in the best interest of the City and its residential communities and beneficial to the community's health, comfort, convenience, welfare and happiness to implement some of the changes to the City's residential parking system.

NOW, THEREFORE, BE IT ORDAINED by the City Council of the City of Hyattsville in regular session assembled that Chapter 114 is hereby amended as follows:

Stopping, Standing and Parking

No automobile or vehicle of any description shall be left unattended upon any street or public space in the city for a continuous period longer than forty-eight (48) hours unless otherwise permitted by the City grants an exemption pursuant to § 114-32-H of this Chapter.

Residential Permit Parking Zones

~~A. The City Council of the City of Hyattsville is enacting this Article IV in order to:~~

- (1) ~~Reduce hazardous traffic conditions resulting from nonresidents and residents competing with residents to park their vehicles in certain residential districts;~~
- (2) ~~Protect the residents of those residential districts from unreasonable burdens in gaining access to their residences;~~
- (3) ~~Preserve the character of those districts as residential districts;~~
- (4) ~~Encourage the use of public transportation;~~
- (5) ~~Promote efficiency in maintaining streets in those residential districts in a clean and safe condition;~~
- (6) ~~Preserve the value of the property in those residential districts;~~
- (7) ~~Promote traffic safety and the safety of children and other pedestrians in those residential districts;~~

1 ~~(8) Prevent dangers arising from the blocking of fire lanes, hydrants and other facilities~~
2 ~~that emergency vehicles require, both in reaching victims and in transporting them to~~
3 ~~hospitals;~~

4 ~~(9) Facilitate the movement of traffic in the event of accidents and other disasters; and~~

5 ~~(10) To promote the peace, comfort, convenience, and welfare of all inhabitants of the City.~~

6 ~~B. General Findings. The City Council finds that the continued vitality of the City depends on~~
7 ~~the preservation of safe, healthy, and attractive neighborhoods and other residential areas. The~~
8 ~~Council further finds that one factor that threatens the safety, health and attractiveness of the~~
9 ~~City's neighborhoods is the availability of parking in certain neighborhoods. The number of~~
10 ~~motor vehicles attempting to park in those areas often exceeds the number of available parking~~
11 ~~spaces. A preferential parking system for residents in designated neighborhoods will help to~~
12 ~~reduce the burden of those neighborhoods and, thus, promote the general welfare of the City.~~

13 ~~C. Specific Findings. The Council makes the following specific legislative findings in support~~
14 ~~of preferential residential parking to illustrate the compelling need for the enactment of this~~
15 ~~Article IV. The Council intends the findings as illustrations only and not the only available~~
16 ~~factual examples supporting adoption of the Article IV:~~

17 ~~(1) The maintenance of the attractiveness and livability of the City's neighborhoods and~~
18 ~~other residential areas will enhance the safety, health and welfare of the City's residents;~~

19 ~~(2) On a daily basis a large number of City residents who own motor vehicles must park~~
20 ~~those vehicles in or near their residences;~~

21 ~~(3) Certain neighborhoods and other areas of the City do not have sufficient on or off street~~
22 ~~parking to accommodate the convenient parking of residents' motor vehicles;~~

1 ~~(4) The influx of motor vehicles from nonresidents that compete for the limited available~~
2 ~~parking in those areas further burdens the residents of those areas;~~

3 ~~(5) The City has certain parking “attractors,” including parks, etc. that further aggravate~~
4 ~~the residents’ parking problems;~~

5 ~~(6) Unnecessary vehicle miles, air and noise pollution, and the inconvenience of not finding~~
6 ~~parking caused by the conditions above create unacceptable hardships for the~~
7 ~~neighborhoods’ residents;~~

8 ~~(7) If the City allows those adverse conditions to continue unchecked, those adverse~~
9 ~~conditions will contribute to the decline of the living conditions in the neighborhoods and~~
10 ~~the attractiveness of residing within the City, resulting in injury to the general public~~
11 ~~welfare; and~~

12 ~~(8) A system of preferential residential parking as enacted by this Article IV will serve to~~
13 ~~promote the health, safety, and welfare of all of the City’s residents by reducing~~
14 ~~unnecessary motor vehicle travel and air and noise pollution, improving the attractiveness~~
15 ~~of living in the City’s neighborhoods, and encouraging the use of public mass transit~~
16 ~~facilities available now and in the future. The Article IV also will serve the public welfare~~
17 ~~by ensuring a more stable and valuable property tax base, in order to generate the revenues~~
18 ~~necessary to provide essential public services.~~

19 **§ 114-287. Definitions. [Amended on 3-27-11 by HO-2011-01]**

20 For the purposes of this Article IV, the following words shall have the meanings respectively
21 ascribed to them in this Section, except where the context clearly indicates a different meaning:

22 A. **City Administrator** means the City Administrator or ~~his/her~~their designee.

1 ~~B. **Commuter Vehicle** means a motor vehicle, other than a resident vehicle as defined below,~~
2 ~~parked in a residential area in which it is not registered.~~

3 ~~CB. **Curbside Parking Space** means twenty (20) linear feet of curb, exclusive of those~~
4 ~~portions of the curb where parking, apart from the provisions of this Article IV, is not presently~~
5 ~~permitted.~~ means any portion of a public street adjacent to a minimum of twenty (20) linear
6 feet of curb where a vehicle could park or remain standing without significantly obstructing
7 the flow of traffic, except where parking or standing would be prohibited by State law or this
8 Code, other than this Article IV.

9 C. **Guest Permit** means a single-use permit issued by the City to a resident which authorizes
10 a guest of the resident of a specific residential parking permit area to park a vehicle in that
11 residential parking permit area for a limited time during a parking permit term without
12 violating this Article IV.

13 **D. Motor Vehicle** means an automobile, truck, recreation vehicle, motorcycle, or other motor-
14 driven or self-propelled form of transportation, except for vehicles exceeding a certain size,
15 weight, and/or carrying capacity that may be prohibited from parking on any public street.

16 E. **Parking Permit Term** means the period of time, defined in §114-28 of this Article, during
17 which parking permits issued pursuant to this Article IV for a particular residential parking
18 permit area for that period may be valid.

19 ~~EF. **Resident** means an adult individual who lives or resides in a structure approved for~~
20 ~~residential occupancy, and can demonstrate exclusive right to occupancy of this residence, and~~
21 ~~uses this residence as their primary dwelling.~~

22 ~~F. **Resident Vehicle** means a motor vehicle parked in a residential area in which it is registered~~
23 ~~and is validly registered with the State of Maryland Department of Motor Vehicles.~~

1 **G. Residential District** means a contiguous or nearly contiguous area open to the public
2 containing streets and highways and parking spaces for the public, all primarily abutted by
3 residential property or residential and non-commercial property (such as schools, parks,
4 churches, hospitals and nursing homes).

5 **H. Residence** means a dwelling unit.

6 **I. Residential Parking Permit** means a permit issued by the City to a resident for a particular
7 vehicle which authorizes the vehicle to be parked in a specific residential parking permit area
8 during a parking permit term without violating this Article IV.

9 **IJ. Residential Parking Permit Area** means a residential district where curbside parking on
10 public streets and highways is limited to not more than ~~two (2)~~thirty (30) consecutive
11 ~~hours~~minutes per day, unless the vehicle properly displays a parking permit authorized by this
12 Article IV.

13 **K. Residential Parking Permit Holder** means a resident/applicant to whom the City has
14 issued a residential parking permit to be used on a vehicle that the resident/applicant owns or
15 principally operates.

16 **L. Special Parking Permit** means a parking permit issued to a caregiver or other person who
17 cannot satisfy the requirements for a residential parking permit but can demonstrate reasonable
18 necessity or hardship justifying the issuance of multi-use permit.

19 **M. Vehicle** means any mobile unit whether or not it is self-propelled and designed to travel
20 on the public roads.

§ 114-298. Designation/Withdrawal of Designation of Residential Parking Permit Areas.

[Amended 4-21-14 by HO 2014-04]

A. Minimum size.

(1) A residential parking permit area shall be, at minimum:

a. one or both sides of the entire length of a street;

b. one or both sides of a street between two intersections or between an intersection and the dead-end termination of the street;

c. one or both sides of less than an entire residential street, but at least 100 contiguous feet; or

d. the entirety of a cul-de-sac.

(2) The City retains all authority and discretion to create, extend, reduce, reconfigure, consolidate or terminate any residential parking permit areas.

B. Notice & Hearing.

(1) In order for the City Council to determine whether a residential district, or any portion thereof as described in subsection A, shall be designated, or shall continue to be designated, as a residential parking permit area, the City Administrator shall conduct, upon the City Administrator's initiative or upon a petition signed by a majority of the residents in the district, or the portion thereof, a public hearing prior to such designation and prior to the withdrawal of such designation.

(2) A notification shall be prominently posted and/or ~~shall be~~ mailed to every residence in the proposed or existing residential parking permit area.

(3) ~~During such a~~ public hearing held pursuant to this Section, any interested person shall be entitled to appear, to be heard, and to submit a written statement for the record.

1 ~~BC.~~ Survey.

2 To enable the City Council to determine whether a residential district, or portion thereof, shall
3 be designated, or shall continue to be designated, as a residential parking permit area, the City
4 Administrator shall conduct a block-by-block parking survey of the proposed, or existing,
5 residential parking permit area.

6 ~~ED.~~ Criteria.

7 In determining whether an area may be a residential parking permit area, and whether
8 conditions are to be imposed, the City Administrator shall consider factors including but not
9 limited to the following:

10 (1) The extent that legal on-street parking spaces are occupied by vehicles during the period
11 proposed for parking restrictions;

12 (2) The extent that vehicles parking in the area during the period proposed for parking
13 restrictions are commuter vehicles;

14 (3) The extent that residents cannot obtain adequate curbside parking adjacent to or near
15 their residences because of widespread use of available curbside parking spaces by others;

16 (4) ~~The effect on the safety of the residents from intensive vehicle parking~~ The number of
17 off-street parking spaces available to residences in the area;

18 (5) ~~The extent of air and noise pollution, hazardous conditions, and deterioration of the~~
19 ~~residential environment as a result of traffic congestion and insufficient parking in the area;~~

20 (6) ~~The extent that the designation of a residential parking permit area would be likely to~~
21 ~~reduce traffic congestion and any other problems referred to above;~~

22 (7) ~~The extent and need for parking by the general public in the residential district; and~~

1 ~~(8) The desire of the residents in the proposed, or existing, residential parking permit area~~
2 ~~for the institution of a residential parking permit system and the willingness of those~~
3 ~~residents to bear the costs incidental to the issuance of parking permits authorized by this~~
4 ~~Article IV; and~~

5 (97) The extent that no reasonable alternative is feasible or practicable that would reduce
6 parking problems and any other problems referred to above without unduly impacting
7 surrounding residential areas.

8 ~~D~~E. Designation/Withdrawal Process.

9 (1) Within ~~fifteen (15)~~thirty (30) calendar days following the close of the public hearing,
10 the City Administrator shall recommend by written report to the City Council, based on
11 the record of the public hearing and the results of the survey, whether to designate the
12 residential district or portion thereof under consideration as a residential parking permit
13 area or whether to withdraw the designation of an existing residential parking permit area.
14 The report also shall demonstrate that the City Administrator, in making the
15 recommendation, has taken into account the criteria enumerated above. The report shall
16 recommend the number of permits to be issued to each residential parking permit area as a
17 whole and the number of permits to be issued to each address in the district~~residential~~
18 parking permit area.

19 (2) Within thirty (30) calendar days following its receipt of the report, unless the City
20 Council shall vote otherwise, the City Administrator's recommendations shall be effective
21 as to the residential parking permit area.

22 (3) Nothing in this section shall limit the authority of the City Council over residential
23 parking permit areas.

1 (4) The City Council or the City Administrator may limit the number of permits issued to
2 all the addresses in a particular residential parking permit area to accomplish the purpose
3 and intent of this Article.

4 ~~EF.~~ Number of Permits Per Residence.

5 (1) The City Administrator or their designee shall determine the total number of residential
6 parking permits that may be issued per residence within a residential parking permit area,
7 taking into consideration the total number of residences and parking spaces, both on-street
8 and off-street, within the particular area.

9 (2) In making their determination, the City Administrator or their designee ~~shall~~ may
10 reduce the total number of permits that may be issued in an area by approximately 10% to
11 accommodate guest parking.

12 (3) The number of residential parking permits per residence in a residential parking permit
13 area shall be no less than one (1) or no more than four (4), except in specific cases where
14 the number of permits available to a particular residence may be adjusted pursuant to
15 paragraphs (4) and/or (5) of this Subsection.

16 (4) If the demand for permits in a residential parking permit area is likely to exceed the
17 total number of off-street parking spaces, the City Administrator or their designee may
18 reduce the number of residential parking permits available to residences with off-street
19 parking by an amount no greater than the total number of off-street parking spaces at each
20 particular residence.

21 (5) Upon a showing of reasonable necessity or hardship, the total number of residential
22 parking permits that may be issued to a particular residence may be increased at the
23 discretion of the City Administrator or their designee who shall take into consideration the

1 nature of the ~~person's~~ applicant's particular circumstances and the potential impact on the
2 affected residential parking permit area.

3 (6) Any exception granted under this Subsection shall expire with the permit issued unless
4 the ~~person~~ applicant for which the exception was granted demonstrates that a reasonable
5 necessity or hardship continues to exist.

6 G. Duration of Parking Permits.

7 (1) All residential parking permit areas shall operate on two (2) year terms, during which
8 permits issued pursuant to this Article IV for the particular term remain valid.

9 (2) Upon the expiration of a two-year term for a particular residential parking permit area,
10 all permits issued pursuant to this Article IV for that term and area also expire and become
11 immediately invalid, and the next two (2) year term begins.

12 (3) The City Administrator or their designee shall establish a month and year for each
13 residential parking permit area upon which the first term for that area shall commence, and
14 the beginning of that term, and every subsequent term for that area, shall be on the first day
15 of that month.

16 (4) Upon the commencement of the first term as set forth in paragraph (3) of this
17 Subsection, all permits issued for the particular area pursuant to this Article IV prior to that
18 date, other than those issued and designated for the first term, shall immediately become
19 void and invalid.

20 (5) Until the first term of a residential parking permit area commences as set forth in
21 paragraph (3), the existing provisions of this Article IV governing that residential parking
22 permit area prior to the effective date of this ordinance shall remain in effect.

1 (6) Parking permits issued for the term immediately following the current term may be
2 issued prior to the expiration of the current term, and such permits shall become valid and
3 may be used up to 30 calendar days prior to the expiration of the current term.

4 H. Posting of Residential Parking Permit Area.

5 (1) ~~Immediately~~Within 60 calendar days following the effective date of the City's
6 designation or withdrawal of designations, but before any parking restrictions go into effect
7 and/or any enforcement takes place, appropriate parking signs shall be erected or moved
8 in the designated area.

9 (2) ~~The~~Residential parking permit area signs shall ~~indicate~~ prominently display the
10 following information:

11 (a) the number of the residential parking area;

12 (b) the enabling ordinance;

13 (c) the days and/or hours of enforcement; and

14 (d) that curbside parking on public streets in the designated area is prohibited unless
15 the vehicle properly displays a parking permit authorized by this Article IV.

16 FI. Notice to Residents of Designation of Residential Parking Permit Area.

17 Following the effective date of the designation, the City Administrator shall provide to every
18 residence within the designated residential parking permit area a Notice of Designation that
19 shall inform the residents in the designated area of:

20 (1) The existence, exact location, and numerical designation of the residential parking
21 permit area;

(2) The parking restrictions applicable to all vehicles in curbside parking spaces along public streets and highways in the designated area that do not properly display a parking permit authorized by this Article IV; and

(3) The procedures to obtain a residential or temporary guest parking permits.

GJ. Withdrawal of Designation.

(1) Following City action to withdraw the designation of an existing residential parking permit area, the City Administrator shall provide to every residence within the existing residential parking permit area a notice of the Council's withdrawal of the designation. Said notice shall specify the effective date of the withdrawal of the designation.

(2) The effective date of the withdrawal of the designation of an existing residential parking permit area shall ordinarily be thirty (30) days following the date of the City's action to withdraw the designation.

~~H. Temporary Designation/Withdrawal of Designation.~~

~~Notwithstanding any other provision of this Article IV, the City Administrator may either establish or temporarily withdraw the designation of all or part of a residential parking permit area or areas on a trial basis for a period not to exceed one hundred twenty (120) days.~~

§ 114-3029. Issuance & Transfer of Residential Parking Permits.

A. Issuance Application.

(1) ~~An Application for Residential Parking Permit.~~ The applicant is to provide at a minimum the following information for each motor vehicle to receive a residential parking permit:

(a) The name and residential address of the owner of the vehicle;

1 (b) The name, residential address, and driver's license number of the principal operator
2 of the vehicle;

3 (c) The make, model, license plate number and vehicle identification number of the
4 vehicle;

5 (d) The number of off-street parking spaces at the applicant's residence; and

6 ~~(de) The name, address and~~ signature of the applicant for the residential parking permit.

7 (2) The applicant shall demonstrate proof of residency in the particular ~~zone~~area, which
8 may include but is not limited to utility bills, lease, driver's license, title, etc., and
9 verification of the resident being the principal driver of the vehicle in a manner determined
10 by the City Administrator, ~~which may include but is not limited to utility bills, lease,~~
11 ~~driver's license, title, etc.~~

12 (3) The applicant for, and holder of, the residential parking permit shall be the owner or
13 principal operator of the vehicle receiving the parking permit.

14 ~~(4)~~ Subject to the limitations outlined in this Article IV, upon the applicant's ~~payment of a~~
15 ~~ten dollar (\$10.00) residential parking permit fee,~~ submission of a completed and validated
16 residential parking permit application, and fulfillment of all applicable provisions of this
17 Article IV controlling issuance, or transfer of residential parking permits, the applicant may
18 receive one or more ~~(1)~~-residential parking permits as set forth in § 114-28 for the motor
19 vehicle(s) described in the application. ~~The residential parking permit shall be securely~~
20 ~~affixed to the inside of the vehicle at a location directed by the City Administrator and shall~~
21 ~~display the permit number and numerical designation of the residential parking permit area.~~

1 B. ~~Other~~ Requirements.

2 ~~(1) No residential parking permit shall be issued to~~for a vehicle unless:

3 ~~(1) whose~~its principal operator ~~does not~~ resides on a residential street within the
4 designated residential parking permit area;

5 (2) it displays valid license plates; and

6 (3) it is registered in the State of Maryland.

7 ~~(2) The applicant for, and holder of, the residential parking permit shall be the owner or~~
8 ~~principal operator of the vehicle receiving the parking permit.~~

9 ~~(3) A motor vehicle shall be issued a residential parking permit only if it displays valid~~
10 ~~license plates that are allowed to those residing in Maryland under Maryland law.~~

11 ~~(4) No residential parking permit shall be issued for any motor vehicle for which a citation~~
12 ~~issued by the City remains unpaid. Upon notice to the resident of an unpaid citation that is~~
13 ~~legally due, the City may revoke the permit.~~

14 C. Exceptions for Active Military and Students.

15 (1) The Supervisor of the Office of Code and Parking Compliance shall waive the
16 requirement of Subsection B(3) of this Section for active duty military personnel and
17 current students.

18 (2) An applicant may appeal the denial of a request for a waiver under this Subsection, in
19 writing, to the City Administrator or their designee.

20 D. Issuance of Permits for Vehicles with Unpaid Citations Prohibited.

21 Notwithstanding any other provision in this Article IV, no residential parking permit shall be
22 issued for any vehicle for which a fully-adjudicated citation issued by the City remains unpaid

1 or to any person while a citation for any fully-adjudicated violation of this Article IV remains
2 unpaid.

3 ~~C. Transfer.~~

4 ~~Upon the holder's payment of a ten dollar (\$10.00) residential parking permit transfer fee,~~
5 ~~submission of complete and validated residential parking permit application, fulfillment of all~~
6 ~~applicable provisions of this Article IV controlling issuance, renewal, or transfer of residential~~
7 ~~parking permits, and surrender of the existing residential parking permit, the holder shall~~
8 ~~receive a new residential parking permit to be transferred to another qualifying vehicle.~~

9 ~~D. Replacement.~~

10 ~~Upon the holder's payment of a ten dollar (\$10.00) residential parking permit replacement fee,~~
11 ~~verification of the holder's prior submission of a completed and validated residential parking~~
12 ~~permit application, fulfillment of all applicable provisions of this Article IV controlling~~
13 ~~issuance, renewal, or transfer of residential parking permits, and affirmation that the holder's~~
14 ~~permit was lost, stolen, or destroyed, the holder shall receive a new residential parking permit.~~

15 ~~The lost, stolen or destroyed permit shall be considered void, and any use of a voided permit~~
16 ~~is prohibited.~~

17 **§ 114-340. Temporary Guest Permits. [Amended on 3-27-11 by HO-2011-01]**

18 A. Issuance of Guest Permits.

19 (1) A resident or owner of rental property on a residential street within a residential parking
20 permit area may apply for, and receive, guest parking permit booklets containing fifty (50)
21 1-day guest permits and one (1) 5-day guest permit.

1 (2) Each residence within a residential parking permit area is limited to two booklets of
2 guest permits for every two (2) year term set forth in § 114-28, one booklet issued during
3 the first half of the term and one booklet issued during the second half of the term.

4 (3) Notwithstanding any other provision in this subsection, residents may apply for:

5 (a) one additional booklet of guest permits; and/or

6 (b) an additional five (5) 1-day guest permits for special events, which shall be
7 pre-dated for the day on which the event is to occur.

8 B. Application

9 (1) A person may, but is not required to, apply for guest permits in the same application
10 for a residential parking permit.

11 (2) A person need not apply for or possess a residential parking permit to apply for guest
12 parking permits; however, each applicant for guest permits must provide, at minimum, the
13 following:

14 (a) name and residential address of the applicant;

15 (b) proof of residency in the particular residential parking permit area, which may
16 include but is not limited to utility bills, lease, driver's license;

17 (c) the number of off-street parking spaces at the applicant's residence;

18 (d) the permit numbers of any residential parking permits that have been issued to
19 persons living or residing in that residence for the current or next parking permit
20 term for that parking permit area; and

21 (e) the signature of the applicant.

1 C. Use of Guest Permits.

2 (1) Each guest permit can only be used once, and before any guest permit may be used, the
3 date and time that the permit will become effective must be recorded in the appropriate
4 place on the permit.

5 (2) 1-day guest permits, when used, remain valid for twenty-four (24) hours; 5-day guest
6 permits, when used, remain valid for one hundred twenty (120) hours.

7 (3) Guest permits, regardless of the denomination, may not be used more than three
8 consecutive times on a single vehicle.

9 (4) No person shall:

10 (a) sell guest permits or otherwise receive compensation for their use; or

11 (b) use or give away guest permits for commercial parking unless they were issued or
12 authorized by the City for commercial property use pursuant to § 114-33 of this
13 Article IV.

14 A. Issuance of Temporary Permits.

15 ~~Upon application of any resident of a residential parking permit area and upon good cause~~
16 ~~being shown, the City Administrator may issue a temporary parking permit to the resident for~~
17 ~~a vehicle which otherwise may legally park on the applicable street, with such temporary~~
18 ~~parking permit limited to that particular parking permit area and subject to conditions and~~
19 ~~limits reasonably imposed by the City Administrator for a fee of one dollar (\$1.00) per permit.~~

20 ~~Upon application and showing of good cause, the City Administrator may also issue to a~~
21 ~~resident an unlimited number of temporary permits for a period of no more than twenty four~~
22 ~~(24) hours for a fee of one dollar (\$1.00) per permit. Such unlimited twenty four (24) hour~~
23 ~~permits may be issued no more than once in any six (6) month period for any address. For the~~

1 ~~purposes of this Article IV, the resident shall be the holder of and responsible for the use and~~
2 ~~misuse of temporary parking permits issued to the resident.~~

3 ~~B. Display of Visitor Parking Permits.~~

4 ~~(1) All temporary parking permits shall be displayed on or about the front windshield of~~
5 ~~the vehicle so as to be easily visible from outside the vehicle. Such parking permits shall~~
6 ~~contain display the permit number and the numerical designation of the residential parking~~
7 ~~permit area.~~

8 **§ 114-31. Special Permits.**

9 A. Issuance of Special Permits.

10 (1) The Supervisor of the Office of Code and Parking Compliance may issue a special
11 permit to:

12 (a) an onsite caregiver;

13 (b) a person who regularly or frequently provides childcare;

14 (c) an owner of a rental residential property or landlord;

15 (d) registered members of a homeowner's association, neighborhood watch
16 organization, or other similar community organization that regularly meets in a
17 residential parking permit area;

18 (e) any other person upon a showing of reasonable necessity or hardship.

19 (2) The Supervisor of the Office of Code and Parking Compliance and/or the City
20 Administrator or the City Administrator's designee may establish reasonable restrictions
21 and limitations on the use of special permits, including, but not limited to, the days and
22 times during which they may be used and the purposes for which they may be used.

1 B. Application. Each applicant for a special permit must provide, at minimum, the following:

2 (1) name and residential address of the applicant;

3 (2) name and address of the business that employs the applicant, if any;

4 (3) the address of the residence where the special permit is to be used and the name of the
5 resident or owner of that residence;

6 (4) supporting documentation demonstrating the need for a special permit, which may
7 include, but is not limited to:

8 (a) a signed letter from the resident, or legal guardian of the resident, for whom the
9 caretaker or other similar services are to be rendered;

10 (b) a contract for caretaker or similar services;

11 (c) a lease demonstrating landlord status;

12 (d) a signed statement from an officer of an organization describing the active
13 membership for which the permits are to be used and generally describing the purpose
14 of the gathering for which the permits are requested; or

15 (e) a signed statement from the applicant otherwise explaining why a special permit is
16 needed if other documentation cannot be obtained;

17 (5) a description of when the permits are to be used; and

18 (6) the signature of the applicant.

19 C. Appeal. An applicant may appeal the denial of an application for a special permit or any
20 restrictions or limitations that are placed on a special permit, in writing, to the City
21 Administrator or their designee.

1 D. Use.

2 (1) Special permits shall not be used for any purpose other than the purpose for which they
3 were issued.

4 (2) The applicant to whom the parking permits were issued shall collect, keep, and maintain
5 all special parking permits when they are not in use.

6 **§ 114-32. Use of Parking Permits & Exemptions. [Amended on 3-27-11 by HO-2011-01]**

7 A. Parking permits may only be used in the residential parking permit area for which it was
8 issued.

9 B. Proper display of parking permits.

10 (1) All parking permits shall be securely affixed and/or located inside of the vehicle as
11 directed by the Supervisor of the Office of Code and Parking Compliance and shall
12 properly display the permit number and numerical designation of the residential parking
13 permit area, and dates and times, if any.

14 (2) Permits that are improperly placed, partially or fully obstructed or obscured, or bear
15 writing or other markings that make the date, time, or location in which the permit is valid
16 illegible or ambiguous may be deemed invalid.

17 A.C. A parking permit shall not guarantee or reserve a parking space within a designated
18 residential parking permit area. A parking permit shall not authorize the standing or parking of
19 any vehicle in such places and during such times when the stopping, standing or parking of
20 vehicles is prohibited or set aside for specified types of vehicles, and shall not excuse the
21 observance of any traffic regulation.

22 ~~B. Whenever the holder of a parking permit, or the vehicle for which the parking permit was~~
23 ~~issued, no longer fulfills one or more of the applicable provisions of this Article IV controlling~~

1 ~~issuance, renewal or transfer of parking permits, the permit shall be deemed to have expired~~
2 ~~and the holder shall notify the City Administrator, who may then direct the holder to surrender~~
3 ~~the parking permit.~~

4 ~~C. Until its expiration, surrender or revocation, a parking permit shall remain valid for such~~
5 ~~time as the holder continues to reside within the designated residential parking permit area.~~

6 ~~D. A parking permit shall be valid only in the residential parking permit area for which it is~~
7 ~~issued.~~

8 ~~E. It shall be a violation of this Article IV for the holder of a parking permit to fail to surrender~~
9 ~~the permit when directed to do so.~~

10 ~~F. It shall be a violation of this Article IV for any person to represent in any fashion that a~~
11 ~~vehicle is entitled to a parking permit authorized by this Article IV when it is not so entitled.~~
12 ~~The display of a parking permit on a vehicle not entitled to such a parking permit shall~~
13 ~~constitute such a representation.~~

14 ~~G. It shall be a violation of this Article IV for any person to duplicate, or attempt to duplicate,~~
15 ~~by any means, a parking permit authorized by this Article IV. It also shall be a violation of this~~
16 ~~Article IV for any person to display on any vehicle such a duplicate parking permit.~~

17 ~~H~~D. Exemptions.

18 (1) It is not a violation of this Article IV for any person to park or leave standing a vehicle
19 in any residential permit parking area for up to 30 minutes without a permit.

20 (2) A permit is not required to park in any residential parking permit area during any posted
21 days and times when residential parking restrictions are not in effect, or during any
22 temporary period that may be established by the City during which parking restrictions
23 may be suspended, which shall in no case be longer than 72 hours.

1 (3) Whenever metered parking is in effect in any portion of a residential parking permit
2 area, the parking spaces controlled by meters shall be excepted from the provisions of this
3 Article IV so long as the control by meters continues.

4 (24) The provision of this Article IV shall not supersede the provisions of the City Code
5 and state laws relating to parking by persons with disabilities.

6 (35) The following vehicles are specifically exempted from the parking restrictions
7 imposed by this Article IV:

8 (a) A motor vehicle owned by or operated under contract to a utility when used in the
9 construction, operation, removal or repair of utility property or facilities or engaged in
10 authorized work in the designated residential parking permit area.

11 (b) A motor vehicle identified as owned by or operated under contract to a federal,
12 state, or local governmental agency and being used in the course of official government
13 business.

14 (c) An authorized emergency vehicle as defined by state law.

15 (46) The City Administrator may grant an exemption to the requirements of this Article IV
16 and to Section 114-18 of Article III to any person for a vehicle which may legally park in
17 the applicable area upon demonstration of unusual hardship or exigent circumstances
18 provided that the exemption will expire at the end of each calendar year unless the person
19 demonstrates that the unusual hardship or unusual or exigent circumstances continue.

20 **§ 114-33. Rental Properties.**

21 A. Within fourteen days (14) after the termination of a lease and tenancy, owners of rental
22 properties are required to:

1 (1) collect all residential parking permits from the former tenants and return them to the
2 Office of Code and Parking Compliance; or

3 (2) notify the Supervisor of the Office of Code and Parking Compliance, in writing, of the
4 termination and permit numbers of the former tenants, and also notify the former tenants
5 that their parking permits are no longer valid.

6 B. Failure to comply with Subsection A of this Section may result in the non-issuance of new
7 permits for that residence until the existing permits expire at the end of the current term.

8 C. Owners of rental properties are also expected to collect all unused guest parking permits
9 upon the termination of a lease and/or tenancy because, consistent with § 114-30, no additional
10 or replacement guest permits may be issued for any residence during a single term.

11 **§ 114-34. Commercial Properties.**

12 A. No person or entity shall receive or use any permits issued pursuant to this Article IV for
13 any for commercially zoned properties in any residential parking permit area.

14 B. Notwithstanding any other provision in this Article IV, residential parking permits and/or
15 guest parking permits may be issued in reasonable quantities, as determined by the Supervisor
16 of the Office of Code and Parking Compliance, for commercially zoned properties within a
17 residential parking permit area if the Supervisor determines that issuance of such permits
18 would not result in a significant adverse impact on the residents and other commercial
19 establishments in the area.

20 **§ 114-335. Regulations & Enforcement.**

21 The City Administrator is authorized to establish all written regulations and procedure necessary
22 to implement and enforce the provisions of this Article IV and collect all fees and fines. The

1 ~~regulations shall include a reasonable period prior to enforcement of the parking restrictions to~~
2 ~~allow for short visits or stops in such residential zones.~~

3 **§ 114-346. Restriction & Penalty. [amended 4-21-14 by HO 2014-04]**

4 A. Parking Violations.

5 (1) Except as set forth in § 114-32(D), it shall be unlawful for any person to park or leave
6 standing any motor vehicle for any length of time designated on the posted signs in a
7 designated residential permit parking zone, area without a valid permit for such zone.
8 ~~Unless otherwise provided, the penalty for each parking violation of this Article IV shall~~
9 ~~be a fine of up to one hundred fifty dollars (\$150.00).~~

10 (2) Unless otherwise provided, the penalty for a violation of this Subsection shall constitute
11 a parking violation punishable by a fine of up to fifty dollars (\$50.00).

12 B. Falsification and Misuse.

13 (1) It shall be unlawful to:

14 (a) knowingly provide any false information on an application for any permit under this
15 Article IV;

16 (b) use or misuse any permit issued under this Article IV for an improper or
17 unauthorized purpose;

18 (c) give any permit to another person for an improper or unauthorized purpose; or

19 (d) duplicate, or attempt to duplicate, by any means, a parking permit issued pursuant
20 to this Article IV or use, or attempt to use, any such counterfeit parking permit.

21 (2) Unless otherwise provided, the penalty for a violation of this Subsection shall constitute
22 a municipal infraction punishable by a fine of up to one hundred fifty dollars (\$150.00).

1 C. Failure to Surrender Revoked Permit and Other Violations.

2 (1) Failure to surrender a revoked residential parking permit when ordered to do so shall
3 constitute a separate municipal infraction punishable by a fine of up to one hundred dollars
4 (\$100.00).

5 (2) A violation of any other part of this Article IV that is not explicitly addressed in this
6 Section shall constitute a municipal infraction punishable by a fine of up to one hundred
7 dollars (\$100.00).

8 ~~B. It shall be a municipal infraction for any person to violate any provisions of this Article IV~~
9 ~~other than the parking provisions as outlined immediately above. The penalty shall be one~~
10 ~~hundred dollars (\$100.00). The penalty for any repeat violation within one (1) year shall be up~~
11 ~~to two hundred dollars (\$200.00).~~

12 ~~C. The falsification of any application for a permit, guest permit or temporary permit, the use~~
13 ~~of any permit, guest permit or the allowance of such unauthorized use by a permittee shall all~~
14 ~~constitute violations of this Article IV, punishable as a municipal infraction.~~

15 ~~D. The misuse of any permit, guest permit or temporary permit shall result in a parking citation~~
16 ~~of up to one hundred dollars (\$100.00). Misuse shall include the failure of the permittees to~~
17 ~~properly fill out or date any such permit, guest permit or temporary permit.~~

18 **§ 114-357. Revocation of Permit, Changes in Circumstances, Severability.**

19 A. In addition to the penalties provided above for violation of this Article IV the City
20 Administrator may revoke the residential parking permit of any person found to be in violation
21 of this Article IV or when an unpaid parking or motor vehicle citation issued by the City is
22 fully adjudicated and legally due, and, upon written notification thereof, the person shall
23 promptly surrender such permit to the Supervisor of the Office of Code and Parking

~~Compliance or the City Administrator. Failure to surrender a revoked residential parking permit when requested to do so shall constitute a separate municipal infraction.~~

B. Changes in Circumstances Causing Ineligibility.

If, at any time, the holder of a residential or special parking permit or the vehicle for which a residential or special parking permit was issued no longer satisfies one or more of the applicable requirements of this Article IV controlling issuance of parking permits, including any special circumstances, such as status as active military, current student, or caregiver:

(1) the parking permit issued immediately becomes invalid;

(2) the holder of the permit shall inform the Supervisor of the Office of Code and Parking Compliance, in writing, of the change in circumstances; and

(3) the holder shall promptly surrender the permit to the Supervisor of the Office of Code and Parking Compliance if requested to do so.

~~BC.~~ Nothing in this Article IV shall be construed as authorizing a permittee to violate any traffic regulation, emergency or otherwise, duly promulgated by the City.

~~CD.~~ Severability.

Severability is intended throughout and within the provisions of the Article IV. If any section, subsection, sentence, clause, phrase or portion of this Article IV is held to be invalid, or unconstitutional by a court of competent jurisdiction, then that decision shall not affect the validity of the remaining portions of this Article IV.

~~DE.~~ The parking districts in existence on September 20, 2004 shall remain in effect until they are modified or withdrawn pursuant to this Article.

ARTICLE V

Trucks and Commercial Vehicles

§ 114-368. Operation of heavy vehicles upon certain streets restricted.

* * *

~~§ 114-37. Reserved.~~

§ 114-389. Definitions.

* * *

~~§ 114-3940. Parking restrictions for vehicles on public rights-of-way.~~

* * *

§ 114-401. Parking restrictions for commercial vehicles on private property.

* * *

~~§ 114-41. Reserved.~~

§ 114-42. Petitions and Permits.

* * *

B. The City Administrator may grant either a temporary permit for a vehicle not meeting the requirements of this Article or one renewable permit, for vehicles prohibited by §114-401, but only after the City Administrator determines that the following criteria are met:

* * *

§ 114-43. Penalties.

* * *

B. A violation of §114-401 shall be a municipal infraction enforceable by Code compliance or the police, with the penalty being one hundred dollars (\$100.00) for a first offense and two

hundred dollars (\$200.00) for each subsequent offense. Each day that a violation continues shall be a separate offense.

AND BE IT FURTHER ORDAINED that if any provision of this Ordinance or the application thereof to any person or circumstance is held invalid for any reason, such invalidity shall not affect the other provisions or any other applications of the Ordinance which can be given effect without the invalid provision or applications, and to this end, all the provisions of this Ordinance are hereby declared to be severable;

AND BE IT FURTHER ORDAINED that this Ordinance shall take effect one hundred eighty (180) days from the date of its adoption;

AND BE IT FURTHER ORDAINED that a fair summary of this ordinance shall forthwith be published twice in a newspaper having general circulation in the City and otherwise be made available to the public.

INTRODUCED by the City Council of the City of Hyattsville, Maryland, at a regular public meeting on October 1, 2018.

ADOPTED by the City Council of the City of Hyattsville, Maryland, at a regular public meeting on October 15, 2018.

Adopted: _____

Attest:

Laura Reams, City Clerk

Candace B. Hollingsworth, Mayor

[] indicate deletions

Underline indicates additions

Asterisks * * * Indicate matter retained in existing law but omitted herein

1 Effective Date: April 13, 2019

2

From: City Attorney

To: Director Economic and Community Development
Manager, Code Compliance

Date: May 9, 2018

Subj: 324-163 Chapter 114 Parking Revisions

MEMO

In order to assist the reader with understanding the revisions made to Chapter 114, I offer this informal memo. Please let me know if you have any questions.

ARTICLE III

Stopping, Standing and Parking

* * *

§ 114-18. Time limit for leaving vehicles unattended.

This section was edited to reflect changes in Article IV.

ARTICLE IV

Residential Permit Parking Zones

~~§ 114-27. Purpose and Legislative Findings.~~

Omitted this section because it was unnecessary and somewhat inapplicable now that the ordinance is being rewritten.

~~§ 114-28. Definitions.~~

* * *

~~B. Commuter Vehicle~~

I recommend striking this definition because it is only referenced once in the Article. Moreover, it is not necessary to distinguish between various uses of vehicles because § 114-35 operates to prohibit ALL vehicles that do not have a valid parking permit for that specific area, except under the circumstances provided in § 114-31(C).

EB. Curbside Parking Space

Proposed language to clarify this definition.

C. Guest Permit

Added this language to define the new type of permit.

* * *

E. Parking Permit Term

Added this language to explain the new parking permit “terms” (i.e., the cycles during which current permits are valid and old permits expire).

EF. Resident

I added the “primary dwelling” language to prevent the periodic overnight guest from attempting to claim residency to obtain a permit.

F. Resident Vehicle

Recommend striking this language for the same reason as “Commuter vehicle.”

* * *

I. Residential Parking Permit

Added this language to define the new type of permit.

IJ. Residential Parking Permit Area

Reduced “grace period” to 30 minutes.

K. Residential Parking Permit Holder

Added this language to describe who is a “holder.”

L. Special Parking Permit

Added this language to define the new type of permit.

* * *

§ 114-298. Designation/Withdrawal of Designation of Residential Parking Permit Areas.

A. Minimum size.

I added section (A) and its subparagraphs to help clarify what “portion thereof” of a residential district means. It may be overkill, but it makes it explicitly clear what a “portion thereof” means.

D. Criteria.

* * *

~~(8)~~

Omitted this language because new parking system does not have fee structure.

* * *

F. Number of Permits Per Residence.

This whole subsection is new and establishes the number of parking permits per residence.

G. Duration of Parking Permits.

This whole subsection is new. Paragraph (1) establishes the two-year terms (or cycles) for parking permits. Paragraph (2) expires and invalidates old permits when a new term begins. Paragraphs (3) and (4) are sort of the “genesis” provisions which establish when terms/cycles begin and end, and they invalidate all parking permits from the previous system upon the commencement of this new system in a new parking permit area. Paragraph (5) was added as a clarification that

make it explicitly clear that all aspects of the “old system” remain in effect until the first day of the first term of a new RPZ term. Paragraph (6) is a provision that permits the City to begin handing out permits for the *next* term *before* the next term begins and makes them valid 30 days prior to the beginning of the upcoming term so that residents have a bit of overlap of the cycles to install their new sticker at their leisure without having to stand next to their cars and replace their stickers at the precise stroke of midnight or else risk getting a ticket for displaying the wrong permit (e.g., it would be permissible for the City to issue January 2020/2021 stickers in, for example, August 2019, and it would be permissible for a resident to remove from their vehicle their January 2018-2019 sticker and affix a January 2020-2021 sticker on December 10, 2019).

H. Posting of Residential Parking Permit Area.

I added language to paragraph (1) to ensure that, at the very least, no parking restrictions will be enforced until the proper signage is in place

* * *

§ 114-3029. Issuance & Transfer of Residential Parking Permits.

A. Issuance Application.

* * *

(4)

I moved language from this paragraph regarding where and how to affix a permit to the “Use” section, which I think makes more sense.

* * *

D. Issuance of Permits for Vehicles with Unpaid Citations Prohibited.

I added the “adjudicated” language to this section so that people who are challenging a citation can still get a permit. I also expanded the section to cover not just vehicle citations, but

also any citation issued to a person for violating this Article. Thus, if a person provides false information on their application, or is directed to return a permit but refuses, or misuses guest permits, and is then fined for the violation, it seems sensible that they would also be precluded from receiving new permits.

* * *

§ 114-310. ~~Temporary~~ Guest Permits. [Amended on 3-27-11 by HO-2011-01]

I intentionally placed the guest permits provisions in its own section, complete with an “issuance”, “use”, and “application”, subsections to complement the previous section, which addresses strictly residential permits. The purpose of this was to permit residents who do not personally own vehicles (who walk, or use public transit, or are disabled, etc.), but still would like to receive guest permits for visitors to obtain guest permits.

I envision a single application form that has four checkboxes:

I am applying for (check one):

☐ Residential parking permit only

☐ Residential parking permit and guest permits

☐ Guest permits only

☐ Special permit only

The applicant will then check the box that is applicable. If they check box 1 or 2, they fill out the whole form (i.e., Make/model of vehicle etc.). If they check box 3 for guest permits only, they just have to fill out part of the form (i.e., name, address, and proof of residency or ownership, etc.).

Thus, residents can automatically get guest permits at the same time as their residential parking permits. This just adds another option for those who do not own a car. For the purposes of tracking people with guest permits only, it is possible to just track them via street address, which

is likely how the quantity of residential parking permits issued to each residence will have be tracked anyway. Another potential way to track these folks is to simply issue a person who requests only guest permits a Residential Parking Permit number without an actual permit, i.e., do everything exactly the same as you would with a residential parking permit, but simply withhold the resident sticker/hangtag/etc. and just give them the guest booklets and a copy of their number.

A. Issuance of Guest Permits.

* * *

(3)

I adjusted this section to allow residents to get more guest permits. Subsection A(3) was written intentionally vague to permit discretion regarding the issuance of a third booklet.

B. Application

I added this subsection to help clarify the operation of the ordinance and to complement the prior section regarding the application requirements for a residential parking permit.

* * *

~~B. Display of Visitor Parking Permits~~

I omitted the old language and consolidated this provision into a single rule in the “Use of parking permits” section, § 114-32(B), which makes the Article uniform and more accessible.

§ 114-31. Special Permits.

I added this third category of permits to address all the “special” circumstances where people are not “residents” as defined by this Article but may nevertheless need the equivalent of a residential parking permit. I envision that these permits might be cardboard/cardstock or something similar to a guest permit.

For example, the president of a HOA might apply for 4 permits so that the secretary, treasurer, and two board members can park at the president's residence for a HOA meeting that occurs on the first Tuesday of every month. The president would hand out the permits on the day of the meeting and, like guest permits, the HOA members could put them on their dashboard when they arrive. The permits might be limited to the first Tuesday of every month, which would coincide with the stated purpose.

Landlords, for example, might be issued a special permit that is valid for the applicant's choice of a limited number of days of the week. So, the landlord might choose Fridays and Sundays, and the permit would be valid on only those days. Or they could be unlimited.

Caregivers might be granted a permit that is valid all day during weekdays. Part of the special permit application for a caregiver might include a statement from the parent stating that they work from 6:00 a.m. to 2:00 p.m. Monday through Thursday, and therefore, they need a permit for the grandmother's car for those days from 5:00 a.m. to 3:00 p.m.

A. Issuance of Special Permits.

(1)

These are the categories that were discussed. This list, of course, can be adjusted, and it also includes paragraph (e) which is a catchall for unusual cases.

* * *

B. Application.

Again, as with residential parking permits and guest permits, this section also has a complementary "application" section.

* * *

D. Use.

* * *

(2)

This provision is targeted at groups, particularly HOAs and such. The caregiver is likely to be the applicant, and therefore, the caregiver will just keep the special permit until it expires or “changes in circumstances” require the caregiver to surrender it. However, for groups that might have multiple special permits and have changing membership, like an HOA or a community watch organization, the City probably does not want to have to deal with special permits scattered around, getting lost, and disappearing. Therefore, whomever applies for the permits, like the HOA president, will be responsible for them and will be required to keep and maintain the permits. Thus, after the HOA meeting is over, the board members will have to return them to the president. Hopefully this will reduce temptation to abuse special permits and fewer issues with lost permits or former members refusing to return them, etc.

§ 114-32. Use of Parking Permits & Exemptions. [Amended on 3-27-11 by HO-2011-01]

* * *

B. Proper display of parking permits.

This new language is a consolidation of old rules. It applies to all classes of permit. It basically requires users to place or affix whatever permit they have in the appropriate location as directed by the City. The new language further makes it a violation to attempt manipulate a permit, like blocking the zone number or writing two dates on a guest permit

* * *

H.D. Exemptions.

(1)

I moved this section from the “penalty” section and placed it within this “exemptions” section to neatly consolidate all of the exemptions into one section. The “parking violation” offense in the “penalty” section just points to this entire category of exemptions as all of the exceptions to the rule that a valid parking permit is needed.

(2)

I added this paragraph for two reasons: First § 114-28(G)(2)(c) indicates that RPZ signs will indicate “the days and/or hours of enforcement.” Accordingly, this provision complements the implication that there may be days and times (such as certain holidays or between the hours of 9:00 a.m. and 2:00 p.m. Monday through Friday) during which parking may be unrestricted.

Second, there was mention of certain special occasions (i.e., funerals) during which the City may want to suspend enforcement. This provision permits suspension of the rules for such special events.

* * *

§ 114-33. Rental Properties.

This section places the responsibility of rental property owners to collect permits from former tenants.

§ 114-34. Commercial Properties.

A.

This subsection prohibits the use of residential parking permits at commercial properties within a parking permit area.

B.

This subsection permits the Parking Compliance Supervisor to determine whether a limited quantity of permits may be issued to businesses in certain areas where it would not significantly impact the residential area.

* * *

§ 114-346. Restriction & Penalty. [amended 4-21-14 by HO 2014-04]

A. Parking Violations.

This subsection sets forth the prohibition and penalty for committing a parking violation (e.g., parking with an invalid permit). The initial clause of paragraph (1), “Except as set forth in § 114-32(D),” refers to ALL of the “exceptions” set forth in that section, and this language was added in large part to clarify that it is not a violation to park in a RPZ when the signs in the area indicate parking restrictions are not in effect, when parking meters are in effect, etc.

* * *

B. Falsification and Misuse.

Most (if not all) of the non-parking related offenses, misusing permits and lying on an application, things of that nature, are combined in this section.

C. Failure to Surrender Revoked Permit and Other Violations.

This is sort of a catchall offense section.

* * *

§ 114-357. Revocation of Permit, Changes in Circumstances, Severability.

* * *

B. Changes in Circumstances Causing Ineligibility.

This section invalidates permits that are contingent of special factors, such as being a student, if the condition no longer applies (e.g., the college student graduates), and it requires the permit to be returned.

* * *

AND BE IT FURTHER ORDAINED that this Ordinance shall take effect one hundred eighty (180) days from the date of its adoption;

[NOTE: Effective date was increased to 180 days, however, this may not be necessary because § 114-28 already includes language that should allow the new system to begin in a rolling manner, one residential parking permit area at a time.]

* * *



Hyattsville City Council Agenda Item Report

Meeting Date: October 1, 2018

Submitted by: Ron Brooks

Submitting Department: Finance

Item Type: Budget

Agenda Section: Action Items (9:10 p.m. - 9:20 p.m.)

SUBJECT

FY19 Capital Budget Amendment: 3505 Hamilton Street (5 minutes)

HCC-76-FY19

Recommendation:

I move that the Mayor and Council amend the FY2019 Capital Budget and appropriate \$8,289,000 for construction costs, contingency's, permits, fees, storage containers, mural storage and other costs directly attributed to renovation of the 3505 Hamilton Street facility.

Sponsor(s):

At the Request of the City Administrator

Co-Sponsor(s):

N/A

ATTACHMENTS

Summary Background:

On May 1, 2017 the Mayor and Council authorized the City Administrator to proceed with the adaptive reuse of 3505 Hamilton Street as the City of Hyattsville's Police Department facility at a total development cost estimate of \$10,265,000. To date expenditures for this facility have been for Professional Services - Architects and Engineers and we are projecting to begin incurring costs for construction in the fall of this year. To cover these costs we are requesting an amendment to the FY2019 Capital Budget by appropriating \$8,289,000 for construction costs, contingency's, permits, fees, storage containers, mural storage and other costs directly attributed to renovation of the 3505 Hamilton Street facility.

The Council discussed this item on September 11, 2018.

Next Steps:

N/A

Fiscal Impact:

The amendment increases the total FY 2019 CIP Budget by \$8,289,000.

City Administrator Comments:

See summary above.

Community Engagement:

N/A

Strategic Goals:

Goal 4 – Foster Excellence in all City Operations

Legal Review Required?

N/A



Hyattsville City Council Agenda Item Report

Meeting Date: October 1, 2018

Submitted by: Katie Gerbes

Submitting Department: Community & Economic Development

Item Type: Planning & Development

Agenda Section: Discussion Items (9:20 p.m. - 9:35 p.m.)

SUBJECT

Hyattsville Armory Apartments PPS (15 minutes)

HCC-51-FY19

Recommendation:

Sponsor(s):

At the Request of the City Administrator

Co-Sponsor(s):

N/A

ATTACHMENTS

[Armory Apartments PPS Discussion Memo.docx](#)

[Hyattsville-UIP-Elevations-180717 \(1\).pdf](#)

[PPS_4-17008_DevelopmentExhibit.pdf](#)

[Planning Committee Minutes- 07.17.18.docx](#)

Summary Background:

The Hyattsville Armory Apartments is a proposed, mixed-use development occurring along the 5300 block of Baltimore Avenue in Ward 1. The site is current home to five (5) vacant structures, as well as two parking lots. The applicant is proposing demolition of the existing structures to construct a five to six (5-6) story building with 32,000 square feet of retail use along the ground floor and 284 rental apartments on the upper floors.

Next Steps:

The item will come back to the City Council on the "Action" agenda on October 15, 2018. Staff anticipates providing the City Council with additional comments and conditions for consideration on October 15, 2018.

Fiscal Impact:

N/A

City Administrator Comments:

Recommend Approval

Community Engagement:

This project was first presented to the City Council on July 16, 2018. It was discussed at the Planning Committee meeting on July 17, 2018. Additionally, a page on the Speak Up site has been created to gather resident comments or 852 the proposal.

Strategic Goals:

Goal 2 – Ensure the Long-Term Economic Viability of the City

Legal Review Required?

N/A



Memo

To: Mayor and City Council

From: Jim Chandler, Assistant City Administrator and Director, Community & Economic Development
Katie Gerbes, Community Planner

Date: July 30, 2018

Re: PPS 4-17008: Hyattsville Armory Apartments

Attachments: Hyattsville UIP Elevations
PPS 4-17008 Development Exhibit
July 2018 Planning Committee Minutes

The purpose of this memorandum is to provide the Mayor and members of the City Council a summary of the preliminary plan of subdivision application for the Hyattsville Armory Apartments project.

Project Summary

- Hyattsville Armory Apartments is a proposed mixed-use development along the 5300 block of Baltimore Avenue;
- The proposed development is to feature 32,000 square feet of ground floor retail space and 284 rental apartment units;
- Vehicular access to the development's parking garage will be located off of Jefferson Street and an improved intersection at Baltimore Avenue and the spur of Hamilton Street;
- Significant pedestrian improvements will be made to Baltimore Avenue, most notably by widening the sidewalk to 20 feet in width;
- The proposed use is consistent with the zoning for the area, and the applicant intends to meet all standards outlined in the Gateway Arts District Sector Plan;
- Staff recommend support of the project, subject to the following conditions:
 - The Bicycle Pedestrian Impact Statement (BPIS) should be used to fund way-finding signage and other infrastructure improvements along the Rhode Island Avenue Trolley Trail.

Project Details

The Hyattsville Armory Apartments is a proposed, mixed-use development occurring along the 5300 block of Baltimore Avenue in Ward 1. The site is currently home to five vacant structures, as well as two parking lots. The applicant is proposing demolition of the existing structures to construct a 5-6 story building with 32,000 square feet of retail use along the ground floor and 284 rental apartments on the upper floors. The building will be five stories on the northern part of the parcel, adjacent to the Hyattsville Armory, and will scale up to six stories on the southern end of the project.

Because the property in question is made up of several smaller parcels, there is a variety of zoning present on site. Parcel A is zoned M-U-I (mixed-use infill), and the remaining parcels are zoned C-O (commercial office) or C-S-C (commercial shopping center). The property lies within the “Town Center” character area of the Gateway Arts District Approved Sector Plan and Sectional Map Amendment. Through the preliminary plan of subdivision, the applicant will be joining together six individual parcels into one large parcel. The total combined site is 4.39 acres.

In addition to the parcels fronting Baltimore Avenue, the applicant has also entered into agreements with the City of Hyattsville and Crossover Church to incorporate the parking lots access by Jefferson Street into the project. The City of Hyattsville property, known as Lot 5, will be leased to the applicant, so that a structured parking garage can be constructed in its place. In exchange, within the parking garage the applicant will be providing 102 public parking spaces that will be maintained and revenues collected by the City of Hyattsville. Similarly, the applicant will be building in dedicated parking spaces for Crossover Church in exchange for use of their parking lot.

The exact mix of retail fronting Baltimore Avenue is not yet determined, but is likely to be a combination of restaurants, convenience type stores, health and beauty stores, as well as a fitness studio or boutique. As for the apartments, apartments will be rented at market rate, and the applicant is proposing the following breakdown of unit types: 25 studios (9%), 174 1-bedrooms (61%), and 85 2-bedrooms (30%).

There will be two locations for vehicular access onto the property. Retail parking will be primarily accessed from Baltimore Avenue, while church and resident parking accessed primarily through Jefferson Street. The Baltimore Avenue access into the parking garage will be controlled by a traffic signal in order to better manage traffic flow in to, and out of, the property. In the original presentation to the City Council, the applicant mentioned a third vehicular access, off of the Church Place alley. In subsequent conversations with the applicant, that entrance has been removed, leaving two other access points into the property.

As a part of the project, the pedestrian realm will see significant improvement. The applicant proposes a sidewalk of 20 feet in width, that will feature tree boxes along Baltimore Avenue, as well as a benches and seating options throughout. The width of the sidewalk will mirror the sidewalk on the eastern side of Baltimore Avenue, at the Shops at Arts District.

As a technical note, during this preliminary plan, the applicant will be working with the City to modify the subdivision of the parcel where Lot 5 is currently located. The way the condominium units for that property are drawn, the parking lot is divided into two units. The applicant will be cleaning up the unit lines so that the entire parking lot falls within one unit. Staff are working with the applicant to ensure this process runs smoothly.

At this time, it is not determined if the project will be subject to a detailed site plan. If a proposal meets all of the standards and requirements of the Gateway Arts District, it does not have to go through a detailed site plan process. The applicant is meeting with M-NCPPC in the upcoming weeks to determine if a detailed site plan is warranted.

Variance Requests

The applicant is seeking one variance for the project. They are seeking a variance to Section 24-113 of the Prince George's Subdivision Ordinance, which calls for the dedication of public utility easements (PUE) along public road right of ways. Baltimore Avenue already has the necessary utilities existing along its right-of-way, so the applicant does not feel it is necessary to dedicate additional frontage to an already existing utility. Additionally, the Gateway Arts District Sector Plan calls for a built-to line of 10-12 feet. If the applicant was required to provide a 10-foot PUE., there would be no room for sidewalks or other pedestrian features without violating the Gateway Arts District Sector Plan requirement. Staff are supportive of this variance request.

Planning Committee Review

The applicant presented to the Planning Committee on July 17, 2018. The Planning Committee largely responded positively to the proposal and had a few suggestions for improvements. Below is a list of the recommendations voted on by the Committee:

- Committee is overall supportive of the project and appreciates the work UIP has done in activating the space and working with the City and its citizens;
- Committee has concerns about Church Place/Hamilton Alley and its ability to accommodate two-way traffic. We are concerned about the impact of truck traffic on 43rd with the elementary schools and childcare center;
- Generally, like the architecture design but believe it needs to be taken further to ensure we have an elevated, lasting design. We are good with it being funky and modern, but needs to go a little further than it is currently;
- We want to ensure there is adequate bicycle parking space in the garage and in the public area;
- Work with different communities in Hyattsville to ensure retail will be the needs of residents of Hyattsville and should consider "local" businesses;
- Encourage developer to reach out to local schools to see if there are ways to partner with them;
- City Council work with the developer to see about the possibility of affordable housing units within the development;
- If you have a water feature, do not put it near the road in the plaza area;
- City staff should follow up with the traffic engineer to obtain the traffic study and ensure traffic will work on Route 1, Hamilton Street and Jefferson Street.

Minutes from the July Planning Committee meeting are attached to this memo.

Staff Recommendations

Staff are recommending that the City Council support this preliminary plan of subdivision application. Many of the initial concerns of Staff have been addressed by the applicant in revisions to the application. The Planning Committee had several recommendations that Staff concur with, however only one of the recommendations is applicable to the preliminary plan of subdivision. That recommendation is for a traffic

study to be provided to Hyattsville staff. Staff received the traffic study completed on August 16, 2018 and are in the process of reviewing it.

Staff are recommending support of the preliminary plan application, subject to the following condition:

- The Bicycle Pedestrian Impact Statement (BPIS) should be used to fund way-finding signage and other infrastructure improvements along the Rhode Island Avenue Trolley Trail.

Next Steps

This project is scheduled to come back to the City Council on the “Action” agenda on October 15, 2018. The Planning Board hearing has not been scheduled at this time, but is estimated to take place before the close of 2018.



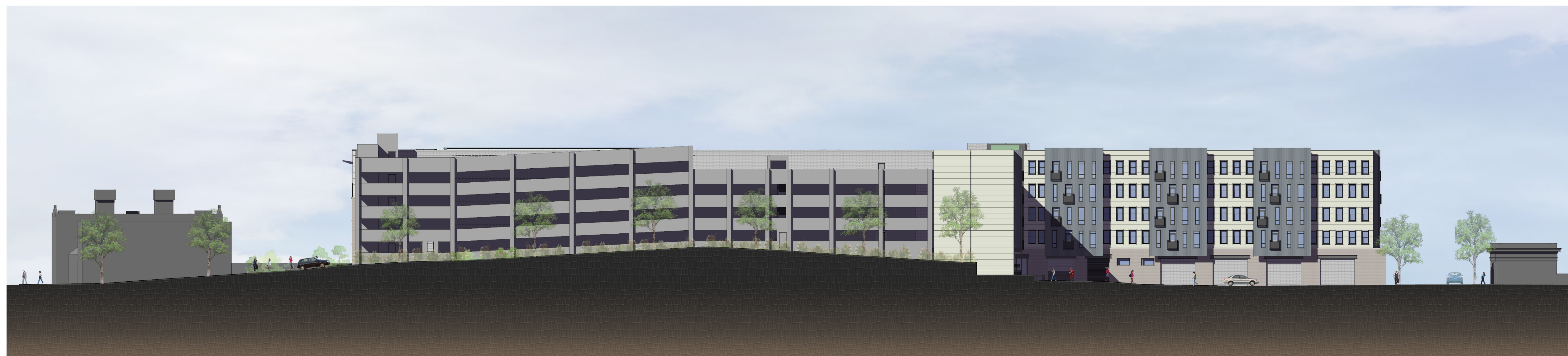
EAST ELEVATION



NORTH ELEVATION



SOUTH ELEVATION



WEST ELEVATION

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CITY OF HYATTSVILLE
PLANNING COMMITTEE AGENDA
JULY 17, 2018

1. Introduction of Committee & Guests Members (7:37 PM)
 - Maureen Foster
 - Wil Maxwell
 - Chad Copeland
 - Jonathan Mueller
 - Todd Dengel
 - Bart Lawrence
 - Katie Gerbes
 - Brook Katzen, UIP
 - Bill Shipp, O'Malley, Miles, Nylen and Gilmore
 - Jonathan Johnson, Torti Gallas
 - Julia Murdoch, Torti Gallas
 - Bob Wallace, Torti Gallas
 - Maria Baroni, UIP
 - Steve Schwat, UIP
 - Andy Akers, UIP
 - Flawn Williams
 - Yohannes Bennehoff
 - Maiya Dacey
 - Ryan Winkelvoss
 - James Garray
 - Nick Harris
 - Krissi Humbard
 - Victoria Moss
2. Committee Business (9:08 PM)
 - Moved to the end of the meeting.
 - Approved unanimously, with edits.
3. Hyattsville Armory Apartments (7:38 PM)
 - Been working on this project for approximately 18 months
 - 6 story building total, with 32,000 square feet of retail and 284 apartments
 - o 25 studios (9%)
 - o 174 1-bedrooms (61%)
 - o 85 2-bedrooms (30%)
 - o Similar size of the Palette apartment building and the EYA commercial on the east side of Baltimore Avenue.
 - Site is currently 7 parcels with 5 vacant structures located on the parcels. These are the buildings along Baltimore Avenue has a lot of art on the buildings and created the temporary Polka Dot Park.
 - Scale of building is broken down by creating outdoor pockets of open and green space to break up the massing.

- Paying a lot of attention to the pedestrian realm – existing sidewalk will be widened from 4 feet to 20 feet, making for a better experience and safer environment. It will be comparable to the size of the sidewalk on the east side of the street at the shopping center.
- Architecture is inspired by the existing context of the neighborhood; taking inspiration from the historic Armory building, Franklins and the residential neighborhood nearby.
- Building will be set off 50 feet from property line adjacent to the Armory building to respect that integrity of the armory and provide a buffer. This will become a pedestrian plaza with outdoor dining, seating and the possibility of programming. This park is referred to as “Armory Plaza.”
 - o Park on the south of the site is “Polka Dot Park 2.0,” with the intention of creating an area with sculptures, art and visual amenities.
 - o There will be an “arts alley,” which is a cut through of the building leading to the Church Place alley in the rear. The intention is to create an art alley experience full of murals and public art.
- There are 3 vehicular access points to the project: Baltimore Avenue (retail parking), Hamilton Alley (Crossover Church parking), and Jefferson Street (residential parking).
 - o With 3 uses coming together, want to provide multiple ways in and out to limit traffic.
- The intersection with Baltimore Avenue and the spur of Hamilton Street (next to Maryland Building) is not very geometrically safe. Meeting with State Highway Administration to try to better align and square off this intersection.
- Intend to add left turn lanes on Baltimore Avenue into the building and onto the spur of Hamilton Street to prevent congestion of folks turning in to the development.
- Just submitted preliminary plan of subdivision to the county to combine these parcels into one.
- Will also need to go through the detailed site plan process.
 - o Do not intend to need any variances supported; have been complying with design guidelines.
- Surcharges and impact fees:
 - o School Surcharge: \$2,361,044
 - o Public Safety Surcharge: \$698,924
 - o Systems Development Charge: \$722,844
- Believe the development as a whole will improve public safety as there will be a widened, safer sidewalk, as well as provide lights and eyes on the street in this area.
- General timeline estimates a Planning Board hearing in October 2018 and to submit building permits by the end of 2018. Hope to start construction in February 2019, and will be approximately 18 months of construction, with an opening slated for late summer 2020.
- Clarifying Questions:
 - o MF: Have you done a traffic study yet? Has it been shared?
 - Have done a traffic study. We didn’t bring our traffic consultants today, but the study did not show that this will result in a failure in any of the surrounding intersections of the project. Study was done about a year ago, but we are in the process of updating those counts and updating the report. I have not been notified of any issues.
 - o MF: Do you have an idea of how many additional students this would bring into the schools?

- Based on Prince George's County metrics, we estimate it could add 38 elementary school pupils, 15 middle school pupils, and 21 high school pupils.
- o MF: Just to clarify, today you are not seeking any variances?
 - Correct.
- o MF: Can you explain the Jefferson Street in and out?
 - Parking garage is located at the rear of the site. It is multi-level, but shorter than the front, so you won't see it from Baltimore Avenue. Entrance from Baltimore Avenue cuts through the building and circulates up. As it goes one level up, as you are up the hill, there will be the Hamilton Alley and Jefferson Street access. The church will have their own area within the garage to replace their existing parking.
- o MF: Can you tell me a little bit about the interaction you expect with pedestrians and the cars coming in off of Baltimore Avenue in the front of the building?
 - It will be a fully signalized, 4-way intersection with four new crosswalks. There will be durations in the cycle for pedestrians only, and times when there will be a no walk sign so that cars can pass through.
- o WM: It looks like you want to close the off ramp on Baltimore Avenue for this? Will that create a traffic mix up.
 - Mistake on the diagram that should be there.
 - BL: City did a walk through with SHA to talk about pedestrian safety on Baltimore Avenue. That intersection is a hazard to pedestrians as it is, so SHA has started considering a hard intersection there to improve that.
- o WM: Are you planning on using wood in the accent pieces on the artists alley?
 - It is a rendering, it is not final. Exact materials and configuration has not been finalized yet.
- o WM: Would there be any bicycle spaces in the parking garage and any accommodation for electric vehicle charging?
 - Yes.
- o JM: For the construction period, do you see any need to close or reduce lanes on Baltimore Avenue while building?
 - Since there will be a 20 foot right of way between the curb and start of the building, that gives plenty of space for construction vehicles and loading. We will ensure there is always pedestrian access.
- o JM: Will the equipment and trucks have to go down Baltimore Avenue?
 - The site utilization plan will be forthcoming as it gets closer to construction, we will know details then.
- o JM: How many buildings are being torn down? Are they all vacant.
 - 5, and all vacant.
- o JM: You are using the 2004 design guidelines, are those the most recent?
 - Yes.
- o CC: How married are you to the materials and scheme of the exterior of the building?
 - We want to build a project that the community is happy with and think it is beautiful. We are hoping you can chime in and give us feedback.
- o CC: Is there a willingness to adopt something that mirrors the color blocking and designs of what is currently on the site?

- We are very flexible on colors, material and detailing on the exterior. It will be challenging for us to change some functional locations, but we can adjust finishes.
- o CC: This will be close to the City Building and elementary schools. Have you considered incorporating something that can be used by the schools as a part of this development?
 - That is a good idea. We recognize that this project will be an important part of the fabric of the community and we don't take it lightly. We are long term managers and owners of all of our properties. Ways to involve the community into the project after completion would work.
 - Do you mean programmatic space?
 - CC: I was intentionally vague to see what you were thinking.
 - I think the space public park spaces can be used informally and formally by the community, like Polka Dot Park currently is.
 - Every year Hyattsville Elementary School paints a mural project with their 5th graders, and we are hoping that they can start expanding their murals onto our property.
- o TD: Does this remove any street parking?
 - There are no on street parking spaces on that side of Baltimore Avenue.
- o TD: You all are maintaining ownership?
 - Yes, we will be leasing and running the building.
- o TD: How do you plan to mark off parking spaces for different groups?
 - 102 spaces dedicated at all times to the public; controlled and managed by the City
 - 90 spaces dedicated to Crossover Church
 - 57 "swing" spaces between Crossover Church and public parking
 - 460 dedicated residential parking spaces
 - There will be gate controlled access to the Church and residential parking spaces.
- o TD: I see there is a middle courtyard. Is that where the arts alley goes to?
 - It will be a private courtyard for residents of the apartment building.
- o TD: Have you done feasibility studies on the project?
 - We have a feasibility team in house that is constantly studying the market and trends. We've spoken to a number of institutional investors, which will come through a combination of debt and equity.
- o TD: You said there is 5 stories of residential and 1 level of retail.
 - Correct, 6 stories total.
- o DM: On this slide, you refer to this as the Hamilton Street alley. The entrance to your project that runs to the alley will be public?
 - It will be exclusively for Crossover Church and residential parking. Public will utilize Baltimore Avenue.
- o DM: Because Hamilton Street is one way, do you think you have enough circulation to avoid an issue with the people who live and work on Hamilton Street having issues with traffic.
 - I don't have the exact data right now, but the alley entrance to the parking garage as there are more established entrances that will see higher traffic. We think it is a convenient additional access point, but is likely to be the least trafficked point.
 - DM: Just to clarify, church members currently multiple entrances to that lot.

- o DM: Does this property line stop at the City lot, or will it impact the artists housing?
 - We intend to relocate a few of their spaces, but won't be impacting their parking aside from that.
- General Public Clarifying Questions:
 - o Maiya Dacey: I live nearby and don't want to look at a parking garage. Can you explain what the rear elevation of the garage may look like?
 - Bottom of the garage will be at the level of Baltimore Avenue, so from the rear will be below grade. First two levels of the garage, almost 3 will be invisible from the rear as it is built into the hill. It's likely we will dress it up with art or designs.
 - Will there be cars on the top?
 - Yes, but there will also be a parapet wall to help shield the view of the cars.
 - o Dan Muth: You mentioned the height will be about 75 feet tall? How does this compare to what is there now? It seems to be much larger?
 - This is a common building type for apartment construction. You can't Building more than 5 stories of wood framed apartments on top of retail. The Palette which is the only comparable apartment in the neighborhood, will be the same height as this.
 - What about the EYA townhomes?
 - I think they are roughly 40 feet.
 - How tall is the Verizon Building?
 - At least 80 feet.
 - o Vicki Moss: Can you talk a bit about the entrance and exit of the parking from Baltimore Avenue. Will you be allowing left turns?
 - New intersection will be fully signalized in all directions, with left turn lanes and crosswalks. Cars coming out of garage will have to wait in the garage until the light changes.
 - What type of retail are you imagining?
 - A little too soon to talk about specific tenants, but the group responsible for the retail on the east side of the street has been a consultant to us and they've produced some merchandising plans. We expect a mix of restaurants, convenience servicing, and retail/boutiques.
 - We are not talking about 7-11s, right?
 - We don't know quite yet. What would you like to see?
 - o This is a tricky question, because there are a lot of destinations in the town that bring people from out of town, which is a good and bad thing.
 - o Flawn Williams: Is there any provision for loading for move in/move out and retail loading?
 - There is a 3-bay loading area off of Hamilton Street, which connects to a back corridor that is accessible to the retail tenants.
 - The parking spaces which are dedicated to the church, is that through a keycard arrangement?
 - We haven't nailed that down yet, we could give fobs, but that is problematic. We may end up with human staffing on Sundays to control that.
 - You mentioned Sundays and Wednesdays will be busy days for the church. Will it be used at all on other days?

- o We will be giving them back exactly what they have (90 spaces dedicated at all times), but then “swing” spaces that can be public parking at other times.
- o MF: Does that mean people on the right-hand side of the retail need to cross the interior street?
 - Yes.
- o DM: You said you want to reconfigure Hamilton Street. I don’t see how it moves on your landscape design to where it is now.
 - We would like to make improvements to the intersection that would solve the misalignment between existing signals and curb cuts. We have talked to the owners on the property on the east side of the street and in the future want to see a connection there.
- o TD: Trash, grease traps, etc. Where will this all be located?
 - In the centralized loading area, off of Hamilton. Anything delivered to or taken away from building will be hosted there.
 - TD: Same for retail?
 - Separate trash rooms for retail and residential, but they are in the same general area.
- o BL: The bike infrastructure was asked about. Will there be bike racks outside the building?
 - In DC there are requirements for bike parking spaces in the building and outside the building.
- o BL: When you are referring to the alley access, that is the City’s alley, so will be stay as the City?
 - Alley access will stay public, but access to the garage itself will be private.
- o BL: Are there steps from the sidewalk to the plaza?
 - No, it is flush.
- o BL: How long is the block from Jefferson to Hamilton?
 - 500 feet.
- o BL: You said retail is 32,000 square feet and comparable to busboys, but can you be more specific? Is that the entire space from Chipotle down to Yes?
 - Yes.
- o BL: You said this would be open to the public, but who will manage this space?
 - UIP would manage the cleaning, landscaping and decoration of the shared spaces. It is private property with a public easement.
- o BL: Have you done other projects with retail? If so, what retail do you see there?
 - Yes, we own shopping centers and a mixed-use building in Adams Morgan. You can see them all on our website.
- o WM: Where is the front door?
 - Through Polka Dot Park 2.0, off of the plaza. There will be a small lobby with elevator and stairs that bring them up to the second level where the amenities like mailroom starts.
- Committee Comments:
 - o DM: I think you need to make sure the alley is managed for two-way traffic.
 - o WM: I think the alley and parking will be good for the area and will turn out okay. I like the design but wouldn’t mind different colors. You may want to consider some bicycle considerations in the residential parking area to have a dedicated bike room.
 - We have one in the building.
 - o JM: I like what I am seeing and like that we are seeing progress on both sides of the street. It looks like a lot of the space is already parking and will be replaced with parking,

- so I like that. I like the design. To me, it seems in style to the artists housing. If people have other suggestions for architecture, I hope they can point you to specific examples.
- o CC: I think the appearance of the building looks generic and like any other apartment building you could run across anywhere. I think part of what makes this community is the fun art, color blocking and the Hyattsville sign. It has warmed the hearts of a lot of people and if you can incorporate that, I think it would be well received.
 - o CC: As you look towards retail development, 7-11 and CVS make my stomach turn. I think you have the opportunity to do something more special than that.
 - o CC: I encourage you to reach out to the public school and St. Jerome to find ways you can be helpful to the school and the City to be a good neighbor and be an advocate to help our schools.
 - o TD: I would like to say that I have seen your presence in the community by being active in the Speak Up plan and activating spaces like Polka Dot Park and that is not going unnoticed. I think the density here is important and hope it will help to activate some of the dormant spaces that currently exist.
 - o TD: From the retail side, I think the term “local” is important. Local businesses are a good opportunity here to coincide with the local businesses we already have.
 - o TD: I like the way you have broken up the space works and see how it works in places like Pike & Rose.
 - o TD: I love Franklin’s, but the corrugated metal has passed its prime and I encourage you to move away from that. In Brentwood what they are doing there already looks dated.
 - o TD: I hope that you continue to engage the community and maybe you meet with the community outside of this committee.
 - o MF: I am concerned about the loading dock and what it means to have the trucks coming and going off Hamilton Street there. I can see there is a backup and then we have trucks parking on Route 1 to unload.
 - o MF: I am still concerned about access of Route 1; I am concerned because it is a nightmare now, but I am excited to see what your traffic study says.
 - o MF: I love the armory plaza and think you should look at Riverdale Park Station and see how they have activated that space.
- Community Comments:
 - o Flawn Williams: I would love to see water features for kids but push them away from car traffic. I concur with Todd to backpedal the corrugated metal. If there is any room in this plan for some affordable housing, I think that would greatly enhance community adoption of this plan.
 - o Vicki Moss: Regarding retail, perhaps a hardware store. They serve everyone and are a great community resource for all prices and people.
 - o Steve Schwat: We think hard about the retail. When you build so much space, but a limited amount is retail, it is more important to provide an amenity to the residents of the building, because often that is then an amenity to the neighborhood. We can lose money on retail rents if it means we’re supporting higher
 - o Steve Schwat: We have been approached by CVS on this project, but have not entered into an agreement with them, but they are being a community resource as well, with the medical clinics and grocery elements.
 - o Dan Muth: I thank you for considering the sector plan and doing something that could be good to the community. I think this will be the new landmark of Hyattsville. In some ways, this will scale up the entire community. That is not a bad thing, but something to be aware of. We aren’t afraid of funky and original here, and I am not offended by modern architecture on this route. I think the architecture is 85% there and could go 15% further with community input.

- o Yohannes Bennehoff: Is the retail space flexible on how big it can be?
 - Yes.
- o James Garray: No comment, but it is a big change to the environment.
- o Ryan Winklevoss: I know you have a business opportunity to outlast the aesthetic on the east side of Route 1. If you look at the more recent residential mixed-use spaces, like Pike & Rose and near Catholic University. You have the possibility to make something that doesn't look like it was build years ago.
- o Maiya Dacey: I would love to see an elevation of materials and how can we get materials that don't look so flat. The pops of color are fun, but they're dated. I know these are mock ups, but if you can elevate the materials to make them look more sophisticated and expensive. Overall, I am excited about this project.
- o Krissi Humbard: Excited about the public spaces.
- Recommendations:
 - o RECOMMENDATION: Committee is overall supportive of the project and appreciates the work UIP has done in activating the space and working with the City and its citizens.
 - Approved: 5 in favor, 1 opposed.
 - o RECOMMENDATION: Committee has concerns about Church Place/Hamilton Alley and its ability to accommodate two-way traffic. We are concerned about the impact of truck traffic on 43rd with the elementary schools and childcare center.
 - Adopted unanimously.
 - o RECOMMENDATION: Generally, like the architecture design but believe it needs to be taken further to ensure we have an elevated, lasting design. We are good with it being funky and modern, but needs to go a little further than it is.
 - Adopted unanimously.
 - o RECOMMENDATION: We want to ensure there is adequate bicycle parking space in the garage and in the public area.
 - Adopted unanimously.
 - o RECOMMENDATION: Work with different communities in Hyattsville to ensure retail will be the needs of residents of Hyattsville and should consider "local" businesses.
 - Adopted unanimously.
 - o RECOMMENDATION: Encourage developer to reach out to local schools to see if there are ways to partner with them.
 - Adopted unanimously.
 - o RECOMMENDATION: City Council work with the developer to see about the possibility of affordable housing units within the development.
 - Adopted unanimously.
 - o RECOMMENDATION: If you have a water feature, do not put it near the road in the plaza area.
 - Adopted unanimously.
 - o RECOMMENDATION: City staff should follow up with the traffic engineer to obtain the traffic study and ensure traffic will work on Route 1, Hamilton Street and Jefferson Street.
 - Adopted unanimously.

4. Development Updates (9:09 PM)

- Magruder Pointe
 - An additional revised CSP was received after the June Planning Committee meeting, which was seeking rezoning exclusively to M-U-I zone.
 - City Council voted on July 16 not to support M-U-I request.
- TESST Building

- Recipient of a Commercial Façade Improvement program grant
- Will be occupied by Will's Decorating.
- Significant renovations inside and outside necessary.
- Metro II
 - Do not have an update on construction, but will talk to them to get an idea of progress/anticipated timeline.
- Is the Minority Access building occupied?
 - Yes, but most of the space isn't used. Pyramid Atlantic used it for their pop-up bookstore recently.
- Sangfroid Distillery
 - Recipient of last year's CFI grant. They have a new hand painted sign, new windows and garage door. Will be opening in October.
 - Request to get a showcase of other CFI project for September meeting.
 - i. Yes.
- Are there businesses moving into flatiron building?
 - City has not heard of anything related to the flatiron building.
- What is the status of Hamilton Street? Why are the roads in such bad condition?
 - Due to WSSC work to replace pipes. Once completed, they are required to pave over the road.
- Sacred Heart
 - Was called up by the District Council and had oral testimony on July 9. Deni Taveras took the case "under advisement" and will be making a decision on July 23 as to if the District Council is to reverse decision.
- Editor's Park numbers
 - Will have them for September meeting.
- Mall Updates
 - &Pizza is supposed to open this week, with Mezeh following in early August. The main sign on East West Highway is being replaced. No news on the pad site – it seems the mall has stopped pursuing that.
- Sunoco on East West Highway
 - Waiting on a referral from M-NCPPC.
- Hyatt View Status
 - At the Planning Board hearing there seemed to be a disagreement about if the project needed a detailed site plan as well. I will check in with applicant to get confirmation.
- Aldi Expansion
 - Language was revised on the dias at the City Council meeting to incorporate more of the Planning Committee's comments.
- Where do we fall with committee speaking to the City Council?
 - Want to talk about Armory Apartments

5. Adjourn (9:31 PM)



Hyattsville City Council Agenda Item Report

Meeting Date: October 1, 2018

Submitted by: Nicola Konigkramer

Submitting Department: City Clerk

Item Type: Community Notices

Agenda Section: Community Notices and Meetings

SUBJECT

City Calendar: October 2 - October 15, 2018

HCC-88-FY19

Recommendation:

Sponsor(s):

At the Request of the City Administrator

Co-Sponsor(s):

ATTACHMENTS

[Main City Calendar_Oct 2 - Oct 15 2018.docx](#)

Summary Background:

N/A

Next Steps:

N/A

Fiscal Impact:

None

City Administrator Comments:

N/A

Community Engagement:

N/A

Strategic Goals:

Goal 1 – Ensure Transparent and Accessible Governance

Legal Review Required?

N/A

Main City Calendar: October 2 – October 15, 2018

Weekly Program Offerings

Ageless Grace Senior Exercise Classes

Wednesdays and Fridays, 10:00 AM @ City Municipal Building

Creative Minds

Tuesdays and Thursdays, 10:00 AM @ Magruder Park Recreation Center

Senior Art Class

Tuesdays, 10:30 AM – 12:30 PM @ Art Works Now

The City is offering free senior art classes in partnership with Art Works Now. Seating is limited, and registration is required.

City Calendar: October 2 – October 15, 2018

Board of Supervisors of Elections Meeting

October 2, 4:00 PM @ City Building, 3rd Floor Mayor's Office

Movin' With the Mayor

October 3, 5:00 PM – 6:00 PM @ City Building

Police and Public Safety Advisory Committee Meeting

October 3, 7:00 PM @ City Building

Race and Equity Task Force Meeting

October 4, 7:00 PM @ City Building, 1st Floor Multipurpose Room

Fall Community Yard Sale

October 5 – October 7 @ Citywide

International Fest

October 6, 4:00 PM – 8:00 PM @ Heurich Park

Hyattsville Environment Committee Meeting

October 9, 7:00 PM – 8:30 PM @ City Building, 2nd Floor Prangley Room

Movin' With the Mayor

October 10, 5:00 PM – 6:00 PM @ City Building

Hyattsville Zombie Run

October 13, All Day @ Magruder Park

Hyattsville City Council Meeting

October 15, 8:00 PM – 10:00 PM @ City Building, 3rd Floor Council Chambers