Washington Metropolitan Area Transit Authority (WMATA)

Compact Public Hearing Staff Report

West Falls Church Metro Station
Replace and Redesign Facilities

Staff Analysis of the Public Hearing
and
Staff Recommendations

Hearing No. 644
Docket No. R22-03

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1.0 Introduction

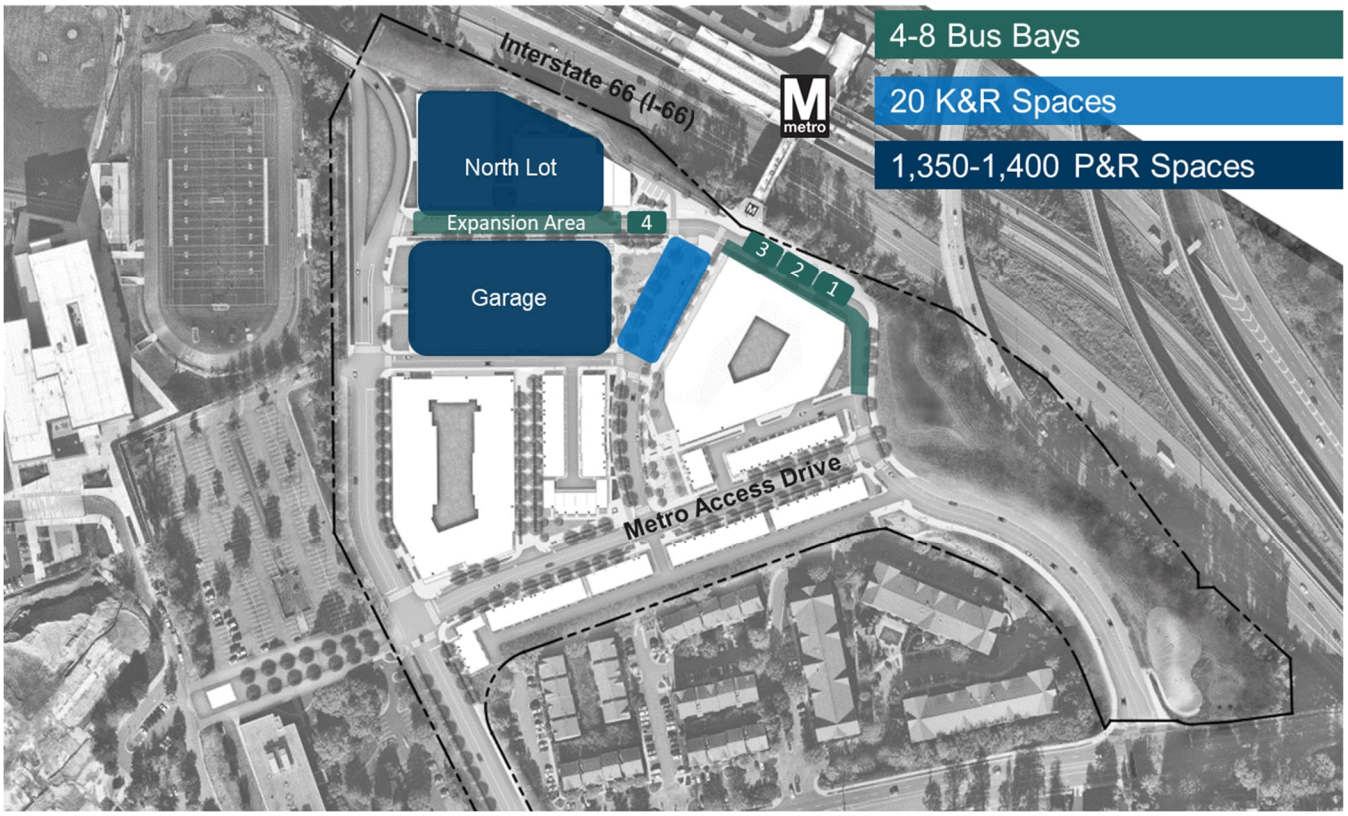
1.1 The Project

Metro is proposing to partially replace and re-design existing Metro facilities (the 'Project') to facilitate joint development on land owned by Metro where the parking lots, bus loop, and green space are located adjacent to the Curtis Memorial Parkway (I-66). The project includes modifications to parking and bus loop facilities at the West Falls Church Metro Station. The proposed concept is shown in Figure 1 below; more detailed drawings and existing conditions can be found in Appendix F of this report.

Metro obtained public input on the following proposed modifications:

- Reduce bus capacity from 8 bays to 4 bays
- Reduce Park & Ride capacity from 2,009 spaces to 1,350-1,450 spaces
- Reduce Kiss & Ride capacity from 64 spaces to approximately 20 spaces
- Eliminate 68 paid on-street metered parking spaces

Figure 1. West Falls Church WMATA Metrorail Station Proposed Changes



Of specific interest to Metro are the changes to transit facility and station access and circulation in the vicinity of the Metro Station. Details of the proposal were provided in the General Plans and the Environmental Evaluation, which included a parking analysis. The Notice of Public Hearing, Environmental Evaluation, and the General Plans were available online at www.wmata.com/plansandprojects beginning September 17, 2022 and are included in Appendices A, E, and F, respectively, of this document.

These documents were also available for inspection during normal business hours at the following locations:

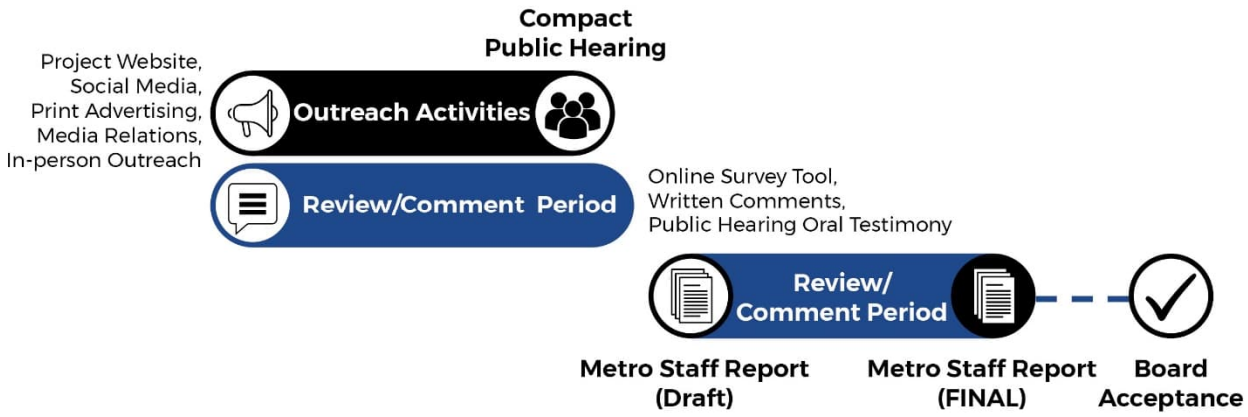
Washington Metropolitan Area Transit Authority
300 7th Street SW, Washington, DC 20024

1.2 Public Hearing Staff Report

As required by the WMATA Compact, the public was provided with the opportunity to comment on the project. Following the guidelines established by Metro's Board-approved Public Participation Plan, the following report—the Public Hearing Staff Report—is a summary of Metro's public outreach efforts, the Project's Public Hearing, and the comments that were received.

This draft report is shared with the public on the project webpage for review and comment for ten days. Following that review, the final report will be finalized and presented by staff to Metro's Board of Directors, where the Board will make a determination on whether the proposed facility modifications will be accepted as an amendment to Metro's Mass Transit Plan. The activities and actions Metro takes to prepare and finalize the Public Hearing Staff Report are shown in (Figure 2).

Figure 2. Staff Report Process



2.0 Communications and Outreach to the Public

2.1 Communications and Outreach Overview

Communications and outreach were guided by the requirements for WMATA Compact Public Hearings and Metro's federally mandated, Board-approved Public Participation Plan (PPP).

Beyond meeting basic requirements for a Compact Public Hearing, Metro followed PPP guidelines to create a targeted communications plan. To encourage feedback on the proposal and fulfill Metro's Public Participation Plan, the communication and outreach plan focused on residents, community representatives, businesses, and property owners most impacted by the project. This included efforts to engage minority, low-income, and Limited English Proficiency (LEP) populations and persons who regularly use the West Falls Church station.

The communications and outreach efforts were conducted during the Project's official public comment period from September 17 through November 10, 2022.

The final communications and outreach plan included the following efforts:

- Stakeholder Communication
- Targeted Marketing and Media
- In-Person Outreach
- Public Hearing (in-person and virtually)

Metro collected feedback through the following sources during the public comment period:

- Online survey and feedback form
- Verbal and written testimony at the Public Hearing by telephone and in-person

The comments received can be found in Appendix D of this report.

2.2 Stakeholder Communication

Metro worked to leverage established communications resources to target local stakeholders.

Metro sent a targeted email on September 23, 2022 to 18 individuals representing 23 nearby stakeholders. Recipients included representatives from schools, local transit providers, local government, places of worship, apartment and residential communities, shopping, and a hotel. Recipients were invited to provide feedback and attend the public hearing. The email included a link to an online survey. A summary of the survey can be found in Appendix D of this report.

2.3 Targeted Marketing and Media

Targeted marketing, in-person outreach, and media relations tactics were used to increase awareness and encourage public feedback.

2.3.1 Project Webpage

The project webpage on Metro's website served as the project information hub and the primary channel for collecting public feedback. Information was presented in English and Spanish, and a variety of content was available for the public to review, including the Environmental Evaluation, parking analysis, and detailed design plans of the proposed changes. Metro's public hearing was also streamed live on this page and on YouTube.

Project Webpage



During the public comment period, the project webpage received 843 unique views. The average time spent on the page was just under 3 and a half minutes.

2.3.2 Social Media

Metro leveraged its social media following to get the message out across a variety of channels. In total, Metro's social media posts resulted in more than 27,000 impressions and more than 370 engagements across all platforms (Table 1).

Table 1. Social Media Engagement Summary

Media	Date	Details
Twitter	10/11/22	• 10,217 impressions • 159 engagements (including 6 retweets, 10 likes, 0 replies) • 75 link clicks
Twitter (second part to thread started on 10/11)	10/17/22	• 8,134 impressions • 123 engagements (including 0 retweets, 14 likes, 0 replies) • 29 link clicks
Twitter (Public Hearing announcement)	10/19/22	• 6,030 impressions • 53 engagements (including 2 retweets, 6 likes, 1 reply) • 0 link clicks
Facebook	10/1/22	• 1,493 people reached • 16 total engagements (11 reactions, 1 comment, 4 shares) • 16 link clicks
Facebook	10/11/22	• 1,652 people reached • 24 total engagements (16 reactions, 4 comments, 4 shares) • 6 link clicks

Note: Reach = the total number of people who saw the content (measure is estimated). Impressions = the number of times the content was displayed on a user's screen, no matter if it was seen, clicked, or engaged with or not. Engagements = Likes, comments, and shares.

Social Media Examples

Facebook



Facebook



Nextdoor



Twitter



2.3.3 Print Advertising

Paid advertisements were placed in publications covering multiple languages based on the station's demographic profile. Two public notices were placed in *The Washington Post* prior to the public hearing. Print ads were also placed in *Atref, El Tiempo Latino, Falls Church News Press, and Washington Hispanic* (Table 2).

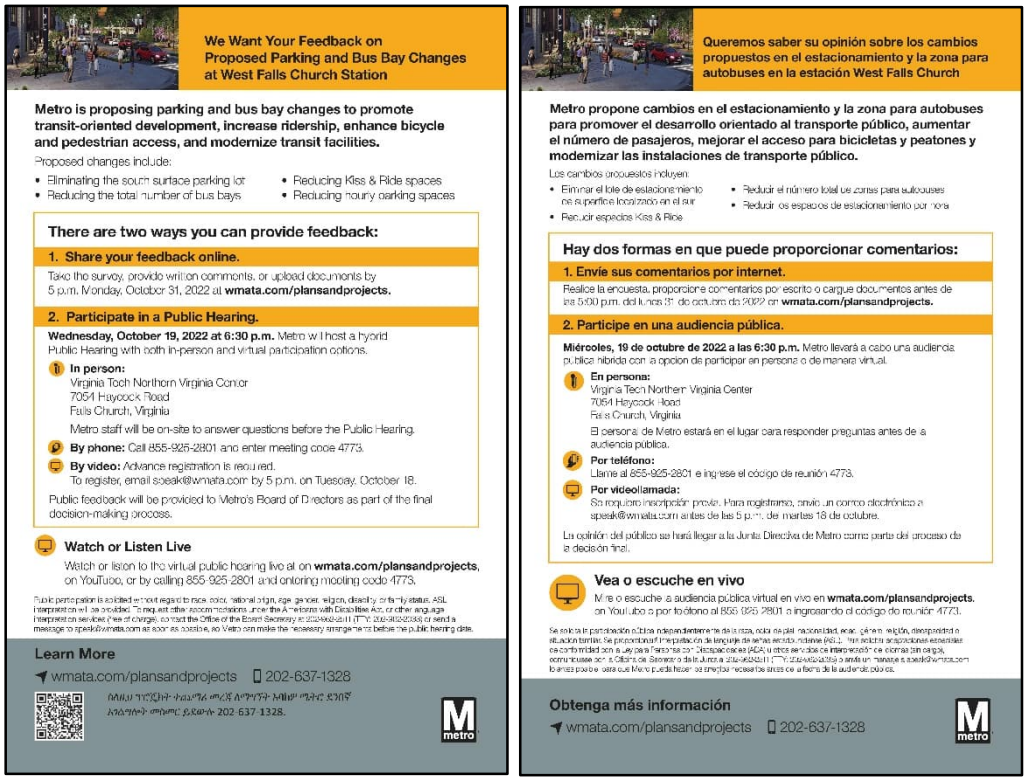
Table 2. Summary of Print Advertisements

Publication	Language	Run Date(s)	Total Est. Impressions
Atref	Amharic	10/14/22	8,000
El Tiempo Latino	Spanish	9/30/22	49,204
Falls Church News Press	English	9/30/22	10,000
The Washington Post	English	9/17, 9/24/22	98,400
Washington Hispanic	Spanish	9/30/22	45,000

2.3.4 Signage and Flyers

Information was posted in English and Spanish in and around West Falls Church Station to reach rail, bus, and parking customers.

- Digital graphics were posted on the digital displays in the station mezzanine.
- Signs were posted at each bus bay at the station.
- Flyers were distributed to the station manager and throughout the station.



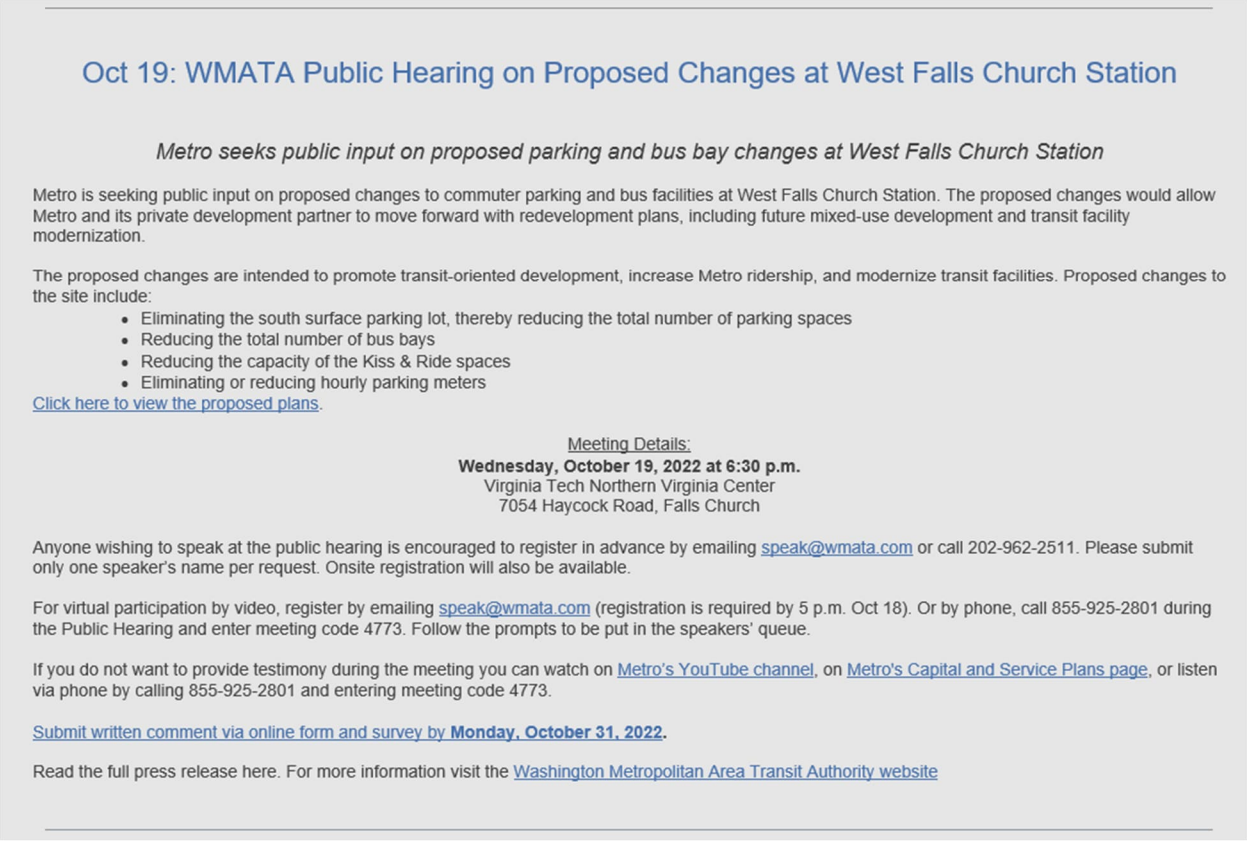
Printed and digital signs were posted in the station and at bus bays.

2.3.5 Media Relations

Metro issued a press release on September 23 to generate earned media coverage and encourage public feedback on the project. Fairfax County shared content in their newsletter, the Dranesville Dispatch, on September 30, 2022 (Table 3 and Table 4).

Table 3. Press Release Summary

Date	Title	Details
9/23/22	Metro seeks public input on proposed parking and bus bay changes at West Falls Church Station	Metro is seeking public input on proposed changes to commuter parking and bus facilities at West Falls Church Station.
9/30/22	Oct: 19: WMATA Public Hearing on Proposed Changes at West Falls Church Station	Metro seeks public input on proposed parking and bus bay changes at West Falls Church Station.



Oct 19: WMATA Public Hearing on Proposed Changes at West Falls Church Station

Metro seeks public input on proposed parking and bus bay changes at West Falls Church Station

Metro is seeking public input on proposed changes to commuter parking and bus facilities at West Falls Church Station. The proposed changes would allow Metro and its private development partner to move forward with redevelopment plans, including future mixed-use development and transit facility modernization.

The proposed changes are intended to promote transit-oriented development, increase Metro ridership, and modernize transit facilities. Proposed changes to the site include:

- Eliminating the south surface parking lot, thereby reducing the total number of parking spaces
- Reducing the total number of bus bays
- Reducing the capacity of the Kiss & Ride spaces
- Eliminating or reducing hourly parking meters

Click here to view the proposed plans.

Meeting Details:
Wednesday, October 19, 2022 at 6:30 p.m.
Virginia Tech Northern Virginia Center
7054 Haycock Road, Falls Church

Anyone wishing to speak at the public hearing is encouraged to register in advance by emailing speak@wmata.com or call 202-962-2511. Please submit only one speaker's name per request. Onsite registration will also be available.

For virtual participation by video, register by emailing speak@wmata.com (registration is required by 5 p.m. Oct 18). Or by phone, call 855-925-2801 during the Public Hearing and enter meeting code 4773. Follow the prompts to be put in the speakers' queue.

If you do not want to provide testimony during the meeting you can watch on Metro's YouTube channel, on Metro's Capital and Service Plans page, or listen via phone by calling 855-925-2801 and entering meeting code 4773.

Submit written comment via online form and survey by **Monday, October 31, 2022**.

Read the full press release here. For more information visit the Washington Metropolitan Area Transit Authority website

Dranesville Dispatch (9/30/2022)

Earned Media Coverage

Table 4. Earned Media Summary

Media	Details
FFX	West Falls Church development plans will require major Metro parking cuts
Patch	Reduced Parking For Redevelopment Proposed At West Falls Church Metro

Earned Media Example



NEWS

West Falls Church development plans will require major Metro parking cuts

Angela Woolsey September 26, 2022 at 1:30pm

A rendering of the proposed development outside the West Falls Church Metro station (via WMATA)

Metro anticipates reducing the parking capacity at its West Falls Church station by over 700 spaces in order to accommodate a planned redevelopment of the property between I-66 and Haycock Road.

FFXNOW

FFX (9/26/2022)

2.3.6 In-Person Outreach

Contracted professional bilingual outreach street teams were at the station several times to reach rails, bus, and parking customers in-person.

Three pop-up events were held at the station on the dates listed in

Figure 3. Customer Interaction Breakdown

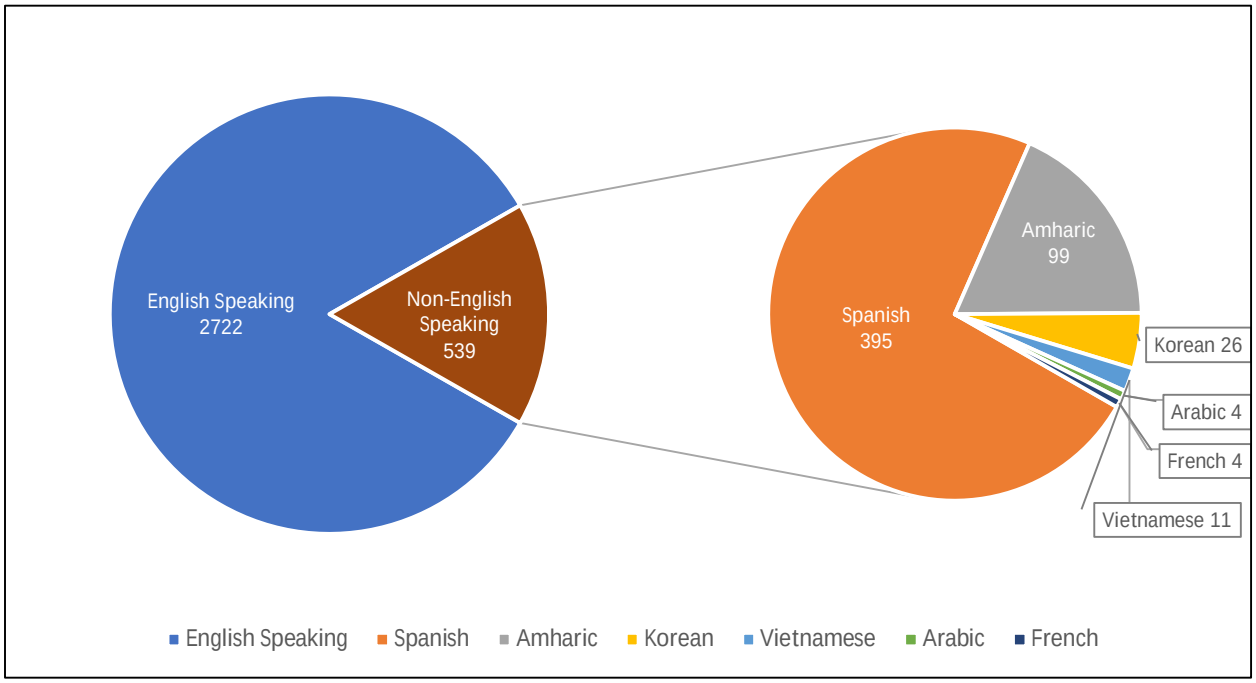


Table 5. The days and times of the events were selected specifically to coincide with the

Date	Time	Notes
Tuesday, Oct. 18	6 a.m. – 10 a.m.	Outreach teams engaged customers at the mezzanine and the southside bus bays.
Wednesday, Oct. 19	2 p.m. – 6 p.m.	Outreach teams engaged customers at the mezzanine, buses, and garage (flyered cars in the garage)
Thursday, Oct. 27	3 p.m. – 7 p.m.	2 staff at mezzanine 2 staff by the buses (all buses)

timeframe when the highest number of people would be at the station. Outreach teams distributed flyers, shared the date and time of the public hearing, answered questions, told people that more information was available at the project website and provided the web address, shared the different options for providing comments, and reminded them of the comment deadline. Each team member was equipped with a data-enabled tablet to administer the survey for anyone wanting to take the survey on-site. Overall, the project team interacted with 3,261 customers including 539 non-English speaking customer interactions (73.3% Spanish, 18.4% Amharic, 4.8% Korean, 2% Vietnamese, and occasional Arabic and French) (Figure 3). The project team distributed 1,221 flyers and 25 surveys were completed on site.

Table 5. In-Person Outreach Events

Date	Time	Notes
Tuesday, Oct. 18	6 a.m. – 10 a.m.	Outreach teams engaged customers at the mezzanine and the southside bus bays.
Wednesday, Oct. 19	2 p.m. – 6 p.m.	Outreach teams engaged customers at the mezzanine, buses, and garage (flyered cars in the garage)
Thursday, Oct. 27	3 p.m. – 7 p.m.	2 staff at mezzanine 2 staff by the buses (all buses)

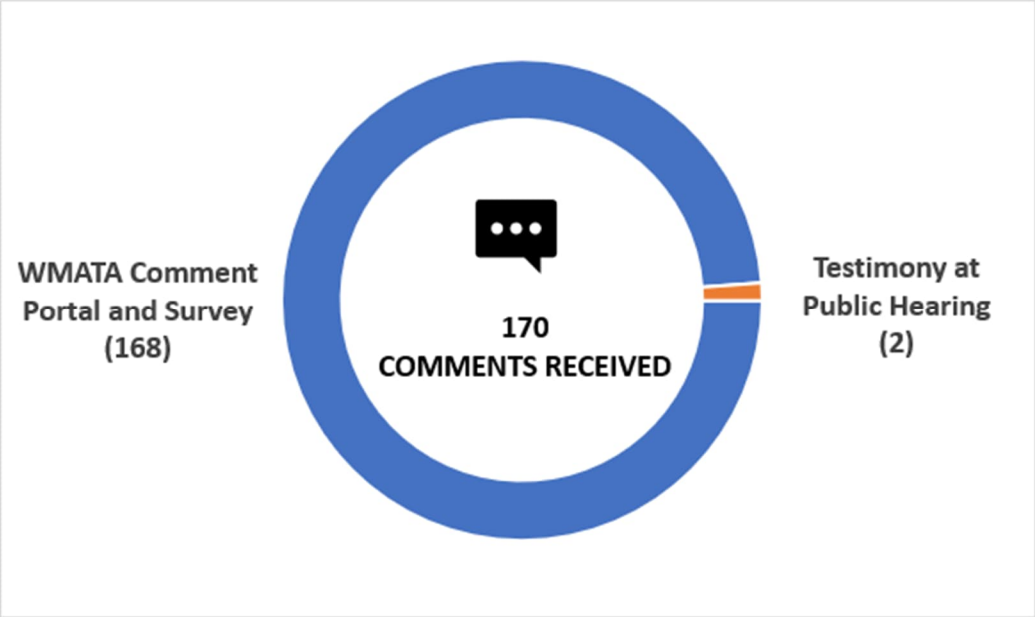
One hour prior to the public hearing, Metro staff held an open house during which people could review project information displayed on printed boards (Figure 4). This provided opportunity for the public to ask questions and give one-on-one feedback. There were no attendees at the open house.

Figure 4. Metro In-Person Outreach at Public Hearing



2.4 Public Input Results

Metro collected public input during the public comment period through an online survey tool that included uploaded documents and written comments and oral testimony collected at the Compact Public Hearing. In total, 186 completed surveys were received with 168 comments in total. Additionally, the survey was initiated 276 times but was not fully completed. Two oral testimonies were provided during the Compact Public Hearing. The public comment period was open from September 17 through 5 p.m. November 10, 2022. A summary of the input received from the online survey is summarized below.



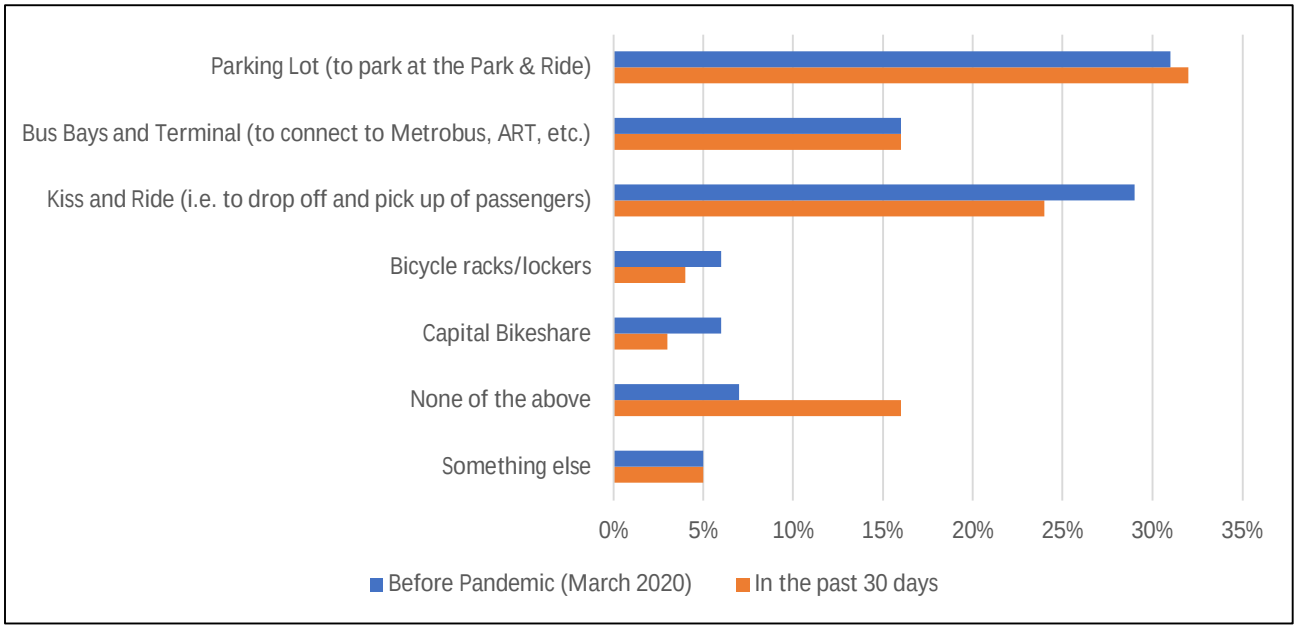
2.4.1 Facilities used at West Falls Church Station

The survey asked respondents which facilities they typically used at the West Falls Church Station before the pandemic (March 2020) and in the past 30 days (Table 6 and Figure 5).

Table 6. Facility Usage at West Falls Church Station

Facilities used at West Falls Church Station	Before Pandemic (March 2020)	In the past 30 days (October 19, 2022)
Parking Lot (to park at the Park & Ride)	31%	32%
Bus Bays and Terminal (to connect to Metrobus, ART, etc.)	16%	16%
Kiss & Ride (i.e. to drop off and pick up of passengers)	29%	24%
Bicycle racks/lockers	6%	4%
Capital Bikeshare	6%	3%
None of the above	7%	16%
Something else	5%	5%

Figure 5. Facility Usage Breakdown



2.4.2 Survey Demographics

Table 7 below shows the percentage breakdown of survey demographics. As noted, age range of survey responders was evenly distributed. Most people responding to the survey are identified as white and non-Latino.

Table 7. Survey Demographics

Age	18-24	6%
	25-34	17%
	35-44	22%
	45-54	17%
	55-64	23%
	65+	15%
Gender	Male	58%
	Female	41%
	Other	1%
Hispanic or Latino	Yes	8%
	No	92%
Race	African American or Black	6%
	American Indian or Alaska Native	2%
	Asian	14%
	Native Hawaiian or other Pacific Islander	1%
	White	76%
	Other	2%

3.0 Summary of the Public Hearing

Virtual Compact Public Hearing

A Virtual Compact Public Hearing was held on Wednesday, October 19, 2022, at 6:30 p.m., in person at Virginia Tech Northern Virginia Center and the hearing was streamed live on Metro's website and YouTube. Metro Board of Directors Chair Paul Smedberg chaired the hearing and Steven Segerlin, Director for Real Estate Development provided the summary of the proposed changes to transit facilities (Figure 6). The hearing was viewed on YouTube 134 times and two people provided oral testimony at the hearing (Figure 7). The staff presentation and script of the Public Hearing can be found in Appendices B and C of this report, respectively.

Figure 6. Metro Staff Presentation



Figure 7. Public Testimony



4.0 Comments Received for the Record

Comments to be considered for the record as part of this process were received through the online survey tool and oral testimony at the Compact Public Hearing. The public comment period was open Saturday, September 17 through 5 p.m. Thursday, November 10, 2022.

A total of 186 survey responses, with 168 providing comments, were received during the public comment period, and two individuals provided oral testimony at the Compact Public Hearing (Table 8 and Figure 8). A total of 166 comments were written in English and two comments were written in Spanish. Analysis of the written comments shows 51% of respondents supported the project, 21% opposed the project, and 28% neither supported nor opposed the project. Table 9 provides a breakdown of the comments by category. Comments received for the public record can be found in Appendix D.

Table 8. Summary of Survey Comment Responses

	Number	Percentage
Support	87	51%
Oppose	35	21%
Other	46	28%
TOTAL	168	100%

Figure 8. Survey Comment Response Breakdown

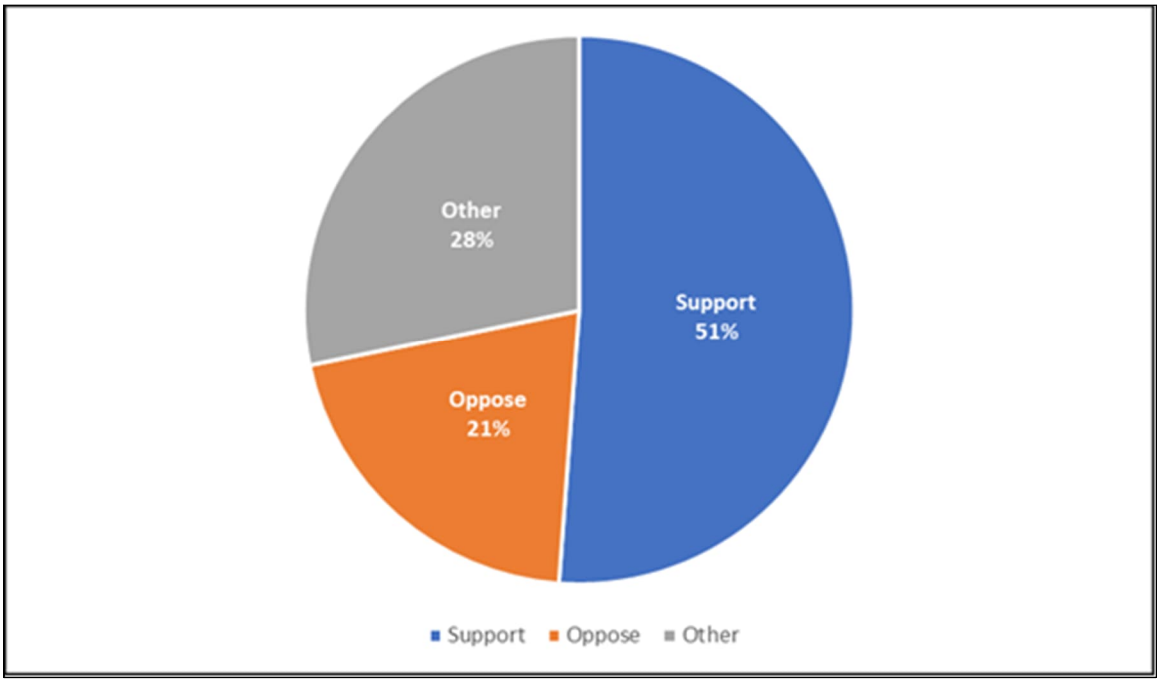


Table 9. Summary of Comments by Category

Category	Number of Comments	Overview
General Support for the Project	87	Comments expressed general support of the overall project
General Opposition to the Project	35	Comments felt entire project was not needed
Parking	113	Comments associated with opposition to, support for, or other about removal of parking spaces
Kiss & Ride	16	Comments associated with opposition to the reduction of the Kiss & Ride area
Bicycle and Pedestrian Safety and Improvements	47	Comments expressed concern about bicycle and pedestrian safety and accommodations and/or recognized the bicycle and pedestrian conditions and recommendations
Development	18	Comments expressed concern about additional development in the area, including from the project
Construction	7	Comments discussed concerns about the construction impacts of the project (traffic, access, disruption)
Comments on Metro Service	52	Comments related to bus bays, bus service, and metro service, both project specific and not related to the project.

5.0 Comments and Responses to Comments Received

The 168 written comments and two oral testimonies were grouped and are being presented as broader, recurring themes. Metro staff is providing responses to the overall concerns and themes expressed. Additional information is provided in the following section to include representative comments (see Appendix D for full comment details).

5.1 General Support for the Project

As noted previously, 87 people expressed general support for the project. They felt that the parking was underutilized and agreed with adding housing and development near the West Falls Church Metro Station.

Representative Comments

- *I support the proposed changes!*
- *I am in favor of the proposed changes especially since parking is underutilized.*
- *Building housing and developing the parking lots is a great idea and I support it whole heartedly.*
- *I agree to this proposal to restructure the parking and bus bay at West Falls Church station.*
- *Great idea to develop the outside station to make it more attractive to riders.*
- *This is a fantastic idea. We need more transit-oriented development in the US. It promotes a healthier culture for us and the environment, and it greatly increases people's quality of life compared to typical suburban sprawl.*
- *Esta bien.*

5.2 General Opposition to the Project

Thirty-five (35) people expressed general opposition to the overall project. Comments associated with opposition felt that the current arrangement of the station is adequate, and it is not necessary to spend funds. They felt that removing parking spaces would be detrimental to Metro customers and adding housing density would overwhelm the facility.

Representative Comments

- *No, thank you…The current arrangement is just fine. Adding this much density would overwhelm this facility.*
- *I oppose the planned redevelopment of the West Falls Church station campus.*
- *I disagree. I would like to keep place for a car.*
- *Leave as is.*
- *Don't do it. These changes will hurt the riders in many ways!*

Metro Response: The existing parking and bus facilities at West Falls Church are significantly underutilized as detailed in the Environmental Evaluation. Redevelopment of the site presents an opportunity to increase ridership in support of WMATA's Transit Oriented Development and Joint Development policy objectives but to also to help achieve the goals identified in the Fairfax County Comprehensive Plan.

5.3 Parking

Parking was mentioned by 66% of the respondents. Of those respondents that mentioned parking, some were supportive of reducing parking spaces, some opposed the reduction of parking spaces at the scale proposed by the project, and others mentioned parking, but were neither for nor against a reduction of parking spaces. There were 13 comments that mentioned concerns about the cost of parking at the West Falls Church Metro station and that the cost may increase with the reduction of spaces.

5.3.1 Supportive of Parking Reduction

Of the respondents that mentioned parking, 52% were supportive of reducing available parking to add transit-oriented development and restructure the metro station.

Representative Comments

- *Ditch the surface parking lot and let's use the space for buildings and stormwater retention and absorption.*
- *The current structure - a huge, mostly unused parking lot - does not fit today's needs for the station.*
- *I think it's definitely underutilized, so I support the change.*
- *Agree that surface parking should be redeveloped - we need more transit-accessible housing, especially for families.*
- *I fully support the plans to change the existing area around the West Falls Church metro to reduce parking and increase other capabilities.*

5.3.2 Opposed to Parking Reduction

Of the respondents that mentioned parking, 42% expressed the importance of not losing parking spaces at the station at the scale proposed. Some do not want any of the currently available parking spaces to be reduced, some want to keep more parking spaces than is proposed in the current project, and some suggest using other methods, like parking garages, to keep the amount of parking but reduce the land the surface lots take.

Representative Comments

- *Keep the parking*
- *Parking and riding is important to many of us to be able to continue to use metro. Please keep enough parking spaces so that we do not opt to drive into work instead, bypassing metro entirely.*
- *I disagree. I would like to keep place for a car.*
- *West Falls Church is the east most station on the orange/silver line with ample parking. East Falls Church's lot is very small. Please keep both lots for now.*
- *Please keep enough parking so people can still park at any time of day, even when commuting increases.*
- *Create a parking garage that would reduce the amount of land needed and keep the amount of parking spaces.*

Metro Response: The proposed changes to reduce Park & Ride capacity are based on an evaluation of current and future parking demand for the West Falls Church station as detailed in the Environmental Evaluation. Since the Silver Line Phase 1 opened in 2014, the station has seen a 35 percent decline in Park & Ride utilization thru 2019 (pre COVID-19) as commuting patterns shifted to the new Silver Line stations. The concept plan design also allows for flexibility to increase parking capacity in the future if parking demand grows faster than anticipated. Prior to the redevelopment of the north surface parking lot, which is the last and third phase of the project, WMATA will update its Parking Demand Study to determine if more capacity should be accommodated when constructing the replacement parking garage.

5.4 Kiss & Ride

There were 16 comments concerning the reduction of the Kiss & Ride spaces to only 20, including respondents that supported the overall reduction of parking and removal of the south surface parking lot, as well as respondents that were opposed to the overall reduction of parking spaces.

Representative Comments

- *Kiss and ride is important to me; our family uses that frequently as well, so we'd hate to see it eliminated, though are open to its reconfiguration as it does seem to take up a lot of space, especially given the number of folks who now use it.*
- *I support generally as long as there is space to line up for Kiss and Ride pickup since those spaces would be significantly reduced.*
- *The number of Kiss and Ride spaces (20) described in the project does not seem very high, especially if this is going to be a large mixed-use development which presumably is going to attract more visitors to the development. I would think 25-30 spaces seems more reasonable.*
- *I would suggest to increase a bit of the kiss and ride parking as 20 parking spaces seems limited and the population in this area is growing.*
- *Ok to decrease the hourly individual parking. Ok to decrease bus bays if bus service not impacted%. Keep kiss and ride.*
- *I would not support the plan to reduce kiss & ride space or # of parking lots. The space during the rush hours is just adequate for now.*
- *I believe that 20 kiss and ride spots is very shortsighted. Please don't severely undersized this. The Dunn Loring kiss and ride and taxi area is a joke. There is absolutely no room for anyone to move around.*

Metro Response: The proposed changes to reduce Kiss & Ride capacity are based on an evaluation of current and future parking demand for the West Falls Church station as detailed in the Environmental Evaluation. The project will not eliminate the facility but reconstruct and replace approximately 20 spaces immediately adjacent to the Metro station. The creation of a street grid with on-street parking will also provide additional opportunities for pick-up/drop-off.

5.5 Pedestrian and Bicycle Safety and Improvements

Approximately, 26% of the comments mentioned pedestrian and bicycle safety concerns and improvements. Many comments addressed both pedestrian and bicycle safety concerns and improvements together. Several were concerned about the current level of pedestrian safety and updating a pedestrian generator before updating the pedestrian facilities around the station. Others were supportive of the improvements to pedestrian and bike facilities included in the project.

Thirteen respondents mentioned bike lanes. Respondents are wanting more protect bike lanes on the nearby roads to the station, including entrance roads to the station.

Ten respondents requested better lighting be added at the station and parking lots to improve safety.

Representative Comments

- *The walkability for Falls Church is grossly overstated. Traffic snarls and pedestrian right away is often more of a hazard than anything else. It is not uncommon for residents of Falls Church to drive to the WFC station due to these pedestrian issues around the city.*
- *all roads nearby should have protected bicycle lanes*
- *More bicycle infrastructure, please.*
- *There should be no road widening, but rather sidewalks and protected bike lanes. This will induce other modes of transportation.*
- *I am very happy to see the inclusion of bike and pedestrian improvements.*
- *Sidewalks on both sides of all roads - All roads should have protected bike lanes - Increase the lights in the area - Protected Bicycle lanes on all roads.*

Metro Response: The project will enhance pedestrian and bicycle access to the Metro Station. Significant investments on the Metro station development site will be made in new sidewalks, bike lanes, shared use paths and a grid of streets designed to promote a safe and inviting environment for pedestrians and cyclists. The project is also planned to link to similar planned investments in the adjoining Virginia Tech site and City of Falls Church property, to encourage connectivity from all three developments to the Metro Station.

Following its approval of the comprehensive plan amendment, Fairfax County established the West Falls Active Transportation Task Force to identify bicycle and pedestrian improvements in the area.

5.6 Development

There were 18 respondents that commented on the amount of development already happening in West Falls Church. The comments shared a concern of the area around the station becoming overdeveloped, as mixed-use developments are coming into the area and adding additional development at the West Falls Church Metro Station would be too much. Some of the comments also show concern that the metro station will be overwhelmed with people living in all of the new developments.

Representative Comments

- *The additional construction in the area from Meridian High School moving and also the new mixed-use development on Haycock and Route 7 will cause massive amounts of traffic. The reduction of parking spaces and addition of a number of buildings will cause WFC to be jammed packed.*
- *The West Falls Church area has become very crowded over the past few years and with the high school nearby moving, a massive apartment/condo and mixed-use area is already in development. This will cause massive traffic in the area that has little land to develop.*
- *To propose adding all of the new development is outrageous. The very things that attracted people to the area….less crowding, smaller town appeal, green space and beautiful trees, and most important SAFETY will be gone. Replaced with an enormous traffic problem, noise, congestion, trash, reduction in safety for walkers/runners and our children.*
- *Not every inch of land needs to be monetized with mixed-use "development!" How about creating truly public space instead, like a park? The Washington metro area, and Fairfax County in particular, and Falls Church in particular, just keeps getting denser and denser with "development" and the accompanying congestion, unsightliness, inconvenience, and pollution*
- *I am firmly against this development for a number of reasons: - the sheer scale of new residents is dramatic - how do our schools support this influx - impact on roads - Haycock is a significant road for commuter traffic - - utilities - Dominion Electric cannot provide adequate service…*

Metro Response: The County and Commonwealth are responsible for evaluating the scale of development and its impact on public facilities. Their evaluation process was initiated by a site-specific plan amendment that was submitted to the Fairfax County comprehensive plan for the West Falls Church Transit Station Area. It was adopted by the Fairfax County Board of Supervisors in July 2021. A Traffic Impact Analysis was also submitted and approved by VDOT. This amendment provided a maximum density that is modest compared to other Metro Stations in the county. The allowable "Floor Area Ratio" – a measurement of density – is capped at 0.96 for the Metro property.

The county is currently reviewing a proposed Conceptual Development Plan and Final Development Plan from the development team that will update the zoning to match the intent of the site-specific plan amendment.

The development team also has a website that summarizes the development plans and outreach activities to the community they are undertaking to ensure gather feedback on the project plan.

5.7 Construction

Seven comments shared concerns regarding potential construction impacts and the associated disruptions. Some of the comments were concerned with the construction impacts on top of the other construction in the area.

Representative Comments

- *… The ridership of metro in the suburban Virginia area was adversely impacted by the previous work done at this station, which delayed or prevented easy access to the facilities and the timely function of the trains…*
- *…While road construction and changes may be temporarily annoying, it is in the long-term interests of this area for development at the West Falls Church Station to happen…*
- *…we will receive the ripple effect of the construction, deliveries, etc. from this project…*
- *We are already experiencing traffic delays and noise from the construction at the Fall Church City's project at the corner of Haycock and Leesburg Pike*
- *…The result will be congestion, horrible skyline and view, years of construction, high taxes for existing residents, road damage, vibrating felt in homes like we do now from the Falls Church high school mess, crazy traffic, pedestrian and biker dangers, and stripping of trees and green space…*

Metro Response: Construction activities will be overseen by the Commonwealth, County, and Metro. Metro requires the developer to prepare a Maintenance of Traffic Plan, which must maintain access to the Metro's transit facilities throughout construction.

The developer has proposed proffers to the county that prior to start of construction, a meeting will be held with representatives for nearby communities, to provide information on planned construction activities, truck routes and phasing, to coordinate solutions to identified concerns. The developer will prepare a Construction Activity Plan prior to each phase of development, for the county.

5.8 Comments on Metro Service

Several comments were made about the reduction of bus bays and transit options. Eleven respondents did not want to reduce the bus bays at West Falls Church Station. Other comments were made to increase the bus service to and from the West Falls Church Metro Station.

Some comments were made about Metro service, including increasing the frequency of trains during rush hour. Additional comments were made about the silver line and some respondents wanted the silver line to have a stop at West Falls Church Metro Station.

Representative Comments

- *I do not see the purpose, however, of reducing the number of bus bays. The Falls Church area deserves more bus access not less.*
- *It is unclear whether you are proposing impacts to the bus bay on the other side of the metro which has no parking spots.*
- *Therefore, it does NOT make any sense to reduce the number of bus bays and foreclose on the possibility of a substantial expansion of transit services.*
- *Increase bus service to and around the station*
- *I would like to see increased bus service and long-term bike lockers.*
- *The metro needs to encourage ridership through increased access, discounted fares, timely schedules, and increased safety.*

Metro Response: These comments are outside of Metro's scope in this Compact Public Hearing but will be shared with the respective Metro divisions for consideration.

6.0 Responses to Comments Received on the Draft Public Hearing Staff Report

[This Section will be filled in after the Draft Public Hearing Staff Report is circulated for public review and comment.]

7.0 Other Information for the Public Record

No other information has been provided.

8.0 Staff Recommendation

Staff recommends approval of the proposed changes to the West Falls Church Metro Station needed to facilitate joint development adjacent to the Curtis Memorial Parkway (I-66). Staff finds that there should be no revisions to the proposed transit facility changes as a result of the Compact Public Hearing and staff report analysis.

These changes include the following modifications to Metro facilities:

- Reduce bus capacity from 8 bays to 4 bays
- Reduce Park & Ride capacity from 2,009 spaces to 1,350-1,450 spaces
- Reduce Kiss & Ride capacity from 64 spaces to approximately 20 spaces
- Eliminate 68 paid on-street metered parking spaces

Staff recommends the Metro Board approve this Compact Public Hearing Staff Report and accept an amendment to the Mass Transit Plan to implement these facility changes at the West Falls Church Station.

APPENDIX A: NOTICE OF PUBLIC HEARING

Notice of Public Hearing

Washington Metropolitan Area Transit Authority
Proposed Changes to Transit Facilities at West Falls Church
Fairfax County, VA
Docket R22-03

Purpose

Notice is hereby given that a public hearing will be held by the Washington Metropolitan Area Transit Authority on proposed changes to transit facilities at the West Falls Church Metrorail Station in Fairfax County, VA as follows:

Hearing No. 644

Wednesday October 19, 2022 at 6:30 p.m.
Virginia Tech Northern Virginia Center
7054 Haycock Road
Falls Church, VA 22043

This hearing will also be conducted virtually and testimony can be provided via phone or video (see below). The hearing can be viewed online at:
wmata.com/plansandprojects **or** youtube.com/metroforward

To listen via telephone: 855-925-2801, Meeting Code 4773

Please note that this date is subject to cancellation. In the event of a cancellation, Metro will post information about the rescheduled hearing on wmata.com

Sign language interpretation will be provided. Any individual who requires special assistance or additional accommodation to participate in this public hearing, or who requires these materials in an alternate format, should contact the Office of the Board Corporate Secretary at 202-962-2511 or TTY: 202-962-2033 as soon as possible in order for Metro to make necessary arrangements. For language assistance, such as an interpreter or information in another language, please call 202-962-1082 at least 48 hours prior to the public hearing date.

For more information please visit
wmata.com/plansandprojects

PURPOSE OF THE PUBLIC HEARING

Notice is hereby given that a public hearing will be held by the Washington Metropolitan Area Transit Authority (WMATA) regarding the environmental report and general plans for changes to transit facilities at the West Falls Church Metrorail Station in Fairfax County, Virginia. At the hearing, WMATA will receive and consider public comments and suggestions about the proposal. The proposed design concepts may change as a result of this hearing.

HOW TO REGISTER TO SPEAK AT THE PUBLIC HEARING

All organizations or individuals desiring to be heard with respect to the proposal will be afforded the opportunity to present their views and make supporting statements and to offer alternative proposals. Public officials will be allowed five minutes each to make their presentations. All others will be allowed three minutes each. Relinquishing of time by one speaker to another will not be permitted.

Individuals can provide testimony at the hearing in one of three ways:

In person: Individuals wishing to provide testimony in person during the hearing are encouraged to pre-register by emailing speak@wmata.com or calling (202) 962-2511 by 5 p.m. on Tuesday, October 18, 2022. Please submit only one speaker's name per request. Advance registration to provide in-person testimony is not required.

By videoconference: Individuals wishing to provide testimony during the hearing via videoconference are required to furnish, in writing, their name and organizational affiliation, if any, via email to speak@wmata.com by 5 p.m. on Tuesday, October 18, 2022. Please submit only one speaker's name per request.

By telephone: Individuals should call (855) 925-2801 during the hearing and enter Meeting Code 4773. Advance registration to provide testimony via telephone is not available.

HOW TO SUBMIT TESTIMONY NOT AT THE PUBLIC HEARING

Testimony may be submitted online about this proposal at wmata.com/plansandprojects. Options to submit testimony online include completing a survey, providing written comments or uploading letters or other documents. Online submission will begin at 9 a.m. on Saturday, September 17, 2022 and will close on Thursday, November 10, 2022 at 5 p.m. This is in addition to your ability to speak at a public hearing. For those without access to computers or internet, testimony may also be mailed to the Office of the Board Corporate Secretary, Washington Metropolitan Area Transit Authority, 300 7th Street, SW, Washington, DC 20024. All comments must be received by the Office of the Secretary by 5 p.m. on Thursday, November 10, 2022 to be included in the public record.

The comments received by the Office of the Board Corporate Secretary, along with the online submissions and public hearing comments, will be presented to the WMATA Board

of Directors and will be part of the official public hearing record. Please note all statements are releasable to the public and may be posted on WMATA's website, without change, including any personal information provided.

WHAT IS PROPOSED

WMATA proposes changes to the West Falls Church Metro Station ("Metro Station") to accommodate a joint development project ("Project") led by EYA, Hoffman, and Rushmark ("Developer"). These recommended changes are made after significant evaluation of future demand for the transit facilities at the Metro Station.

The proposed joint development project would include the following modifications of WMATA facilities:

- Reduce existing commuter Park & Ride capacity from 2,009 spaces to 1,350 spaces, thereby eliminating the south parking lot.
- Relocate the Kiss & Ride spaces to a new roadway closer to station; reduce capacity from 64 spaces to approximately 20 spaces, including about 10 short-term paid spaces, two ADA spaces, and short-term drop-off spaces.
- Replace the eight bus bays currently located in a bus loop with no fewer than four bus bays along a new roadway immediately adjacent to the station plaza.
- Eliminate or reduce 68 Metro-operated hourly paid parking spaces along the Metro Access Road.

REFERENCE MATERIAL AVAILABLE FOR INSPECTION

The docket consists of this Notice of Public Hearing, an environmental report, and general plans for the proposed changes to transit facilities at the West Falls Church station. These documents are available online at wmata.com/plansandprojects and may be inspected during normal business hours at the following location:

WMATA
Office of the Board Corporate Secretary
300 7th Street, SW
Washington, D.C. 20024
202-962-2511
(Please call in advance to coordinate)

WMATA COMPACT REQUIREMENTS

WMATA's Compact requires that the Board, in amending the Mass Transit Plan, consider current and prospective conditions in the transit zone should the project be built. The transit zone includes Fairfax County and considerations include, without limitation, land

use, population, economic factors affecting development plans, existing and proposed transportation and transit facilities, any dislocation of families or businesses; preservation of the beauty and dignity of the DC Metro Area; factors affecting environmental amenities and aesthetics, and financial resources. The mass transit plan encompasses, among other things, transit facilities to be provided by WMATA, including stations and parking facilities, and the character, nature, design, location and capital and operating cost thereof. The mass transit plan, in addition to designating the design and location of transit facilities, also provides for capital and operating expenses, as well as "various other factors and considerations, which, in the opinion of the Board, justify and require the projects therein proposed" all as more particularly set forth in WMATA's Compact.

APPENDIX B: PUBLIC HEARING PRESENTATION MATERIALS

Compact Public Hearing
Docket R22-03
West Falls Church

October 19, 2022
Public Hearing

Agenda

- Purpose of Public Hearing
- Proposed Changes to Metro Facilities
- Public Comments
- Next Steps

wmata.com/plansandprojects

Para recibir información sobre este proyecto, sírvase llamar a la línea de servicio al cliente de Metro al 202-637-1328.

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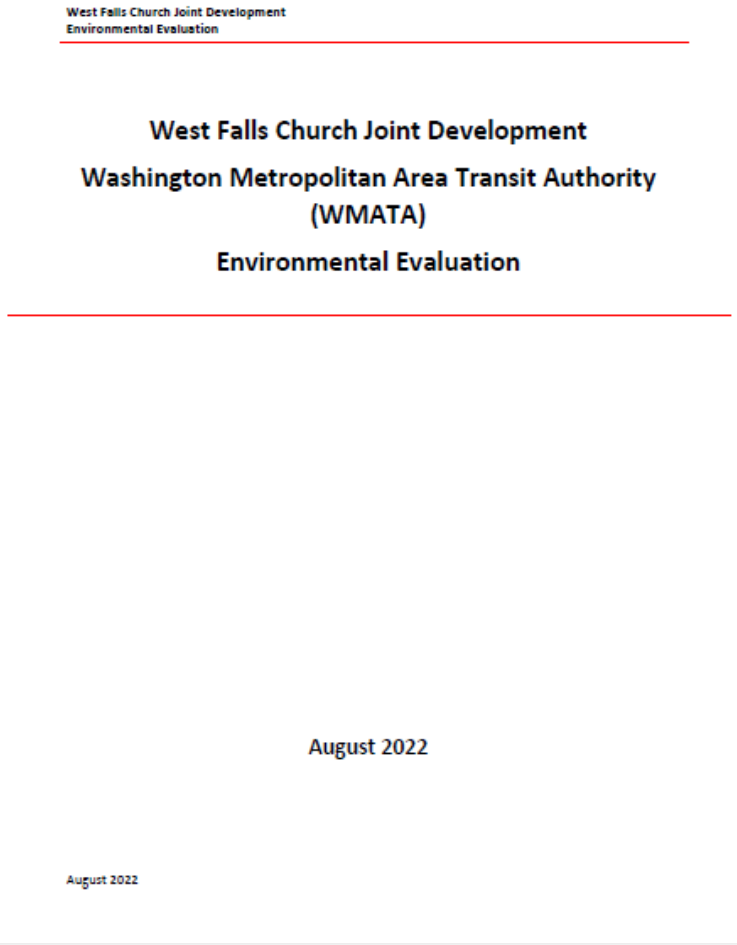
想要获取该项目的更多信息，请致电地铁客户服务热线 202-637-1328。

想要獲取有關此項目的其他信息，請致電地鐵客戶服務專線202-637-1328。

Reference Materials

WMATA Compact Public Hearing Materials

- https://www.wmata.com/initiatives/plans/West-Falls-Church-Compact/
- www.wmata.com/plansandprojects


West Falls Church Joint Development
Environmental Evaluation

West Falls Church Joint Development

Washington Metropolitan Area Transit Authority (WMATA)

Environmental Evaluation

August 2022

August 2022

Providing Testimony at Hearing

Call **855-925-2801** and enter code **4773**

Press ***3** to be added to the speakers' queue

Public Hearing Procedures

- Public Officials **5 minutes each**
- Private Citizens **3 minutes each**

Relinquishing of time by one speaker to another speaker is not allowed

Purpose of Hearing

- To obtain public input on the following changes to the facilities at the West Falls Church Metro Station:
  - Reducing bus capacity from 8 bays to 4 bays
  - Reducing Park & Ride capacity from 2,009 spaces to 1,350-1,400 spaces
  - Reducing Kiss & Ride capacity from 64 spaces to approximately 20 spaces
  - Eliminating the 68 paid on-street metered parking spaces

Background

- 1986 Station opens
- 2014 Silver Line opens
- 2017 City of Falls Church approves school redevelopment project
- 2018 Comprehensive plan amendment submitted
- 2021 Comprehensive plan adopted by County
- 2021 WMATA Board approval of Joint Development Agreement & to hold Compact Public Hearing



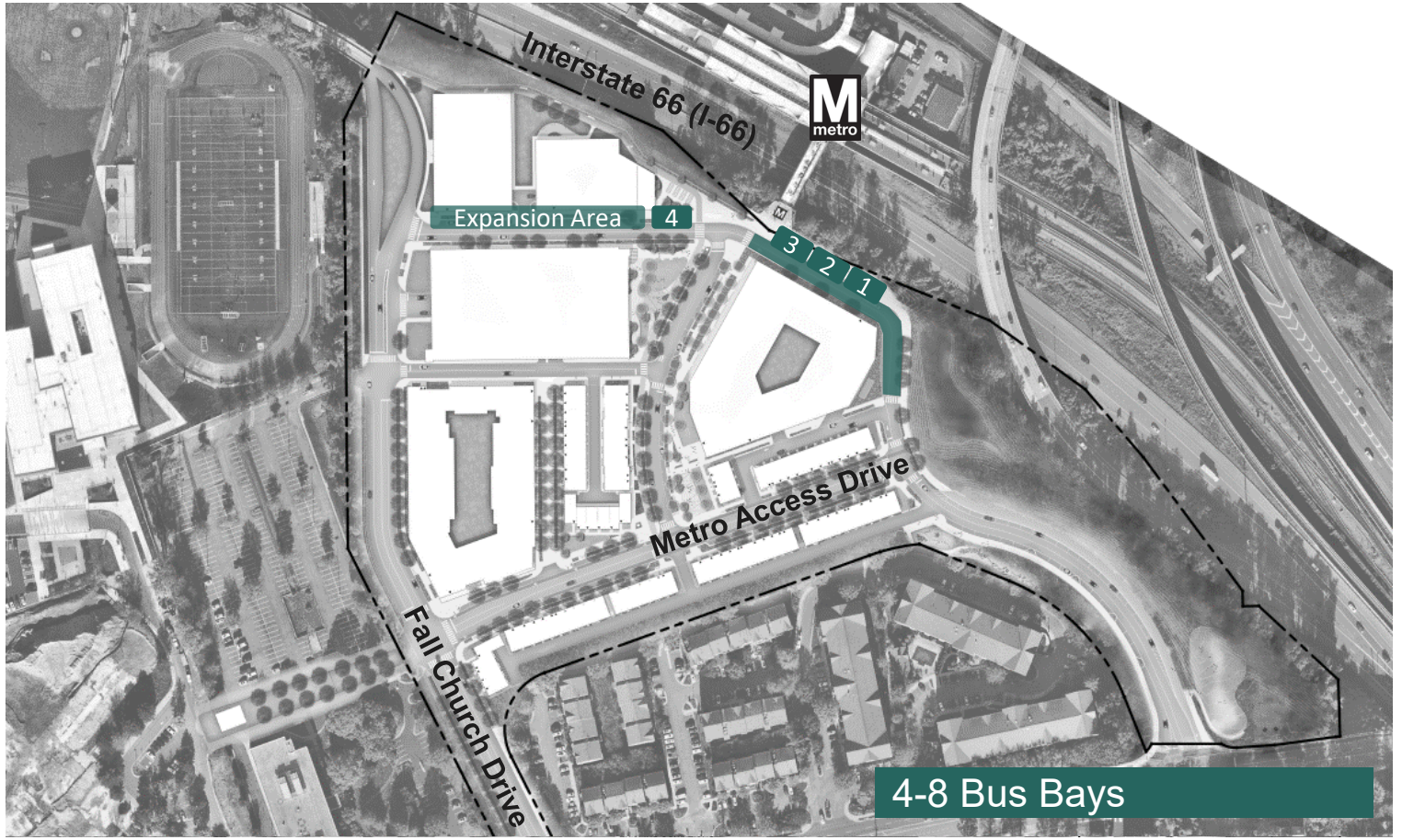
Changes to Bus Facilities

Capacity

- Proposes reduction from 8 bays to 4 bays
- Aligns with pre-COVID bus service demand patterns, but retains expansion potential—if needed
- Route 7 BRT to not use Metro Station property—currently planned to remain on Leesburg Pike

Access & Configuration

- Entrance remains on Metro Access Dr, but exit changed to Falls Church Dr
- No private vehicles allowed in bus area by bays 1-3



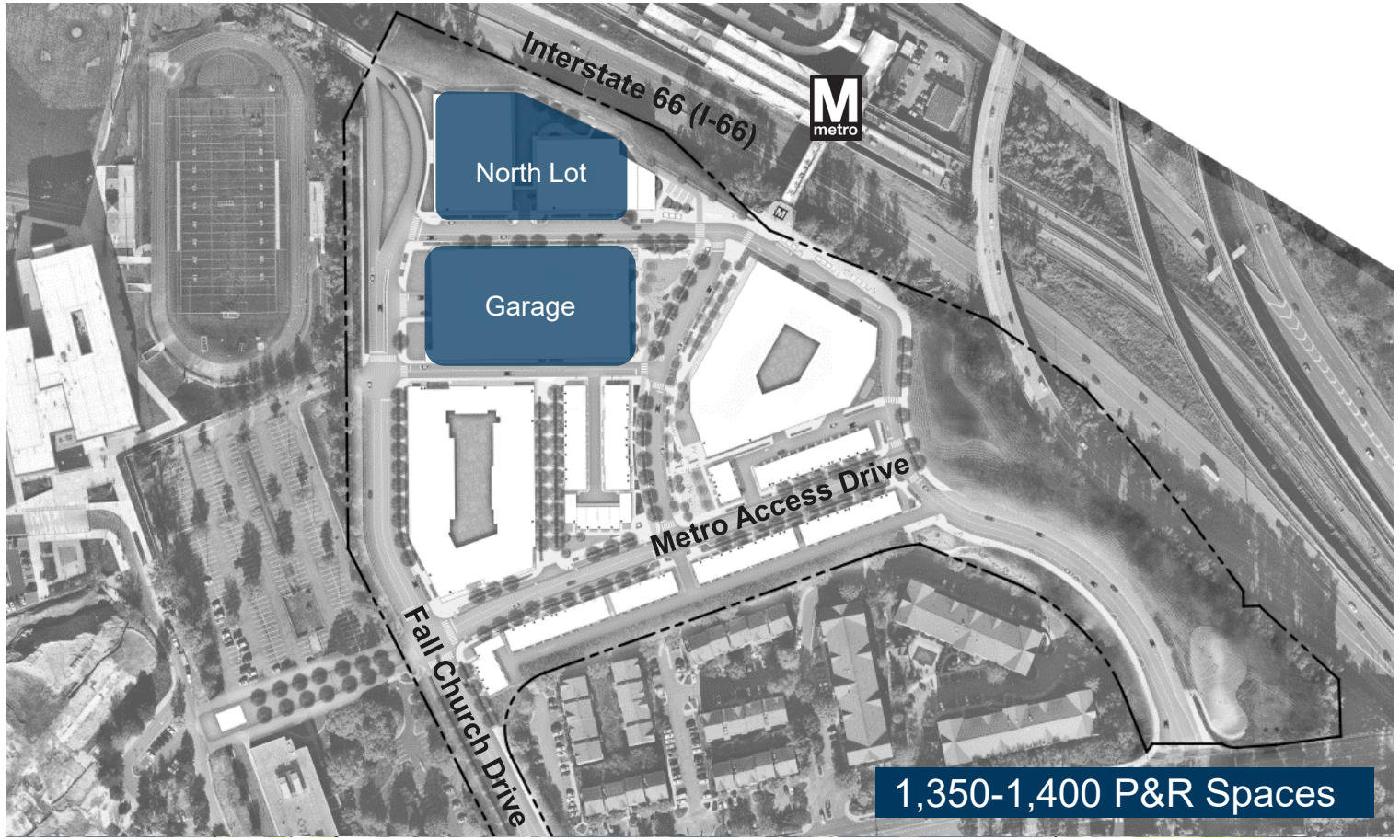
Changes to Park & Ride Facilities

Capacity

- Proposes reduction from 2,009 spaces to 1,350 - 1,400 spaces
- Aligns with pre-COVID demand patterns with future growth factor
- The North lot will be redeveloped as the last phase (est. 2030)—and the final parking capacity will be based on new demand study

Access & Configuration

- Still accessible from Metro Access Dr & Falls Church Dr
- North lot may be converted into a garage in the future



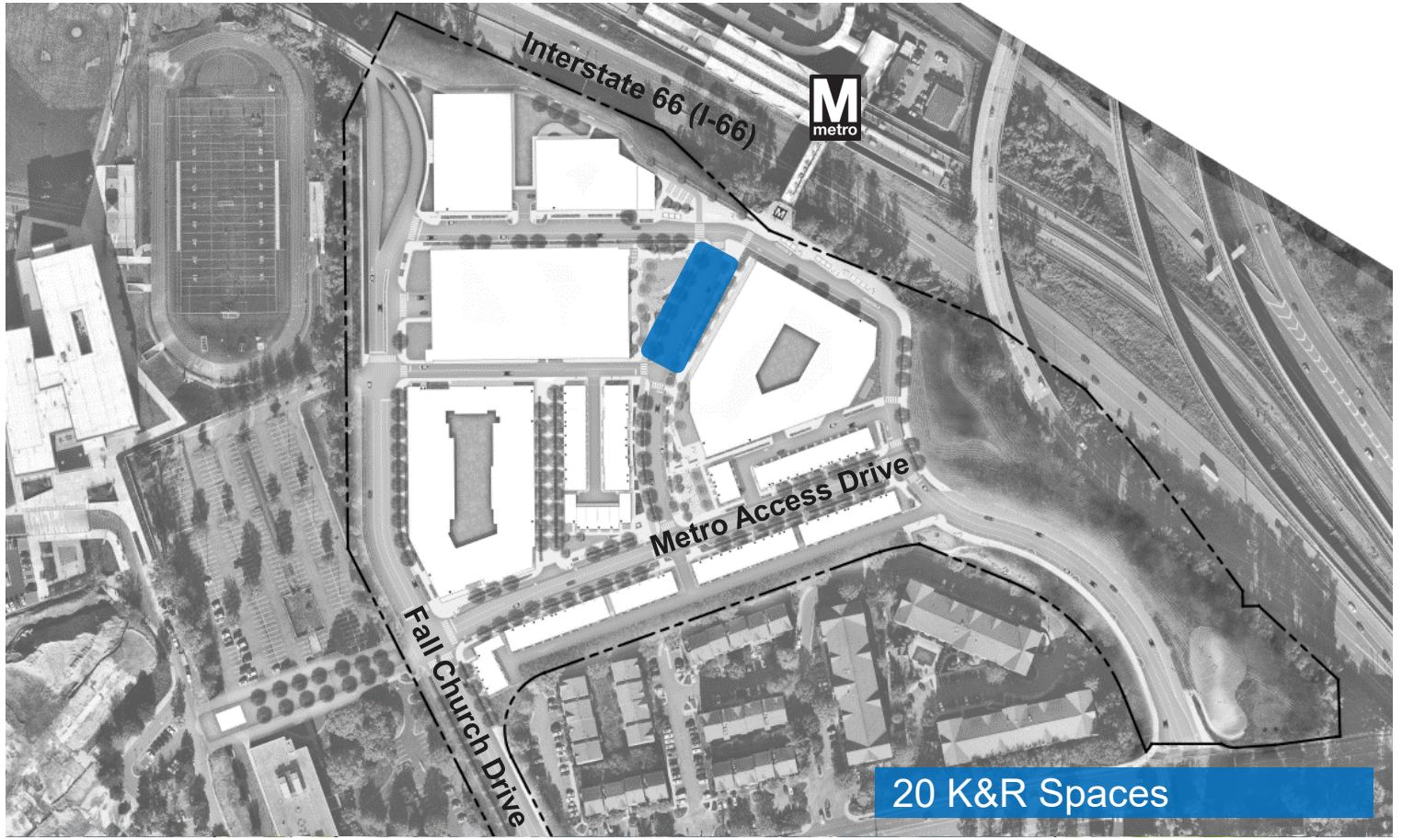
Changes to Kiss & Ride Facilities

Capacity

- Proposes reduction from 64 spaces to approximately 20 spaces
- Aligns with pre-COVID pick-up/drop-off demand patterns with future growth factor

Access & Configuration

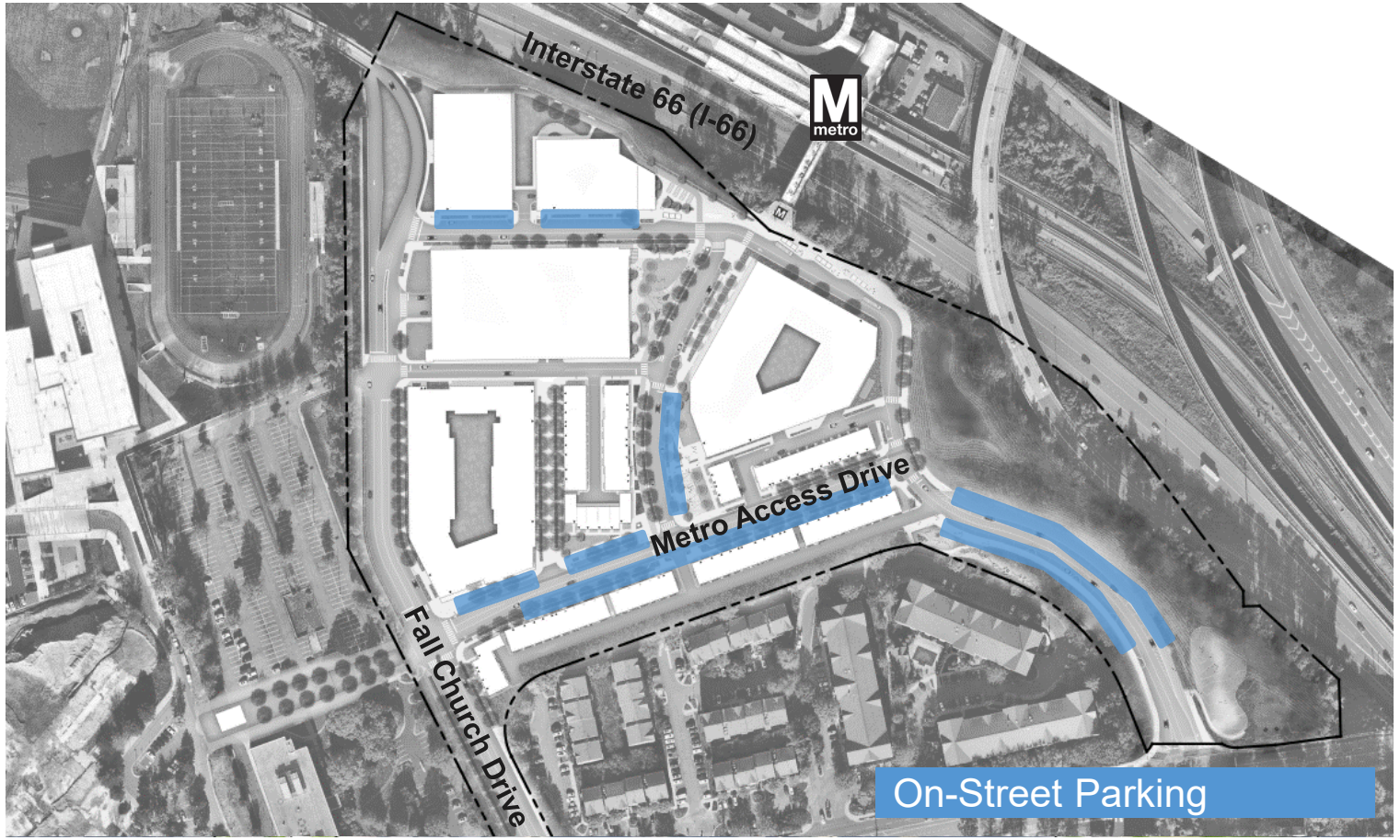
- Accessible from Metro Access Dr & new access from Falls Church Dr
- Final space design to be determined in coordination with County entitlement process—but map shows general vicinity



Changes to Paid On-Street Metered Parking

Capacity

- Proposes eliminating the 68 paid on-street metered parking as a facility subject to the WMATA Mass Transit Plan
- Metered parking to still exist within the comprehensive development plan for the site
- Meters may be operated by WMATA or private developer



Environmental Analysis

- An Environmental Evaluation (EE) for the transit facility changes has been provided as part of the Docket. Likely environmental impacts are summarized in the table below.

Environmental Features	Permanent Impacts	Temporary Impacts Construction-related	Minimization & Mitigation Efforts
Traffic	None – No additional bus or private vehicular trips anticipated for transit facilities given capacity reductions Safer access for pedestrians and bicycles to be provided on-site	Disruption to pedestrian and vehicular access during construction	Establish interim operations plan to maintain access during construction for motorized & non-motorized (bike/ped) traffic to the West Falls Church Metro station
Air Quality & Noise	No impacts resulting from changes to transit facilities	Dust or noise from construction-related equipment & operations	Cleaning, minimizing night-time work, noise control measures
Stormwater	None – total impervious areas of transit facilities to be reduced No changes to existing pond capacity	Minor sediment or erosion risk	Controls to be applied per Fairfax County requirements for construction operations

Providing Testimony at Hearing

Call **855-925-2801** and enter code **4773**

Press ***3** to be added to the speakers' queue

Public Hearing Procedures

- Public Officials **5 minutes each**
- Private Citizens **3 minutes each**

Relinquishing of time by one speaker to another speaker is not allowed

Providing Written Comments

Must be received by **5 p.m**. on **Sunday, November 10, 2022**
~~Oct 31, 2022~~

Option 1

Submit online at:
www.wmata.com/plansandprojects

- You can comment anonymously or give your name
- You can also answer survey questions, compose freeform text, or upload a document

Option 2

Submit by mail to:

- Office of the Secretary
  WMATA
  300 7th Street SW, Washington, DC 20024
- Reference "West Falls Church Public Hearing" in the "subject" line.

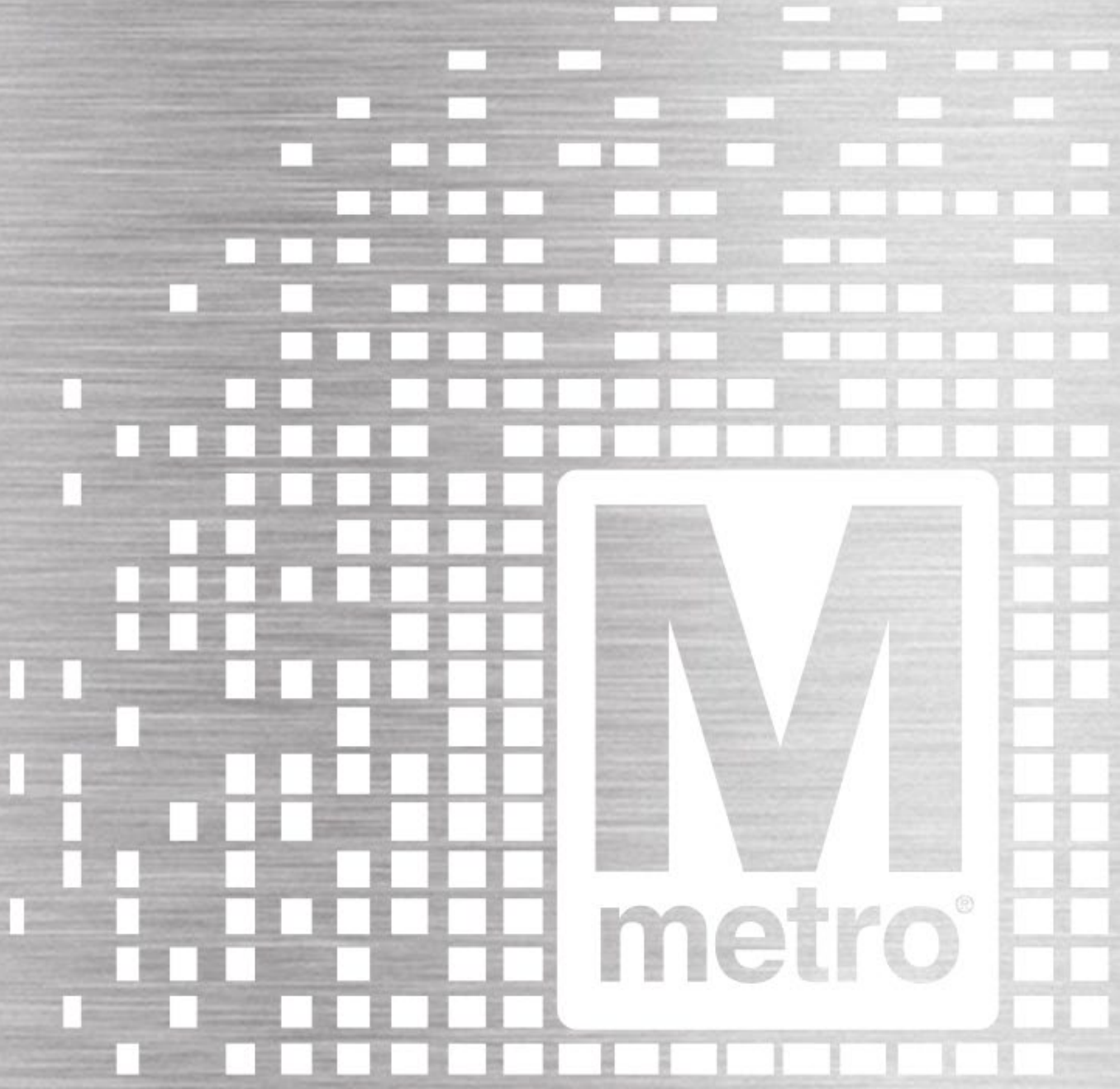
Things Outside the Purpose of this Hearing

- *Not* within the scope of this hearing are, for example:
  - Size, mix or design of buildings or future joint development projects
  - Land use matters
  - Service complaints
  - Fares
- Any matters raised outside the scope of this hearing cannot be resolved as part of this hearing process

Next Steps

November 10, 2022	Close of Public Comment Period
~~October 31, 2022~~	
~ Winter 2023	Draft Staff Report posted on WMATA website for 10-day public comment period
~ Spring 2023	Final Staff Report presented to Finance & Capital Committee and Metro's Board of Directors for approval

Thank you for
your participation!



APPENDIX C: PUBLIC HEARING SCRIPT

West Falls Church – WMATA Compact Public Hearing – Oct 19, 2022

SLIDE 1

MR. SMEDBERG:

- I call this meeting to order.
- I am Paul Smedberg, the Chair of the Metro Board of Directors.
- With me tonight is Jennifer Ellison, Metro's Board Corporate Secretary, and
- Steven Segerlin, the Director for Metro's Office of Real Estate and Station Area Planning, who will be giving tonight's presentation.
- I'd also like to recognize that we're joined this evening by Dranesville District Supervisor John Foust, who represents this area on the Fairfax County Board of Supervisors. Welcome, Supervisor Faust.

SLIDE 2 - AGENDA

- This hearing is convened by the Metro Board of Directors to gather public comments on a proposed changes to the West Falls Church Metro Station located in Fairfax County, VA.
- This is our Agenda today; We will begin with some background information, then move to describing the proposed project, followed by an overview of the protocol for commenting. We will then hear public comments and discuss next steps.

SLIDE 3 – REFERENCE MATERIALS

- The General Plans, Environmental Evaluation—including the Parking Analysis—for this project are available online at these links in the presentation. Two copies are also available at the back of the room at the registration desk
- Notice of this hearing was made by publication in the Washington Post, and ads were placed in the Falls Church News Press, Atref, El Tiempo Latino, and Washington Hispanic.
- The docket was sent to all local governments and other organizations within the Compact Zone, as well as posted at wmata.com.

SLIDE 4- PROVIDING TESTIMONY AT HEARING

- There are three ways to provide comments at this evening's hearing: in-person, via Zoom, or over the phone.

- If you're with us in person and would like to provide testimony, please see the staff at the registration table if you have not already put your name on the list of speakers.
- For those of you who have pre-registered and joined via Zoom we ask that you remain muted with your camera off until you're called on to speak.
- And those of you participating via telephone – if you'd like to provide testimony, please press *3. This will put you in the speakers' queue.
- Elected public officials will be allowed five minutes and everyone else will be allowed three minutes each.
- Extra time will be given for translation, if needed.
- If you have copies of your testimony to distribute, please hand them to Yasmine whose hand is raised when it's your turn to speak.

I now call on Mr. Segerlin for the staff presentation.

SLIDE 5 – PURPOSE OF HEARING

STEVEN:

- Thank you, Chair Smedberg.
- The Purpose of the Hearing is to obtain public input on the following changes to the facilities at the West Falls Church Metro Station:
    - Reducing bus capacity from 8 bays to 4 bays
    - Reducing Park & Ride capacity from 2,009 spaces to 1,350-1,400 spaces
    - Reducing Kiss & Ride capacity from 64 spaces to approximately 20 spaces
    - Eliminating the 68 paid on-street metered parking spaces

SLIDE 6 – BACKGROUND

- Before discussing the changes further, let me give some context or background about how we got to this meeting today.
- As many of you may know, the West Falls Church station opened in 1986 and had around 10,000 riders per average weekday until 2014 when the Silver Line opened. This new transit service provided new options for many of the customer using West Falls Church and as a result ridership at the station dropped to around 2,500 ridership per average weekday in the years leading up to the pandemic—leaving the transit facilities significantly underutilized.

- Then in 2017 City of Falls Church began an initiative to redevelop the nearby school site, which led to WMATA to think about the potential to redevelop the WMATA property and resize the transit facilities, which currently include
    - 8 bus bays
    - 2,009 Park & Ride spaces
    - 64 Kiss & Ride spaces, and
    - 68 On-Street parking spaces.
- Subsequently, in 2018 WMATA initiated the process with Fairfax County to replan the station and transit facilities, which was later approved in 2021 by the Fairfax County Board of Supervisors.
- In that same year the WMATA Board approved a Joint Development Agreement with Falls Church Gateway Partners-Metro and provided authorization to hold this Compact Public Hearing

SLIDE 7 – CHANGES TO BUS FACILITIES

- Regarding the changes to the transit facilities, we'll cover them in the following slides one-by-one.
- For the bus facilities, the project proposes a reduction in capacity from 8 bays to 4 bays.
- This aligns with pre-COVID bus service demand patterns. Currently there are only three local bus routes serving the station and one commuter route.
- If in the future there is a need to expand the number of bus routes using the station, the four bus bays can accommodate a significant increase in bus services. However, the project design retains the potential to expand up to 8 total bays if needed.
- I'd like to briefly make a note about the Route 7 BRT being planned by the Northern Virginia Transportation Commission (NVTC). It does not anticipate using the Metro Station property but will travel nearby with stops on Leesburg Pike adjacent to the City of Falls Church school site.
- Regarding access, the entrance to the bus loop will still remain on Metro Access Drive, but the exit will now be onto Falls Church Drive.
- The project will also be designed so that no private vehicles are allowed in bus area by bays 1 thru 3.

SLIDE 8 – CHANGES TO PARK & RIDE

- As for the Park & Ride facilities, the project proposes a reduction from 2,009 spaces to 1,350 - 1,400 spaces that will be achieved by closing the south lot, keeping the garage, and slightly modifying the north lot.

- This capacity also aligns with pre-COVID demand patterns and includes additional capacity to accommodate future growth in households in the station's park-shed that may result in increased Park & Ride demand.
- Regarding the North lot, the project may be redeveloped it into a parking garage as part of its last phase—estimated to be around 2030—which is intentionally strategic, giving WMATA time to monitor the return of ridership and parking demand. At that point in time, WMATA proposes to conduct and present a new parking demand study to determine the final proposed parking capacity that should be reconstructed.
- The access to the parking facilities will remain with entries and exits available from the existing primary road network—Metro Access Drive & Falls Church Drive.

SLIDE 9 – CHANGES TO KISS & RIDE FACILITIES

- As for the Kiss & Ride facilities, the project proposes a reduction from 64 spaces to approximately 20 spaces.
- Similar to the approach to the Park & Ride facilities, this capacity aligns with pre-COVID demand patterns that had been changing in the past decade with the surge in pick-up/drop-off activity that preferred to use the curbside rather than the angle parking spaces.
- The proposed capacity also includes additional capacity to accommodate future growth in households in the station's park-shed that may result in increased Kiss & Ride demand.
- The Kiss & Ride facilities will remain accessible from Metro Access Drive & new more direct access will be available from Falls Church Drive.
- I'd like to note that the final design of the parking spaces in the Kiss & Ride facilities is on-going and will be determined in coordination with the Fairfax County entitlement process—but the map on this slide those the general vicinity of the planned Kiss & Ride parking area.

SLIDE 10 – CHANGES TO PAID ON-STREET METERED PARKING

- Regarding the Paid On-Street Metered Parking, this is a unique condition as it is not standard WMATA facility like the Kiss & Ride.
- Given that the redevelopment envisions a new street grid network with abutting private uses, the project proposes the elimination of the 68 on-street parking spaces as a facility subject to the WMATA Mass Transit Plan.
- The project does anticipate significant on-street metered parking to still exist within the comprehensive development plan for the site, which is likely to exceed capacity existing today, but wants the flexibility to manage that design thru Fairfax County's entitlement process.
- I would note that the party operating the meters is still to be determined and that it could be WMATA or the private developer.

SLIDE 11 – ENVIRONMENTAL ANALYSIS

- Finally, as part of the Compact Public Hearing, Staff has prepared an Environmental Evaluation for the project to assess any permanent or temporary impacts and to identify opportunities to minimize or mitigation them.
- This analysis identifies whether there are impacts to traffic, air quality, noise, and stormwater as a result of the changes to the transit facilities---not that impacts related to the private development are subject to review and approval by the County's entitlements and approval process.
- In its final full-built condition, the analysis indicates there are no permanent impacts and only minor temporary impacts related to the construction activities.
- Regarding traffic, there should be no permanent impacts given that the parking and bus capacity and trip potential is being reduced and some improvements given that enhanced & safer pedestrian and bicycle access being provided on-site. During the reconstruction of the transit facilities and road network, an interim operations plan—sometimes called a Maintenance of Traffic plan—will be stablished to ensure access for all travel modes to the West Falls Church Metro Station is always provided throughout the project.
- *A quick side note on our traffic analysis, the appendix to the Environmental Evaluation with the detailed study was accidentally omitted from the website. It has since been uploaded and we are extending the deadline for public comments by 10 days.*
- Then regarding air quality, noise, and stormwater, there are also no permanent impacts anticipated as a result of the transit facility changes, however there may some minor temporary impacts during reconstruction of the transit facilities, like dust, equipment noise, or sediment & erosion. These will be mitigated following typical construction mitigation techniques and following Fairfax County requirements for construction operations.

This concludes my presentation on the project. I'll turn the floor back over to Mr. Smedberg to go over the procedures for tonight's hearing.

SLIDE 12 – PROVIDING TESTIMONY AT HEARING

MR. SMEDBERG:

- Thank you, Mr. Segerlin. Briefly, I will cover the procedures that we will follow during the hearing.
- We will be alternating between the three ways that we are accepting comments today in this hearing: in person, via zoom, and over the phone.

- For those of you here in person, you can start making your way towards the podium once your name is called. However, if you need a microphone brought to you, please wave your hand when your name is called so we can see you, and we'll bring one to you.
- For those of you who have pre-registered and joined via Zoom we ask that you remain muted with your camera off until you're called on to speak.
- And those of you participating via telephone in the speaker's queue: when it's your turn to speak, we'll announce your phone number and you'll receive an automated message that it is your turn to speak.

- Elected public officials will be allowed five minutes and everyone else will be allowed three minutes each.
- Extra time will be given for translation, if needed.
- We have a timer that will count down how much time you have left to speak. It will give you a warning beep when you have 20 seconds left and will beep continuously when your time is up.
- The timer is important because we have a lot of folks who want to speak today.
- We ask that you stay within your allotted time to ensure that we can hear from everyone who wants to provide testimony.

SLIDE 13 – PROVIDING WRITTEN COMMENTS

- In addition to the opportunity to speak at this evening's hearing, Metro also welcomes written comments on the proposed changes.
- Further written testimony may be submitted and must be received by 5 PM now on Day November 10, 2022.
- Testimony can be submitted online at wmata.com *slash* plans and projects. Online, you can enter freeform testimony or upload letters or other documents.
- You can also mail testimony to: Office of the Secretary, WMATA, 300 7th Street SW Washington, D.C. 20024. Please Reference "West Falls Church Public Hearing" in the "subject" line. This testimony must be received (not postmarked) by November 10th in order to be included in the hearing record.
- Your comments will become part of the public record that will be reviewed by the Metro Board of Directors.
- Changes to the project presented here tonight may be proposed in response to testimony received and subsequent staff analysis.

SLIDE 14 – OUTSIDE THE PURPOSE OF THIS HEARING

- I will note that this public hearing process is unable to address any comments outside the scope of this docket. Those include comments on land use matters, service complaints, and fares.
- Please note that profanity will not be tolerated during this public meeting. I would also ask that you mute yourself and turn your camera off when you're not speaking and, for those providing testimony that may be watching the hearing on another device, please make sure that device is muted when you're giving testimony to avoid feedback.
- I want to take a moment to recognize that this is where *we* listen to *you*.
- This is your opportunity to comment on the proposal, and we are here to listen, so we won't be able to answer questions during your testimony.
- Before you begin your remarks, please state your name and the organization you represent, if any.
- Please note that all statements, including any personal information such as name, e-mail address, address, or telephone number you provide in the statement, are releasable to the public upon request, and may be posted on WMATA's website, without change, including any personal information provided.

SLIDE 15 – NEXT STEPS

- The public comment period will close on November 10, 2022. Staff anticipates releasing the draft staff report to the WMATA website in the Winter.
- Once the staff report is released to the public, those of you who provided comments will have the opportunity to review the report to ensure that we captured your comments accurately. That review and comment period will close two weeks after the draft staff report is posted.
- Staff anticipates that the Final Staff Report and Supplement will be submitted to the Board of Directors for acceptance in the Spring.

SLIDE 15 – THANK YOU FOR YOUR PARTICIPATION

- Now that we have all the background out of the way, it's time to call the first witness.
- We'll begin with those here present tonight then will go through those joining via video and phone, until everyone who wants to provide testimony has had that opportunity. Our first speaker is _____.

Read the names from the speakers list to be provided to you in advance. Additional speakers will be put into the speakers queue from the phone line. Staff will announce the phone numbers of those in the speakers queue. When there are no more names:

- Is there anyone present in this room who wishes to provide testimony? Please approach the mic.
- Is there anyone else on the phone who wishes to provide testimony tonight? If so, please press *3 to be put in the speakers' queue. (Wait 20-30 seconds to see if anyone joins speakers' queue.) If not, this hearing is now concluded.
- As a reminder, we'll be accepting written testimony until 5 p.m. on Sunday Nov 10th Testimony can be submitted online at: W-M-A-T-A.com *forward slash* plansandprojects (all one word).
- Testimony can also be sent via U.S. Mail to: Office of the Secretary, WMATA, 300 7th Street, SW, Washington, DC 20024. All mailed testimony must be received (not postmarked), by 5 p.m. on Sunday Nov 10th.
- Thank you again for participating in this evening's hearing. Have a good evening.

APPENDIX D: SURVEY RESULTS AND COMMENTS

Proposed Parking and Bus Bay Changes at West Falls Church Station

Proposed Parking and Bus Bay Changes at West Falls Church Station Metro is proposing changes to commuter parking and bus facilities at West Falls Church Station. The proposed changes would allow Metro and its private development partner to move forward with redevelopment plans, including future mixed-use development and transit facility modernization.

Proposed changes to the site include:

- Eliminating the south (surface) parking lot, which would reduce existing commuter Park & Ride spaces from 2,009 to 1,350 spaces.
- Relocating the Kiss & Ride spaces to a new roadway closer to the station, reducing the available spaces from 64 to 20 (including about 10 short-term paid spaces, two ADA accessible spaces, and short-term drop-off spaces).
- Replacing the eight bus bays with no fewer than four bus bays. Relocating bus bays currently located in the station's bus loop to a new roadway parallel to the station plaza.
- Eliminating or reducing the 68 Metro-operated hourly paid parking spaces along the Metro Access Road.

Parking is underutilized at West Falls Church Station, and parking utilization rates declined after the Silver Line opened in 2014.

Daily riders at the station decreased by 64% between 2014 and 2019 (before the pandemic). Proposed changes are intended to promote transit-oriented development, increase Metro ridership, enhance bicycle and pedestrian access to the station, support economic development, and modernize transit facilities.

How do you wish to use this form to provide your comment regarding the Proposed Parking and Bus Bay Changes at West Falls Church Station? (n=276)

Type and submit a written comment	93%
Upload and submit a document	5%
Both upload a document and type a written comment	3%

Please provide your comments in the box below:

Category	Mentions	Comment
Support	95	
Support the changes (in general)	80	-"I support the proposed changes. I believe that removing surface parking and redeveloping the land into transit-focused housing and commercial area will be a net gain for the area." -"I approve of all of these changes. The parking lots by the station are almost always empty and should be turned into something useful."
Support the changes but don't reduce bus bays or transit options. Increase bus service!	11	-"I am comfortable with reducing the parking. Whenever I go to the station, the parking lot is near completely empty. I do not see the purpose, however, of reducing the number of bus bays. The Falls Church area deserves more bus access not less."

		-"Reducing the number of bus stops by half and then even relocating it from the current bus loop, will only add additional struggles to respective commuters."
Support the changes but what about bike traffic?	4	-"I am concerned that bicycle traffic will increase beyond all expectations, and the infrastructure surrounding WFC will not support the bike traffic" -"I approve removing the surface lots and putting in new development. The main change to the development should be better bike lanes. "
Against	52	
Against the proposal, retain all the parking	40	-"Reducing parking would discourage Metro ridership: I take the metro precisely because I can park here at a reduced price. If I find that I cannot reliably park, I'll have to drive." -"Reducing available parking will result in a deterrent for people to use the Metro, increasing the number of cars on the road. Before the pandemic, it was already difficult to find parking slots. This will make the situation even worse. I am against it." -"If Metro uses returns to pre-pandemic levels, I would not want the South Parking Lot to be eliminated. When I would commute from this station to work, that is the lot that I would normally use. "
Against the proposal (in general)	10	-"I oppose the planned redevelopment of the West Falls Church station campus. Not every inch of land needs to be monetized with mixed-use 'development!' How about creating truly public space instead, like a park?" -"We are very opposed to the proposed plans and future development....The result will be congestion, horrible skyline and view, years of construction, high taxes for existing residents, road damage, vibrating felt in homes like we do Now from The Falls Church high school mess, crazy traffic, pedestrian and biker dangers, and stripping of trees and green space. Increase in crime? ABSOLUTELY!"
Against the proposal, use the money on service instead	2	"Take the money (for this project) and buy more trains so metro can get back to the 7 minute rush hour schedules! Do not lose sight of the primary mission of metro to be an efficient and safe public transportation system."
Other comments	17	-"Have more security for criminal activity." -"Parking security is needed at night Better lights" -"Will there be sufficient docking stations for bikes/scooters? Will there be parking spots for ride sharing? Will there be Electric Vehicle Charging Stations in the parking garage or on street?"

Now, some basic background questions to close out the survey: Metro will host a Public Hearing on October 19, 2022 at 6:30 p.m. You can participate in in person or virtually. Do you plan on attending? (n=185)

Yes, in-person	5%
Yes, virtually	18%
No	48%
Not sure	29%

Which type of housing best describes your home? (n=186)

Apartment or condominium	28%
Single family, detached house	54%
Townhome, attached to other houses	17%
Other, please specify:	1%

Before the pandemic (i.e. before March 2020), which of the following facilities did you typically use at the West Falls Church Station? (n=186)

Parking Lot (to park at the Park & Ride)	31%
Bus Bays and Terminal (to connect to Metrobus, ART, etc.)	16%
Kiss and Ride (i.e. to drop off and pick up of passengers)	29%
Bicycle racks/lockers	6%
Capital Bikeshare	6%
None of the above	7%
Something else	5%

In the past 30 days, which of the following facilities did you use at the West Falls Church Station? (n=186)

Parking Lot (to park at the Park & Ride)	32%
Bus Bays and Terminal (to connect to Metrobus, ART, etc.)	16%
Kiss and Ride (i.e. to drop off and pick up of passengers)	24%
Bicycle racks/lockers	4%
Capital Bikeshare	3%
None of the above	16%
Something else	5%

Proposed Parking and Bus Bay Changes at West Falls Church Station

What is your age? (n=156)

18-24	6%
25-34	17%
35-44	22%
45-54	17%
55-64	23%
65+	15%

What is your gender identity? (n=164)

Male	58%
Female	41%
Other	1%

We understand that gender identity may not be fully captured by the options above. Should you wish to elaborate on your response or nonresponse to the previous question, you are invited to do so in the box below:

Are you of Hispanic or Latino origin? (n=166)

Yes	8%
No	92%

Which of the following best describes you? Please select all that apply. (n=168)

African American or Black	6%
American Indian or Alaska Native	2%
Asian	14%
Native Hawaiian or other Pacific Islander	1%
White	76%
Other, please specify:	2%

1	Please don't get rid of parking at WFC metro. If I can't find a spot in the mornings, I will have to drive in every day. I have the option of a free parking space in DC, but I prefer to take the metro in from WFC to avoid the hassle of driving.
2	If the plan is to revitalize West Falls Chrurch Metro station and area surrounding it, reducing the amount of parking according to the proposal will cause issues; especially when past reports of crimes in the parking structure indicated it was high before the Silver line opened.
3	I recommend WMATA do not modify WFC metro and parking. The additional construction in the area from Meridian High School moving and also the new mixed use development on Haycock and Route 7 will cause massive amounts of traffic. The reduction of parking spaces and addition of a number of buildings will cause WFC to be jammed packed. Pre-pandemic, it was very difficult to obtain a surface parking spot and the parking garage was full up to the 4th floor. The return to workplace is now occurring and workers are not reparking once more. This project is unnecessary spending that will be very, very expensive and will cause the WFC metro station to be overcrowded. Please do not go forth on this project.
4	Hello, I am a 24-year-old Vienna resident and frequent metro rider. I am highly supportive of mixed-use development and strongly support Metro's proposed changes in this project to "promote transit-oriented development, increase Metro ridership, enhance bicycle and pedestrian access to the station, support economic development, and modernize transit facilities." I believe there is too much parking at Metro stations in general and think we should replace the parking spots with housing. Housing in the Northern Virginia is very expensive because we have a housing shortage, and building more housing would help lower prices. I would like to live independently in Fairfax County, which is where I grew up, but as of right now, I am unable to make it work financially. So, I am saving money by living at home. I definitely see myself applying to live in housing that may be built as a result of this project. I encourage Metro to move forward with this project and maximize the number of housing units that will be built. Please think of the residents like me that would benefit from the housing that will be built. Thank you!
5	I support the proposed changes!
6	TO: WMATA Board RE: West Falls Church Metro Station Compact Hearing – 10/19/22 I am writing to support the recommended changes to the transportation infrastructure at the West Falls Church Metro Station. The proposed improvements to the Kiss and Ride and bus facilities will convert what is today a sea of asphalt parking lots into a more modern urban transportation center that will be pedestrian and bike friendly and ultimately improve ridership at the station. In addition, removal of the surface parking lots will allow for transit-oriented development and bike and pedestrian facilities that will create a safer, attractive, and more accessible station for those who will work or live within the new development as well as the existing residents in the surrounding communities who will now have a much more appealing walk or bike to the station. Best regards, Akida Rouzi
7	WMATA West Falls Church Station Comments The developer is proposing an unworkable solution for the Kiss 'n Ride waiting places. 1 Parallel parking on the driver's side is crazy. Not only does it mean passengers must walk into traffic to get in and out of the vehicle, which is unsafe—no matter what EYA claims—but also it will be difficult for drivers, many of whom can't parallel park easily anywhere. There should continue to be normal parking spaces (pull in, back out). 2 Reducing the number of Kiss 'n Ride spaces is short sighted. If WMATA truly wants to increase ridership at the station, having fewer spaces will not help. 3 Reducing the number of bus bays is also short sighted. Where will buses have to wait to get a space? It better not be in our neighborhood right across the street from the station. Is the goal to give EYA more space for development or to serve the developer's objectives? 4 Today, the trip into the Kiss 'n Ride area is fast and direct. EYA is proposing to make it indirect, winding through their development. How will that encourage transit use? We recommend that you reject

	EYA's proposals and start over with this design. We are also concerned with the location of the proposed dog park. The current treed buffer is an effective noise barrier. It's steep too. Why ruin a good thing? Board of Directors Ellison Heights-Mt. Daniel Civic Association Ehmdcivicassociation@gmail.com
8	I herby object to WMATA's plans to eliminate 1/3 of the parking and add bus stations. Please do not redevelop the WFC station and parking. The West Falls Church area has become very crowded over the past few years and with the high school nearby moving, a massive apartment/condo and mixed use area is already in development. This will cause massive traffic in the area that has little land to develop. The plans for an addition of a bus bay is rather useless and a waste of money as wmata has a front bus bay at the metro and a rear bus bay in the back of WFC station. Additional bus stops will not attract more ridership. Pre-pandemic, parking was very difficult to find even in the parking garage. Although ridership and parking has dropped, it is expected to rise as workers return to the office and also with the new developments in the former Meridian High school area. If a new mixed development is added, the area will become unbearable with traffic.
9	I use the West Falls Church Metro to go into DC. I live not far from Tyson's Mall, but there is no place to park all day to take the Silver Line, so I drive to West Falls Church and take the Orange Line from there to Foggy Bottom. If you remove many of the parking places, there is a good chance there will not be enough parking for those of us who cannot get there by walking, bicycle, etc. Also, I am 70 years old, and cannot walk over a mile to the stations closest to me carrying everything I need to take with me. Please do not take away too much parking at West Falls Church. More and more people are riding Metro now. The parking lots will become fuller as more go back to work in DC instead of working remotely.
10	We live just north of the West Falls Church Metro and must drive to pick up my husband, by turning right on Haycock Rd ir getting on the 66 eastbound ramp.. Is there any way to have an overhead walkway that goes over 66, where people can pick up on Idylwood Rd and allow people to walk to destinations north? The walkways could be like the ramps on either side of the Nutley metro.
11	Agreement that the parking at the West Falls Church station is underutilized. Costs for daily parking should not increase with this proposed change to the surface area around WFC. The walk-ability for Falls Church is grossly overstated. Traffic snarls and pedestrian right away is often more of a hazard than anything else. It is not uncommon for residents of Falls Church to drive to the WFC station due to these pedestrian issues around the city.
12	I am a homeowner living near the West Falls Church Station who commutes via MetroBus and MetroRail with 3-5 roundtrips per week. I write to express my full support for development (preferably mixed-use) in the area around the West Falls Church Station. I believe that more development in the area will be better for the community, for Metro, and especially for housing in the community. The plans for buildings in the "General Plans" document seem wise to me, though I would still support an altered plan if the developer believed changes were necessary. Since the parking lots have been very under-utilized, this development plan seems like a common-sense way to make better use of the land surrounding the Metro station. While road construction and changes may be temporarily annoying, it is in the long-term interests of this area for development at the West Falls Church Station to happen. These changes have my full support and I look forward to learning more about the developments in the future.
13	I am concerned that Metro, Fairfax County, and its partners have not sufficiently explored or addressed traffic issues related to this proposed development. It is a fantasy to assume that a large percentage of trips in and out of this development will be by Metro (although it will be more than if Metro was far away, the line is designed primarily for commuting to DC and not for other activities). Thus, it is likely that most residential units will have a car and most will

	take many trips to for locations other than work (and many for work as well). There seems to be no real remedy to these issues. For example, Grove Ave. shows poor performance with this development, and a turn lane will make little to no difference (what it really needs is a stoplight with "no turn on red"). Haycock Rd. needs to be lowered to 30 MPH, and the bridge over I-66 needs to be reconfigured for pedestrian safety. As a member of the community I need to see these things and others in writing (not just improvements within the development, but those surrounding it) before there's any chance of supporting it.
14	Reducing parking based on 5 years of data is short-sighted. Higher density projects within driving distance in Falls Church and Fairfax county. The previous short-term decline of parking will revert to the long-term trend of not having enough parking. Reducing parking and bus terminals will exacerbate the decline in ridership rates of West Falls Church and overcrowd other stations that have appropriate parking allotments as West Falls Church does now.
15	Hello! I live in the neighborhood and am very excited for the proposed development - dense housing near transit, and multimodal access to transit, are exactly what is needed for smart growth in Fairfax County and the surrounding areas. There are only a couple things that stand out on the plans that I want to highlight. First, the bike lanes only appear to be along West Falls Station Boulevard. While this is nice for the connection through the Virginia Tech site to the West Falls development site once all that is finished, it seems shortsighted to not have bike lanes along Metro Access Road and/or New Street #3. The main benefits of that would be to get bikes closer to the actual metro station entrance, and more importantly, connecting to Haycock Road. This is the main way to get to the surrounding area, and also is the best way to connect to the W&OD trail. Second, while there are no crosswalks across the Alley entrances, I want to make sure there is a curb cut or at-grade crossing there, for accessibility purposes. Finally, while this may be outside the scope of this project specifically, I urge the developers to look at the intersection between Metro Access Road and Haycock, and to coordinate with Fairfax County's Active Transportation Study to ensure good pedestrian crossing over 66 on Haycock Road. Right now the sightlines from Metro Access Road to the right westbound lane of Haycock is not good, and more importantly, the currently existing sidewalks on Haycock over 66 are the furthest thing from welcoming, discouraging pedestrians from coming from the surrounding area to the metro, as well as discouraging children from near the Metro station from walking/biking to school at Haycock Elementary and Longfellow Middle School.
16	I really enjoy parking in the surface parking lot at West Falls Church Metro Station, because it's closer to the train platforms, and I don't have to wait for an elevator or deal with the stairs like I would if I parked in the garage, so it saves me time.
17	Parking (pre-pandemic) was incredibly difficult after snowstorms due to snow being pushed into open parking spots. During the weeks it was present, parking was incredibly limited during the later part of morning rush with only a handful of available spots remaining—assuming drivers parked within one lane and/or left enough space to park and still get out of the vehicle. The parking is needed and shouldn't be taken away.
18	If Metro uses returns to pre-pandemic levels, I would not want the South Parking Lot to be eliminated. When I would commute from this station to work, that is the lot that I would normally use. The other proposed changes are acceptable to me.
19	I am in favor of the proposed changes. This metro station area is underdeveloped compared to nearby stations and can better serve our region as a dense hub that is continuous with West Falls in Falls Church City. Ditch the surface parking lot and let's use the space for buildings and stormwater retention and absorption. I do ask that you reconsider the proposed bicycle facilities. There should be an all ages and abilities link from the W&OD directly to the metro station as well as links to neighborhoods and commercial areas in Fairfax and Falls Church. The proposed bike lanes do not connect to the metro station itself nor to Haycock

	Road for points north. They may also be unsuited to "interested but concerned" riders if vehicle speeds or volume are too high. Finally, the use of ebikes is growing and new design should consider how to safely accommodate relatively unskilled riders who will be capable of 15-25 mph speeds on an ebike. For example, wider bike lanes and more generous turn radii.
20	I ask that you all strongly reconsider these measures. Unfortunately, many of us still find ourselves needing to commute to work places whether they are not telework friendly/ capable or employers refusing to fully acclimate to such measures. Reducing the number of bus stops by half and then even relocating it from the current bus loop, will only add additional struggles to respective commuters.
21	I am in favor of the proposed changes especially since parking is underutilized.
22	Eliminating extra surface parking is paramount to more urban, transit oriented development. we need to create walkable centers near all our transit options, and I am fully onboard with this idea. I would also like to see more bike parking / bike lanes to be utilized in some way to promote users to bike to the station as well. this might take effort from West Falls church to encourage it.
23	I use the West Falls Church Metro stop daily to commute into DC. I nearly always park in the parking garage, but occasionally I get dropped off at the Kiss-n-Ride lot. Even before the pandemic, I saw that the parking facilities were grossly underused. Also, the current bus stops are pretty far from the station exit. I fully support these redevelopment plans. Good luck!
24	Reducing available parking will result in a deterrent for people to use the metro, increasing the number of cars on the road. Before the pandemic, it was already difficult to find parking slots. This will make the situation even worse. I am against it.
25	What should we expect to have developed in the area? I think it's a great way to use the space%.
26	Great for the community.
27	I agree
28	That's sounds great
29	Yes
30	I am in favor of these proposed changes and would also appreciate additional bike lockers as well as maintaining the City Bikeshare bay.
31	Positive! I am in support of the new West Falls Church WMATA development. The current space - a large, underused parking lot - does not fit today's needs for the station nor the land. The new plan - with parks, vegetation, better bike / pedestrian paths, hundreds of new housing units - is essential for improving housing affordability & transportation access at the station. There is a housing crisis in this area and we need more units across the board, including those allocated in this project to affordable housing.
32	I agree to this proposal to restructure the parking and bus bay at West Falls Church station
33	No! We are very opposed to the proposed plans and future development. We live tight across the street from WFC METRO. People are going back to work now and you are taking a pandemic hit to ridership and using it as an excuse to develop for more tax money. The result will be congestion, horrible skyline and view, years of construction, high taxes for existing residents, road damage, vibrating felt in homes like we do Now fromThe Falls Church high school mess, crazy traffic, pedestrian and biker dangers, and stripping of trees and green space. Increase in crime? ABSOLUTELY! Leave the metro as is or do something creative that will benefit the area like a green area park with playground and dog park. Something beautiful instead of more buildings. For once care about your residents and tax payers instead of lining your pockets.
34	I live in the condo complex directly in front of West Falls Church Metro. I am strongly opposed to the proposed development. With the horrible development being built in the place of George Mason High school we are already dealing with increased noise, traffic, and that will

	only get worse once everything is built. To propose adding all of the new development is outrageous. The very things that attracted people to the area....less crowding, smaller town appeal, green space and beautiful trees, and most important SAFETY will be gone. Replaced with an enormous traffic problem, noise, congestion, trash, reduction in safety for walkers/runners and our children. I do not want my children growing up in a city which is why this area was ideal. This is all about greed and money not considering the people that have lived here for decades and how this will impact the overall attractiveness. WHY so much development?! Why do you need so many townhouses, condos, stores, etc?! You take every inch of green nature and destroy it. It is disgusting. The trees that had been around GMHS for decades just torn down for a massive building. Give me a break,! Why do you want children going to school with so much surrounding them...do you not care about their safety? Look at Tysons and Arlington....the over development increased traffic, increased crime, and made the areas so ugly and cold. This is what you want to do to every inch of Fairfax County and Falls Church?
35	yes
36	No, thank you...The current arrangement is just fine. Adding this much density would overwhelm this facility.
37	I oppose the planned redevelopment of the West Falls Church station campus. Not every inch of land needs to be monetized with mixed-use "development!" How about creating truly public space instead, like a park? The Washington metro area, and Fairfax County in particular, and Falls Church in particular, just keeps getting denser and denser with "development" and the accompanying congestion, unsightliness, inconvenience, and pollution (because few residents of new mixed-use developments ultimately abandon their cars altogether; rather, these developments just attract more new residents bringing more cars to the area than before the new development existed). Please stop making this area less pleasant with more buildings, cars, and people, and try to make it more pleasant by preserving and enhancing what little un-"developed" space still exists.
38	By reducing the number of parking spots at the station you will be directly removing a source of income from WMATA, as well as the businesses and mixed use areas around the metro station. On weekends I can virtually guarantee this parking lot is full, and during the week the spots that are used are generating income and are not necessarily tied to whether the trains are running or not, thereby guaranteeing WMATA income. You will be cutting down a similar percentage of that income by removing these parking spots. We need more parking and parking garages in the DMV area and especially at metro stations, not less.
39	My only concern is that we will have enough parking space. The reservation parking spots should be reduced since those are mostly empty.
40	Dear Sir: Regarding the West Falls Church Metro Station: I recommend you do not reduce the amount of parking spots for kiss and ride customers. Sometimes, chauffeurs must enter the station for a few minutes to obtain metro cards or check on delays and need short term spots. The delays posted online almost never coincide with the actual delays posted on the station screen and it becomes necessary to enter the station. Reducing short term parking near the kiss and ride should be less than what is proposed. You should also clarify the parking instructions which currently are unclear and unintelligible. While It is true that the station is not as busy as other stations, his is probably due to the added access and traffic off of I66, not the numbers of cars. I often witness traffic congestion, especially at the 5 o'clock trains, so reducing kiss and ride parking spots will not enhance traffic. Where else would the overflow of drivers park for only minutes? The garage costs at least four dollars. My only concern is the amount of parking available close to the drop off points. You are better off making the kiss and ride lane(s) wider or include double lanes. The East Falls Church station is not a good example of reduced kiss and ride parking spots. It's challenging picking someone up at that

	location. Often, minor accidents occur. As for removing the southern parking area, very few cars truly park there. However, we do not need more commercialization of the metro stations. There are too many commercial establishments near metro stations as is. Do you really even have a problem at West Falls Church? It looks likes an excellent layout to me. The planners were spot on. You should not fix a problem if the thing isn't broken. Profit is not always a good motive in my view. Fyi, ingress and access of the Dunn-Loring is atrocious. I hope West Falls does not become like that. My suggestion is for you to do nothing. Just keep the maintenance up. The southern parking area could be turned into a small park with benches so drivers waiting in their cars for their families need a small break due to train delays, which is often. Please do not create a problem where there isn't one. Best wishes. Signed, Mr. Tomas G. Sanchez, Customer, and retired Federal employee.
41	I see the plans to eliminate things but it is not clear what Metro proposes to put in place. I do worry about not being able to find parking in the future and how far away would the new bus terminals be? Not everyone will be able to ride a bike to the metro. More details of proposed replacements are necessary.
42	I support the move to modernize the West Falls Church metro station and make it more pedestrian and bike accessible. I have used it off and on for years to commute to work in DC, and frequently walk to the station from my home. It is currently not a welcoming station for pedestrians or bikers. I have observed the decline in both ridership and parking usage and wholeheartedly support the replacement of the surface parking lot with something more vibrant and useful. Kiss and ride is important to me; our family uses that frequently as well, so we'd hate to see it eliminated, though are open to its reconfiguration as it does seem to take up a lot of space, especially given the number of folks who now use it.
43	Supportive of the overall plans. Please consider limiting car access entry and exit to only Falls Church Rd side. Bus and pedestrian access can remain both via Falls Church Rd side as well as Metro Access Rd. With increased housing in the adjacent parcels as well as proposed within this WMATA plan, the neighborhood safety on the Metro Access Rd/Haycock Rd intersection is of major concern. Kids have bus stops nearby and walk/bike to Haycock Elementary. Limiting the number of cars traveling along Haycock Rd and having cars enter/exit via the major throughfare of Fall Church Rd will maintain a level of safety to the immediate nearby neighborhoods and residents. Thank you for taking the time to consider this input. Take care and be well.
44	Great idea to develop the outside station to make it more attractive to riders.
45	I'm extremely excited about the new WMATA development. The current structure - a huge, mostly unused parking lot - does not fit today's needs for the station. The new plan - with new parks, better bike / pedestrian paths, hundreds of new housing units - is critical for improving housing affordability & transportation access at the station.
46	I write today to express my support for the redevelopment of the West Falls Church Metro Station into a walkable, bike-friendly, transit-oriented community and to also express my support for the proposed changes to the transit facilities to make that happen. Providing more homes and jobs in walkable communities at major transit stations like West Falls Church is essential to reducing traffic in our region and slashing our greenhouse gas emissions, creating healthier communities, and increasing access to opportunity. The changes being proposed to the kiss and ride and commuter parking spaces, and bus bays at the station are needed to support the redevelopment plan. Ultimately, the redesigned station area will provide a top-notch, modern multi-modal facility with an updated bus loop and kiss-and-ride facility, and significant pedestrian and bike improvements. The transit-oriented development at West Falls Church will create a vibrant community that will serve to help increase rail and bus ridership at West Falls Church. I ask that you please vote to approve the changes. Thank you, Sonya Breehey

47	The Fairfax County gives access to the Wast Falls Church Metro via Birch St, Grove St and Highland Avenue, which connect to Haycock St. This document was not referenced as far as I can ascertain, in considering bike access to the Metro. As someone who has biked to the West Falls Church Metro (and now the McLean Metro), I find the proposed "bike and pedestrian" access in the current plan unrealistic and unacceptable. Pedestrians will follow paths of least resistance to get to the WFC Metro. At the moment, cyclists will take Haycock Road to get to the Metro as there is no choice. Haycock Road is not safe now for cyclists. As I understand the current planning, there is not consideration of access to WFC Metro via Falls Church streets. I think most cyclists will take Westmoreland to Haycock, because it has bike lanes and shoulder lanes. Great Falls Street does not have such bike provisions, but I've noticed more and more cyclists using Great Falls Street because many stretches of Great Falls can accommodate cyclists safely, but some parts, definitely not. The plans for WFC Metro should be forward thinking, proposing new bike lanes/routes that will help channel current, and future, cyclist traffic onto routes that are safe for cyclists, and for pedestrians, and autos. Lastly, Route 7/I66 intersection as a pedestrian and bike path is not realistic, as I've walked, biked, and driven along that route for years.
48	Have more security for criminal activity.
49	Kiss and Ride spaces reduction - agree Reducing hourly parking spaces - agree No comment on reducing number of bus bays (I am not a bus rider) Eliminating the south surface parking lot - how many parking spaces are we reducing, will this cause a crunch in the multi story car park? With Amazon HQs opening up in this region, will this foresee a rise in commuters in the coming years?
50	I think it's definitely under utilized, so I support the change. However i usually walk to the south side gate from haycock road so I do want to keep the walking and biking access from haycock road
51	Do not eliminate public Parking surface lot spaces
52	Keep the parking. I work In dc. Also the area in the next couple of years is going to grow in population.
53	I support generally as long as there is space to line up for Kiss and Ride pickup since those spaces would be significantly reduced.
54	I would not support the plan to reduce kiss&ride space or # of parking lots. The space during the rush hours is just adequate for now.
55	Let's make a cool artist designed bus bay!
56	Agree that surface parking should be redeveloped - we need more transit-accessible housing, especially for families. Please improve bike access - it's terrifying to bike on Haycock Road, so I tend to bike on the sidewalks getting to Metro, and I know that's not fair to pedestrians. The bike cage at EFC is fantastic - much more accessible going through a separate process and carrying around a separate locker key.
57	Agree
58	West Falls Church is certainly due for a modernization and reassessment now that so much parking is not needed. It still remains a very important parking location and is a critical station because of its location close to Route 7 and 66. I would request WMATA do the following to the changes suggested. - Increase the planned remaining hourly and kiss and ride spots. There is no need to eliminate so much and 20 is not enough - The garage should remain and the reserved parking spaces should be reduced. Almost all of them are empty during the day - The south parking lot is not needed and suitable for redevelopment - The North parking lot can be redeveloped at a later time - WMATA patrols of the parking lots to give out tickets (i.e. such as state inspection expired) are extremely annoying and should be terminated. Riders should be encouraged to ride metro, not punished by over enforcement of trivial tickets.

59	As a regular commuter from West Falls Church metro to DC, I am obviously concerned 1. That too many spaces are being taken away, so that by the time I arrive at 9 am, there will be no spaces left 2. That the newly vacated areas will be filled by developers with dense stores and activities that will hugely increase traffic and delays in the area, particularly as the areas on Route 7 at West street and Broad street clog the roads. Is the vision for Falls Church to become another Ballston? 3. It would be nice if the parking costs were reduced/eliminated, but at the very least could Senior cards get reduced rates?
60	I support Metro more efficiently using the space at the West Falls Church station. I live nearby and currently commute from WFC>McPherson Square 2-3 days per week, and I occasionally ride Metro from WFC on the weekends. I oppose increasing the cost of parking or fares to support the development. I hope that, if Metro does eliminate a significant number of parking spaces, that the reduction in spaces does not regularly leave the WFC parking lots near or over capacity. Parking at WFC was often at or near capacity (especially mid-morning on weekdays) before the silver line opened and I don't want this planned development to bring back those problems. Even though you want to build mixed-use development, that won't change the fact that the WFC station is located in a suburban area and that many of the people who use the station are most likely to drive/park at the station from the surrounding areas. I choose to use WFC because the parking at the McLean station (equidistant from my home) is more expensive, in a private lot and in an area with a higher volume of traffic. My hope is that doesn't become the case at WFC and if it did I would be less likely to use Metro.
61	Please allow this space to be developed with housing!
62	TO: WMATA Board RE: West Falls Church Metro Station Compact Hearing – 10/19/22 I am writing to support the recommended changes to the transportation infrastructure at the West Falls Church Metro Station. The proposed improvements to the Kiss and Ride and bus facilities will convert what is today a sea of asphalt parking lots into a more modern urban transportation center that will be pedestrian and bike friendly and ultimately improve ridership at the station. In addition, removal of the surface parking lots will allow for transit-oriented development and bike and pedestrian facilities that will create a safer, attractive, and more accessible station for those who will work or live within the new development as well as the existing residents in the surrounding communities who will now have a much more appealing walk or bike to the station. Thank you for your attention to this matter. Adam Thormahlen
63	Would be easier to give feedback if the design plans were labeled more clearly for the layperson. Where would the bus bays, kiss and ride, parking be in the new design? "Block G" "Block H" doesn't mean anything to me. What will bldg D, bldg E, etc. be used for? That said, I think the South surface parking lot can be drastically reduced but don't think should be eliminated entirely. Agree bus bays can be reduced as long as service is not reduced -- including the Virginia Breeze -- which is a welcome addition especially for university students since it stops at VTech and JMU. BTW, you'll be pleased to hear I pointed out a mistake in Virginia Breeze's bus stop information and they changed it. Previously they misnamed it Arlington but it now correctly says West Falls Church station. New bus bays should also remain as close to the metro entrance as possible. I think 20 kiss and ride spaces is too low, especially since that number includes the drop-offs, the 10 short-term paid, and two accessible spaces. I'd say maybe 10 free spaces or so in addition to the paid (maybe decrease from 10 a bit -- does anyone really use those?), drop-offs and two accessible spaces. Agree can eliminate or reduce 68 paid parking spaces along Metro Access Road.
64	This sounds okay
65	Great I love it, I don't drive here
66	I just need daily parking here
67	The lot is never full

68	Keep the parking
69	I approve of all of these changes. The parking lots by the station are almost always empty and should be turned into something useful. Development (stores, restaurants, businesses) around the station would make it a destination and improve my quality of life.
70	I would suggest to increase a bit of the kiss and ride parking as 20 parking spaces seems limited and the population in this area is growing.
71	More long commuter shuttles
72	Parking security is needed at night Better lights
73	Parking and riding is important to many of us to be able to continue to use metro. Please keep enough parking spaces so that we do not opt to drive into work instead, bypassing metro entirely. This would be penny wise and pound foolish and could diminish ridership not enhance it. I trust you'll make the right decisions for the community and for Metro to enable to many of us who drive and park at the station to be able to continue to Metro into town. Thank you very much
74	Do not reduce the number of garage parking spaces. Developing the area will increase the number spaces needed as more people are drawn to the area and make it more difficult for daily commuters to ensure parking.
75	More buses lines
76	Ok to decrease the hourly individual parking. Ok to decrease bus bays if bus service not impacted%. Keep kiss and ride.
77	I am a regular commuter at this station. I will continue to use West Falls Church with these proposed changes. However, if the price of parking increases from the current $3, I will use other transit options.
78	Great public service
79	I disagree. I would like to keep place for a car.
80	The ridership numbers were skewed by the pandemic. The offices are starting to transition from hybrid to in person very fast. The stress on i66 is already evident. Decreasing number of parking spaces (and eventual price hike because of limited spaces) is extremely counterproductive because all this would do is discourage people to take the car into DC. It costs me $7.90(two way fare to Farragut West) +$3.00 (daily parking) for my daily trip to my office via metro. It costs $11.00 typically to find a parking spot on spot hero. $3.8 for a gallon of gas. Metro is barely economical and feasible for me. And this applies to most of us who commute. I am completely disregarding the time factor (waiting for train and commute time) To be blunt, The way I see the proposed change is : decreasing parking spaces while the eventual and inevitable rise in demand for metro in coming months; which would Jack up the prices of parking slots even more :) Bicycle ridership is amazing but unrealistic at 6 AM/7AM because of cold and how aggressive drivers are in the area. Same reason applies to evening biking. My home does not have a clear bike lane to the station which means that eventually I will have to share space with the cars. It's extremely dangerous and unrealistic.
81	Leave as is.
82	Don't do it. This changes will hurt the raiders in many ways!
83	As long as the proposed changes are not only a response to COViD19 changes which may change as companies decide whether work from home is really a thing, I would support changes that improve the financial position of wmata
84	Looking forward the changes
85	Looking forward to all the changes
86	Need to make the metro trian and bus 24/7/365. They have the ridership for it. Also need to charge a flat rate for the train regardless of distance or time of day. Especially in the D.C. limits. The metro train needs to run overnight. And have more subway lines.

87	In favor of the proposed modification for the West Falls Church Station. I would suggest you include a few waiting spaces for on demand transportation vehicles (Uber / Lyft). More and more individuals are using Uber/Lyft for transportation. Its a very cinvenient alternative. Also not related to the survey but Metro Transit Authority need to increase their presence and visibility at all stations. Thanks
88	I think it is foolish to make sure broad changes to West Falls Church, yes some light business and reduction of bus bays and hourly parking is a good idea. However, removing so much of the daily parking it too much. In addition, the areas housing communities do not need anymore broad bush business development near residential areas.
89	TO: WMATA Board RE: West Falls Church Metro Station Compact Hearing - 10/19/22 I am writing to strongly support the recommended changes to the transportation infrastructure at the West Falls Church Metro Station. The proposed improvements to the Kiss and Ride and bus facilities will convert what is today a sea of asphalt parking lots that are empty both day and night into a more modern urban transportation center that will be pedestrian and bike friendly and ultimately improve ridership at the station. In addition, removal of the surface parking lots will allow for transit-oriented development and bike and pedestrian facilities that will create a safer, attractive, and more accessible station for those who will work or live within the new development as well as the existing residents in the surrounding communities who will now have a much more appealing walk or bike to the station. I live directly across the street from the Metro entrance. In addition to the safety issues involved with having large, empty parking lots in the center of our neighborhood, I am also aware of the road changes that have been proposed to reduce the traffic and wait times getting into and our of our development on Haycock Rd. I am on the condo board of the Gates at Westfalls and the changes proposed are important to our community. I am very much in favor of this development. Thank you for your time and consideration for approval of this very important project. Best regards, Cheryl Smith 7033D Haycock Rd. Falls Church, VA 22043
90	Developer should be aware that they may encounter buried tieback anchors that provide lateral support for the retaining wall along the I-66.
91	Proposing a reduction of parking spaces and bus bays at West Falls Church-VT Metro Station would be an idea and if this were to be finalized, more power to them.
92	West Falls Church is the east most station on the orange/silver line with ample parking. East Falls Church's lot is very small. Please keep both lots for now.
93	I fully support the plans to change the existing area around the West Falls Church metro to reduce parking and increase other capabilities.
94	Thank you for the opportunity to comment on WMATA's plans for west falls church. I support the redevelopment of the West Falls Church Metro Station into a walkable, bike-friendly, transit-oriented community. That's why I also support the proposed changes to the kiss and ride and commuter parking spaces, and bus bays at the station as part of the redevelopment plan. The redesigned station area will provide a modern multi-modal facility with an updated bus loop and kiss-and-ride facility, and significant pedestrian and bike improvements. WMATA board approval of these facility changes for the transit-oriented development will create a vibrant community and increase rail and bus ridership at West Falls Church.
95	I would like a more comprehensive survey of the increase in vehicular traffic with 2000 additional dwelling Units. What about business? What about utility vehicles? What measures will be taken to reverse the adverse impact of an increase in traffic? There is no way to reverse this once the dwelling/offices/shops are built and occupied. So do we, the long-time residents of this area, have to accept this fait accompli?
96	I support the redevelopment of the West Falls Church Metro Station into a walkable, bike-friendly, transit-oriented community. That's why I also support the proposed changes to the kiss and ride and commuter parking spaces, and bus bays at the station as part of the

	redevelopment plan. The redesigned station area will provide a modern multi-modal facility with an updated bus loop and kiss-and-ride facility, and significant pedestrian and bike improvements. WMATA board approval of these facility changes for the transit-oriented development will create a vibrant community and increase rail and bus ridership at West Falls Church.
97	I strongly support the redevelopment of this area to suit the currents and future needs of the community and riders like me. We need to make sure these spaces are made thinking primarily of people coming in and out for transit use. A more pedestrian and bike friendly setting can enhance the appeal of Metro use. The redevelopment will also improve the perception of safety for late night riders who walk to and from Metro. The redesigned station area will provide a modern multi-modal facility with an updated bus loop and kiss-and-ride facility, and significant pedestrian and bike improvements. WMATA board approval of these facility changes for the transit-oriented development will create a vibrant community and increase rail and bus ridership at West Falls Church.
98	I approve removing the surface lots and putting in new development. The main change to the development should be better bike lanes. Right now they show only one street with them, and they're "lanes" that are to the left of parked cars. For bike safety that's a pretty big mistake as cyclists will run the risk of being doored by parked cars. There's also only one street in the entire plan. With this lackluster bike infrastructure, it'll be difficult for people on bikes to access the station, and considering these are brand new streets its important to get them right now instead of waiting many years for the roads to be fully rebuilt. Building dutch-style protected bike lanes & protected intersections should be important to having a safe and accessible bike network that can get people into the stations. And the two roads leading into the development area, the "Metro Access Road" and the road to the left of the development, should have bike paths added to provide dedicated bike route into the development area.
99	WFC is too big and not built for pedestrians or anyone not using a car, so reducing the parking footprint is a great idea. It would also be great to consolidate the bus bays so people don't have to walk as far. I can't imagine hardly anyone using a parking meter at a metro station, so those can go too. Hope the rest of the private development gets approved too!
100	I am supportive of this change. Ever since the Silver Line opened West Falls Church being such a big Metro is not necessary and that area could definitely benefit from ToD.
101	More transit oriented development, please. More bicycle infrastructure, please.
102	In general, I am opposed to these changes. If there were some site plans available as to how the new space will look, that could help change my mind.
103	I am generally not opposed to the planned changes. It seems like a better use of space and should integrate nicely with whatever it is that is going up where the old GM High School building once was. The problem with the West Falls Church Metro is always access, meaning the Metro Access Road. You can only access the metro station from Haycock or via Rt. 7/66. I realize you can't build more access points but the real problem with driving to and around this station is the condition of the road itself. This road is a disaster and has been for as long as I can remember. It is riddled with potholes, the intersection at the Virginia Tech building is dangerous, and the curbs and paint are just generally lacking any attention. If you plan to contract out the construction of these new shopping areas to third parties -- PLEASE include either funds or requirements to FIX THE ROAD. This would include, not only repaving the entire road (those potholes cannot be patched, please be serious) and providing improve walkways and bike lanes to promote other transport options. I typically use the metro to either pick-up or drop-off and sometimes park and commute. I would walk or bike there if it were safer and more accessible.
104	The project description on the website indicates that the South surface parking lot would be eliminated. There are currently two surface parking areas, one on each side of the multi-story

	parking garage. It's unclear if only one of these parking lots is considered the south surface lot, or if both combined are considered the South lot. However, the General Plan document in the docket seems to show the elimination of both these surface parking lots that are currently on either side of the multi-story parking garage (which I assume is "Ex Bldg C" in the General Plan). I think it would be nice to leave the smaller surface lot area that is north of the multi-story parking lot, closer to I-66, as either a surface parking lot or an open green space and not replaced with two buildings. There are a lot of new buildings in the proposal which noted it would be a mixed use area. If this new development makes the area attractive to people to come visit for shopping or dining, then I think having one multi-story parking area may not be enough, unless there is significant underground parking also built into these new buildings. Also, in general, it seems like a lot of new buildings and it would be nice not to build the area so densely and instead leave some nice open green space for people to enjoy. The "linear park" marked on the General Plan doesn't seem like a very large green space for such a large development. I would also suggest not reducing the number of bus bays to only 4 from the current 8. I think it would be nice to have 6 bus bays, since the busses do seem to have a high ridership whenever I pass by them during my commute on the metro. The number of Kiss and Ride spaces (20) described in the project does not seem very high, especially if this is going to be a large mixed-use development which presumably is going to attract more visitors to the development. I would think 25-30 spaces seems more reasonable. Reducing the number of paid parking spaces along the access road seems reasonable since they are mostly empty whenever I go on the metro.
105	This is a fantastic plan that completely tackles the persisting issues of massive car-oriented development and makes way for more robust transit-oriented development. We need to get more cars off of the road, and this will do just that. There should be no road widening, but rather sidewalks and protected bike lanes. This will induce other modes of transportation.
106	Bus bays and parking are under utilized due to very poor planning from WMATA, Fairfax County and other involved entities that are clueless about public transportation and how to promote the use of it since they themselves most probably drive their cars and never use these facilities. It all started with the diversion of the silver line and not having it stop by West Falls Church which has much, much larger parking facilities than East Falls Church and has numerous well spaced bus bays that would have allowed it to be a transportation hub. But no, the silver line merge is in east Falls Church that has a very small parking lot and a rather dangerous bus bay. Was this all planned earlier so that the West Falls Church metro area would be a new development? If yes, than what is the point of this survey?
107	Will there be sufficient docking stations for bikes/scooters? Will there be parking spots for ride sharing? Will there be Electric Vehicle Charging Stations in the parking garage or on street? I assumed that the surge of hundreds of new residents would bring more cars on the already congested roads (e.g., Haycock Road, and Route 7) in this neighborhood. Is there any traffic congestion mitigation strategies?
108	Building housing and developing the parking lots is a great idea and I support it whole heartedly.
109	Before metro raised the meter rates to an astronomical level, all the meters were used at WFC. It would be interesting to see how much money was lost due to the increase in meter rates at WFC. No one ever asked the users about the impact of these higher rates. If you want to increase metro ridership, you need to focus on security and reliability of service.... is this effort distracting metro from these two objectives?
110	I live directly across from WFC in the low-rise condos. Before the pandemic I rode the train daily. Now all the way in 2022, the massive volume the station used to see never returned. Selfishly, we all now enjoy walking through the station and using it as “green space” and dog walking areas because it’s quiet and less dangerous. I thought that by now, the thousands of

	cars that used to park and/or transit through the station would slowly return, but they've been replaced by a family of deer. Nor have the bus routes/ridership returned to pre-pandemic service. It used to be a vibrant, busy and energetic area BUT ALSO very unsafe to cross the road from the condos. Cars still speed through on the road. So, I am rambling around to say: Yes the station can def weather all the proposed cut backs/reductions. Most assuredly all the metered parking spots along the road. And I support doing so IF IT WOULD CHANGE THE OVERALL SAFETY OF THE ROAD. Better and more complete sidewalks? Speedbumps? Flashing lights? Changing where pedestrians cross the road? I know all the new housing development will eventually change the landscape of WFC - and without the volume it used to have, such reductions are logical. I hope that the changes can result in more pedestrian-friendly spaces and areas.
111	Create a parking garage that would reduce the amount of land needed and keep the amount of parking spaces.
112	Please keep enough parking so people can still park at any time of day, even when commuting increases.
113	It appears that WMATA is no longer interested in passenger revenues from suburban riders who live close enough to Metro to be one-car families, but at a distance of a half-mile or so that walking or bicycling in the West Falls Church Station is (to use smart-growth jargon), "uncomfortable." This entire exercise to build over virtually every inch of the 24 acres and put up million-dollar-plus townhomes (with garages no less) and condos priced in the high six figures borders (also with parking) and then deny "suburban neighborhood" riders adequate kiss/ride, handicapped accessible spaces, is appalling. Can Metro service without us dreaded "suburban riders?" What makes you all think that the folks who buy into this TOD community of high-priced homes will keep those Audis, Infinitis, Lexuses parked so they can jump on one of the most unreliable mass transit systems in the country? People will move into this development to have access to the McLean High School pyramid, for its access to Tysons, i495, I66 and sure, the Metro will be an added benefit for when they have their out-of-town visitors. At least your consultant's paper asserts WMATA will hold off on building two buildings so it can access "needs." Great. Keep in mind the needs of your riders who've supported WMATA over the past four decades, slogging on poorly cleared sidewalks outside of the station area, crossing increasingly dangerous streets, and waiting cumulative hours on end for jam-packed trains to arrive. You owe the community more than a few kiss and ride spots.
114	Yes please reduce parking at the much unloved West Falls Church. As a cyclist who frequently enters and exits this station, I need smoother pavement on its south side. In fact, the south side looks like it's stuck at 1980. The useless bus bays on the north side probably need to be removed and repurposed as well.
115	Yes! Please start to develop more dense housing options on these parking lots like you did at merrifield!
116	I believe that 20 kiss and ride spots is very shortsighted. Please don't severely undersized this. The Dunn loring kiss and ride and taxi area is a joke. There is absolutely no room for anyone to move around. Plus, someone thought it was a great idea to have the restaurants dumpsters there as well. Bicyclist and pedestrians are not the sole source for metro use. We have an aging population , and people with disabilities who need have more than two spots as an option.
117	A small reduction in parking is understood. There is limited walking to the station from surrounding neighborhoods and bus routes do not reach these areas. Why punish those who want to take the metro rail but do not have another way to get to the station except driving.
118	I am very happy to see the inclusion of bike and pedestrian improvements, and especially to see a significant number of parking spaces opened up for development into housing. I hope

	WMATA will go even further at this and other metro stations, turning them into hubs of transit-oriented development rather than seas of commuter parking. This is good for the local communities around the stops, and for the welfare of the Metro system as a whole
119	I am looking forward to West Falls Church being upgraded and modernized. It's an old station and the area surrounding it is in dire need of new investment. The parking lot is severely underutilized and seems to reflect an older model when the station was first built rather than the reality of today
120	Es mejor tener menos estacionamientos y buses más frecuentes
121	I agree with diversifying the West Falls Church metro. I have seen metro ridership really pick up in the last 12 months, so the proposed changes are reasonable.
122	I agree with this approach of lessening the parking and public bus stops. We want to create a walking, cycling and public transport vibrant community in this area with driving and cars reduced. Not as dense as north arlington, but just as vibrant with multiple retail, entertainment and restaurant options both day and night, with a mix of retail, business, education, public space, condos, apartments and limited town houses. It is extremely valuable space it should be used far more strategically then reserved for parking spaces that sit empt as long standing evidence has proven. It should also blend better with the FCC development which will be community and retail focused. It should be an Improved Mosiac district and gateway, focal point for the region and FCC. Last, it should move forward much more quickly. Be bold. Think of 2040 not the past. This prime real estate is not being used for several years now, expedite its redevelopment, cut the red tape to catch it up with the FCC development.
123	Reducing parking spots at a time when metro isn't providing full service is short-sighted.. Any development plans should allow for similar number of total parking spots - this is still a core commuter station and continued parking options are necessary to encourage metro use by surrounding community. Figure out how to maintain current number of spots - add to garage or allow mixed use of new development parking.
124	It sounds like you want to encourage pedestrians and bikers to use the metro. Please do not lose sight of the residential areas surrounding the station -- we have been supporting Metro for years. Even more of us would walk to the Metro with their kids on the weekends, or for a baseball game in the evening, if we had a safe way to do so. Unfortunately the streets within 1-2 miles from the Metro station are inhospitable for walkers and bikers (other than the most bold or desperate). Numerous people have been hit by cars within a mile and a half of the metro station in either direction. Not on Rte. 7, a commercial road, but on smaller residential streets, Haycock and Shreve. One mom died in front of her son at a bike path crossing. Two students were hit outside of their middle school. most recently a pedestrian was hit at the Haycock/Great Falls intersection. Residents have begged elected officials, VDOT and FCDOT for years to give us safe places to walk, bike and cross the street. We've asked for help slowing down vehicles on our residential streets. Our requests have fallen on deaf ears because VDOT and FCDOT focus on vehicle throughput, while our supervisors claim they'd love to help but the budget won't allow it. But Metro is in a unique position. Your mission is people-oriented, correct? You can use your power to mandate that the infrastructure leading to the metro FINALLY be made safe enough for residents 1-2 miles away along Haycock/Shreve. I don't think is unreasonable -- we will receive the ripple effect of the construction, deliveries, etc. from this project, and we are the ones who have been your riders for years, and who have paid into the tax base that is helping to fund this project. Thank you for your help, for any protection that you can push for! More important than parking spots are lives.
125	I live off of Great Falls Street in McLean, midway between the West Falls Church Station and the McLean Station (Silver line). On work days, each station is simply too far to walk to. I have lived here for 25 years and have never found an easy way to get to East or West Falls stations

	that doesn't involve driving and parking. If you're going to reduce parking space so significantly at West Falls, how can people like me, who have had to resort to driving to and parking at West Falls (or East Falls, because there's never been sufficient parking at the McLean Station), manage to get to a nearby station without having to walk 2+ miles back and forth, across busy streets, sometimes in darkness? Please consider allowing Metro buses or vans to run on Great Falls Street to and from West Falls and the McLean Station. I'd be happy to take a bus or van to a nearby Metro station if I didn't have to walk a mile or so to a bus stop. Also, if you do provide a more efficient system (e.g., more buses, vans) to transport people to Metro stations, please consider the safety of pedestrians who need to find their way to those modes of transportation. At a minimum, more visible crosswalks and flashing lights or stop lights are needed along busy streets like Westmoreland St. and Great Falls St. More needs to be done to ensure the safety of pedestrians who are walking on those streets in the early morning darkness, during rush hours, or in the evening hours--especially those who risk their lives to cross those streets simply to get to a bus stop. Thank you.
126	I fully support this plan. The surface parking lots at west falls church are underutilized and a very poor use of this valuable real estate. The parking structure that will remain provides more than enough parking.
127	I often ride the Orange line from West Falls Church and use the parking since I live near Tysons. There is no parking for the Silver Line which has three stops that are much closer to where I live. I live too far to walk to the Silver Line stations and am unable to ride a bike. That is why I drive to West Falls Church Metro Station since it has parking available.. I hope you will not remove too much of the parking since there is no other alternative except to drive in to DC and pay $23/day for parking plus the toll on I66. Before the Wiehle Station parking was opened up, both the surface lot and the garage would often be full and I would have to park in the other paid lot belonging to the campus near the Metro station. I am not sure if that is being redeveloped also.
128	I think if you want to encourage more use of public transport you don't cut the number of spots allowed for park and ride. This will drive more vehicles on to 66 and into areas surrounding WFC
129	I took metro from WFC to federal triangle for 30 years untl the pandemic. I. General, until the opening of the silver line, parking was difficult. After the silver line - anyone who could hop to EFC would do that in the a.m. If u want people to use WFC there needs to be parking available all day and not just rush hour. Don't make WFC difficult to use or people will just drive downtown.
130	I have been using the WFC metro station since it first opened. Up until 2011, I took it almost daily to an ofc in DC. Since that time, I still commute downtown via Metro for medical appointments. To do so, I have to drive either from my home in downtown MCLean or my boyfriend's in FC off Great Falls st., with both options requiring a place to park my car. Buses are inconvenient and not frequent enough.... If you reduce the parking there by that much, yiu will surely lose, not gain, ridership! It is ludicrous to think that the average citizen will walk or bike o a station more than a mile away, particularly in inclement or cold weather. This plan was not well thought out!!! You will lose my patronage for certain if you make it more difficult and expensive to park there.
131	Have you not learned yet the fallacy of your assumptions on reduced parking around metro? If they were true, there would be no private lots charging upwards of $20 a day. yet they are all over Tysons. Why do you continue to repeat this fallacy? Your aspirational studies defy actual resident needs. EVERY STATION SHOULD HAVE A MUNICIPAL PARKING DECK!!!!!
132	In general this seems like a pretty good plan, but I am concerned that the people living in all the new housing will occupy a lot of the available parking and that commuters will have as much of a problem being able to find a parking spot as they do at East Falls Church. I think too

	much parking is being eliminated. There are also too many apartments/townhomes/living spaces in the plan.
133	- Eliminate all surface parking - Increase bus service from the station - No widening of any road - Sidewalks on both sides of all roads - All roads should have protected bike lanes - Increase the lights in the area - Protected Bicycle lanes on all roads
134	Reducing the number of bus bays to four mean that there is a plan to reduce or stabilize the nunmber of bus lines to West Falls Chuch station. We had complained multiple times about this incorrect decision and that all bus lines seem to serve East Falls Church. Please do not decrease the bus bays so drastically. Please do not reduce/remove the vegetation and trees on Haycock Road, Metro Access Road or the area surrounding the Pavillion buildings. The vegetation and trees are a sound and dust barrier to I-66 and Dulles Toll Roads. Removing the trees will cause negative effects to the noise and quality of life for all apartment unit dwellers on that side of the Pavilion buildings. Please do not construct a "Nature Play Space" or Tot Lot in the ares marked on the general plan on the corner of the metro access road. This area is the access of the pavilion to the metro and may not be blocked or built on. Also the topography of this area is sloping towards the pavilions so how is it safe to have it as a playground? The rear of the planned townhouses on Alleys especially Alley 2 behind Block H means that garbage storage and collection will take place across from our Pavilion balconies, this will be noisy, disgusting, spread pests and diseases in addition to smelly garbage across a narrow road.
135	I am against reducing park and ride spots. I am fine with reducing the kiss and ride spots.
136	I am firmly against this development for a number of reasons: - the sheer scale of new residents is dramatic - how do our schools support this influx - impact on roads - Haycock is a significant road for commuter traffic - - utilities - Dominion Electric cannot provide adequate service. Our development has lost power 5 times in the last year - we are too low on their priority list to have the upgrades needed to keep our approximate one square mile area with power, even though surrounding areas do not lose power. Yet, we pay the same rates, endure loss of refrigeration and freezer, heat and cooling - Fairfax County cannot take care of basic maintenance to mow down the grass and weeds that grow over the sidewalk - I have to walk in the street to and from the Metro - whatever happened to the airport bus that left from West Falls Church. As of now, I have to travel to East Falls Church to take the metro to Wiehle to take a bus to the airport, all with baggage in tow. I have serious doubts metro is up to this task. And the developer reaps all the benefits.
137	as much parking should be eliminated as possible to free up land for housing. any parking should be in garages to avoid wasting ground space. make it easier to get to the station without a car by having sidewalks and protected bike lanes and increasing the number and frequency of bus routes to and from the station.
138	I am fully supportive of these changes and any additional changes to improve the number of people that can access the Metro without parking. We need more amenities on the Orange Line so people are not required to drive as much.
139	I am fully supportive of the idea to reduce the parking and concentrate on redevelopment and increasing density of the site. There are way too many parking spaces now, too many underutilized bus bays. The area is not pedestrian friendly now.
140	Less parking is better. If at all possible please BUILD something USEFUL on that space - public shopping spaces, maybe even housing. Retain ownership of it so that Metro can make money on the land like every REASONABLE transit system in the world does. PLEASE make this as pedestrian and bike friendly and oriented as possible. Please have wide walkways and work with businesses to make this metro stop an actual destination worth spending money in.
141	I agree with the proposed changes

142	I am comfortable with reducing the parking. Whenever I go to the station, the parking lot is near completely empty. I do not see the purpose, however, of reducing the number of bus bays. The Falls Church area deserves more bus access not less. I also do not see the point of repaving roadways, that seems like a solution in search of a problem.
143	WMATA has been remiss in connecting to its Falls Church/McLean area neighbors about the development of the West Falls Church Metro excess property! That WMATA is finally now contacting taxpayers to seek their views shows how disrespectful and cavalier WMATA has become toward the people who fund it through three separate tax streams (local, state, and federal) and ridership revenue. WMATA has treated us like non-entities as if three-plus decades of using WFC metro station means nothing compared to the new residents who will buy EYA's townhomes/condos and rent apartments. And, you expect us to naively believe that these new residents will all rush to use Metro and that this development will somehow save Metro from financial ruin! You may think we are idiots, but we are not village idiots, and we deserve better from WMATA and our County Board of Supervisors. Now we see how you plan to decimate the kiss/ride spaces under some misguided theory that they will never be needed. When asked about the paltry number, EYA has smugly asserted that drivers should just circle the new streets until a space opens up. Really? This is the best you can give us? Please ensure there are more than 14 spaces and that they are safely accessible for drivers. Please ensure our safety as we walk and use the kiss/ride when construction is underway. This is the LEAST who can do for the community that supported WFC metro since it opened! Why did WMATA's representatives sit through the Comprehensive Plan amendment process and allow the "big lie" to take hold in the community? The "big lie" being that without this massive development, WMATA would be forced to close the station given the drop-off of passengers using it once the Silver line opened? How this took hold with your representative sitting by silently is more than shameful! Of course, passengers moved from WFC metro to Silver line stations -- why wouldn't they use the stations that are closer to their homes? And that WFC wasn't bursting at the seams during the morning rush was welcomed by us and now we are paying the price for not a decrease in total system-wide passengers, but something that was quite naturally the expected outcome of the Silver Line. Please tell us how we as taxpayers benefit from the "non-passenger" revenue that WMATA will accrue from the development. No one appears willing to tell us, so it probably is rather insignificant. Please tell us how EYA was selected as the builder. What process was used or was EYA selected because of its long association with WMATA? You and your representatives have mocked us for being NIMBYs, for allegedly not caring about TODs, and as malcontents. This is outrageous for those of us who walked to Metro, suffered through shut-downs, splotchy service, because even though we don't live in a TOD believe in mass/public transit. We walked on the unshovled and frightening I66 overpass on Haycock Road during inclement weather, we tripped on the poorly lit asphat trail that runs from the current entrance to Westmoreland Street. We shuddered when another commuter was raped on that trail in 2002...and now your chosen developer asserts that WMATA/EYA has no obligation to address any of the concerns we've had about the Haycock Road challenges for walkers! VDOT says there is nothing that prohibits you and EYA from proffering improvements on the eastern side of Haycock Road/Great Falls intersection! We expect nothing less.
144	I had to submit this twice because your web system is garbage and discarded my answer because i used the back button and had the survey open in mutliple tabs. This is becuase I do not remember the question and wanted to reference the precise text while writing. Please include the text of the question over the prompt so people can remember what they're answering. As a voter and resident in Northern Virginia, I support metro's proposal and urge metro to go further. Station-adjacent land is precious - we have a duty to maximize density along metro stations to ensure as many people as possible can benefit from metro service

	and commute by metro rather than car. If we fail in this, if we continue to prioritize the selfish fears of enriched homeowners afraid of declining land values, we fail to serve the greater populace and we fail to take the adequate steps to freeze and revert our intensifying climate crisis. Do not stop at reducing surface parking - eliminate surface parking! Provide as much space as possible for tall, high density (10+ floor) housing so as many people as possible benefit from metro access. Maximize the utility of the land so we are not serving between one and maybe 3 vehicles, but instead floor upon floor of residents. As a general comment, I also urge Metro to fix itself and end the unceasing comedy of errors that WMATA provides our regional news outlets. New trains, but all the wheels fall off. New faregates, but they don't support tap credit cards and need to be replaced because people jump over them. A new metro line, but the cement is defective and will require constant maintenance. A new metro line, but it gets delayed for years and the system doesn't even have enough trains to support it. Reverse the decline before it becomes a death spiral.
145	I am in full support of this plan. The current setup is really not useful to anyone. West Falls Church has one of the lowest ridership in the system, and it simply does not make sense to have a metro station that only serves 9-5 commuters that park and ride, especially with covid-era work from home. Smart housing development around metro stations is what can allow for our region to have affordable housing, lower traffic, and better quality of life. TOD has been effective in DC (NOMA, Navy Yard), Maryland (Silver Spring, Bethesda), and Virginia (Ballston, Clarendon). Let's have a system that serves people, not parking lots.
146	Walking, biking and driving to the West Falls Church station from the nearby neighborhoods(especially from the Haycock Road and Great Falls street areas) is already challenging and, at times, dangerous. Automobile back ups on Haycock Road during peak hours continue even after the opening of the Silver Line since those drivers are the local Falls Church, McLean and Arlington users of Metro. While those coming to the station from the West abandoned the station when the Silver Line opened, the locals are the ones who still use this station. Despite requests for improvements to the walking paths in the area many times over the years, little has been done. Children attempting to walk or bike to Haycock and Longfellow Schools are in danger every day. While creating a mini city with many amenities around the station sounds attractive, nothing should be done until and unless the immediate neighborhood access to the station area is improved. In fact, adding development to include retail, restaurants and even a dog park will essentially create attractive nuisances encouraging those in the nearby neighborhood to walk, bike or drive to these new spots in unsafe conditions. We are already experiencing traffic delays and noise from the construction at the Fall Church City's project at the corner of Haycock and Leesburg Pike. This additional proposed development will only make the situation worse for residents near the West Falls Church Station and, once it is completed, we will have difficulty accessing the new area and the station unless improvements are made to the infrastructure in the nearby neighborhoods. Please assure us that the County will protect our stable neighborhoods by investing in traffic calming measures, improved roads and, most of all, better pedestrian and bicycle access within the one mile "easy walking" area around the station prior to or along with any additional development. Though we are now retired and no longer use Metro on any regular basis, we did so for many years. We are hesitant to use the system now both because of the pandemic and the irregular and limited service of Metro. We no longer have school aged children so are not affected as are our neighbors who worry about the safety of their kids trying to get to school. Nonetheless, as long standing tax payers, we believe that the County has much to gain from the proposed development. The residents in this area should not have to pay the price of congestion, traffic and lack of safety.
147	I like the idea of removing the surface lot and shrinking down the kiss and ride. However, I definitely think the kiss and ride is still useful. I would also recommend an importance of

	sidewalks to and from the nearest housing units so that people can walk to the station. It is the nearest lot to Tysons with parking though, so for those eager to get into the city who work in tysons, but cannot leave their car overnight at the office, maintaining parking spots would be very useful. But I think only the garage is needed for that. Please consider increasing the lightning near the parking lots and the area to make it safer to walk.
148	I believe reducing the parking around the West Falls Church station and taking more of a transit-oriented development approach to the land would be fantastic.
149	I fully support the proposal and recommend WMATA go further by making the following changes: - Eliminate all surface parking. Surface parking is an inadequate land use especially next to a major transit station - Increase bus service to and around the station. - Reduce road widths and implement as many traffic calming measures as possible, including bulb outs, raised crosswalks, etc. - Ensure any redeveloped roadways have fully protected bicycle infrastructure
150	- Eliminate all surface parking - Eliminate kiss and ride - Increase bus service from the station - No widening of any road - Sidewalks on both sides of all roads - All roads should have protected bike lanes Hi, my name is Michael Starnes, and I am a long time metro rider. Please do the following to improve the value generated by Metro as well as Metro owned land. Dense housing is one of the best ways to reduce environmental impact, and this transit oriented development also helps people get the most out of metro. 1. Please lower surface parking to zero spots. Parking is unnecessary near metro 2. Eliminate kiss and ride, people can take transit and driving delays transit. 3. Increase bus service from the station 4. Put all surrounding roads on a "road diet" 5. No widening on any road 6. All roads should have sidewalks and large bike lanes protected by bollards. Best, Michael Starnes
151	This plan is a step in the right direction, but it should go much further to eliminating car transportation and encouraging sustainable mobility. I recommend the complete elimination of all surface parking, which will continue to be less utilized in the coming years. "Kiss and Ride" should be reduced and placed where it will not cause conflicts with pedestrians and cyclists. I would like to see increased bus service and long-term bike lockers. There should be ample, wide sidewalks and protected bike lanes on all roads. There should be no increased road space for cars. Lights and signals should be optimized for pedestrians and cyclists.
152	I am concerned that bicycle traffic will increase beyond all expectations, and the infrastructure surrounding WFC will not support the bike traffic. I fear that fatalities are inevitable unless changes are made in the current road and walkway network surrounding WFC.
153	The only way to reduce car use into DC and increase use of public transport is to provide FREE parking at metro stations. Otherwise by the time you've paid for parking AND the metro fare it is cheaper and easier to drive.
154	Reducing parking would discourage metro ridership: i take the metro precisely because I can park at a station at a reduced price. If I find that I cannot reliably park, I'll have to drive.
155	I agree with the proposed changes. Since the Silver Line opened, there has clearly been less need for parking at West Falls Church and Transit-Oriented Development is the right long-term investment in WMATA's ridership and financial health. My only question is whether some number of the housing units created will be set aside for low-income affordable housing. TODs out in the suburbs are a potential answer to the low-income DC housing crisis because they give people working blue collar jobs downtown a higher standard of living out in the suburbs and commuting via public transit.
156	With all the new development, the parking options should not be reduced.
157	Esta bien
158	For West Falls Church station. - Make the Silver line pass through the station for a stop. Can use the route from the Yard - Eliminate all surface parking space and only use the garage -

	Increase bus service - Eliminate Kiss & Ride - No widening roads - Roads should be two lanes maximum - All roads nearby should have protected bicycle lanes - Add more lights and improve the lighting in the area - Wide sidewalks for all the roads on both sides
159	This is a fantastic idea. We need more transit oriented development in the US. It promotes a healthier culture for us and the environment, and it greatly increases people's quality of life compared to typical suburban sprawl.
160	I think it is important to retain parking for persons who utilize it for 24 hour parking. For example, if I need to ride to work at 9pm, I should be able to park until Metro opens at Dupont to get me back to my vehicle at West Falls Church/VT In addition, if the development is to mirror Reston-Wiehle, then that is over development and would not support such a venture. My relatives live in the West Falls Church Station area and we do not want over development or light industry to move in. Respectfully, Timothy Hollar
161	I am against the proposed parking and bus bay changes at West Falls Church metro station The ridership of metro in the suburban Virginia area was adversely impacted by the previous work done at this station, which delayed or prevented easy access to the facilities and the timely function of the trains. The redevelopment plans are not conducive to increasing ridership for a suburban area where the ridership has many other shopping and eating establishments to choose from daily. The metro needs to encourage ridership through increased access, discounted fares, timely schedules, and increased safety. This is an unnecessary expenditure for a system that is already financially broken. Take the money and buy more trains so metro can get back to the 7 minute rush hour schedules! Do not lose sight of the primary mission of metro to be an efficient and safe public transportation system.
162	I used to use the station regularly and the garages and lots were rarely full in recent years. The station and its parking were laid out before the silver line and many of those that would have parked there are now using the silver line and parking elsewhere. Using the currently unused space for productive things is a very good idea. My two concerns are 1) if ridership increases, more parking than is in use now will be required. 2) Riders will be in competition with customers of the mixed use facilities, so separate parking would be needed for that.
163	I'm in favor of the change and look forward to seeing the new development. The Kiss and Ride, south parking and temporary parking areas are underused and could be reduced in size.
164	My nearest metro stop is West Falls Church and I approve of the proposed changes.
165	The reduction in park and ride makes sense. However, the proposed reduction in bus bays is totally antithetical to the encouragement of transit-oriented development. Even with the proposed densification of residential and commercial spaces near the West Falls Church metro station, there can and should be MORE transit, i.e. bus and micro-bus connections to the Metro at West Falls Church. Therefore it does NOT make any sense to reduce the number of bus bays and foreclose on the possibility of a substantial expansion of transit services. In addition, these bus bays should be reconstructed to allow in-route charging for electric buses, which may be inductive charging or pantograph charging. In either case the required electrical infrastructure should be part of the bus bays.
166	I support the proposed changes. I believe that removing surface parking and redeveloping the land into transit-focused housing and commercial area will be a net gain for the area. Much of that parking is not needed since the construction of the silver line extension had finished.
167	Plans look fantastic, I can't wait for this to be built. TOD is good for all!
168	I take the Loudon commuter bus along with some individuals who are handicapped. It is unclear whether you are proposing impacts to the bus bay on the other side of the metro which has no parking spots.

Aaron Wilkowitz:

Hey there, my name is Aaron Wilkowitz. I live in the neighborhood, about a mile away from… I just want to say I'm unequivocally, extremely excited about all the development that's being proposed and I couldn't be happier with the proposal. You know, I lived in Arlington for many years…went and commuted via Metro across most of North Arlington – Ballston, Falls Church…not Falls Church…Virginia Square, Clarendon, et cetera. And a lot of the features that made those (neighborhoods) so inviting, having parks nearby, having it very pedestrian friendly, I loved all of that. And when I moved here, I didn't see as many of those features and I'm extremely excited that that is now…it seems like we're getting much closer to that. Getting to, you know, more usable, more pedestrian friendly, more bike-friendly, you know, areas right around the Metro station.

In particular, what I found convincing is that it seems like a lot of the West Falls Church's construction was done before the Silver Line existed, it was done with something else in mind. Where, you know, people used to drive in from, you know, especially kind of the Route 267 area, whereas now there, you know, there's all sorts of Metro stations on the Silver Line. We don't need as big of a parking lot. We don't need as many (parking spaces). What we have a severe shortage of is housing. So the idea that we're taking away parking spaces, putting in housing to make housing more affordable for, for folks everywhere in the area is just incredibly (important). I want to say I'm unequivocally excited and really, really proud of the developments that are happening.

Mark Kieffer:

Good evening. Thank you for giving me the opportunity to speak. Let me get my cursor. I'll be reading so my eyes will be a little bit off, off the screen so bear with me. I live on Casemont Drive, a half mile east of the West Falls Church Metro Access Road that comes out onto Haycock. I'm a Metro supporter who used Metro regularly for years and would like to see the service improve and prosper. However, I have several concerns about the impact of the proposed changes on surrounding communities.

The goals in the environmental evaluation include improve conditions to existing communities, improve transportation safety and efficiency, enhancement of bicycle and pedestrian safety and access. These are all admirable goals that most of us support. Unfortunately, without significant infrastructure improvements, these goals will not be achieved outside of the development bubble, the boundary of the development parcel, particularly in the neighborhoods northeast of the station along Haycock and Great Falls.

Many of us are concerned that traffic generated by the development along with expected traffic from the far more densely developed Falls Church City project and the Virginia Tech parcel will overwhelm local streets resulting in traffic backups, cut-through traffic and increased pedestrian safety issues. The poor infrastructure we're living with makes it uncomfortable for many to walk or bike to the Metro station from our nearby neighborhoods. This is before any of this new development. The unsafe conditions discourage children living right next to the metro station from walking or riding bikes to and from Haycock Elementary School. Many of us are fearful of accidents at the intersection of Haycock and Great Falls.

The development as proposed includes nothing to improve the deficient infrastructure just outside the parcel boundary from the Access Road east toward Great Falls Drive and Westmoreland. If you would walk or drive this stretch it is obvious that Haycock Road, especially crossing the Route 66 bridge, steps from the access road, is very dangerous for bicycles, with the path too narrow for multiple bicycles or wheelchairs.

Changing focus here a little bit - with regard to the reduction in Park-and-Ride and Kiss-and-Ride areas, I agree that these areas are underutilized, very much so, even before the pandemic, and are better used for housing and businesses, so I'm not against the development. However, I'm concerned with how WMATA will regulate the reduced parking to ensure that Metro users will not be crowded out by the new non-Metro-riding population working or living around the station, who may use the spaces as intended for riders.

In sum, while I support improvements around the Metro station, they should be accompanied by significant infrastructure improvements, connecting Metro’s neighborhoods or a bad situation will only get worse. And thanks for the additional time.

APPENDIX E: ENVIRONMENTAL EVALUATION

West Falls Church Joint Development

Washington Metropolitan Area Transit Authority (WMATA)

Environmental Evaluation

August 2022

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1.0 INTRODUCTION

The Washington Metropolitan Area Transit Authority ("WMATA") is proposing a joint development of the West Falls Church (WFC) Metro Station (the "Project"). The project area is in Falls Church, Virginia. The Project is bounded by I-66 to the north and east; by residential properties and Haycock Road on the south, and by Meridian High School and Northern Virginia Center on the west. A development team consisting of EYA, Hoffman, and Rushmark ("Developer") has been selected and has begun planning of the site. The project location is shown in **Figure 1**. The proposed joint development project would include the following modifications of WMATA facilities to the south of the station:

- Reduce existing commuter Park & Ride capacity from 2,009 spaces to 1,350 spaces, eliminating the south parking lot.
- Relocate the Kiss & Ride spaces to a new roadway closer to station; reduce capacity from 64 spaces to approximately 20 spaces, including about 10 short-term paid spaces, two ADA spaces, and short-term and drop-off spaces.
- Replace the eight south side bus bays currently located in a bus loop with four to eight bus bays along a new roadway immediately adjacent to the station plaza.
- Eliminate or reduce 68 Metro-operated hourly paid parking spaces along the Metro Access Road.

Because the Project includes a modification of Metro station facilities and station access, an Environmental Evaluation has been prepared to assess the potential effects of this action. To support WMATA Compact requirements, specifically Section 14(c)(1), this Environmental Evaluation describes the Project, and documents the potential effects of the Metro Station facility modifications on the human and natural environment in terms of transportation, social, economic, and environmental factors. This Environmental Evaluation only assesses impacts where changes to the Metro facilities are proposed.

For purposes of project implementation, the Developer will be responsible for complying with Fairfax County, State of Virginia, and all federal requirements for the Project. WMATA and the Developer will coordinate with Fairfax County and, in accordance with County guidance, follow the county's development process. This includes adhering to the recently enacted Site Specific Plan Amendment to the West Falls Church Transit Station Area, which established the vision and general characteristics of the desired development. The developer will then refine specific plans for the site based on input from county staff and the public for the Concept Development Plan and Final Development Plan submissions necessary to implement the project.

Figure 1. Project Location Map



2.0 EXISTING SITE DESCRIPTION

Metro operates the West Falls Church Metro Station in Fairfax County, Virginia on the Metrorail Orange Line. It is served by Metrobus route 28A, Fairfax Connect routes 703 and 480, and Loudoun County Transit Route 902.

The Metro station has two entrances: the north side is accessible only from a bus loop, and the south side is accessible from buses, kiss-and-ride, and park-and-ride. The south entrance access facilities contain the Project Site. The Metro station entrance on this side is at grade level, with an overpass over eastbound I-66. The tracks and platform are located in the median of I-66 at a lower elevation.

An overview of the existing transportation facilities is shown in **Figure 2** and a detailed description in the subsections below, with a focus on access to the facilities from the south entrance:

Figure 2. Existing Transportation Facilities



2.1 Metrobus and Other Bus Providers

Fairfax Connector (Route 480 to Wolf Trap National Park) and Loudoun County Transit (Route 902 to Broad Run Farms) utilize the northside bus bays. Fairfax County Connector service begins two hours prior to each performance at the Wolf Trap Filene Center and the buses leave every 20 minutes, with the last bus leaving at showtime. Loudoun County Transit service departs from West Falls Church Metrorail Station Monday-Friday at 4:10 p.m., 5:30 p.m., and 6:50 p.m.

Metrobus Route 28A (Leesburg Pike Line) to Tysons Corner and King St-Old Town, and Metrobus shuttles utilize the southside bus bays. Route 28A to Tysons Corner operates seven days a week and departs from the station every 12 minutes every day from 7 a.m.-9 p.m. and every 12-20 minutes after 9 p.m. Route 28A to Alexandria operates seven days a week and departs every 12 minutes every day from 7 a.m.-9 p.m. every 12-20 minutes after 9 p.m. During track work and/or rail shutdown events, bus bays G and H will also be served by Metrobus shuttles. See **Table 1** for bus summary.

Table 1. Bus Summary Table

NORTH SIDE											
				MONDAY - FRIDAY				SATURDAY		SUNDAY	
ROUTE	BOARDS AT BUS BAY	DESTINATION	OPERATOR	AM RUSH	MIDDAY	PM RUSH	EVENING	DAY	EVENING	DAY	EVENING
Route 480	E	Wolf Trap National Park	Fairfax Connector	#	#	#	#	#	#	#	#
Route 902	F	Broad Run Farms	Loudoun County Transit	3 arrivals	n/a	3 departures	n/a	n/a	n/a	n/a	n/a
# Service begins two hours prior to every performance at Wolfe Trap Performance Cetner. Buses run every 20 minutes and the last bus leaves at showtime.											
SOUTH SIDE											
				MONDAY - FRIDAY				SATURDAY		SUNDAY	
ROUTE	BOARDS AT BUS BAY	DESTINATION	OPERATOR	AM RUSH	MIDDAY	PM RUSH	EVENING	DAY	EVENING	DAY	EVENING
Route 28A	C	King St-Old Town Station	Metrobus	Every 12 mins	Every 12 mins	Every 12 mins	Every 12-20 mins	Every 12 mins	Every 12-20 mins	Every 12 mins	Every 12-20 mins
Route 28A	D	Tysons Corner	Metrobus	Every 12 mins	Every 12 mins	Every 12 mins	Every 12-20 mins	Every 12 mins	Every 12-20 mins	Every 12 mins	Every 12-20 mins
Route 703	B	McLean Station	Fairfax Connector	Every 30 mins	Every 30 mins	Every 30 mins	Every 30-60 mins	Every 60 mins	Every 60 mins	Every 60 mins	Every 60 mins
Valley Flyer	A	Washington, D.C.	Virginia Breeze - DRPT	n/a	2:05 p.m.	n/a	n/a	2:05 p.m.	n/a	2:05 p.m.	n/a
Valley Flyer	A	Blacksburg, VA	Virginia Breeze - DRPT	n/a	10:00 a.m.	n/a	n/a	10:00 a.m.	n/a	10:00 a.m.	n/a
Shuttle	G/H	n/a	Metrobus	During trackwork and/or rail shutdowns, these bays will serve Metrobus rail shuttles.							
ESP	E/F	Prince William County	Omniride	During rail shutowns and/or other disruptions, these bays will support Omniride's Emergency Service Plan (ESP)							

The Project does not anticipate bus rapid transit (BRT) services coming into the site. The current Northern Virginia Transportation Commission (NVTC) design for Envision Route 7 locates the BRT stop near the intersection of Chestnut Street on Leesburg Pike approximately ½ mile from the Metro Station entrance.

2.2 Park & Ride

Park & Ride (P&R) demand at the West Falls Church station varies significantly throughout the year, with demand being higher during the spring and fall months. 2019 P&R utilization exceeded 1,200 vehicles on 123 days in 2019, by an average of 86 vehicles. However, utilization

occasionally exceeded 1,400 vehicles or fell below 900 vehicles. Given the variability in utilization throughout the year, WMATA prioritizes annual average peak-hour (AAPH) utilization for planning purposes to maximize revenue potential. Summaries of historical AAPH utilization at the station are provided in **Table 2**.

Table 2. Annual Average Peak-Hour P&R Utilization

Year	AAPH Utilization (approx.)	Notable Events
2010-2013 (avg.)	1,700	
2014	1500	WMATA Silver Line opened
2015	1050	
2016	900	
2017	850	WMATA P&R daily fare rate decrease
2018	950	I-66 and I-495 toll projects completed
2019	1,100	

When the Silver Line opened, the AAPH utilization steadily declined to a low of 862 vehicles in 2017. The AAPH utilization of the Park & Ride (P&R) increased prior to the pandemic, Source: Parking Analysis, 2021

2.3 Kiss & Ride

WMATA operates one Kiss & Ride (K&R) lot on the southside of the station. There are 47 short-term metered spaces, 9 accessible spaces, and 5 pick-up/drop-off designated spaces. The current K&R is underutilized, and observations indicate that it is likely being used by some riders as daily parking. The observed existing K&R demand was 14 vehicles, prior to the pandemic.

2.4 Paid On-Street Parking

WMATA currently operates 68 metered hourly spaces on Metro Access Road.

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3.0 PROJECT DESCRIPTION

The purpose of the project is to partially replace and re-design existing WMATA facilities to facilitate the joint development on land owned by WMATA where the parking lots, bus loop, and green space are located adjacent to the Curtis Memorial Parkway (I-66), as shown in **Figure 1**. The existing WMATA Parking Garage would remain.

The Joint Development of the WMATA parcel is being undertaken to create a mixed-use transit-oriented neighborhood, with the following goals:

- Increase Metro ridership – not only from development located on Metro's property, but also through improved connections to surrounding development and existing communities.
- Improve transportation safety and efficiency.
- Enhance bicycle and pedestrian access and safety, by including:
    - Improvements to Station Entrance to increase visibility, and
    - A direct multi-modal link between the city development and the Metro Station, with new bike lanes and sidewalks.
- Promote transit-oriented development surrounding the Metro Station.
- Enhance the surrounding community and create inviting spaces around the Metrorail station's transit facilities.

The selected Developer is responsible for planning, securing entitlements and constructing the project. An amendment to Fairfax County's Comprehensive Plan was recently passed by the Board of Supervisors, which will allow for nearly one-million square feet of development on the Metro site. The Developer's proposed program includes

- 24-acre mixed-use development
- Up to 90 townhouses
- Up to 810 multi-family units
- Up to 10,000 square feet of ground-floor retail
- Up to 110,000 square feet of office
- 9 acres of open space

The final design will be refined through the local planning process.

The proposed Site Plan (see **Figure 3**) requires several modifications to Metro Transit Facilities, which are the subject of this evaluation.

Figure 3. Proposed Site Plan



3.1 Modifications to Parking Facilities

3.1.1 Kiss & Ride

The K&R facility will be concentrated along a new roadway within the development area across from the station plaza and will incorporate approximately 20 K&R Spaces (see **Figure 6**, below). Growth in K&R demand is difficult to predict due to increased market penetration of Transportation Network Companies (TNCs) and an increase in K&R volume combined with decreases in K&R dwell times. Using the same growth rates from the MWCOG model and Fairfax County Land Use Plan (LUP), the projected demand in year 2045 is between 16 and 19 vehicles.

3.1.2 Park & Ride

The existing total Park & Ride (P&R) capacity at the West Falls Church Metro station is 2,009 spaces, the majority of which is accommodated by the existing parking garage. The remaining

parking spaces are in two surface lots, which will be redeveloped into residential and office buildings. It is anticipated that 2045 demand can be met by retaining approximately 1,350-1400 parking spaces, based on pre-COVID travel patterns. A detailed Parking Analysis of the station was prepared and is attached as **Appendix D**.

The project has a phasing plan to retain flexibility to address further parking demand. The project will retain the 1,200-space garage. In Phase 1 and 2, the project will retain an additional 150-200 spaces in the north parking lot (as shown in **Figure 4** below), which will be reconfigured to accommodate a new street grid. The north lot is planned as Phase 3, the last phase of the joint development. Prior to construction of that site – anticipated in about 10 years – Metro will reassess its parking needs. Metro will have the option to either 1) retain the north lot for parking (either as a surface lot or for constructing a new parking garage) or 2) allow the developer to redevelop the site and provide 150-200 commuter spaces in the private garages to be constructed on the site for the office and residential buildings planned there (**Figure 5** below).

Figure 5. Phases 1 & 2: Close south lot and reconfigure access to north lot

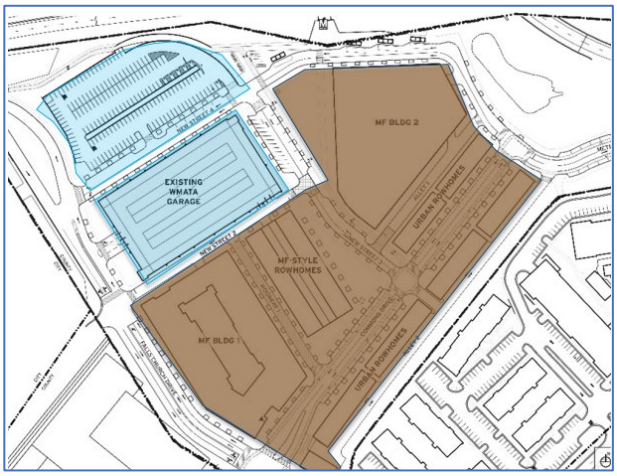


Figure 4. Phase 3: Decide in 2030 (est.) if expansion is needed with north lot development



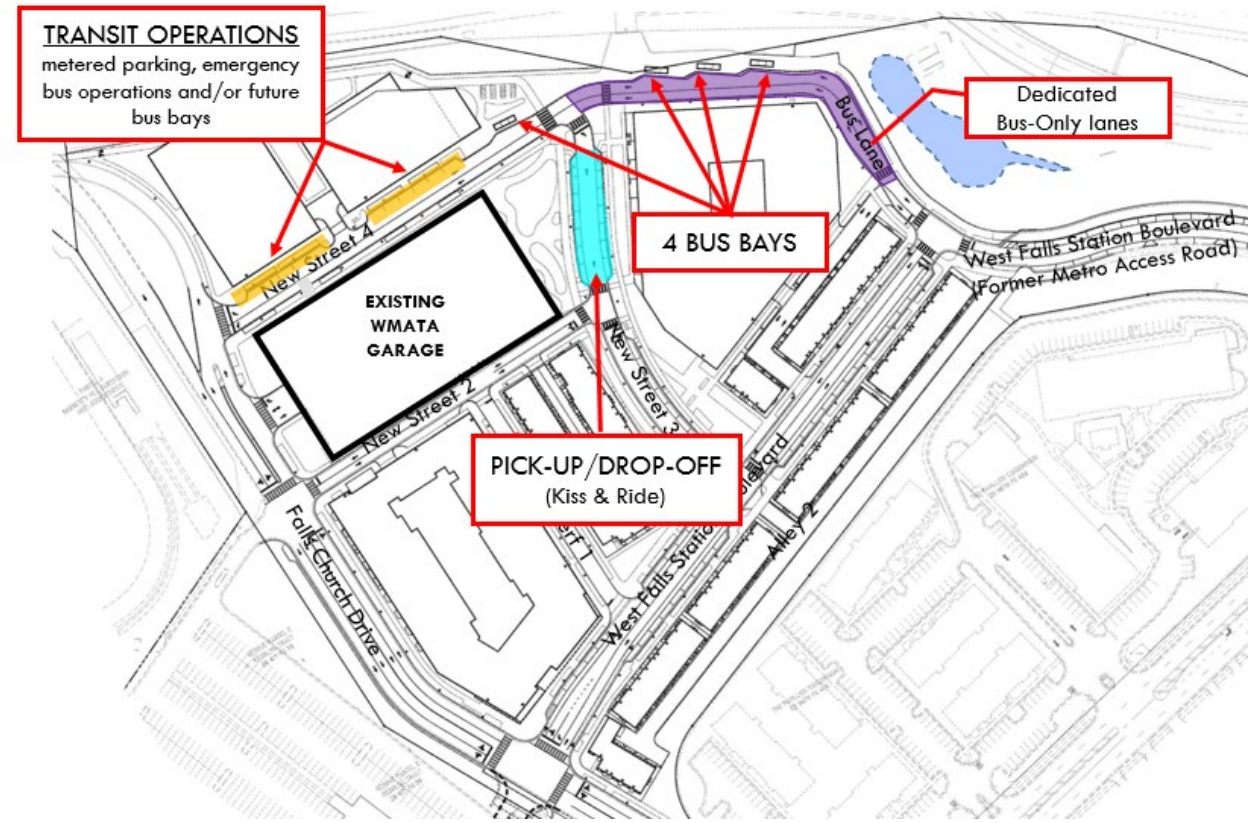
3.1.3 Paid on-street parking

Metro Access Road is planned to be realigned and reconstructed with a design to support multi-modal access to the Metro Station. This includes bicycle lanes, new sidewalks, and on-street parking. Currently, there are Metro-maintained parking meters along the roadway, available to the public. (Note: Metro has plans to replace the meters with new payment technology systems.) The Project proposes that paid parking would be retained along the street. However, ownership and operations of the paid parking spaces may be transferred to an entity other than Metro, depending on the final ownership and maintenance of the roadway.

3.2 Modifications to Bus Loop

Bus bays that are currently located on the Bus Loop will be relocated to a new roadway that will be immediately parallel to the station plaza. A minimum of four bus bays will be provided along the new roadway and will be designed to meet the requirements needed for the "Standard WMATA Tandem Bus" with sawtooth loading. The site design will allow for up to four additional bus bays and/or bus layover spaces, which may be constructed initially or phased in as needed. (See **Figure 6**.)

Figure 6. Proposed Bus and Kiss & Ride Facilities



4.0 PROJECT IMPACTS

This section evaluates the potential environmental effects of the Project, which consists of the proposed joint development and associated replacement of WMATA facilities described in Section 3.

4.1 Land Acquisitions and Displacements

Joint Development occurs when a public transportation agency joins with another private or public organization to develop land owned or operated by the transit authority. In the case of the West Falls Church Metro Station, WMATA has selected as its joint developer the team consisting of EYA, Hoffman & Associates, and Rushmark. Transit facilities at the Project site, including Metrorail, Kiss & Ride, Bus Bays, and Park & Ride facilities would remain within WMATA's control. The Developer would be allowed to construct other facilities to achieve transit-oriented development (TOD).

No land acquisitions by WMATA are required for the Project. The existing bus loop will be relocated to bus bays on an adjacent street. The existing Kiss & Ride in front of the Metro Station will be reconstructed to a plaza area and the spaces will be reduced due to demand and located on a street adjacent to the plaza. The WMATA parking garage will remain and will be enhanced. Aside from closing the South parking lot, reducing and reconfiguring P & R spaces, potentially replacing the North parking lot with a garage in the future and potentially removing paid parking on the Metro Access Road, no WMATA facilities will be permanently removed from the site.

Development pad sites will be conveyed to the Developer either fee simple for town houses and condominiums or ground leased for multi-family and office uses. The street grid is proposed to be dedicated as public streets, with appropriate right-of-way transfers or easements provided. The bus bay area, New Street 4, and the Kiss & Ride streets will be retained by WMATA. Private streets will be maintained by the owners of the development phases.

4.2 Transportation

4.2.1 Parking

As part of the Project, the Developer would remove approximately 600-650 Park & Ride spaces through development of the surface parking lots. **Table 3** breaks down existing capacity by facility type, shows other existing facilities, and summarizes proposed capacity in the station area.

Table 3. Existing and Proposed Parking Facilities

Parking Type	Existing Spaces	Proposed Spaces (Phases 1&2)	Proposed Spaces (Phase 3)	Option* (Alternative to Phase 3)
Park & Ride	*2,009*	*~1350*	*~1350*	*1,350 to TBD*
Kiss & Ride	*64*	*20*	*20*	*20*

*WMATA will reassess its parking needs prior to Phase 3 and has the option to retain the property to build a Metro garage if determined to be needed.

The remaining 1,350-1,400 Park & Ride spaces are projected to accommodate demand through the year 2045, based on the full parking analysis performed for the West Falls Church Metro Station Development, attached as **Appendix D**.

WMATA will reassess its parking needs for West Falls Church as the Joint Development Project is implemented. Several factors could affect commuter parking demand, including post-COVID changes in commuter travel patterns, the planned openings of Silver Line phase 2 and the I-66 toll lane project, and efforts by Metro to manage parking demand. Additionally, the private development will construct approximately 700 parking spaces, which could potentially be used to serve maximum P&R demand, as described in the parking analysis.

Should there be changes in demand, WMATA is retaining the ability to both add capacity if needed and to manage demand. Prior to Phase 3 of the Joint Development, WMATA will have the option to either 1) retain the north lot for parking (either retaining the surface lot or for constructing a new parking garage expanding capacity) or 2) allow the developer to redevelop the site and provide 150-200 commuter spaces in the private garages to be constructed on the site for the office and residential buildings planned there.

4.2.2 Traffic

A Traffic Impact Study (TIS) was prepared by Gorove Slade in April 2021 in conjunction with a proposal to amend Fairfax County's *Comprehensive Plan* for the West Falls Church Transit Station Area (TSA) in order to provide compatible, non-automobile dependent development. This study was developed in accordance with guidelines and recommendations set forth by the Virginia Department of Transportation (VDOT), Fairfax County, and the City of Falls Church.

Under existing (2019) traffic, all intersections in the area except for VA 7 at Haycock Road operate at acceptable traffic levels of service (LOS) per VDOT standards. Under a future build condition in year 2030, due to anticipated vehicular traffic growth in the area and trips generated from the site development, some intersections in the area will not operate at acceptable LOS without mitigation. As a result, recommended improvements are signal timing

and phasing modifications, addition of travel lanes, and new street connections in the project site. The full traffic study is provided in **Appendix A** *Traffic Impact Study.*

The Developer will be responsible for securing approval of the site plan for any private development, including the final traffic study, from Fairfax County and WMATA. Implementing roadway improvement commitments in these plans and traffic study are conditions for approval.

4.2.3 Metrorail

Transit-oriented joint development at the West Falls Church Metro Station is expected to increase overall ridership at the West Falls Church Metro Station. The addition of the office/ multifamily space in accordance with the joint development plan is expected to generate as much as 1,000 new trips per day, based on WMATA's *Station Walk Area Ridership Model*.

Any increase in ridership at the Metro station due to new employment or residential opportunities associated with the joint development is not expected to be large enough to cause any significant impact on Metrorail operations. An increase in ridership due to the proposed employment uses on site would make better use of existing Metrorail capacity because of the potential for reverse commute rides.

4.2.4 Bus Routes

All routes accessing the bus bays may experience a marginal increase in ridership from people traveling to and from the employment and residential uses associated with the proposed development projects. Bus routes serving the station may experience travel time savings of 10 to 15 percent with route adjustments stemming from the new roadway network and bus bay layout.

4.2.5 Pedestrian and Bicycle Access

Dedicated on-street bicycle infrastructure does not currently exist in the area. Fairfax County's *Comprehensive Plan* calls for a variety of bicycle facility improvements within the vicinity of the study area. In particular, the *Comprehensive Plan* recommends a bike lane along Haycock Road west of I-66 and along Great Falls Street north of I-66, and shared lanes east and south of the respective I-66 crossings. It recommends a shared roadway along Grove Avenue and through the WMATA access drive to the Metro station and a shared-use path from near Falls Church Drive and Haycock Road to the Metro station. The *Comprehensive Plan* highlights a major regional trail system, and a major paved trail at least 8-foot-wide in the vicinity of the study area.

Proposed bicycle facilities around and within the site area are shown in **Figure 7**. The planned trail network is shown in **Figure 8**. Marked crosswalks currently exist at the signalized intersections within the study area, but not on all legs. All marked crossings at signalized

intersections have pedestrian signalization provided, but the full suite of pedestrian crossing amenities is not provided at all locations (accessible pedestrian signals [APS], countdown pedestrian signals [CPS], and detectable warning surfaces on curb ramps). Marked crosswalks are in place on at least a portion of the legs at several unsignalized intersections. Pedestrian paths to Metro exist today and will continue to exist in the future. When the WMATA and Virginia Tech developments are built, pedestrian accessibility and connectivity will be more robust.

Figure 7. Site-Proposed Bicycle Network



Figure 8. Planned Trail Network



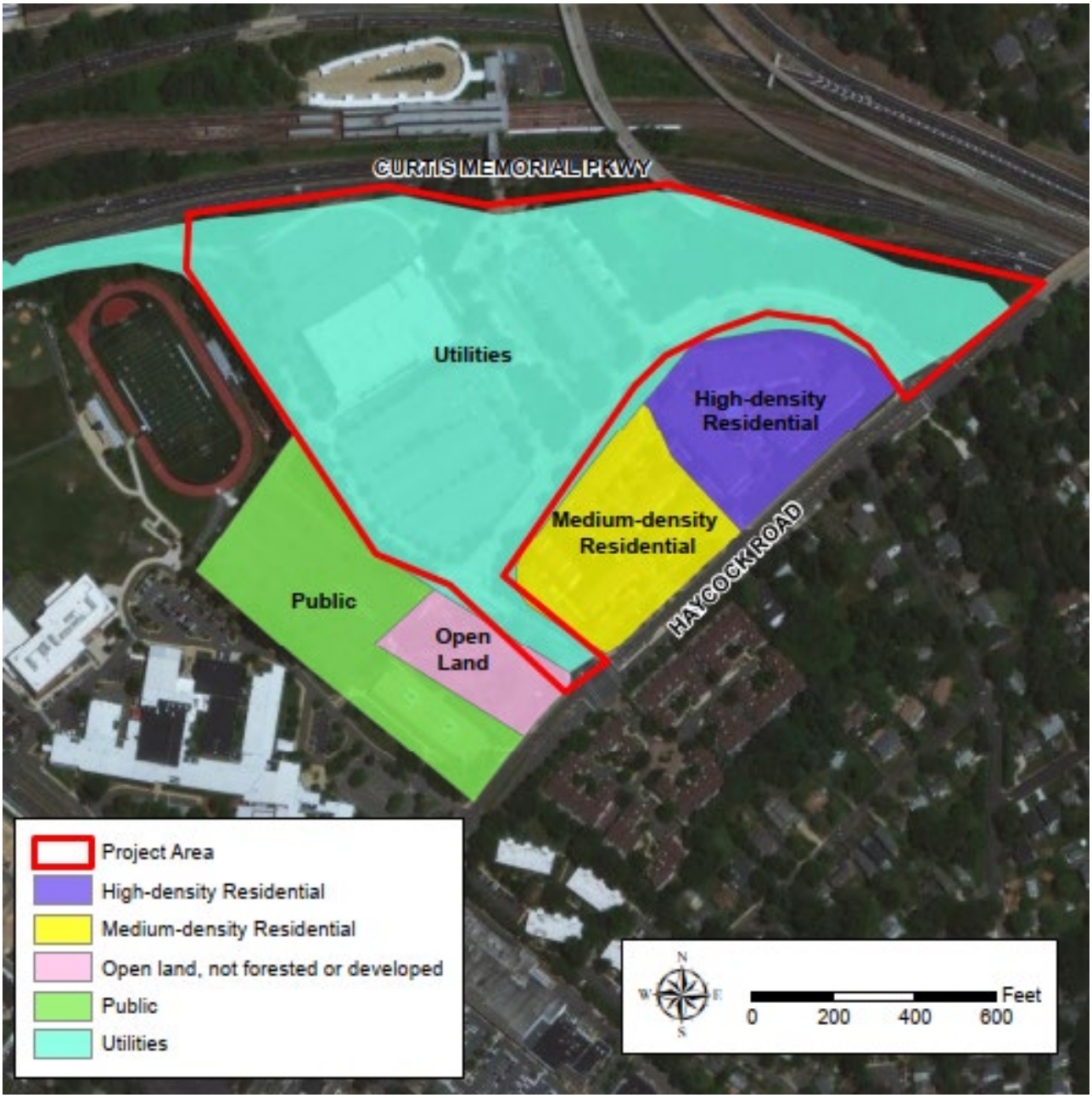
4.3 Land Use and Zoning

Based on the Fairfax County Planning & Zoning Viewer, the Project has been assigned a residential (R-30) zone. The purpose of the R-30 zone is to provide for multiple family dwellings at a density not to exceed 30 dwelling units per acre; to provide for affordable dwelling unit developments at a density not to exceed 36 dwelling units per acre; to allow other selected uses, which are compatible with the residential character of the district; and otherwise to implement the stated purpose and intent of the ordinance. The majority of the Project area was determined to have an existing land use classification of utilities due to its use as a transit center. Zoning and current land use are shown in **Figure 9** and **Figure 10.**

Figure 9. Existing Zoning Map



Figure 10. Existing Land Use Map



4.4 Planning Consistency

Table 4 identifies applicable local plans and evaluates the consistency of the Project with them.

Table 4. Local Plans

Plan	Description	Author	Date	Inconsistencies
Concept for Future Development Map	Identifies the West Falls Church Metrorail Station property as one of 11 existing Metrorail stations, and one of 10 Transit Station Areas ("TSAs") in the County. TSAs promote a land use pattern that supports Metrorail by encouraging a mix of uses in a compact, pedestrian-friendly urban form within walking distance of the rail station.	Fairfax County	2012	None
Fairfax County Comprehensive Land Use Plan Map – Baseline Recommendations	Identifies the baseline land use recommendation for the Property as "*Public Facilities, Governmental and Institutional Uses*," and as a Metrorail station. The Comprehensive Plan map indicates the primary land use recommendation and should be consulted in conjunction with the Area II Plan for more detailed recommendations than generally illustrated on the map.	Fairfax County	2018	None
Fairfax County Comprehensive Plan, 2017 Edition, Area II, McLean Planning District, West Falls Church Transit Station Area	Identifies the West Falls Church TSA as appropriate for higher intensity mixed-use development and is identified as a Transit Development Area ("TDA"). The TDA offers the most viable opportunities for development and redevelopment, including a baseline and options for redevelopment. A revised optional level of development was approved by the Board of Supervisors in July 2021, and recommends the following: - Maximum intensity of up to 0.96 FAR. - Between 105,000 and 120,000 square feet of office use, located adjacent to the Metrorail station entrance. - Between 10,000 and 30,000 square feet of ground floor, community-serving retail or active ground floor uses.	Fairfax County	2021	None

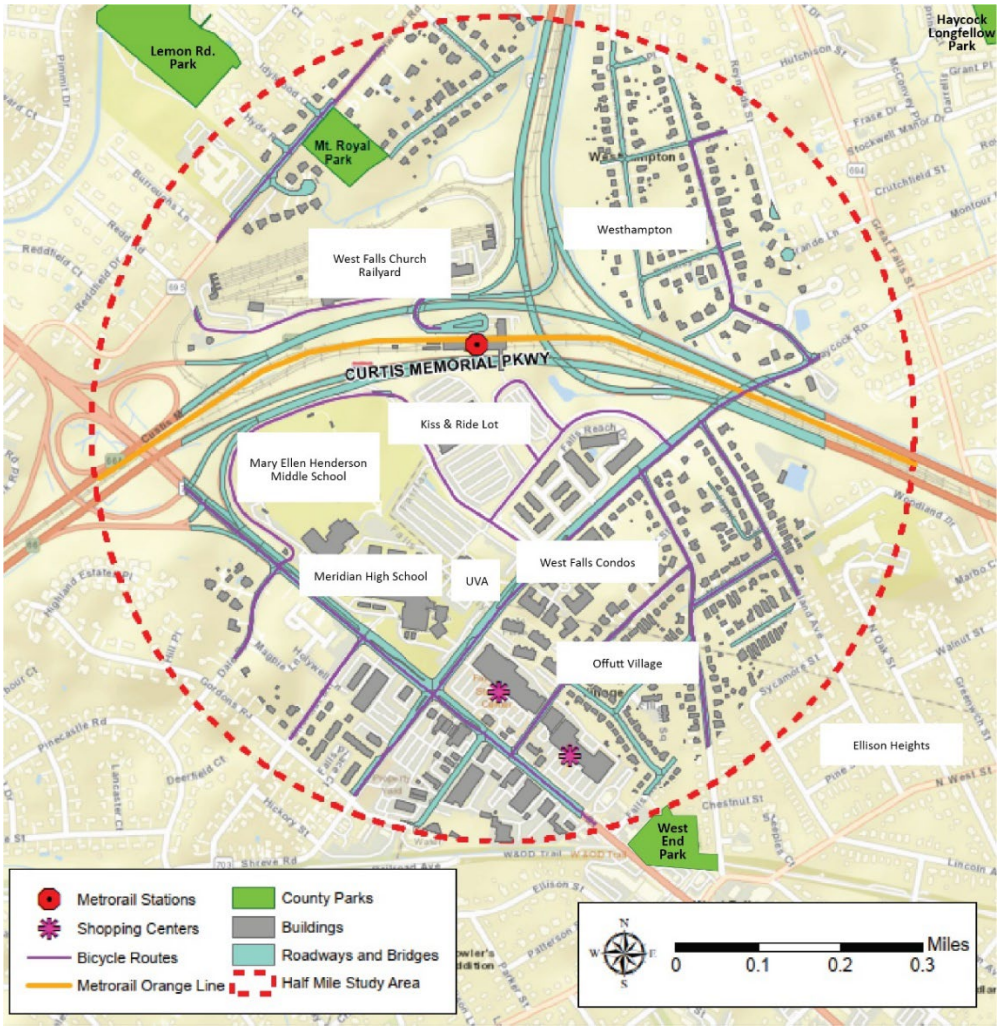
Plan	Description	Author	Date	Inconsistencies
	- Residential use should not exceed a maximum of 900 dwelling units, including approximately 80 townhomes on the periphery of the sub-unit. - Maximum building heights ranging from 35 – 120 feet; and - Provide publicly accessible parks and open spaces.			
Transportation Recommendations West Falls Church Transit Station Area – M2 Community Planning Sector	Identifies the planned roadway improvements in the vicinity of the West Falls Church TSA. The following specific transportation improvements are recommended: - A high-quality transit system is expected along the Route 7 corridor. - Appropriately sized bus bays and shelters should be accommodated adjacent to the WMATA Metrorail station entrance; and - Construction of a new two-lane roadway connecting the Metrorail station entrance to a new 2-lane roadway parallel to Haycock Road.	Fairfax County	2015	None
Countywide Trails Plan map	Identifies the County's planned, but not yet built, trail system. Recommendations include a major paved trail (asphalt or concrete), which is eight feet (or more) in width along Haycock Road.	Fairfax County	2018	None
Fairfax County Bicycle Master Plan Map	Identifies the existing and planned bicycle facilities countywide with the following recommended improvements: - A shared roadway facility connecting the Metrorail station entrance to Grove Avenue. - A shared use path from the Metrorail station entrance towards Route 7; and - A bike lane along Haycock Road.	Fairfax County	2014	None

4.5 Neighborhoods and Community Facilities

Within a half-mile of the Project are two public schools (Meridian High School and Mary Ellen Henderson Middle School), Northern Virginia Center (UVA), Mount Royal Park, two shopping centers, and residential housing (see **Figure 11**). Two parks, West End Park and Lemon Road Park, are located just outside the half-mile radius.

The proposed development Project would not create a physical barrier within a neighborhood, isolate a portion of a neighborhood, or have a direct impact on a community facility or access to a community facility.

Figure 11. Neighborhood and Community Map



4.6 Environmental Justice Populations

This section identifies minority and low-income populations (collectively "Environmental Justice Populations") in the Project area and assesses the potential for any disproportionately high and adverse impacts to those identified populations. Two block groups were identified within the half mile study area (Block Group 1 and Block Group 5).

4.6.1 Identification of Environmental Justice Populations

A half-mile radius around the Project area was determined to be the appropriate study area boundary ("Census Project Study Area") to analyze the presence of Environmental Justice Populations; all U.S. Census block groups and any portions of block groups that fell within the half-mile boundary of the project site were included. The study area with block groups identified are shown in **Figure 12**. The City of Falls Church and Fairfax County were selected as comparison areas for the Environmental Justice analysis. Minority and low-income populations were then analyzed at the Census block group level using demographic and income data from the U.S. Census Bureau's American Community Survey 5-Year Estimates (2015-2019).

Figure 12. Study Area with Block Groups

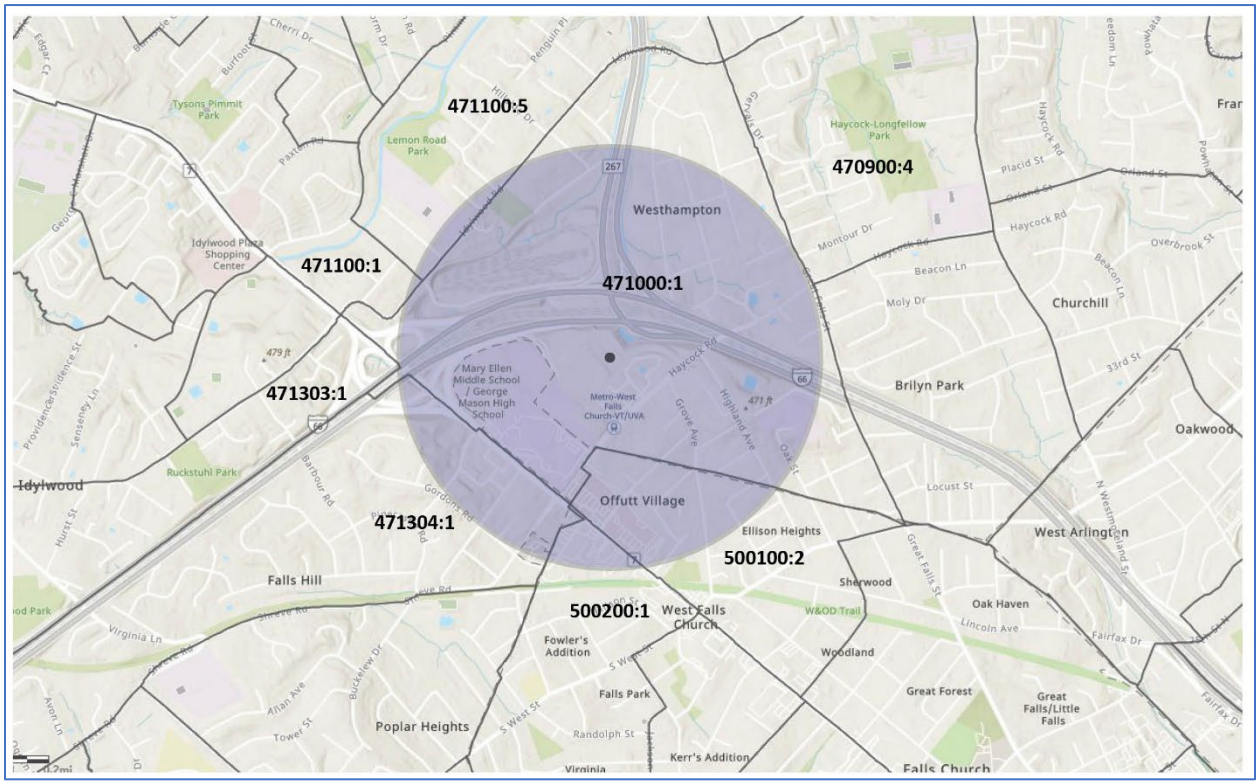


Table 5 lists the percentages of minority and low-income residents in the half-mile project study area in comparison to the City of Falls Church and Fairfax County overall. 30.7 percent of the study area population belongs to a minority group, which is about the same as the

percentage within the City of West Falls Church, but lower than Fairfax County. Additionally, 2.4 percent of the study area population is low-income, which is lower than the percentage within the City of Falls Church and that within Fairfax County.

Table 5. Minority and Low-Income Population by Block Group

Census Tract	Block Group	Minority			Low-Income		
		Total Population	Minority Population	Percent (%)	Total Population	Low-Income Population	Percent (%)
470900	4	4	1	0.0%	4	0	0.0%
471000	1	1776	539	20.4%	1776	50	1.9%
471100	1	44	12	0.4%	44	2	0.1%
471100	5	203	74	2.8%	203	5	0.2%
471303	1	6	1	0.0%	6	0	0.0%
471304	1	164	49	1.9%	164	4	0.1%
500100	2	432	132	5.0%	432	2	0.1%
500200	1	10	4	0.1%	10	0	0.0%
Census Project Study Area Total		**2640**	**812**	**30.7%**	**2640**	**64**	**2.4%**
City of Falls Church		14,617	4,297	29.4%	14,617	468	3.2%
Fairfax County		1,147,532	593,274	51.7%	1,147,532	68,852	6.0%

Table 6 provides a breakdown of the minority groups present within the project study area. The largest minority groups within the study area are Asians (19.5%) and Hispanic/Latino (4.6%). The percentage of Black/ African Americans within the study area is significantly lower than the City of Falls Church (4.9%) and Fairfax County (10.6%).

Table 6. Minority Population by Group

Minority Group	Census Project Study		City of Falls Church		Fairfax County	
	# of Residents	% of Total Population	# of Residents	% of Total Population	# of Residents	% of Total Population
Black/ African American	53	2.0%	716	4.9%	121,638	10.6%
American Indian/ Alaska Native	4	0.2%	29	0.2%	5,738	0.5%
Asian	514	19.5%	1,447	9.9%	230,654	20.1%
Native Hawaiian or Other Pacific Islander	0	0.0%	0	0.0%	1,148	0.1%
Two or More Races	119	4.5%	541	3.7%	44,754	3.9%
Hispanic or Latino	122	4.6%	1,564	10.7%	189,343	16.5%
Minority Total	**812**	**30.7%**	**4,297**	**29.4%**	**593,274**	**51.7%**

4.6.2 Assessment of Disproportionately High and Adverse Impacts

There is no anticipated human environmental impact, including health, economic, and social, on the identified minority and low-income populations within the project study area. No adverse impacts to neighborhoods, community facilities, air quality, noise, vibration, or traffic are anticipated as a result of the Project. Considering these factors, the joint development project would not have "disproportionately high and adverse effects" on identified Environmental Justice Populations.

4.7 Cultural Resources

There are no above-ground historic structures within the Project area, and the ground has been substantially disturbed over the years as a result of development for the original Metro Station facilities.

The Virginia Cultural Resource Information System does not list the property as being located within a registered historic district and has no known archaeological sites.

4.8 Public Parklands

The Mount Royal Park, shown in **Figure 11**, is the only public parkland located within a half-mile of the study area. West End Park and Lemon Road Park are located just outside the half-mile radius. No parks or recreation areas would be impacted by the Project.

4.9 Wetland and Waters of the U.S.

A wetland and waterway delineation of the Project area resulted in the finding of one Palustrine, Unconsolidated Bottom (PUB) pond. This section summarizes the results of the routine wetland and waterway determination.

4.9.1 Methodology

A detailed wetland and Waters of the U.S. delineation was conducted on April 9, 2021 using the *1979 Corps of Engineers Wetlands Delineation Manual* and the *Regional supplement to the U.S. Army Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0)*.

A combination of a desktop assessment and field reconnaissance was employed as part of the effort to determine the presence of wetlands and waterways. The desktop assessment included the review of the following:

- Aerial photography
- Lidar imagery
- United States Geological Survey Topographic maps
- Natural Resources Conservation Service Soil Survey Geographic Database (SSURGO) Web Soil Survey

- United States Fish & Wildlife Service National Wetland Inventory (NWI) mapper

After the desktop assessment, a detailed field investigation of existing natural resources was conducted. Wetlands were identified using an approach which requires interpretation of indicators representing hydrology, vegetation, and soils to determine the presence of a wetland. Wetlands typically are required to meet all three parameters to qualify as a wetland. The wetland indicator status of the observed vegetation was identified using the National Wetland Plant List (NWPL) (Lichvar, 2018). Soils were evaluated by using the Munsell Soil Color Chart.

4.9.2 Desktop Assessment – Soils

The SSURGO Web Soil Survey identified five, non-hydric, soil types within the project area. The soil survey report and mapping are included in **Appendix B** *Preliminary Desktop Review of Readily Available Data*. All soils within the project area are included in **Table 7.**

Table 7. Soils within Project Area

Map Unit Symbol	Map Unit Name	Acres in Project Area	Slope (%)	Hydric Rating
95	Urban land	14.7	-	No
101	Urban land-Wheaton complex	2.1	-	No
105B	Wheaton-Glenelg complex	0.3	2 to 7	No
105C	Wheaton-Glenelg complex	2.1	7 to 15	No
102	Wheaton loam	5.0	2 to 25	No

4.9.3 Desktop Assessment - NWI

Based on the desktop review of the NWI online mapping tool, no wetlands or waterways were identified within the Project area. A map of the Project area from NWI is included in **Appendix B** *Preliminary Desktop Review of Readily Available Data.*

4.9.4 Results

<u>WET-1 (Wetland-1)</u>

WET-1 is a stormwater management pond classified as PUB (see **Figure 13**). The pond's area is mapped as being underlain by Wheaton Loam 2-25% slope soil, with no frequency of flooding. The Wheaton Loam soil series does not have a hydric rating and is very well-drained. The depth to the water table is typically more than 80 inches. The hydrology for the open water pond is supplemented by periodic rainwater flooding from adjacent stormwater conveyed runoff channels. In their natural condition, these soils and their associated hydrology supported no known wetland community.

The development of a stormwater pond on these soils required extensive manipulation of the landscape and hydrology. Ponds were excavated, and underground drainage systems were installed to provide the necessary drainage to develop the metro station. Although the ponds were excavated to depths that typically would intercept the groundwater, they were likely lined with clay to ensure that water levels remained consistent for aesthetics purposes.

No Project impacts to WET-1 are anticipated. A photo of WET-1 is included in **Appendix C** *Photo Log.*

Figure 13. Natural Resources Map



4.9.5 County and State Water Resource Buffers

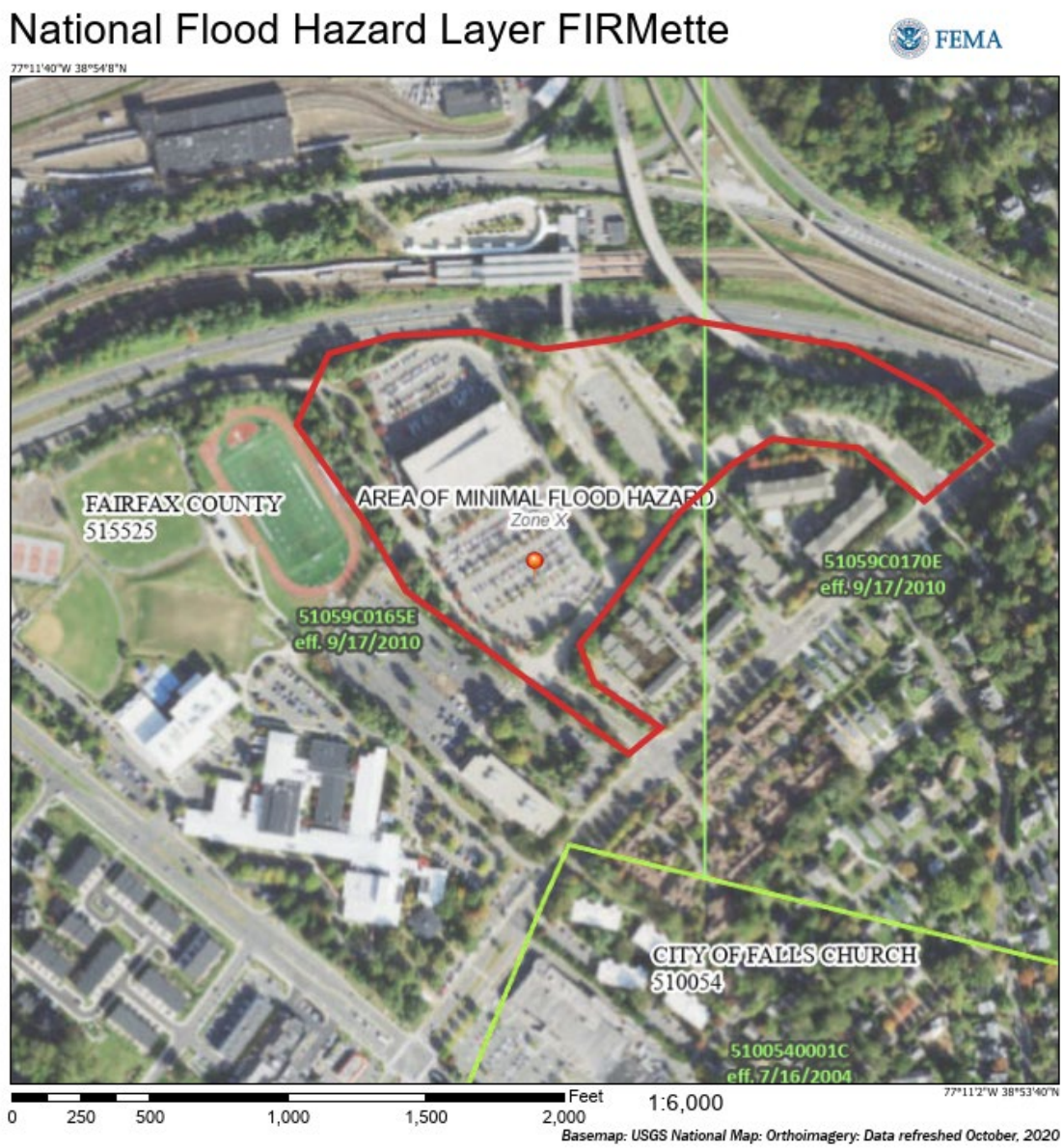
A minimum 25-foot-wide wetland buffer is required by state and county regulation. No impacts to the wetland buffer by the project are anticipated.

A review of Fairfax County's Potential Wetlands Area Map was performed, which resulted in no identified Waters of the US or Potential Wetlands within the project area, other than the delineated PUB.

4.10 Floodplains

The effective Federal Emergency Management Agency ("FEMA") Flood Insurance Rate Map ("FIRM") shows that there are no floodplains present within the Project area. The Project area is classified as an area of minimal flood hazard. See **Figure 14**.

Figure 14. National Flood Hazard Map



4.11 Water Quality

The Project is not anticipated to affect the water quality of the adjacent streams and wetlands. Stormwater management facilities will be constructed in accordance with Fairfax County

regulations, which control the rate and water quality of stormwater runoff. The Developer is solely responsible for obtaining all required permits and the stormwater management plan development. The overall joint development project will result in significant improvements to the treatment of stormwater management onsite.

Project area is not within a Chesapeake Bay Critical Area, does not contain highly erodible soils, and is not within a Tier II watershed. The Project site is within a watershed with a Total Maximum Daily Load for sediment. Erosion, sediment control, and site stabilization requirements will be integrated into site construction per Fairfax County Erosion and Sediment Control requirements. A Water Quality Impact Assessment will also be required. No new discharges (i.e., industrial), from the Project are anticipated that would require a National Pollutant Discharge Elimination System (NPDES) permit.

4.12 Air Quality

The Project site is located in Fairfax County, which is part of the EPA-defined Metropolitan Washington Air Quality Designation Area. The Greater Metropolitan Washington area is currently designated as a nonattainment area for 8-hour ozone (O3) and annual average particulate matter less than 2.5 microns (PM2.5). The Metropolitan Washington area is in attainment for all other pollutants including carbon monoxide (CO), particulate matter less than 10 microns (PM10), nitrogen dioxide (NO2), sulfur dioxide (SO2), and lead (Pb).

No impact is anticipated by the Project.

4.13 Forest Stands

The Project is not anticipated to affect any forest stands. In addition, no specimen, champion, or historic trees have been located on the site.

The Developer will be required to comply with Fairfax County's Tree Conservation Ordinance. The Developer will complete corresponding Tree Conservation Plans for any effect on forest stands and will be required to gain approval through the Land Development Services Division of Fairfax County. Per the Code of Virginia, based on the land use zoning of the Project area, the Developer will be required to maintain ten percent tree canopy.

The amount of reforestation required will be calculated using multiple factors such as net tract areas, land use category, existing forest cover, sensitive environmental features, and proposed clearing. Reforestation can occur either on- or off-site and may include the use of a pre-approved tree canopy bank or paying into a tree canopy fund. The Developer would be responsible for implementing the approved Tree Conservation Plans for any impact to forest stands resulting from the Project.

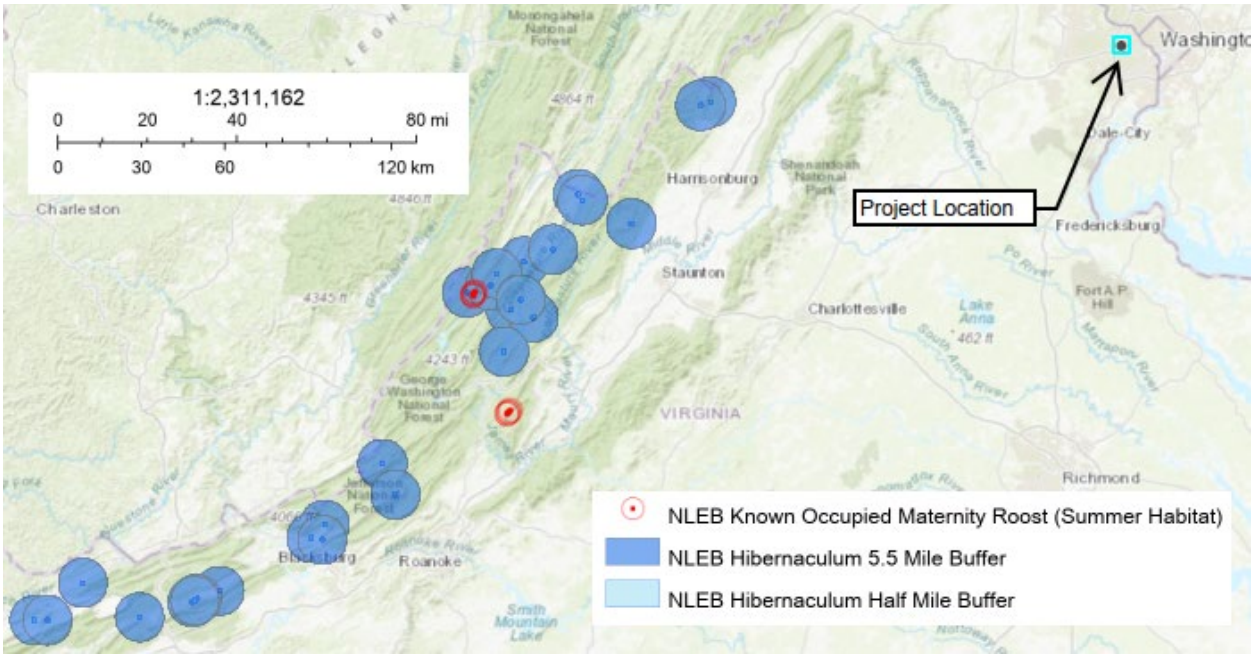
4.14 Threatened and Endangered Species

No impact to federally-protected species or habitat is expected as a result of the Project.

An official species list of potential threatened and endangered species from the USFWS IPaC online application (see **Appendix C** *Preliminary Desktop Review of Readily Available Data)* was reviewed for the project area**.** The Northern Long-eared Bat (NLEB) was the only species identified in the official species list for the Project area. No critical habitats were identified. The Virginia Department of Wildlife Resources (VDWR) provides an online mapping tool to help determine if projects are near NLEB habitat. Based on the VDWR NLEB Hibernacula mapping tool, there are no NLEB habitats located near the Project area, see **Figure 15**.

The Developer would be solely responsible for any permits or other documentation required related to protected species and critical habitats.

Figure 15. NLEB Hibernacula Map



4.15 Utilities

The Project is not anticipated to affect utilities that serve the project site and adjacent neighborhoods, including water, sewer, electric, and natural gas services. The Developer is responsible for providing adequate utility services for the proposed development and re-routing any affected existing utilities.

4.16 Hazardous and Contaminated Materials

Hazardous and contaminated materials include oil and other hazardous substances that present an imminent and substantial danger to the public health and the environment. Federal and state laws that regulate hazardous and contaminated materials include:

- Comprehensive Environmental Response, Compensation, and Liability Act;
- Resource Conservation and Recovery Act;
- Toxic Substances Control Act;
- Clean Water Act; and
- Clean Air Act.

A Phase I Environmental Site Assessment (ESA) was conducted for the Project (ECS Mid-Atlantic, LLC, October 15, 2019) consistent with the requirements of the American Society of Testing and Materials (ASTM) ESA procedures. The Phase 1 ESA Report is attached to this Environmental Evaluation as **Appendix E**.

A regulatory database search report was provided by Environmental Data Resources, Inc. (EDR). The database search involves researching a series of Federal, State, Local, and other databases for facilities and properties that are located within specified minimum search distances from the subject property. The report identified the subject property on the VA TIER 2 database for the storage of sulfuric acid. Information related to the purpose and duration of storage of sulfuric acid was not reported in the database listing. The property was not listed on the Resource Conservation and Recovery Act (RCRA) Information System (RCRIS), which would indicate generation or handling of hazardous wastes. In addition, the records obtained from the Fairfax County Fire Department indicated that the sulfuric acid was stored in traction power station, which is not located on the current subject property. Based on the absence of a RCRIS Generator listing or a reported release, this onsite listing is not considered to be a Recognized Environmental Condition (REC) for the subject property. The EDR report identified several off-site properties within the minimum ASTM search distances. Based on our review of available public records, none of the database listings are believed to represent a REC for the Project area.

4.17 Noise and Vibration

Existing noise sources within and adjacent to the project area are dominated by motor vehicle traffic along I-66 and VA-267 (the Dulles Toll Road), and Metro operations. No sources of vibration exist within the Project area since the West Falls Church Metro Station Platform is located in the median of I-66.

No impact on existing noise-sensitive receptors is anticipated as a result of the Project. If the Project is constructed, the existing Metrobus and Metrorail transit operations would continue to operate as they do now, and no increase in service is anticipated. The Metrorail tracks would continue to function as they do now; the tracks would not be realigned nor would any new switches be constructed on the tracks as a result of the project being built. The existing bus routes would continue to serve the Metro station as they do now although they would so from the proposed relocated bus bays on an adjacent street.

The Developer is solely responsible for quantifying and mitigating noise and vibration impacts from the Project on the private development project. The Developer is also responsible for constructing the joint development in a manner that mitigates potential noise and vibration impacts from rail, mass transit, and station-related sources to the Project's new residences and commercial uses. This mitigation includes compliance with the Fairfax County Noise Ordinance (Fairfax County Code, Chapter 108.1 – Noise Ordinance).

4.18 Secondary and Cumulative Impacts

4.18.1 Secondary Impacts

No adverse secondary impacts are anticipated as a result of the Project. Secondary impacts of the project would result from the increase in permanent residents and workers at the Project area. The joint development's office, housing, and commercial uses would increase the overall employee and resident population of the Falls Church area and would contribute to a marginal increase in economic activity in the project vicinity, including demand for goods, services, and housing.

4.18.2 Cumulative Impacts

No adverse cumulative impacts are anticipated because of the Project.

<u>Transit</u>

The completion of the proposed joint development is projected to increase transit ridership at the Metro station and increase bus ridership on routes serving the Metro Station.

- *Metrorail* – WMATA assessed the impact of increased ridership from the joint development on the Metrorail station using the Station Walk Area Ridership Model and estimates up to 3,200 additional riders per day. The additional ridership is not

anticipated to cause station crowding. The joint development has employment as well as residential users, and therefore a portion of the generated Metro trips would be in the reverse commute direction (outbound AM, inbound PM), compared to the majority of current Metro station customers. The additional ridership is not anticipated to lead to crowding on the Orange Line.

- *Metrobus* – WMATA assessed the impact of increased ridership from the completion of proposed phases of joint development on the bus services at the Metro Station. The results were that no additional bus bays would be needed on the south side of the Metro station.

4.19 Construction Impacts

During construction of the Project, pedestrian and vehicular traffic will be disrupted. Maintenance of Traffic (MOT) plans will be required for each phase, to reroute surface traffic and maintain access to and operations of Park & Ride, bus loop, Kiss & Ride, bicycle and pedestrian facilities. The new street network with bus lanes and sidewalks, bus loop, Kiss & Ride will be constructed in Phase 1. During construction of all phases, on-site Park & Ride capacity may be reduced. In Phase 1, the North Lot will be reconfigured. In Phases 2 and 3, on-site parking in the North Lot may be reduced for construction staging in support of the development project. If commuter parking demand justifies it, alternative off-site parking is to be provided.

Construction noise may impact surrounding neighborhoods, from the operation of construction machinery and vehicles and activities such as potential pile driving for the multi-family and office buildings. The Developer is solely responsible for ensuring that all construction activities adhere to noise control regulations as established in the Fairfax County Noise Ordinance, including time of day restrictions. Additional specific requirements may be established by the county through the plan review process.

Emissions from on-site diesel equipment and increased truck traffic and fugitive dust could negatively impact air quality during construction. “Good housekeeping” methods to minimize project-related dust include keeping dirt wet, rinsing vehicles exiting the site, providing street sweeping, and implementing other dust minimization measures when needed.

5.0 PUBLIC INVOLVEMENT

WMATA and the Developer will keep the public informed about the proposed Project through public outreach. A public hearing in accordance with the WMATA Compact will be scheduled, to be announced in a Notice published with this report. The hearing will provide the public with the opportunity to comment on the proposed modifications to the site.

The subject of this hearing will be on the following changes to Metro transit facilities:

- Permanent closure of the Park & Ride South Lot for future development, reducing parking capacity from 2,009 to about 1,350-1,400.
- Reduction of Kiss & Rides spaces from 64 to about 20 and relocation of the Kiss & Ride Parking Spaces to a proposed adjacent street
- Relocation of the existing eight bus bays within the Bus Loop to a proposed adjacent street, with four to eight bus bays which may be implemented as needed.
- Elimination of Metro-operated paid spaces along the Metro Access Road, with the intent allowing another public agency or entity to operating the spaces depending on the future ownership of the road.

Notice of the public hearing will be published in the *area newspapers*. Additionally, information about the proposed changes will be posted in multi-language print publications across the region and on social media.

A public hearing staff report summarizing comments received during the public comment period with staff responses will be released for public review and comment. The staff report will be made available online and in hard copy at WMATA headquarters and as may be further described in the Notice.

WMATA will collect comments from the public through the following ways:

- Comments and documents submitted online at wmata.com/plansandprojects
- A Compact Public Hearing
- Written comments mailed to: Office of the Secretary, Washington Metropolitan Area Transit Authority, 300 7th Street, NW, Washington, DC 20024

All comments must be received by 5 pm October 31, 2022 to be included in the public record.

The hearing process above is to be held by WMATA, about only the changes in transit facilities. The proposed private development components – the type, mix and density of development - will be subject to public involvement requirements of Fairfax County. The Project has followed an elaborate community engagement plan as part of the Fairfax County Comprehensive Plan Amendment process. From January 2019 to April 2021, a community task force worked with County staff and neighboring communities to develop draft recommendations for the Project.

More than 20 Task force meetings were held to collect public feedback on the Project. Task force meeting agendas, recordings, and presentation materials are publicly available through Fairfax County's Planning Division website. Additionally, details about the proposed project were presented by the developer at a Community Meeting on May 11, 2021, to the Fairfax County Planning Commission on June 16, 2021 and to the Fairfax County Board of Supervisors on July 13, 2021 when the amendment was adopted. Information about the comprehensive plan amendment is available on Fairfax County's website: www.fairfaxcounty.gov/planning-development/plan-amendments/west-falls-church-tsa-study

Going forward, the developer plans additional outreach to neighborhood associations, as it advances development plans through the county approval process.

6.0 REFERENCES

ECS Mid-Atlantic, LLC *Phase 1 Environmental Site Assessment, October 2010.*

Gorove Slade *Traffic Impact Study (TIS), April 2021.*

Federal Emergency Management Agency (FEMA), *Flood Insurance Rate Map (FIRM) for Fairfax County, VA.*

Macbeth. *2018. Revised Edition, Munsell Soil Color Charts. Macbeth Division of Kollmorgan Instruments Corporation.*

Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. *2018. The National Wetland Plant List: 2018 wetland ratings. U.S. Army Corps of Engineers.*

U.S. Army Corps of Engineers. *1987. Corps of Engineers Wetlands Delineation Manual. U.S. Army Corps of Engineers Waterways Experiment Station, Vicksburg, MS. Technical Report. Y-87-I. 100 pp.*

U.S. Army Engineers. *2012 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountain and Piedmont Region (Version 2.0), ed. J.S. Wakeley, R.W. Lichvar, C.V Noble, and J.F. Berkowitz. ERDC/EL TR-10-9. Vicksburg, MS: U.S. Army Engineer Research and Development Center.*

U.S. Department of Agriculture*. 2020. Web Soil Survey. In cooperation with the Natural Resources Conservation Service. https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm*

U.S. Department of the Interior. *Quadrangle Base Map. National Wetlands Inventory Wetlands Mapper. https://www.fws.gov/wetlands/data/mapper.html*

Fairfax County *GIS and Mapping Services https://www.fairfaxcounty.gov/maps/*

Virginia Department of Wildlife Resources, *Winter Habitat and Roost Trees Service NLEB Winter Habitat and Roost Tree*

TECHNICAL MEMO

TO: Steven Segerlin, WMATA

FROM: Adam Greenstein, WSP

SUBJECT: **July 2020 Parking Analysis, West Falls Church Metrorail Station**

DATE: **August 10, 2021**

1.0 INTRODUCTION

WMATA is planning joint development (JD) of the West Falls Church (WFC) Metro station. As part of the planning process, a parking analysis was performed in July 2020 to define current park-and-ride (P&R) demand, identify approaches to forecasting future P&R demand, analyze methods to optimize the existing and future capacity of the P&R, and modernize the kiss-and-ride (K&R) facilities to meet demand within the new development.

2.0 CURRENT P&R DEMAND

2.1 Average Annual Daily Ridership, P&R Demand, and Parking Capacity

Ridership at the WFC station had held relatively steady between 10,100 to 10,700 average annual daily riders (AADR) from 2010 through 2013. Ridership sharply declined to approximately 7,000 AADR when the Silver Line opened in June 2014, as passengers from northwest of the station towards Tysons and Reston migrated to stations along the Silver Line. Ridership decreased to a low of 2,400 AADR in 2017, rebounding slightly to 2,600 AADR in 2019.

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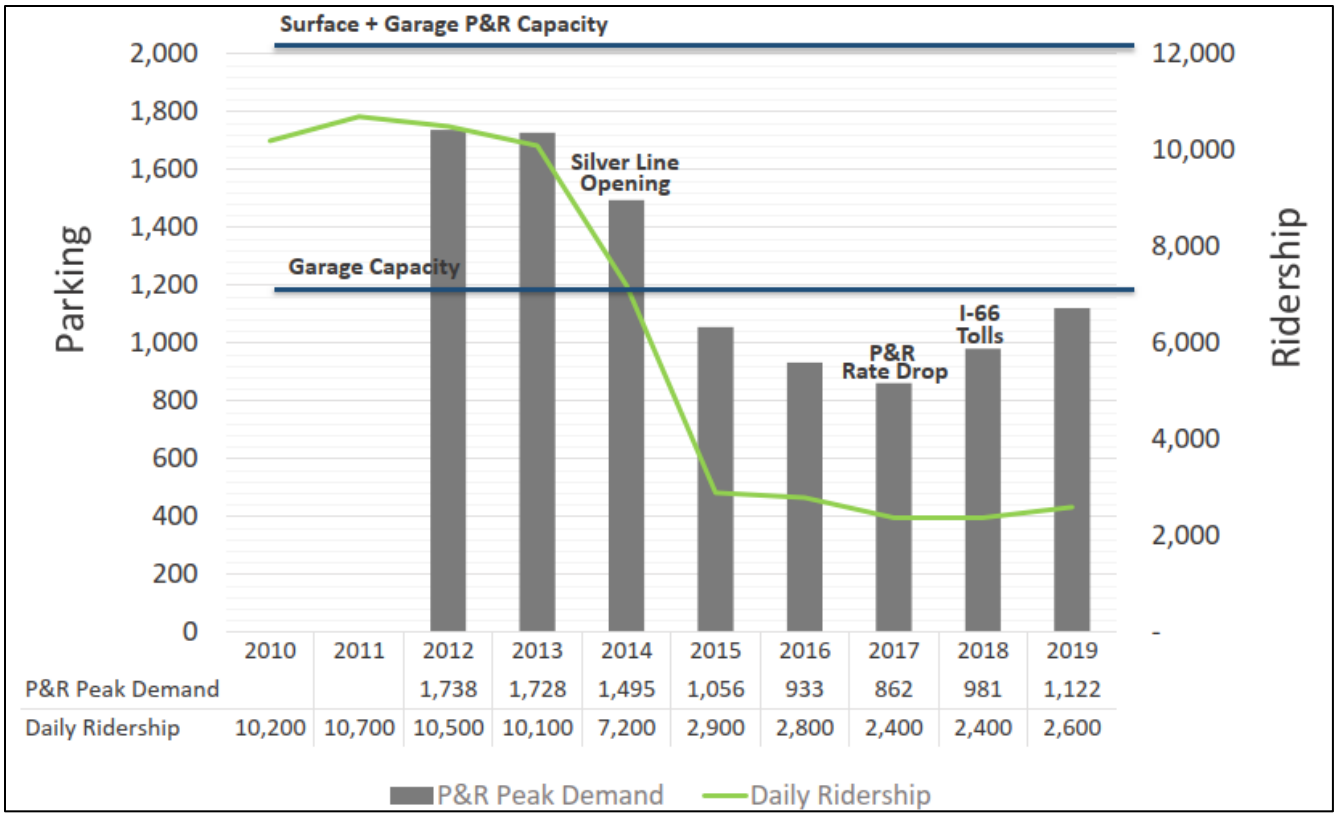


Figure 1: Rail Ridership and P&R Capacity/Demand

The existing combined capacity of the parking facility at WFC station is 2,009 spaces, of which approximately 1,200 are garage spaces. The annual average peak-hour (AAPH) utilization of the P&R was approximately 1,730 vehicles between 2010 and 2013. When the Silver Line opened, the AAPH utilization steadily declined to a low of 862 vehicles in 2017. The AAPH utilization of the P&R had been increasing prior to the pandemic, also influenced by the reduction of the P&R rate at West Falls Church to $3 per day (compared to $4.95 at nearby Orange and Silver Line stations) and the opening of the I-495 Express Toll Lanes (ETL) in 2018, with an AAPH of 1,122 vehicles in 2019. This figure is still below the garage capacity. It is not possible to isolate a single variable nor produce elastic coefficients based on current available data.

2.2 Seasonal Fluctuations in P&R Utilization

P&R utilization at the WFC station varies significantly throughout the year, with demand being higher during the spring and fall months. P&R utilization exceeded garage capacity on 123 days in 2019 by an average of 86 vehicles. However, there were some days with higher utilization, occasionally exceeding 1400 vehicles. There were also days with utilization below 900 vehicles, mostly between late December and late January. Given the high variability in P&R utilization throughout the year, WMATA prioritizes AAPH demand for planning purposes to maximize utilization and revenue potential. As shown above, the 2019 AAPH for the WFC station was 1,122 vehicles. WMATA will be using this figure for forecasting furture demand.

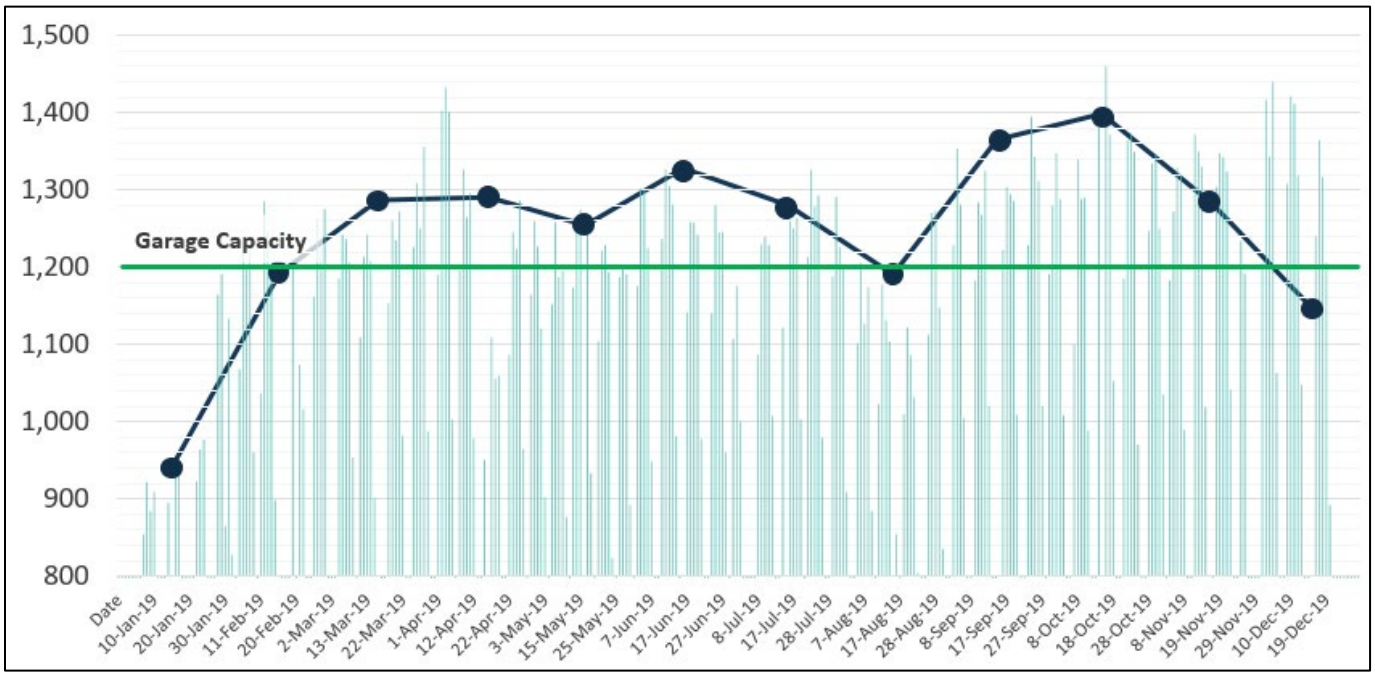


Figure 2: P&R Utilization (Calendar Year 2019)

3.0 FUTURE P&R DEMAND

3.1 P&R Demand Forecasting Approach

There are no agreed-upon industry standards for analyzing transit parking demand. Multiple approaches exist that can be used to forecast P&R demand. In lieu, WMATA produced a sensitivity analysis by comparing different household (HH) growth rates within the park-shed. The park-shed is determined from customer SmarTrip card registration data, as described below. HH growth rates were derived from two sources:

1. Metropolitan Washington Council of Governments (MWCOG) Cooperative Forecasts – a coarse tool based on Transportation Analysis Zones (TAZ)
2. Fairfax County Land Use Plan (LUP) – more granular tool based on underutilized parcels

The resulting HH growth projection is then multiplied by a demand coefficient to determine the projected number of new customers to be added to the existing demand to forecast future demand.

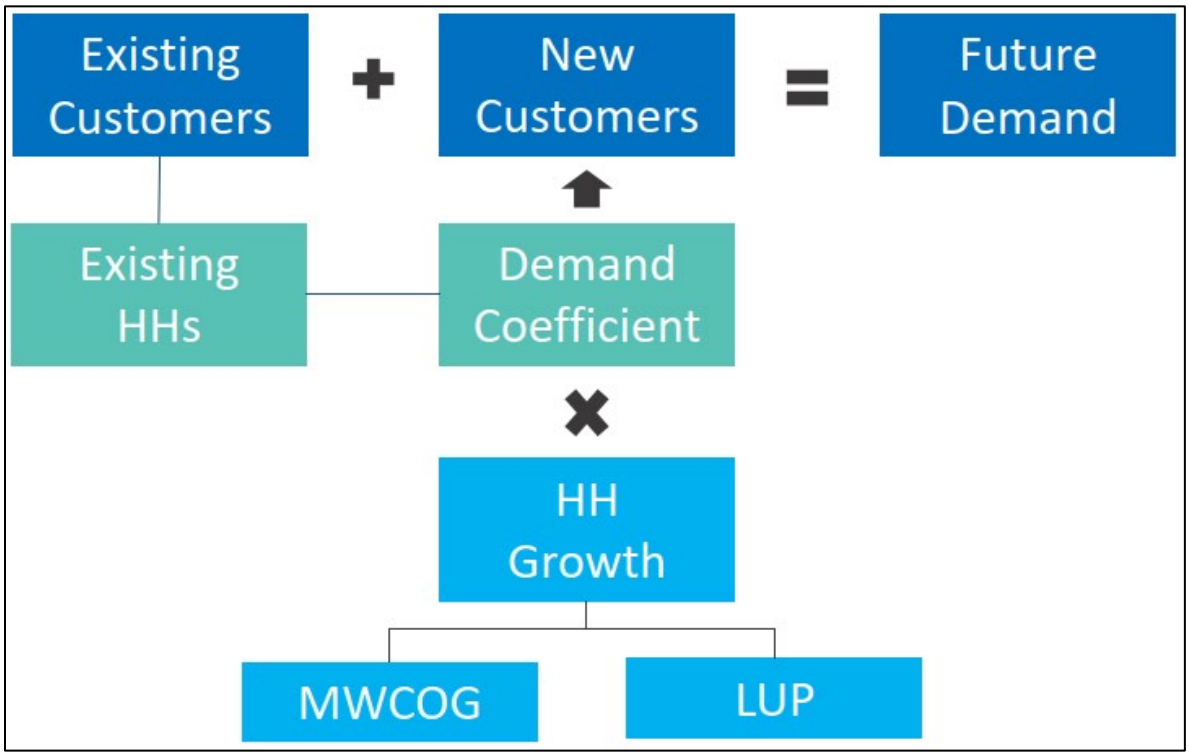
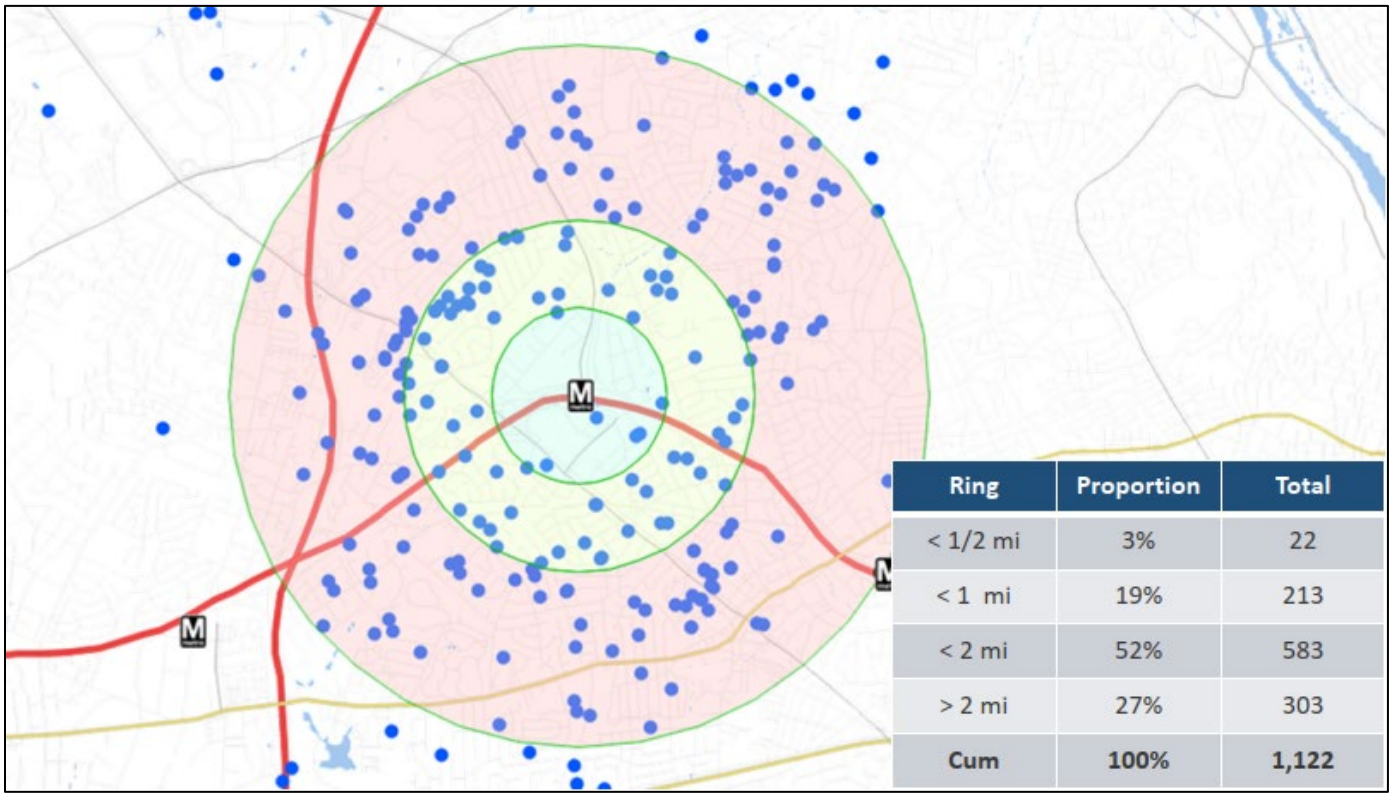


Figure 3: P&R Demand Forecasting Approach

3.2 Core Parkshed

As stated above, the park-shed is determined from customer SmarTrip card registration data. Approximately 27% of WFC P&R customers have registered SmarTrip cards identifying their home addresses. Of the registered P&R customers, roughly 74% reside within two miles of the station, representing the core demand for WMATA's planning purposes. Therefore, the core park-shed for the WFC station is roughly a two-mile radius from the station.



Ring	Proportion	Total
< 1/2 mi	3%	22
< 1 mi	19%	213
< 2 mi	52%	583
> 2 mi	27%	303
Cum	**100%**	**1,122**

Figure 4: WFC P&R Core Park-Shed

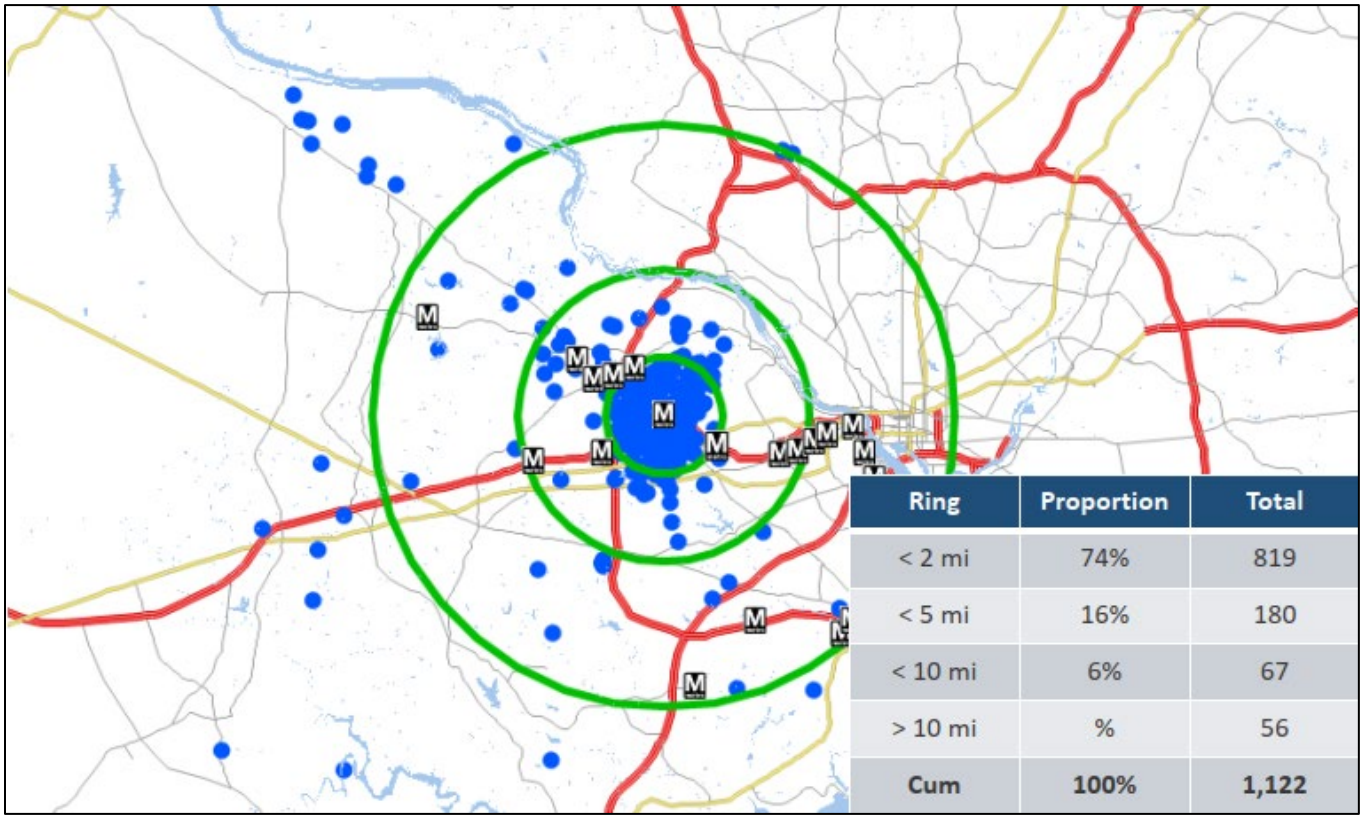
40,394 households exist within the 2-mile radius. The P&R customer-to-household ratio, the demand coefficient used to forecast growth, within the two-mile radius is 0.018 per household.

3.3 Predicting Demand Beyond the Core Parkshed

Many challenges exist in predicting demand beyond the two-mile core park-shed. Customers consider multiple factors when they choose to park at WFC, and many of these factors have changed over time. Some examples of these factors include, but are not limited to, the following:

- Silver Line opening (June 2014)
- New garages at the Fairfax station
- Lower P&R rates (2017)
- Highway tolling (I-66, 2018)
- Roadway construction
- Increased traffic congestion

Other factors are anticipated to be introduced into the decision, including new bus rapid transit (BRT) lines, tolls implemented outside the Capital Beltway, and the new direct access ramp from I-66 eastbound to the WFC station, which is currently under construction and expected to open by spring 2021. Additionally, some customer address data is likely to be inaccurate since it is understood that not all customers update their home addresses on their SmarTrip cards when they relocate.



Ring	Proportion	Total
< 2 mi	74%	819
< 5 mi	16%	180
< 10 mi	6%	67
> 10 mi	%	56
Cum	**100%**	**1,122**

Figure 5: P&R Demand Beyond the Core Park-Shed

3.4 HH Growth Rate Variability

The forecasted HH growth rates vary dramatically between data sources. The MWCOG Cooperative Forecasts model projects a growth rate of 1.2% per year, which amounts to an additional P&R demand of 264 vehicles by 2045, resulting in a total P&R demand of 1386 vehicles. In contrast, the Fairfax County LUP forecasts a growth rate of 0.3% per year, which amounts to an additional 71 vehicles, resulting in a total P&R demand of 1193 vehicles by year 2045. The LUP model forecast is more likely to accurately reflect future conditions.

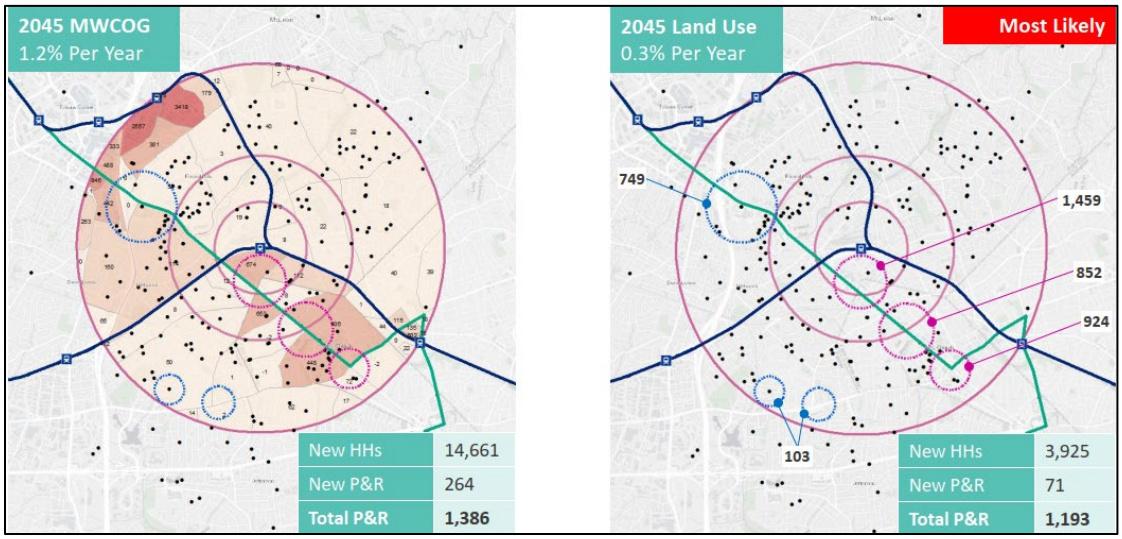


Figure 6: Comparison of MWCOG and Land Use Plan HH Growth Forecasts

The variability in growth rates between the MWCOG forecast and the Fairfax County LUP also results in high variability in projecting when P&R demand will exceed current P&R garage capacity, a key measure in determining when different phases of planned JD should take place in order to keep up with P&R demand. Using the MWCOG forecast model, it is projected that garage capacity will be exceeded by 2025, while the projection using the LUP forecast is that the garage capacity will not be exceeded until after 2045.

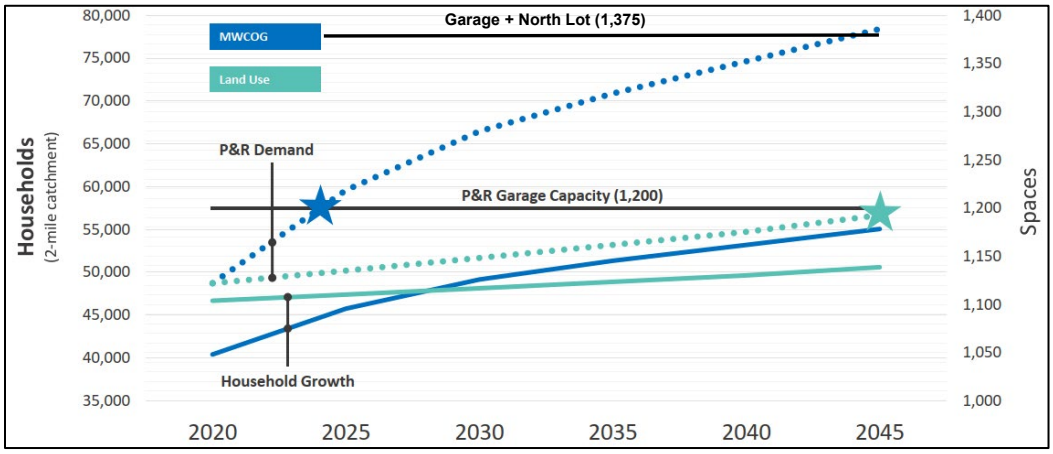


Figure 7: Comparison of MWCOG and Land Use Plan HH Growth Forecasts

3.5 Additional Factors

A variety of additional factors could also impact future parking demand at West Falls Church:

- Post-pandemic changes in commuter behavior – Following the end of the pandemic, changes in commuter behavior may occur, with potentially large increases in telework, which may reduce peak parking demand.

- Major transportation investments in the area – Both the Silver Line Phase 2 project (which includes the addition of approximately 10,000 commuter parking spaces) and the I-66 toll lane project may impact commuter parking demand at West Falls Church.

- Demand management efforts – WMATA is completing a Parking Master Plan for its parking portfolio, which will include strategies to consider shifting demand to stations with excess capacity. For instance, there were approximately 2,650 vacant spaces available at Dunn Loring and Vienna stations combined on an average weekday prior to the pandemic.

4.0 ACCOMMODATING MAXIMUM P&R DEMAND

4.1 Proposed Parking Plan

The proposed parking plan takes into consideration the projected P&R demand per the LUP forecast, maintaining approximately 1,375 P&R spaces on the site (1,350-1,400 depending on surface lot design). Additionally, the plan includes a phased approach, with an option to further increase P&R spaces if deemed necessary.

The JD project has three phases. Phase 1 involves keeping the existing P&R garage (1200 spaces) and the north lot (175 spaces) in service, for a total of approximately 1,375 spaces. A multi-family residential building ("MF1") would be constructed in this phase, adding 306 private garage spaces. Phase 2 involves the construction of a second multi-family residential building ("MF2"), adding another 270 private garage spaces.

Prior to Phase 3, anticipated to occur in approximately 10 years, WMATA will reassess its P&R needs for the station. WMATA will have the option to retain the north lot and use it to construct additional P&R capacity, if needed. Or, WMATA could allow the developer to redevelop the north lot to include an office building, a third multi-family residential building ("MF3"), and parking facilities to serve both buildings and include 175 P&R spaces to replace those displaced from the surface lot.

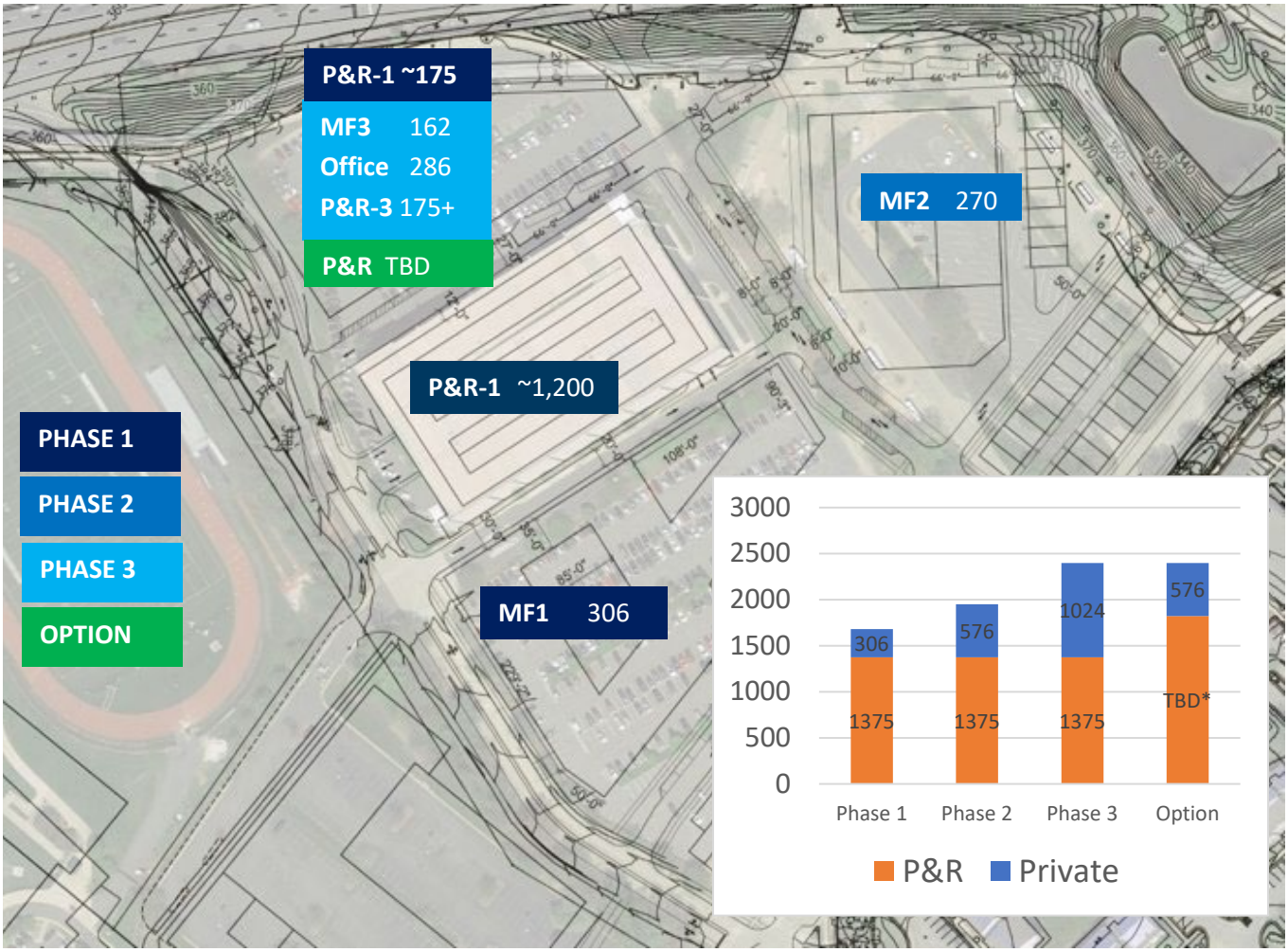


Figure 8: Proposed Phased Parking Plan

(*the amount of parking for the north lot option would need to be determined through further demand and feasibility analysis)

4.2 Solutions to Support Maximum Demand

A mix of solutions is being considered to support maximum demand at the WFC station JD. WMATA and the developer plan to explore shared parking facilities to maximize parking availability utilizing digital signing and mobile applications to direct users to available spaces. Or alternatively, the developer could make excess spaces available for public parking, which could be utilized by Metro customers.

P&R capacity will be reduced to approximately 1,375 spaces (1,350 to 1,400 spaces). Between demand for the P&R facility (WMATA) and residential parking demand, the total demand is projected reach or exceed full P&R capacity. The addition of 306 private garage parking spaces within the WFC JD facility will have the capacity to provide additional parking capacity to support projected demand.

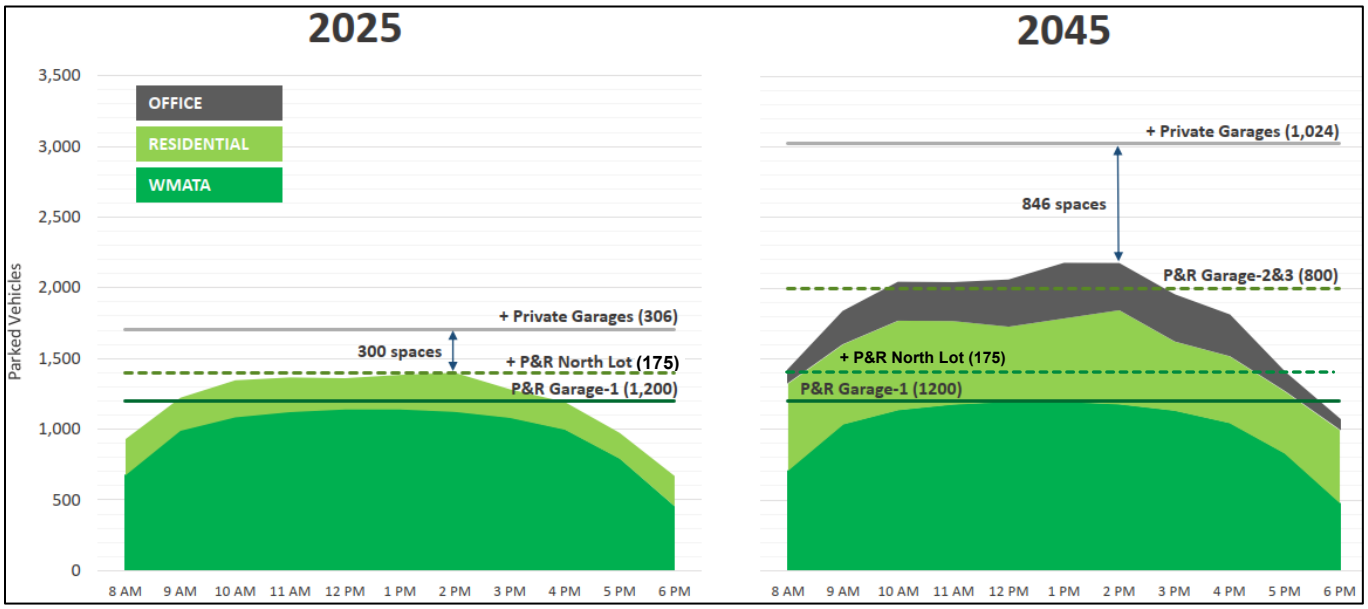


Figure 9: Mix of Solutions to Support Maximum Demand

By Phase 3 / Optional Phase (2045), total parking demand at the WFC JD facility is projected to total approximately 2,200 vehicles between the P&R demand, office parking demand, and residential parking demand. Private garages within the WFC JD facility will have capacity for 1,024 vehicles that can support maximum demand.

The private garages are expected to have excess capacity. Mixed-use projects in activity centers in northern Virginia have parking facilities with supply ranging from 0.2 to 1.3 spaces per unit for multi-family residential (MFR) developments and 1.0 to 2.0 spaces per 1,000 gross square feet (GSF) for office development projects. Peak hour utilization for case examples near WFC is below 80% (mostly between 60% and 80%) of constructed capacity, as can be seen from the two examples in the figure below.

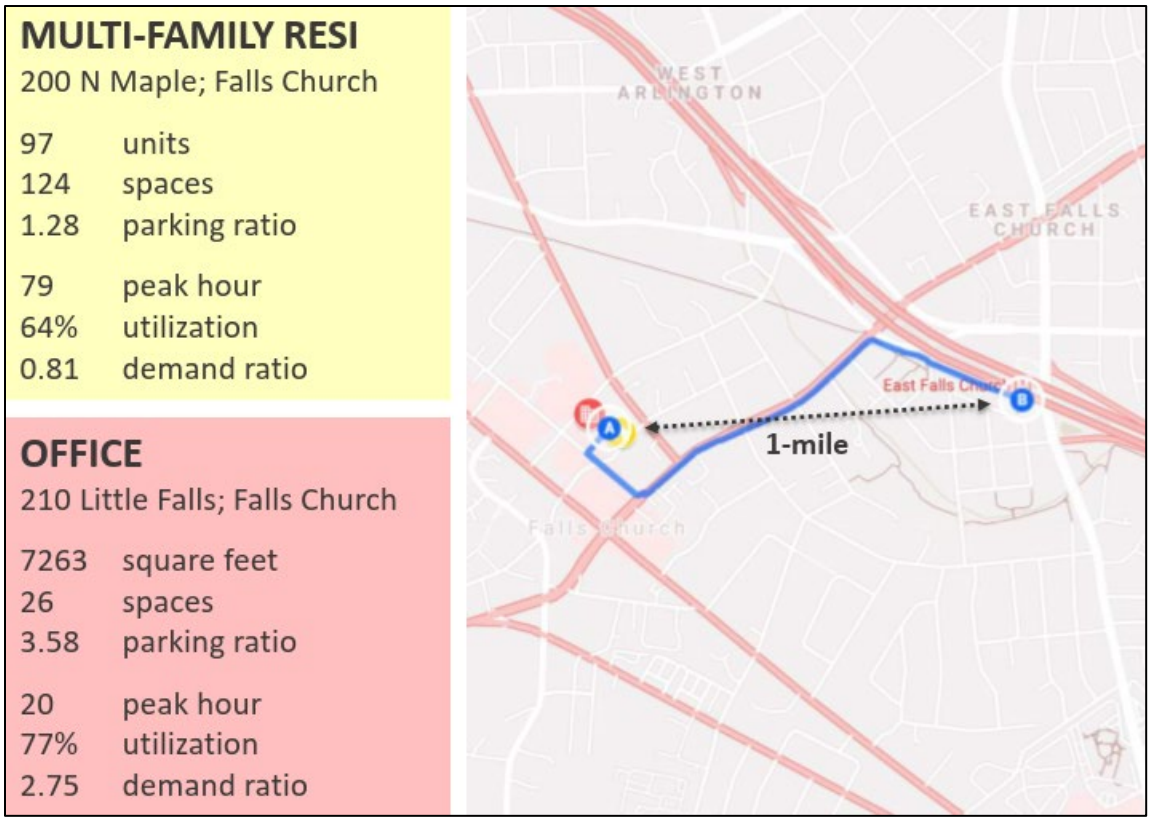


Figure 10: Excess Capacity at Nearby Private Garages

The development team for WFC proposes the following ratios:

- MFR – 0.9 spaces per unit
- Office – 2.0 space per 1,000 GSF

These ratios are within the range of surrounding mixed-use development projects, and similar peak-hour utilization is expected in the private garages at the WFC JD site.

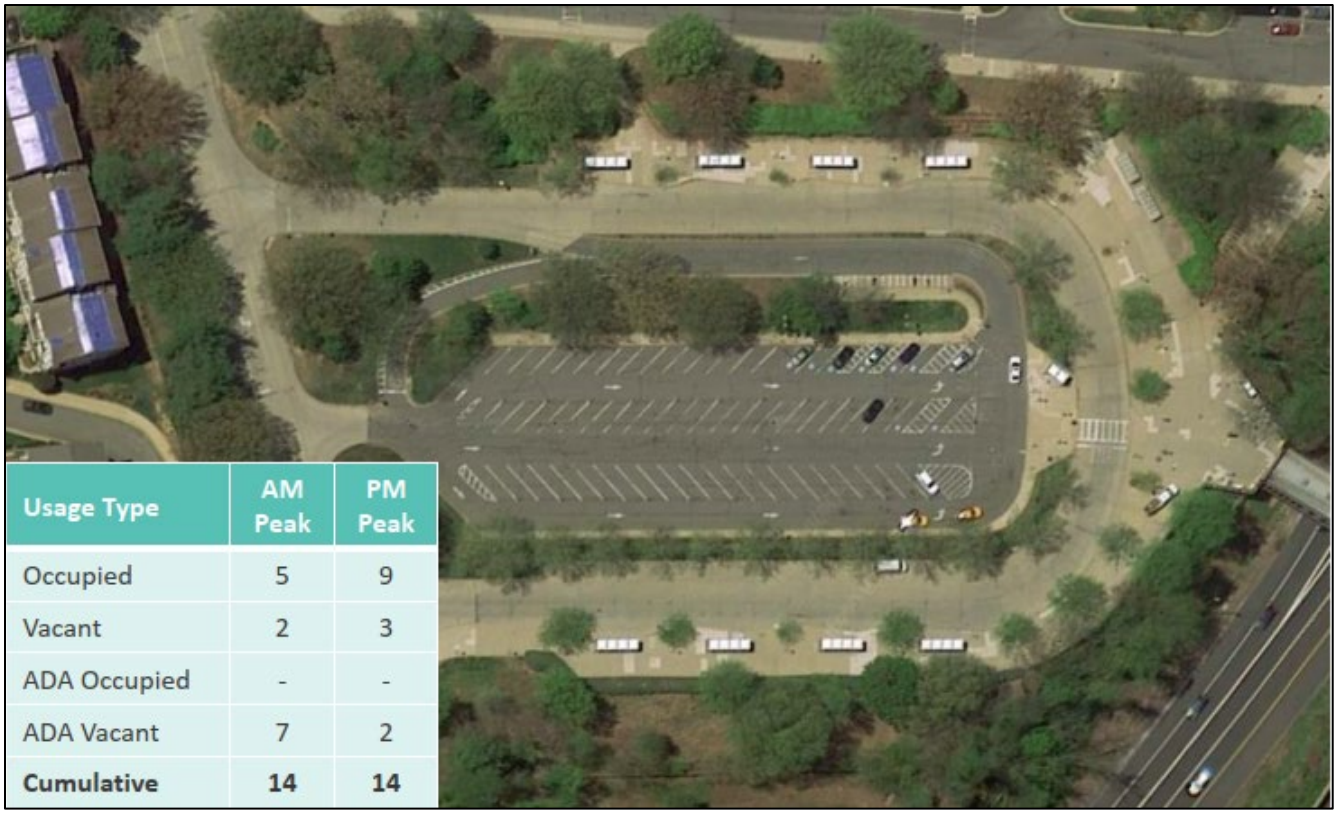
6.0 MODERNIZING THE KISS & RIDE FUNCTION

6.1 Current (Pre-COVID) kiss & Ride Demand

The maximum observed usage of the K&R (Pre-COVID) is 28% of the total capacity of 64 spaces. Approximately 50% of the vehicles observed are typically unoccupied and may be daily parkers instead of short-term parking. The following K&R peak-hour demand has been observed:

- 8:00-9:00 AM – 134 vehicles
- 5:00-6:00 PM – 127 vehicles

Hourly turnover of vehicles is high during peak hours, indicating that most vehicles arriving at the station K&R facility are for pick-up/drop-off activity.



Usage Type	AM Peak	PM Peak
Occupied	5	9
Vacant	2	3
ADA Occupied	-	-
ADA Vacant	7	2
Cumulative	**14**	**14**

Figure 11: Current K&R Demand

Minimal queuing was observed for passenger pick-up, ranging from two to four vehicles. Many unoccupied vehicles were seen at expired parking meters or did not have appropriate tags for occupying spaces designated by the Americans with Disabilities Act (ADA). Based on the K&R spaces observed being used by waiting vehicles, the current peak K&R demand is 14 spaces.

6.2 Proposed Kiss & Ride Capacity

Growth in K&R demand is difficult to predict given the increasing market penetration of Transportation Network Companies (TNCs). K&R volumes have been observed to be increasing, while dwell times have been decreasing. Modernizing K&R facilities requires the application of a greater diversity of space typologies:

A. ADA spaces

B. Waiting spaces

C. Curbside pick-up/drop-off spaces

K&R demand was estimated using the current K&R peak demand and applying the forecasted MWCOG and LUP HH growth rates from the two-mile park-shed. Year 2045 demand is projected to be between 16 and 19 spaces (LUP and MWCOG, respectively).

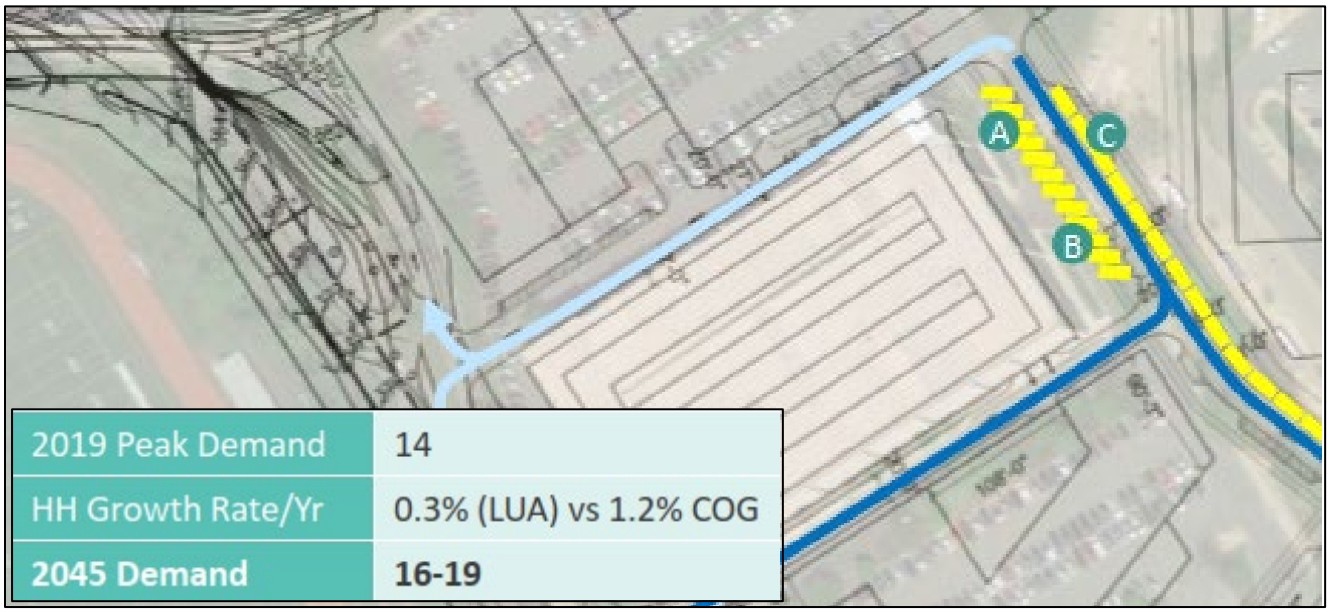


Figure 12: Projected K&R Demand

In contrast, the WMATA Station Area Planning Guide formula suggests that 8.4 spaces are required. In the proposed JD concept, 2 ADA K&R spaces, 10 metered K&R spaces, and 7 to 10 pick-up/drop-off spaces are recommended.

7.0 SUMMARY AND CONCLUSIONS

P&R demand at the WFC station has halved after the opening of the Silver Line in 2014 but has been steadily increasing since then, likely influenced by multiple factors such as P&R rate-drop and the opening of the I-495 ETL. It is not possible to isolate any single variable nor produce a reliable formula based on current available data. Due to seasonal fluctuations in P&R utilization, WMATA uses AAPH utilization to determine demand. The AAPH at the WFC station in 2019 was 1,122 vehicles. There is no established industry standard for analyzing transit parking demand. WMATA uses a sensitivity analysis using growth rates from the MWCOG model and Fairfax County LUP within the two-mile core park-shed. The County LUP forecast AAPH of 1193 vehicles is a more likely scenario and was used for this analysis. The parking plan for the WFC station will maintain about 1,375 P&R spaces at the station, with WMATA reassessing its parking needs prior to the development of the north lot. At that time, WMATA will have the right to retain the north lot and use it to construct additional P&R capacity if needed, or let the developer build private mixed-use development there, along with 175 P&R spaces. . It is expected that the private office and residential parking will have excess capacity and will be used to meet maximum P&R demand.

The current K&R is underutilized, and observations indicate that it is likely being used by some riders as daily parking. The observed existing K&R demand was 14 vehicles. Growth in K&R demand is difficult to predict due to increased market penetration of TNCs and an increase in K&R volume combined with decrease in K&R dwell times. Using the same growth rates from the MWCOG model and Fairfax County LUP, the projected demand in year 2045 is between 16 and 19 spaces. The WMATA Station Area Planning Guide suggests 8.4 spaces are required. The K&R is being proposed with 2 ADA spaces, 10 metered spaces, and 7 to 10 pick-up/drop-off spaces to meet maximum K&R demand

Traffic Impact Study

West Falls Church WMATA and Virginia Tech Developments

Falls Church, Virginia



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INTRODUCTION AND SUMMARY

Purpose, Introduction, and Study Objectives

This report presents the findings of a Traffic Impact Study (TIS) conducted for the proposed redevelopment of the existing Washington Metropolitan Area Transit Authority (WMATA) West Falls Church metro and the Virginia Polytechnic Institute and State University (Virginia Tech/VT) sites, located in the Dranesville Magisterial District of Fairfax County, Virginia. This study was conducted in conjunction with a proposal to amend Fairfax County's *Comprehensive Plan* for the West Falls Church Transit Station Area (TSA) in order to provide compatible, non-automobile dependent development.

The site is anticipated to be complete and in operation by 2030. The WMATA West Falls Church metro development (to be referred to in this study as the "WMATA site") will be reconstructed and is projected to consist of approximately 130 kSF of office space, 10 kSF of retail space, and 865 residential dwelling units (DU). The VT site is projected to consist of an additional 181 kSF of office space, 18 kSF of retail space, 440 residential DU, and 160 kSF of institutional uses. Combined, the site is anticipated to ultimately consist of 311 kSF of office space, 28 kSF of retail space, 1,305 residential DU, and 160 kSF of institutional uses.

This study was developed in accordance with guidelines and recommendations set forth by the Virginia Department of Transportation (VDOT), Fairfax County (County), and the City of Falls Church (City). This document was prepared in accordance with best professional practices and standards in order to assess the impact of the proposed developments on the surrounding transportation systems and recommends improvements to lessen or negate those impacts. This traffic impact study involves the evaluation of anticipated roadway conditions with and without the proposed developments and recommends possible transportation improvements and strategies to offset both the impacts of the increase in future traffic demand and the changes in traffic operations and characteristics due to the development. This traffic impact study serves to assist public officials and developers to balance interrelations between efficient traffic movements with necessary access.

The following tasks were completed as part of this study:

- A scoping meeting was held with VDOT (Northern Virginia District), the County, and the City, which included discussions about the parameters of the study and relevant background information. Additional meetings have been held between the parties, discussing further information, assumptions, and interim findings. A copy of the signed scoping document for this traffic impact study is included in Appendix A.
- Field reconnaissance in the vicinity of the site was performed to collect information related to existing traffic controls, roadway geometry, and traffic flow characteristics.
- Traffic counts were conducted at the existing study intersections in May of 2018 and in May of 2019 during the weekday morning and afternoon peak periods and utilized in accordance with the scoping meeting.
- The scenarios analyzed in this study include 2019 Existing Conditions, 2030 Future Conditions without Development, 2030 Future Conditions with Development, 2045 Future Conditions without Development, 2045 Future Conditions with Development. Furthermore, the analyses included for 2045 horizon year are <u>for planning level purposes</u>.
- The intersections of Haycock Road at Village Crossing Road and at Falls Reach Drive were included in the analysis network (*Synchro)* files.
- The 2030 Future Conditions without Development traffic volumes were projected based on an inherent growth rate of 1.0% (one percent), compounded annually between 2019 and 2030 to account for regional growth along the road

network and include identified background development(s) and roadway improvement(s) that were discussed in scoping meeting with VDOT, County, and City staff.

- The proposed site generated traffic volumes were derived based on the methodology outlined in the Institute of Transportation Engineers' (ITE) Trip Generation Manual, 10th Edition publication.
- The 2030 Future Conditions with Development traffic volumes were projected based on regional growth, existing regional and site traffic patterns, anticipated background development(s) and roadway improvement(s), and plans for the proposed developments.
- The 2045 Future Conditions without Development traffic volumes were projected based Fairfax County Department of Transportation's (FCDOT) travel demand forecasting model projections.
- The 2045 Future Conditions with Development traffic volumes were based on FCDOT's travel demand forecasting model projections, projected roadway improvement(s), and plans for the proposed developments.
- The 2045 horizon year analyses will include link analyses and volume-to-capacity (v/c) ratios.
- An assessment of the previous crashes has been conducted at existing study intersections.

Sources of data for this study include information provided by VDOT, the County, the City, AECOM, and the office files and field reconnaissance efforts by Gorove/Slade Associates, Inc.

Executive Summary

Site Location and Study Area

The site is currently located northeast of Leesburg Pike (Rte. 7), northwest of Haycock Road (Rte. 703), and south of Interstate 66 (I-66) in the Dranesville Magisterial District of Fairfax County, Virginia. The site is part of the West Falls Church Transit Station Area (TSA) and is part of a highway overlay district.

For the purpose of this study, the analysis presented herein includes 14 existing study intersections (12 external intersections and two internal intersections). Furthermore, the analysis includes three additional future intersections that are anticipated to be constructed with proposed redevelopment of George Mason High School and Mary Ellen Henderson Middle School in Falls Church, Virginia (referred to in this study as the "West Falls Church Economic Development site").

The study intersections are as follows:

1. I-66 eastbound off-ramp and Leesburg Pike (Rte. 7) (partial-movement, signalized)
2. Leesburg Pike (Rte. 7) and Dale Drive (Rte. 1128) (partial-movement, unsignalized)
3. Leesburg Pike and Mustang Alley (full-movement, unsignalized)
4. Leesburg Pike and Chestnut Street (Rte. 1750) / Grace Community Church (partial-movement, unsignalized)
5. Leesburg Pike and Shreve Road / Haycock Road (Rte. 703) (full-movement, signalized)
6. Haycock Road and Mustang Alley (full-movement, unsignalized)
7. Haycock Road and Falls Church Drive (full-movement, signalized)
8. Haycock Road and Grove Avenue (Rte. 1745) (full-movement, unsignalized)

9. Haycock Road and WMATA Metro Entrance (Metro Access Drive) (full-movement, signalized)
10. Haycock Road and Highland Avenue (Rte. 2318) (full-movement, unsignalized)
11. Haycock Road and Turner Avenue (Rte. 7541) (full-movement, unsignalized)
12. Haycock Road and Great Falls Street (Rte. 694) (full-movement, signalized)
13. Falls Church Drive at Nova Driveway (VT Parking Lot Entrance) / WMATA Metro Entrance (Metro Access Drive) (internal intersection, full-movement, unsignalized)
14. Falls Church Drive at Nova Driveway (VT Parking Lot Entrance) / WMATA Park & Ride Garage Entrance (internal intersection, full-movement, unsignalized)

Furthermore, as noted in the scoping document, the intersections of Haycock Road at Village Crossing Road and at Falls Church Drive were included in the analysis network (*Synchro*) files for reference but were not included in this document.

Description of Proposed Development

This study was conducted in conjunction with a proposed to amend Fairfax County's *Comprehensive Plan* for the West Falls Church Transit Station Area (TSA) in order to provide compatible, non-automobile dependent development. The anticipated redevelopment of the site is anticipated to be complete by 2030. The WMATA site will consist of approximately 130 kSF of office space, 10 kSF of retail space, and 865 residential dwelling units (DU). The VT site is projected to consist of an additional 181 kSF of office space, 18 kSF of retail space, 440 residential DU, and 160 kSF of institutional uses. Combined, the site is anticipated to ultimately consist of 311 kSF of office space, 28 kSF of retail space, 1,305 residential DU, and 160 kSF of institutional uses.

Principal Findings and Conclusions

Based on the above guidelines, the analysis presented in this report supports the following conclusions:

Existing Conditions (2019) Scenario

- Traffic counts were collected at existing intersections in May of 2018 and in May of 2019. These traffic counts were balanced in order to develop a baseline for the analysis.
- Analysis of the traffic data found the following system peak hours:
    - Weekday Morning (AM) Peak Hour: 7:45 AM to 8:45 AM
    - Weekday Afternoon (PM) Peak Hour: 5:00 PM to 6:00 PM
- Based on the capacity analysis, all signalized intersections operate at an overall acceptable Level of Service (LOS) with the exception of the Leesburg Pike and Haycock Road intersection. The intersection operates overall at a LOS E during both peak hours.

Future Conditions without Development (2030)

- To account for future conditions, an inherent growth rate of 1.0% per year, between 2019 and 2030, was applied to all movements at the intersection of Route 7 and Haycock Road. Additionally, traffic associated with the proposed High School & West Falls Church Economic Development, a development abutting the site, was taken into consideration in order to determine future traffic volumes.

- A couple of roadway improvements are anticipated to be developed and in operation by 2030. VDOT is currently in the process of constructing a connector ramp on the eastbound I-66 off-ramp towards Route 7; the connector ramp would act as a by-pass for vehicles heading towards the site and the West Falls Church Metro station. Additionally, the intersection of Chestnut Street at Route 7 is anticipated to be converted to a signalized, full-movement intersection with the proposed High School & West Falls Church Economic Development
- Based on the capacity analysis, all intersections operate at an overall acceptable LOS under 2030 future conditions without development with the exception of the Leesburg Pike and Haycock Road intersection (similar to 2019 existing conditions) and the Haycock Road and Great Falls Street intersection.

Future Background with Current Comprehensive Plan Development Conditions (2030)

- The WMATA and VT developments are anticipated to be fully constructed and in operation by 2030. Under the current *Comprehensive Plan* for Fairfax County, the WMATA and VT sites could develop approximately 962 multi-family residential units and 240 kSF of institutional uses, which is anticipated to generate approximately 484 additional trips in the AM peak hour, 459 additional trips in the PM peak hour, and 5,556 daily trips after transit and transportation demand management (TDM) reductions.
- Based on the capacity analysis, all intersections operate at an overall acceptable LOS under 2030 future background current comprehensive plan conditions with the exception of the Leesburg Pike and Haycock Road intersection and the Haycock Road and Great Falls Street intersection (similar to 2030 Future Conditions without Development).

Future Conditions with Development (2030) Scenario

- The WMATA and VT developments are anticipated to be fully constructed and in operation by 2030. The proposed developments are anticipated to generate approximately 709 additional trips in the AM peak hour, 695 additional trips in the PM peak hour, and 8,182 daily trips after transit, transportation demand management (TDM), internal, and commercial pass-by reductions.
- Due to increased traffic demand from the developments, road improvements will be necessary in order to achieve acceptable levels of service / maintain similar traffic operation conditions as compared to future without development conditions during the weekday morning (AM) and weekday afternoon (PM) peak hours. The following mitigations are proposed to improve operations at the study intersections:
  - Route 7 at Haycock Road
    - Add southbound thru lane on Haycock Road; and
    - Adjust signal timings to accommodate new configuration.
  - Haycock Road and Falls Church Drive
    - Restripe the eastbound approach on Falls Church Drive to a shared thru/right and an exclusive left turn lane which will operate under permitted + protected phasing.
    - Modify signal timings to accommodate new configuration.
  - Haycock Road at Great Falls Street
    - Change eastbound and westbound Haycock Road lane configuration from left/thru, right to left, thru/right; and
    - Modify signal timings to account for the change in roadway geometry.
  - Haycock Road at Grove Avenue
    - Add a northbound right turn lane to provide an exclusive left lane and an exclusive right lane.

  - Route 7 Corridor
    - Optimize traffic signal timings along Route 7 to promote progression and to account for the modifications to the Route 7 and Haycock Road intersection.
  - Haycock Road Corridor
    - Optimize traffic signal timings along Haycock to promote progression and to account for the modifications to the Route 7 and Haycock Road intersection.
- Based on the capacity analyses, the roadway improvement strategy would mitigate potential impacts of the development, resulting in similar to or better overall levels of service/reduced delays as compared with future conditions without development conditions or without the proposed comprehensive plan amendment.

Future Conditions with Development (2030) – Alternative Conditions without Virginia Tech Redevelopment

- This scenario is presented to provide analysis without the VT redevelopment. Under this scenario, only the WMATA development is anticipated to be redeveloped per the proposed Comprehensive Plan Amendment (CPA) and in operation by 2030. This scenario does not assume a new direct connection between Leesburg Pike (Rte. 7) and the WMATA site via Commons Drive. Such conditions are unlikely to be realized, but are included for completeness.
- The WMATA development is anticipated to generate approximately 236 additional trips in the AM peak hour, 285 additional trips in the PM peak hour, and 3,454 daily trips after transit, transportation demand management (TDM), internal, and commercial pass-by reductions.
- Due to increased traffic demand from the developments, road improvements will be necessary in order to achieve acceptable levels of service / maintain similar traffic operation conditions as compared to future without development conditions during the weekday morning (AM) and weekday afternoon (PM) peak hours. The mitigation strategy presented in the Future Conditions with Development (2030) is also proposed for the Alternative "without VT" scenario.
- Based on the capacity analyses, the roadway improvement strategy would mitigate potential impacts of the development, resulting in similar overall levels of service/reduced delays as compared with future conditions without development conditions or without the proposed comprehensive plan amendment.

Future Conditions without Development (2045) – Planning Scenario

The site is anticipated to be constructed and in operation by 2030. Due to the development requiring with a comprehensive plan amendment (CPA), it was recommended that the road network near the site be analyzed 15 years after the anticipated build-out. This scenario, which analyzes the future conditions for the year 2045 with respect to the current *Comprehensive Plan*, and, as agreed to in the scoping document, is to be used as a planning-only scenario.

- To account for future conditions, future traffic volumes without the CPA along the Route 7 and Haycock Road corridors were approximated based on Fairfax County Department of Transportation's (FCDOT) travel demand forecasting model projections. The FCDOT model incorporated trips in association with the development of the proposed property under the existing *Comprehensive Plan*. It was assumed that the WMATA and VT sites could develop approximately 962 multi-family residential units and 240 kSF of institutional uses under the current *Comprehensive Plan*.
- Based on the segment capacity analysis, the Route 7 and Haycock Road Corridors are anticipated to operate at a volume-to-capacity (v/c) ratio of 0.64 or less.

Future Conditions with Development (2045) – Planning Scenario

The site is anticipated to be constructed and in operation by 2030. Due to the development requiring a CPA, it was recommended that the road network near the site be analyzed 15 years after the anticipated build-out. This scenario analyzes the future conditions for the year 2045 with respect to the CPA, and, as agreed to in the scoping document, is to be used as a planning only scenario.

- To account for future conditions, future traffic volumes along the Route 7 and Haycock Road corridors were approximated based on FCDOT's travel demand forecasting model projections. The FCDOT model incorporated trips in association with the development of the proposed property under the existing *Comprehensive Plan*. In order to account for any changes in the road network with the proposed comprehensive plan amendment, the current comprehensive plan development program was compared to the one proposed in this study by assigning the site generated differential to the road network.
- Based on the segment capacity analysis, the Route 7 and Haycock Road Corridors operate at a volume-to-capacity (v/c) ratio of 0.66 or less.

Thus, none of the segments of along the Route 7 and Haycock Road Corridors are expected to exceed the capacity of the existing roadway facilities as a result of the proposed development under 2045 conditions.

Overall Conclusion

The roadway improvement strategies recommended would mitigate the traffic impacts of the WMATA and VT sites through 2030. The combination of new street connections and turn lane improvements would result in in acceptable overall levels of service/reduced delays as compared with future conditions without the proposed comprehensive plan amendment (CPA).

As indicated in the 2045 planning scenario, the Route 7 and Haycock Road Corridors would have adequate through capacity to accommodate the anticipated development of the WMATA and VT sites.

BACKGROUND INFORMATION: PROPOSED DEVELOPMENT (SITE & NEARBY)

Description of the Existing Site

This report presents the findings of a TIS conducted for the proposed redevelopment of the existing WMATA West Falls Church metro and the VT sites, located in Fairfax County, Virginia.

Site Location

The site is generally located in the Dranesville Magisterial District of Fairfax County, northeast of Leesburg Pike (Rte. 7), northwest of Haycock Road (Rte. 703), and south of Interstate 66 (I-66), as shown in Figure 1. Of note, the Figure 1 incudes the location of existing and future study intersections that were included as part of the analysis.

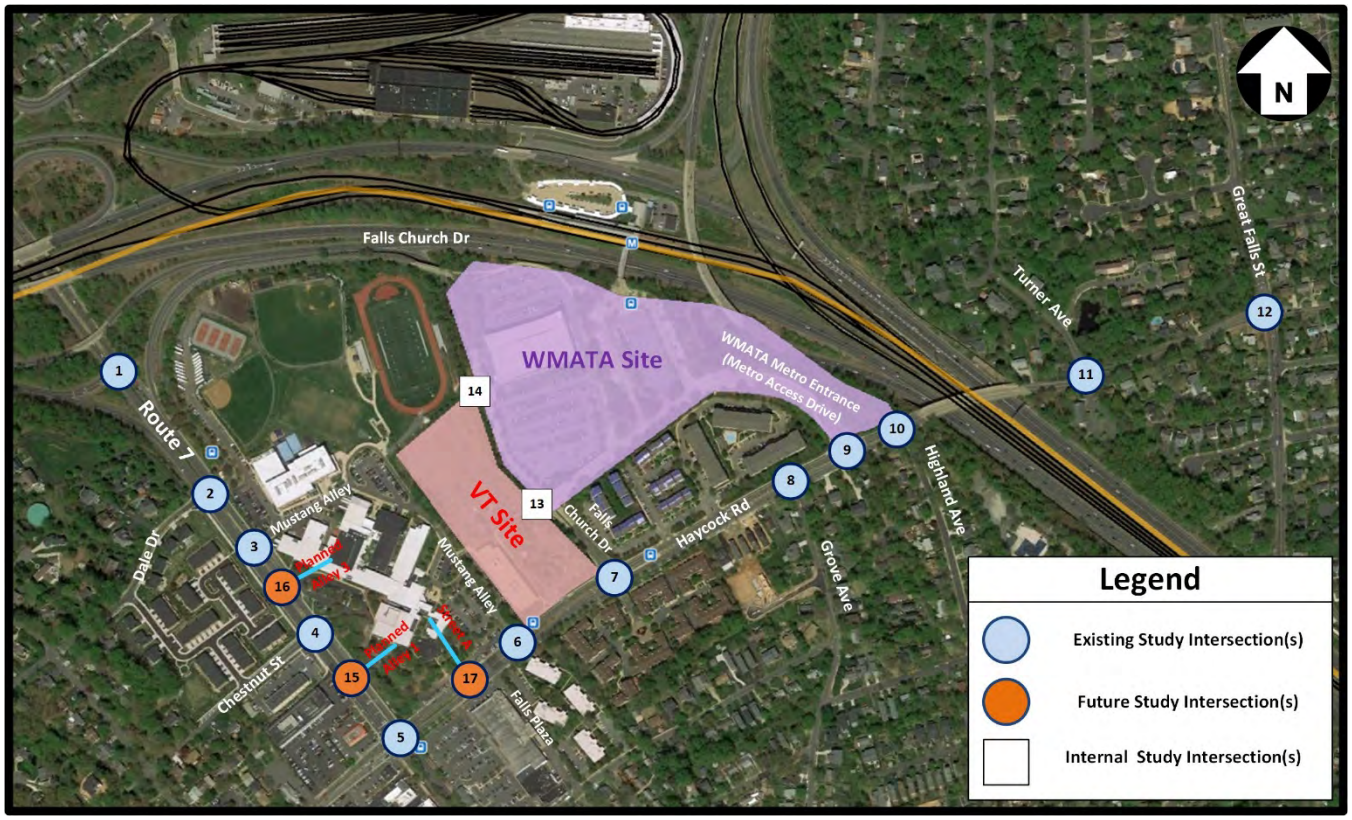


Figure 1: Site Location

Description of the Parcel

The redevelopment site is composed of a total of seven parcels, and the total site area is approximately 31.5 acres.

The WMATA site is approximately 23.99 acres and occupies five parcels, which can be identified on Fairfax County Tax Maps with the following PIN#: 0403-01-0013, 0403-01-0083, 0403-01-0084, 0404-02-0001, and 0404-02-0002. Primary site access is provided via the access road to the West Falls Church Metrorail Station and Falls Church Drive. With the construction of the High School & West Falls Church Economic Development site to the southwest, additional access points to the development along Route 7 will be provided.

The Virginia Tech site is approximately 7.53 acres and occupies two parcels, which can be identified on Fairfax County Tax Maps with the following PIN#: 0403-01-0092 and 0403-01-0092A. Primary site access is provided via Falls Church Drive.

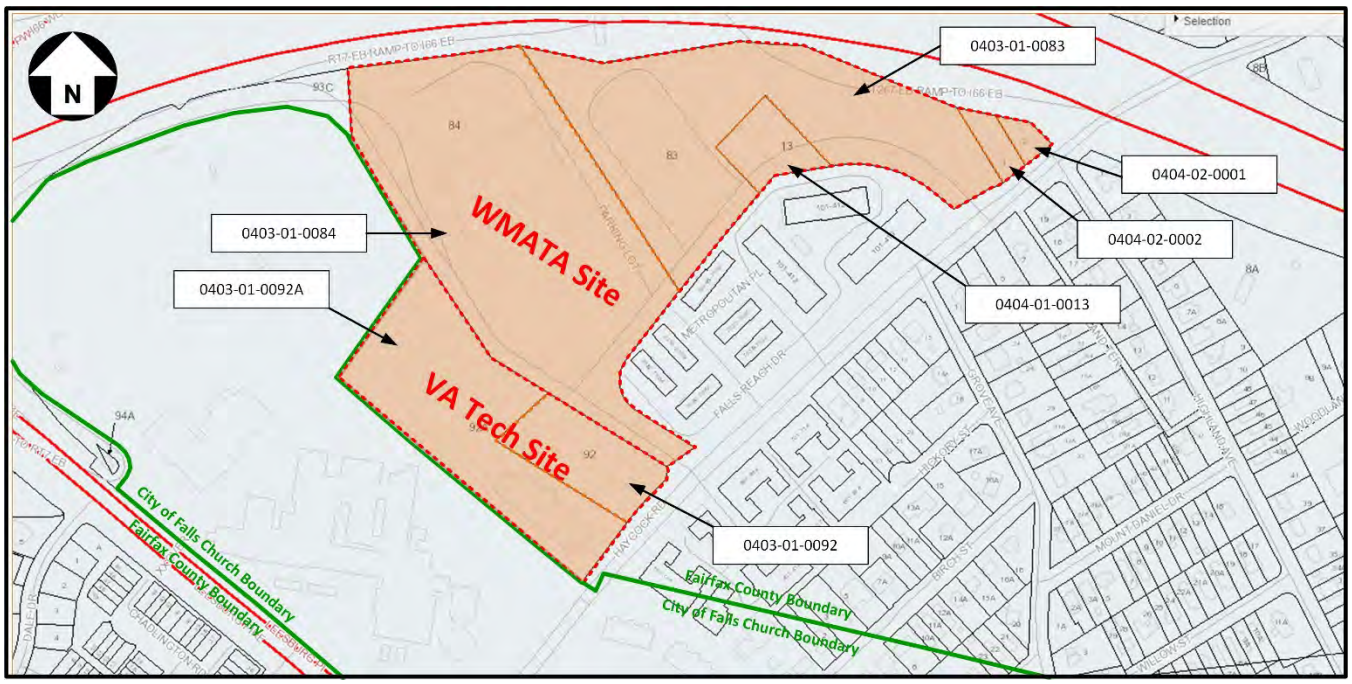


Figure 2: Parcel Map

Location within Jurisdiction and Region

The site is generally located in the Dranesville Magisterial District of Fairfax County, Virginia. The site abuts the City of Falls Church boundary to the south and to the west. The site is adjacent to the City's West Falls Church Economic Development site.

The site is illustrated in terms of its regional location and the developments' boundaries in Figure 3.

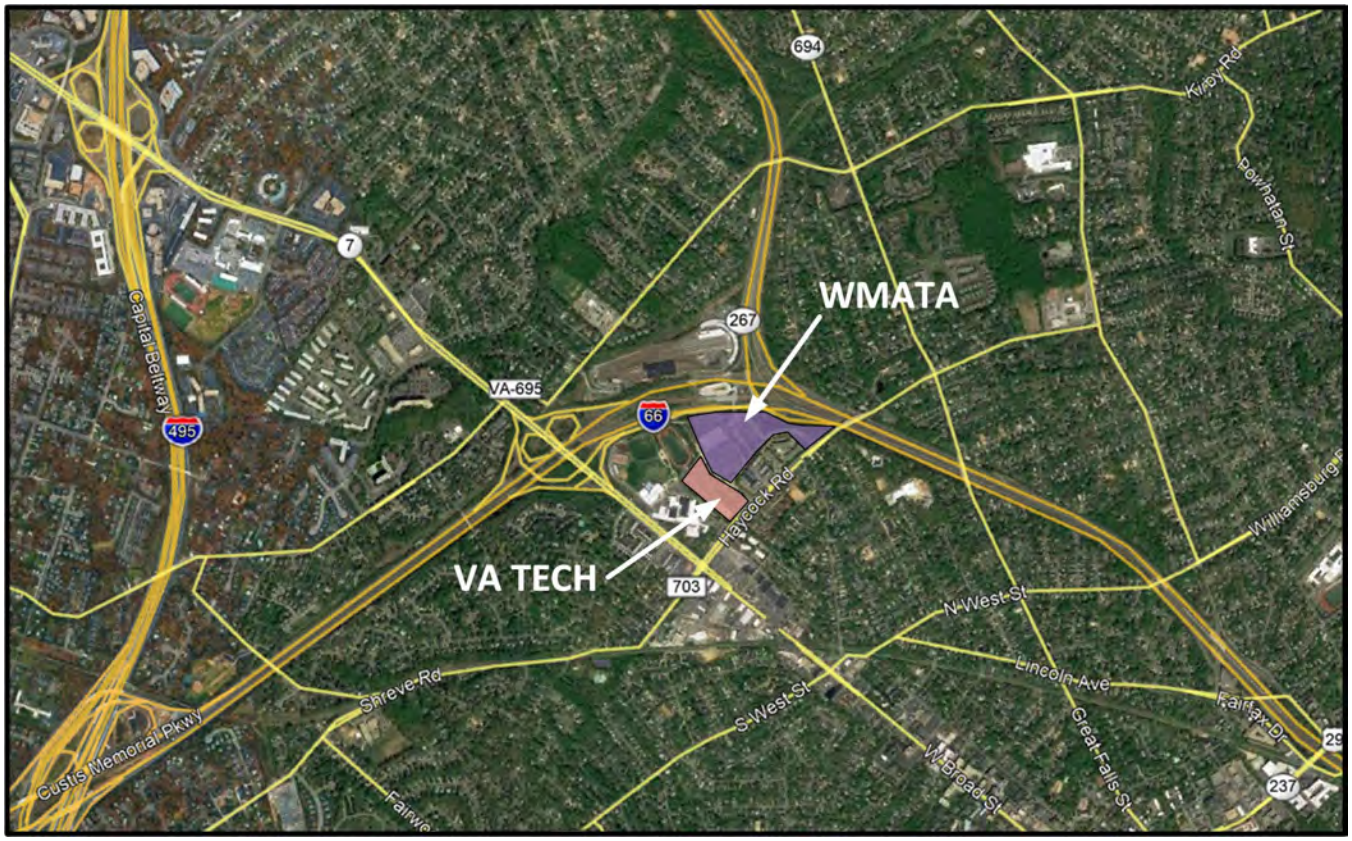


Figure 3: Regional Location

Comprehensive Plan Recommendations

Fairfax County's *Comprehensive Plan* provides the recommendation for Public Facilities for the WMATA site, and the recommendation for Mixed Uses for the VT site. The *Comprehensive Plan* includes the recommendation to widen or improve Leesburg Pike and Shreve Road. Of note, there is also a recommendation for a pedestrian crossing over Leesburg Pike at some location between I-66 and Chestnut Street, and a goal to include bicycle and pedestrian facilities in coordination with redevelopment along Leesburg Pike and Shreve Road. A map of the *Comprehensive Plan Transportation Recommendations* is shown in Figure 4.



Figure 4: Comprehensive Plan – Transportation Recommendations

Zoning for the Site and Nearby Uses

The existing zoning for the WMATA site is R-1 (Residential, 1 dwelling unit/acre) and R-30 (Residential, 30 dwelling units/acre), while the Virginia Tech site is currently zoned for C-3 (Office). The overall site is part of the West Falls Church Transit Station Area (TSA). The zoning map for the County is illustrated in Figure 5.

The comprehensive plan recommendation map is illustrated in Figure 6.

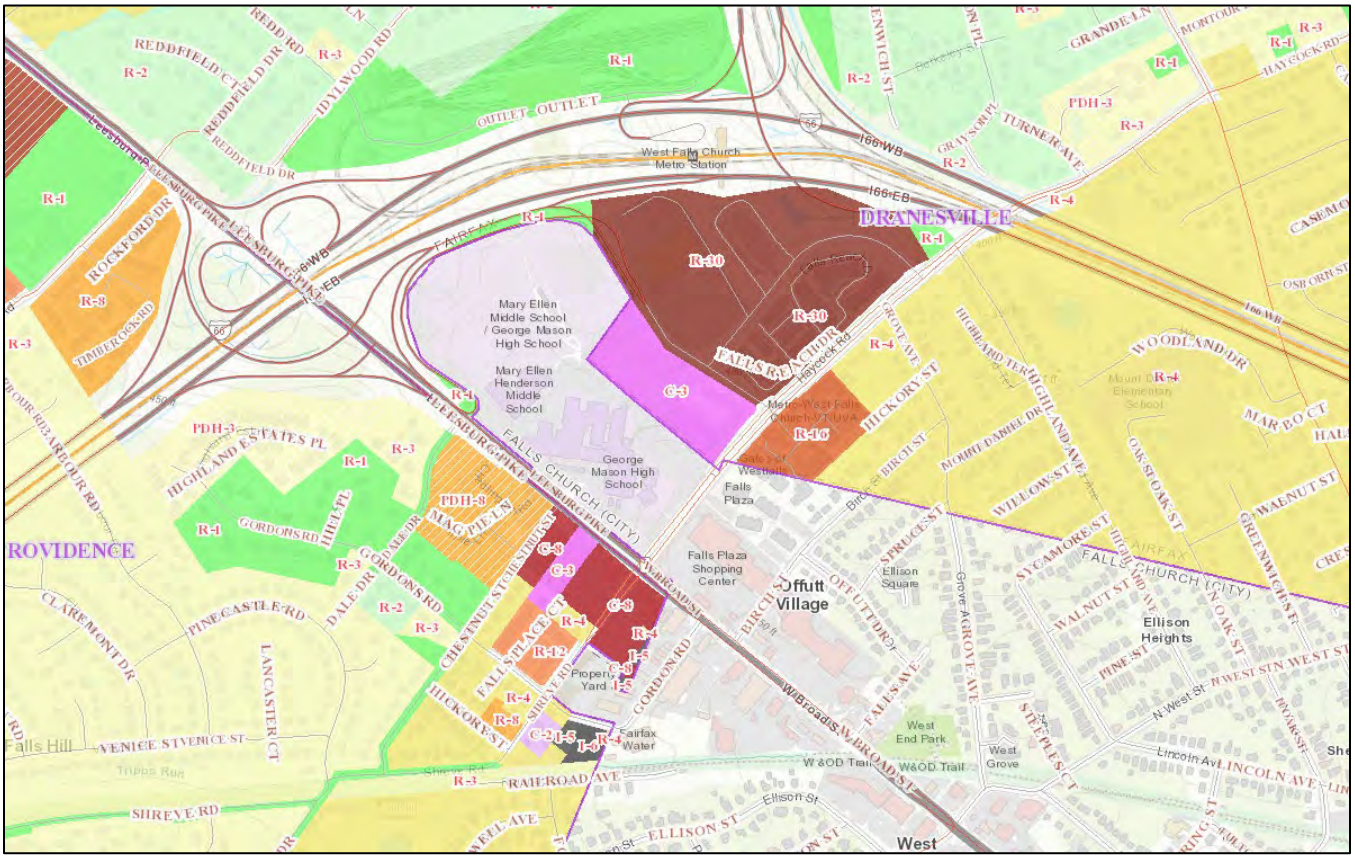


Figure 5: Fairfax County Zoning Map

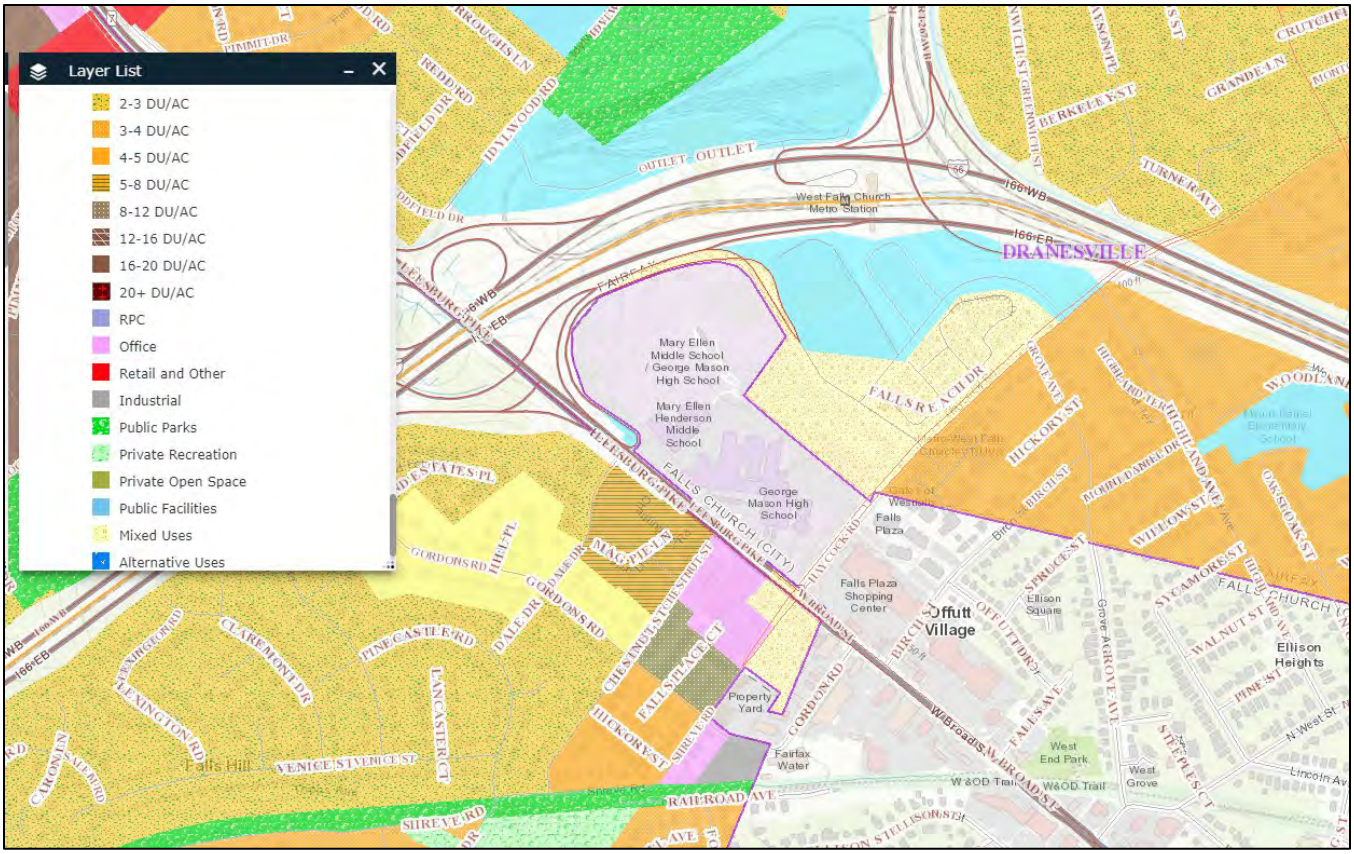


Figure 6: Fairfax County Comprehensive Plan Recommendation Map

Nearby Future Uses

The proposed WMATA and VA Tech sites are anticipated to be complete and in operation by 2030. In addition, one major nearby background development is anticipated to in operation by 2030: the High School & West Falls Church Economic Development site. The background development is situated adjacent to the proposed development within the boundaries of the City of Falls Church, Virginia.

The High School & West Falls Church Economic Development site is currently occupied by an 800-student high school and a 600-student middle school. The background site is anticipated to be redeveloped and is anticipated to include a 1,500-student high school, a 600-student middle school, 330 kSF of office, 134 kSF of retail, 680 residential units, 225 senior housing units, a 10 kSF daycare and a 150-room hotel. Total site buildout is planned for the year 2025. The proposed background development is anticipated to generate approximately 1,092 additional trips in the weekday morning (AM) peak hour and 912 additional trips in the weekday afternoon (PM) peak hour.

The High School & West Falls Church Economic Development site is currently accessed by one full access point on Route 7, one right-in/right-out (RIRO) on Route 7, and two full access points on Haycock Road. The redevelopment will create an additional RIRO and right-out (RO) driveway on Route 7. The internal circulation within the background site will create connectivity between all the proposed buildings on site and would promote and support additional connectivity to and from the proposed WMATA and VA Tech sites in addition. The development includes a few roadway improvements, including a signal at the intersection of Route 7 and Chestnut Street / Commons Drive, two signals along Haycock Road (at Road C and at Mustang Alley), and a third northwestbound lane on Route 7 between Haycock Road and Mustang Alley. Additional information is included in subsequent section of this report.

A traffic impact study for the background development was conducted by Gorove/Slade for the City of Falls Church Department of Public Works. The background study, titled *High School & West Falls Church Economic Development*, was submitted to VDOT, the City, and the County for review in conjunction with a Signal Justification Report (SJR) pertaining to the modification to the intersection of Route 7 and Chestnut Street/Commons Drive. The TIA and SJR were both approved by VDOT.

Descriptions of Geographic Scope and Limits of the Study Area

The geographic scope of the study area was developed in accordance with VDOT, Fairfax County, and the City of Falls Church guidance. The scoping document for this study has been included in Appendix A.

Existing Roadways

The site is generally located northeast of Leesburg Pike (Rte. 7), northwest of Haycock Road (Rte. 703), and south of Interstate 66 (I-66) in the Dranesville Magisterial District of Fairfax County, Virginia.

The analysis presented herein includes 14 existing study intersections (12 external intersections and two internal intersections). Furthermore, the analysis includes three additional future intersections that are anticipated to be constructed with proposed redevelopment of George Mason High School and Mary Ellen Henderson Middle School in Falls Church, Virginia (referred to in this study as the "West Falls Church Economic Development site").

Detailed roadway descriptions are provided in the *Existing Conditions (2019)* section of this study.

The study area includes the following existing intersections:

1. I-66 eastbound off-ramp and Leesburg Pike (Rte. 7) (partial-movement, signalized)
2. Leesburg Pike and Dale Drive (Rte. 1128) (partial-movement, unsignalized)
3. Leesburg Pike and Mustang Alley (full-movement, unsignalized)
4. Leesburg Pike and Chestnut Street (Rte. 1750) / Grace Community Church (partial-movement, unsignalized)
5. Leesburg Pike and Shreve Road / Haycock Road (Rte. 703) (full-movement, signalized)
6. Haycock Road and Mustang Alley (full-movement, unsignalized)
7. Haycock Road and Falls Church Drive (full-movement, signalized)
8. Haycock Road and Grove Avenue (Rte. 1745) (full-movement, unsignalized)
9. Haycock Road and West Falls Church Metro (full-movement, signalized)
10. Haycock Road and Highland Avenue (Rte. 2318) (full-movement, unsignalized)
11. Haycock Road and Turner Avenue (Rte. 7541) (full-movement, unsignalized)
12. Haycock Road and Great Falls Street (Rte. 694) (full-movement, signalized)
13. Falls Church Drive at Nova Driveway (VT Parking Lot Entrance) /WMATA Metro Entrance (Metro Access Drive) (internal intersection, full-movement, unsignalized)
14. Falls Church Drive at Nova Driveway (VT Parking Lot Entrance) / WMATA Park & Ride Garage Entrance (internal intersection, full-movement, unsignalized)

Furthermore, as noted in the scoping document, the intersections of Haycock Road at Village Crossing Road and at Falls Church Drive were included in the analysis network (*Synchro*) files yet were not included in this document.

Planned Future Transportation Improvements

Roadway Improvements

The roadway improvements identified within the study area for this site include arterial roadway widenings or improvements on Leesburg Pike and Shreve Road, as identified in Fairfax County's *Comprehensive Plan*. These improvements are shown in Figure 4. Of note, the proposed Comprehensive Plan Amendment for the station area does not preclude these widenings.

Regional Improvements

As part of VDOT's I-66 Inside the Beltway improvements, a new connector ramp from eastbound I-66 to the West Falls Church Metro Station is currently in design and is planned for build out by 2025. The ramp is currently under construction.

The new ramp, shown in Figure 7, will exist within VDOT's existing right of way adjacent to the development site. The new ramp will reduce the number of vehicles exiting eastbound I-66 onto Leesburg Pike and making left turns onto Haycock Road within the study area.

This approved project will include the addition of signage and pavement markings that direct traffic and promote wayfinding. Additional wayfinding will be explored during the SESP process.

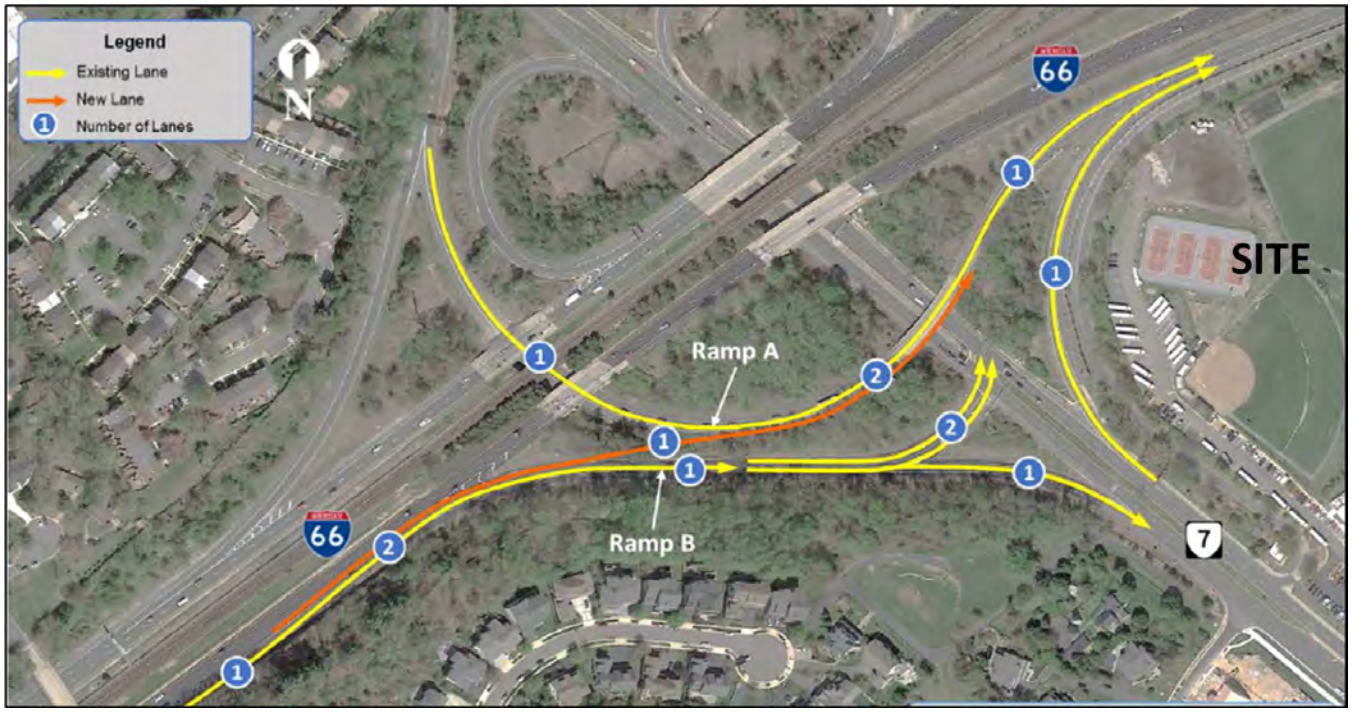


Figure 7: I-66 Eastbound Connector Ramp to West Falls Church Metro Station

EXISTING CONDITIONS (2019)

Existing Transit Services

Two WMATA Metrobus routes currently serve the site area. The existing bus routes are shown in Figure 8, and the expected headways are summarized in Table 1. The site is also within ½ mile of the West Falls Church Metro Station.



Figure 8: Existing Metrobus Routes

Table 1: 2019 Existing Bus Routes

				Typical Headway/Frequency (minutes)				Weekday Service		Saturday Service		Sunday Service	
Route	Direction	From	To	Peak	Off-Peak	Saturday	Sunday	First	Last	First	Last	First	Last
28A	Eastbound	Tysons Corner Station	King St.-Old Town Station	20	20-30	20-30	30	5:30 AM	12:45 AM	5:50 AM	12:45 AM	5:50 AM	11:30 PM
	Westbound	King St.-Old Town Station	Tysons Corner Station	20	20-30	20-30	30	4:18 AM	11:35 PM	6:00 AM	11:25 PM	6:05 AM	10:05 PM
3T	Eastbound	McLean Station	West Falls Church Station	24	60	60	-	5:35 AM	10:35 PM	6:35 AM	10:35 PM	-	-
	Westbound	West Falls Church Station	McLean Station	24	60	60	-	5:48 AM	10:05 PM	7:05 AM	10:05 PM	-	-

The planned transit projects are shown in Figure 9. As shown, the Broad Street (Route 7) is anticipated to serve the site area.

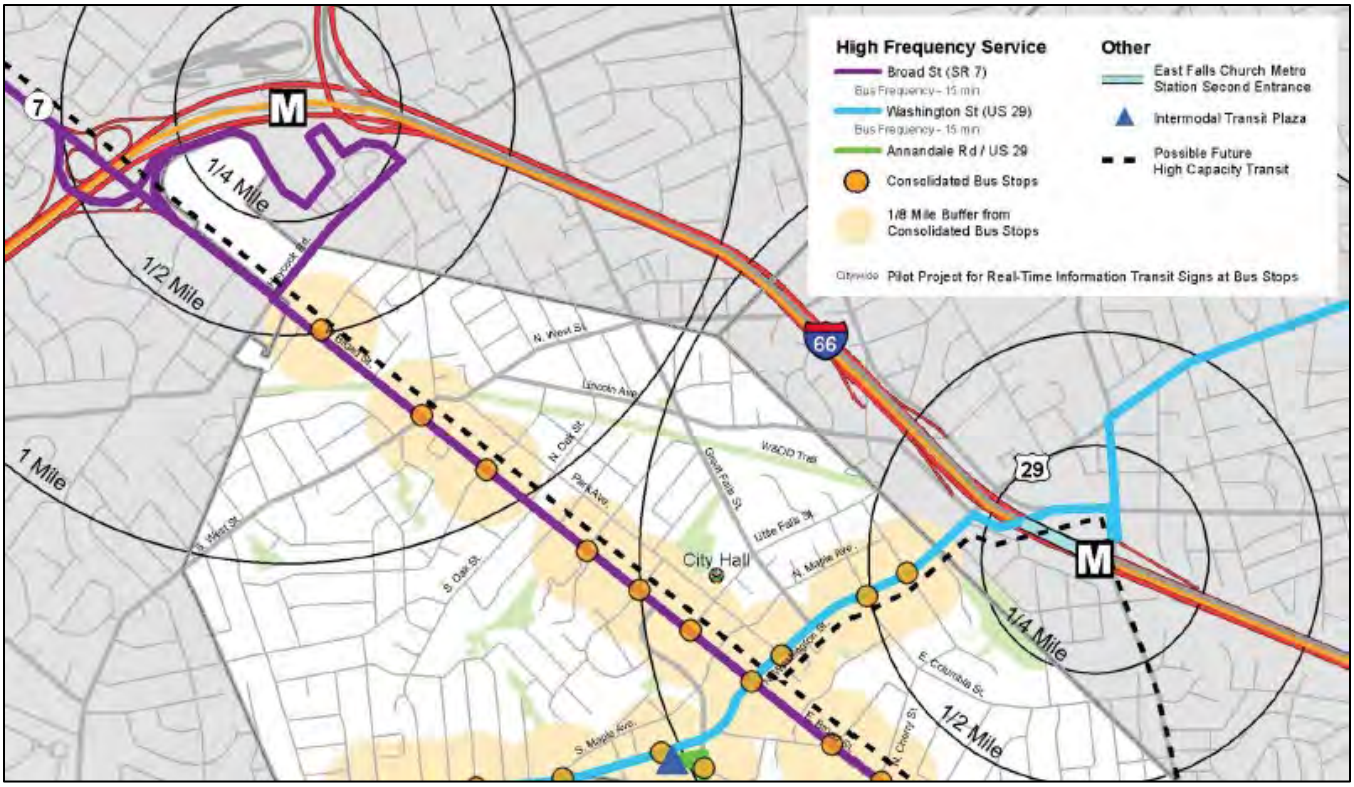


Figure 9: Planned Transit Projects

Existing Bicycle and Pedestrian Facilities

Dedicated on-street bicycle infrastructure does not currently exist in the area. Fairfax County's *Comprehensive Plan* calls for a variety of bicycle facility improvements within the vicinity of the study area. In particular, the *Comprehensive Plan* recommends a bike lane along Haycock Road west of I-66 and along Great Falls Street north of I-66, and sharrows east and south of the respective I-66 crossings. It recommends a shared roadway along Grove Avenue and through the WMATA access drive to the Metro station, and a shared use path from near Falls Church Drive and Haycock Road to the Metro station. The *Comprehensive Plan* highlights a major regional trail system, and a major paved trail at least 8-foot-wide in the vicinity of the study area. Existing and recommended bicycle facilities in the study area are shown in Figure 10. The trail network is shown in Figure 11.

Crosswalks currently exist at the signalized intersections within the study area but not on all approaches. The existing pedestrian facilities are shown in Figure 12. Pedestrian paths to the metro exist today and will continue to exist in the future. When the WMATA and Virginia Tech developments are built, the pedestrian paths will further improve.

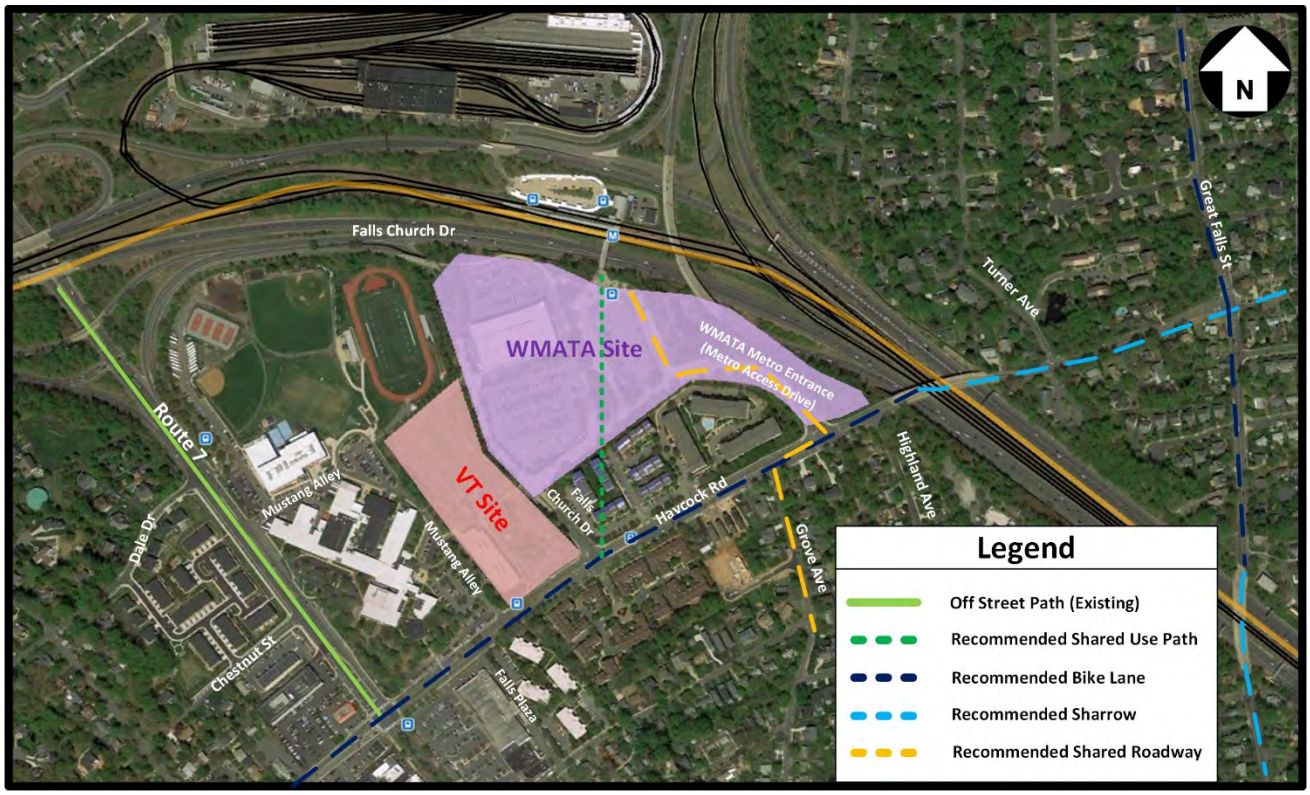


Figure 10: Existing and Planned Bicycle Network (Fairfax County Comprehensive Plan)



Figure 11: Trail Network (Fairfax County Comprehensive Plan)



Figure 12: Existing Pedestrian Facilities

Existing Roadway Network

A description of the major roadways within the study area is presented in Table 2. The existing local roadway network, including lane configurations and traffic controls, is illustrated in Figure 13 and in Figure 14.

Table 2: 2019 Existing Road Network

Roadway	RTE #	VDOT Classification	Lanes	Speed	AADT (vpd)
I-66 East Ramp	I-66	Interstate Ramp	2	35 mph (Advisory)	10,000* (west partial)
Leesburg Pike	7	Other Principal Arterial	4	25 mph	30000*
West Broad St	7	Other Principal Arterial	4	25 mph	30000*
Haycock Rd	703	Minor Arterial	2	25 mph	6300*
Haycock Rd	703	Minor Arterial	4 / 2 (east of Interstate 66)	35 mph / 25 mph (east of Interstate 66)	12000*
Shreve Rd	703	Major Collector	2 - 4	35 mph	10000*
Grove Ave	1745	Local Road	2	25 mph	2100*
Great Falls St	694	Minor Arterial	2	35 mph	10000*
Great Falls St	694	Minor Arterial	2	35 mph	8900*
Falls Church Dr	-	Minor Collector	2	25 mph	-
Dale Dr	1128	Local Road	2	25 mph	950*
Highland Ave	2318	Local Road	2	25 mph	1400*
Turner Ave	7541	Local Road	2	25 mph	860*
Chestnut St	1750	Local Road	2	25 mph	990*
West Falls Church Metro	-	Local Road	2	25 mph	-
Mustang Alley	-	Local Road	2	25 mph	-

* Source: VDOT 2018 AADT Traffic Data (http://www.virginiadot.org/info/2018_traffic_data.asp)

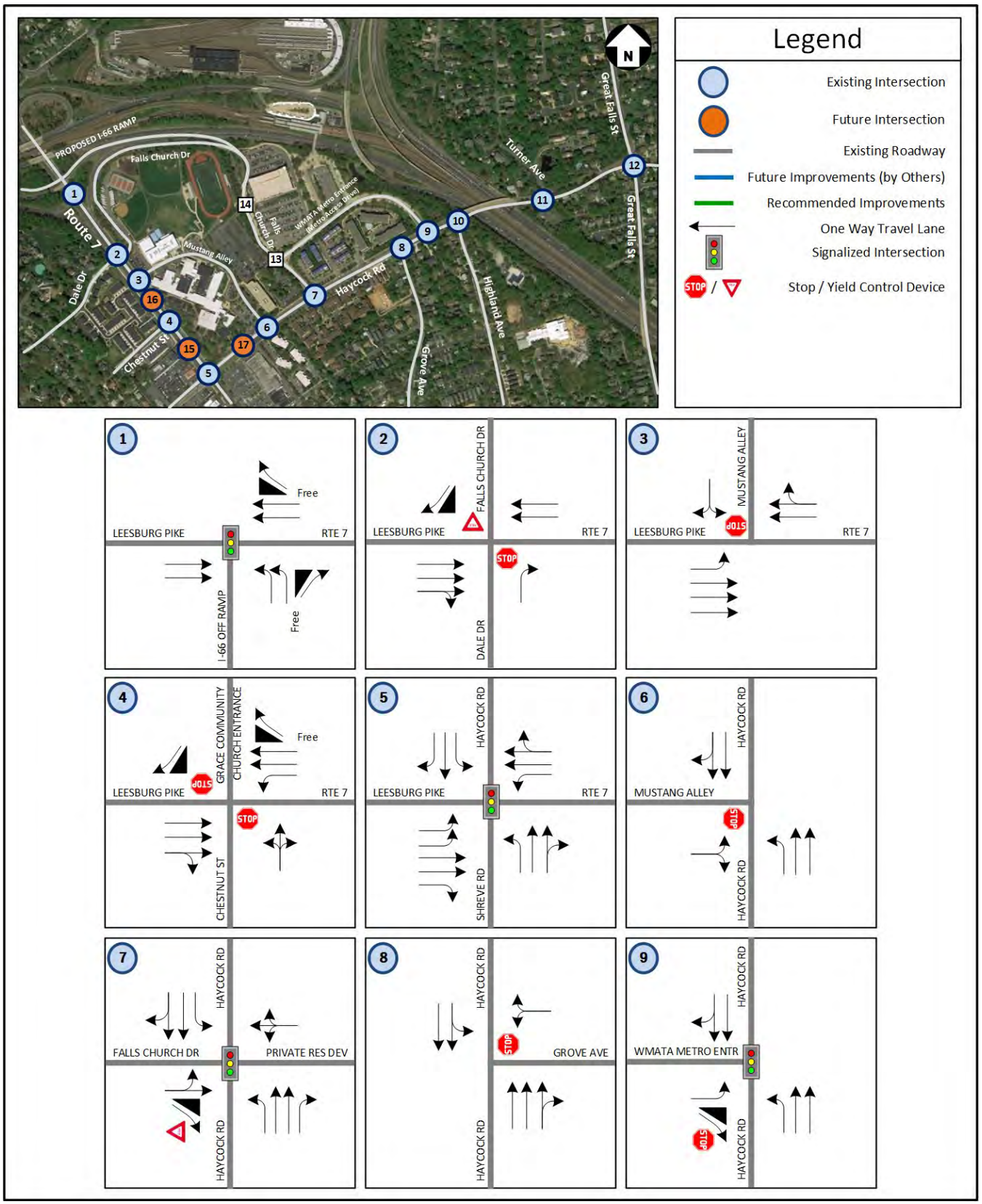


Figure 13: 2019 Existing Conditions – Roadway Lane Configuration and Traffic Control Devices (1 of 2)

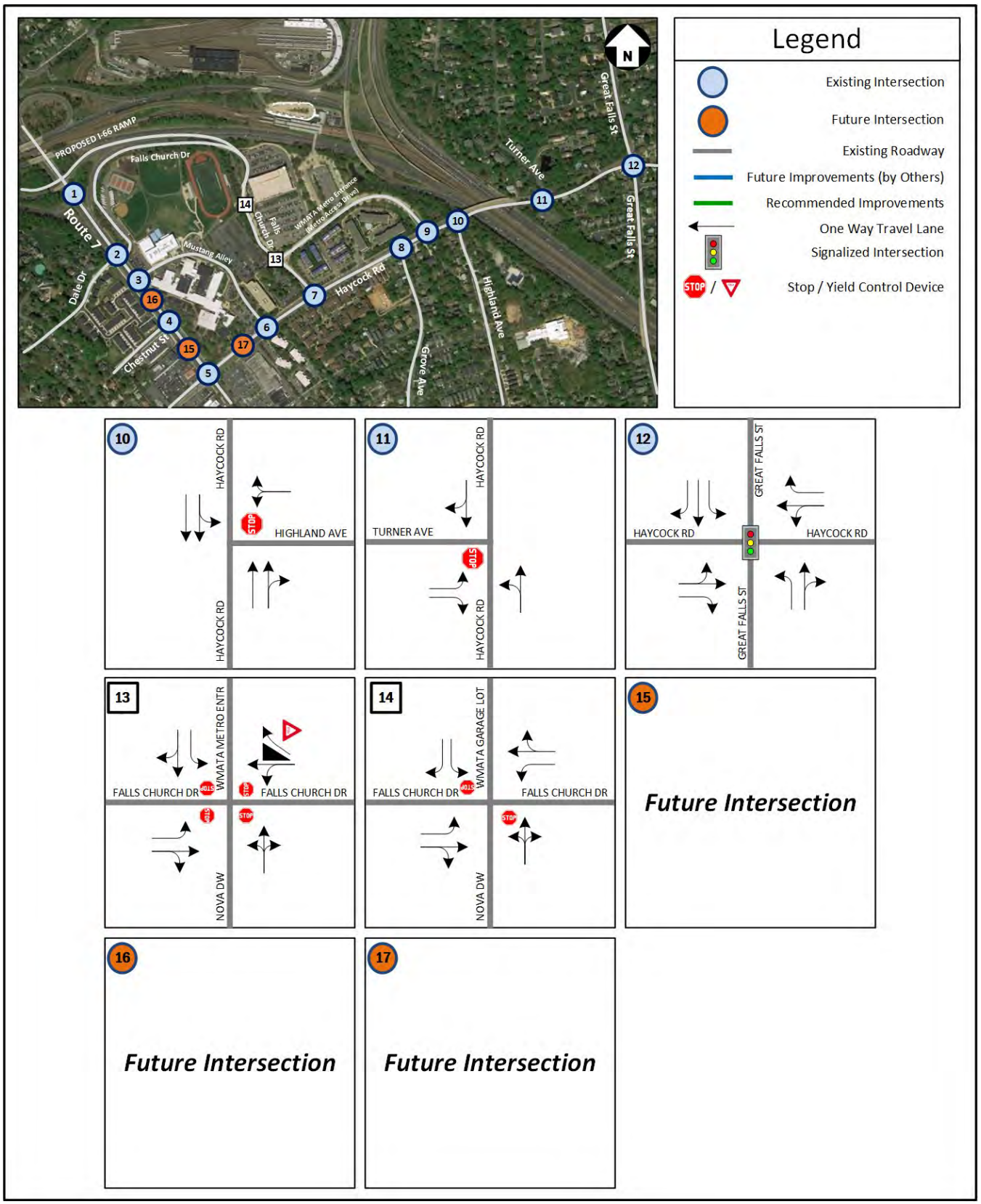


Figure 14: 2019 Existing Conditions – Roadway Lane Configuration and Traffic Control Devices (2 of 2)

Historical Crash Data

Historic crash data at the study intersections was obtained from VDOT for the most recent three years (January 2016 to March 2019).

The crash data is summarized in Table 3.

Table 3: Crash Data (January 2016 – March 2019)

Intersection	Number of Crashes	Number of Property Damage Crashes	Number of Crashes Resulting in Injury	Number of Fatal Crashes	Crash Rate (Crashes per MEV)
I-66 East Ramp & Leesburg Pike	10	4	6	0	0.23
Leesburg Pike & Dale Dr/Falls Church Dr	9	8	1	0	0.17
Leesburg Pike & Mustang Alley	2	0	2	0	0.04
Leesburg Pike & Chestnut St/Grace Community Church	28	15	13	0	0.57
Leesburg Pike & Shreve Rd/Haycock Rd	16	10	6	0	0.27
Haycock Rd & Mustang Alley	8	3	5	0	0.39
Haycock Rd & Falls Church Dr	0	0	0	0	0
Haycock Rd & Grove Ave	1	1	0	0	0.05
Haycock Rd & West Falls Church Metro	1	0	1	0	0.05
Haycock Rd & Highland Ave	1	1	0	0	0.05
Haycock Rd & Turner Ave	0	0	0	0	0
Haycock Rd & Great Falls St	5	3	2	0	0.20

As shown in the table above, the intersection of Leesburg Pike and Chestnut Street/Grace Community Church had the highest number of reported crashes (28) during the study period. This intersection is planned to be converted into a right-in/ right-out (RIRO) configuration as a background improvement which should improve safety. A Signal Justification Report (SJR) has been submitted to VDOT for review toward this effort of signalization.

The crash rates shown for each intersection are calculated as crashes per one million entering vehicles (MEV), and were calculated based on the following formula:

$$Rate_{intersection} = \frac{1{,}000{,}000 * \#\ of\ Crashes}{\#\ of\ Years * 365\ \left(\frac{days}{year}\right) * ADT_{approach}}.$$

The approach ADT comes from calculations for the existing ADTs, as per Figure 15 and Figure 16 in the subsequent section.

The crash data provided by VDOT is included in Appendix B.

Existing Conditions (2019) Traffic Volumes

Vehicular turning movement counts were collected at existing study intersections on Thursday, May 3, 2018, on Tuesday, May 22, 2018, and on Thursday, May 9, 2019. A list of the study intersections by count date is provided below:

- Thursday, May 3, 2018
    - Haycock Road (Rte. 703) and Grove Avenue (Rte. 1745)
    - Haycock Road (Rte. 703) and Falls Church Drive
    - Leesburg Pike (Rte. 7) and Chestnut Street (Rte. 1750) / Grace Community Church Entrance
    - Leesburg Pike (Rte. 7) and Dale Drive (Rte. 1128)
    - Leesburg Pike (Rte. 7) and Mustang Alley
- Tuesday, May 22, 2018
    - Haycock Road (Rte. 703) and Mustang Alley
- Thursday, May 9, 2019
    - I-66 eastbound off-ramp and Leesburg Pike (Rte. 7)
    - Leesburg Pike (Rte. 7) and Shreve Road / Haycock Road (Rte. 703)
    - Haycock Road (Rte. 703) and Highland Avenue (Rte. 2318)
    - Haycock Road (Rte. 703) and Turner Avenue (Rte. 7541)
    - Haycock Road (Rte. 703) and Great Falls Street (Rte. 694)
    - Haycock Road (Rte. 703) and WMATA Metro Entrance (Metro Access Drive)
    - Falls Church Drive and Nova Driveway (VT Parking Lot Entrance) /WMATA Metro Entrance (Metro Access Drive)
    - Falls Church Drive and Nova Driveway (VT Parking Lot Entrance) / WMATA Park & Ride Garage Entrance

Analysis of the traffic data found the following system peak hours:

Weekday Morning (AM) Peak Hour: 7:45 AM to 8:45 AM

Weekday Afternoon (PM) Peak Hour: 5:00 PM to 6:00 PM

In order to derive the baseline traffic volumes for the 2019 Existing Condition scenario, it was necessary to balance the road network and increase traffic volumes at some study intersections in order to account for difference in the 2018 and 2019 counts. As such, the road network was then balanced conservatively where appropriate. The existing peak hour traffic volumes are illustrated in Figure 15 and in Figure 16. The raw traffic count data are included in Appendix C.

It should be noted that the average daily traffic (ADT) volumes illustrated in Figure 15 and in Figure 16 are based off the k-factors from 2018 VDOT historic traffic data and the afternoon peak hour volumes. If traffic data was not available for a given approach, it was assumed to have a k-factor of 0.10.



Figure 15: 2019 Existing Conditions – Vehicular Traffic Volumes (1 of 2)

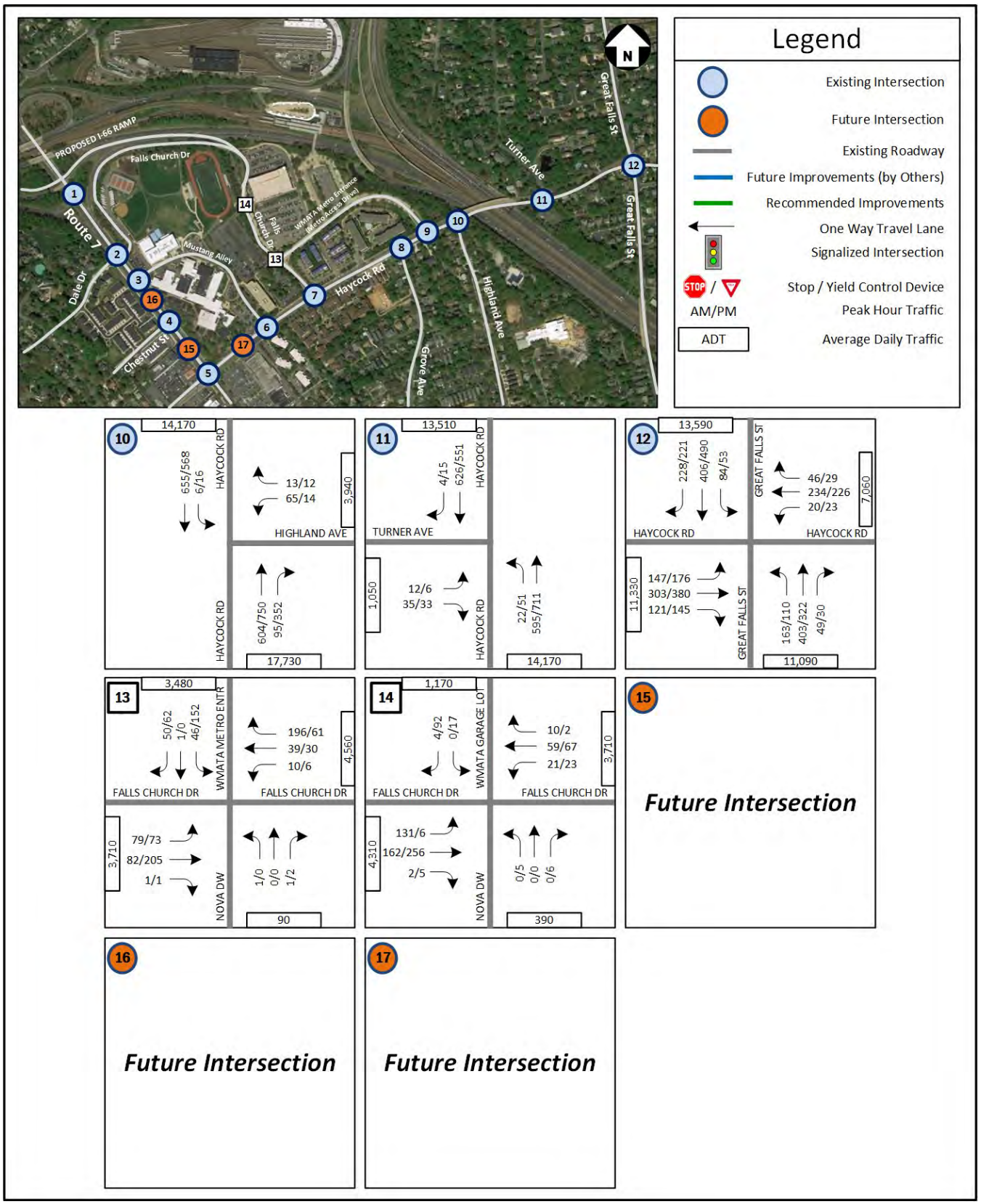


Figure 16: 2019 Existing Conditions – Vehicular Traffic Volumes (2 of 2)

Existing Condition (2019) Intersection Capacity Analysis

Intersection capacity analyses were performed for the Existing Conditions (2019) scenario at the study area intersections during the weekday morning (AM) and afternoon peak (PM) peak hours. *Synchro,* version 10, was used to analyze the study intersections with results based on the Highway Capacity Manual (HCM) 2010 methodology[1] and includes level of service (LOS), delay, and queue length comparisons for the turning movements analyzed. *Synchro* files with existing signal timings were provided by VDOT staff and used as a base for the existing analysis.

The existing peak hour factors (by intersection) acquired from the traffic counts, with a minimum of 0.85, were used in the analysis of existing conditions. Heavy vehicle percentages of major movements used in the analysis were based on the traffic counts collected. The lane configurations were field verified.

Per the scoping meeting between the VDOT, County, and City staff, it is desirable to strive for an overall intersection LOS of D or better for traffic operations using the HCM methodology. The results of the intersection capacity analyses from *Synchro* are presented in Table 4 and graphically in Figure 17 and in Figure 18. The results are expressed in LOS and delay (seconds per vehicles) for overall signalized intersections and per approach and lane group by intersection. The signalized intersections that operate overall at LOS E or F are shown in red. The 50th and 95th percentile queues were also determined from *Synchro* and are expressed in feet.

The description of different LOS and delays are included in Appendix D. The detailed analysis worksheets of 2019 Existing Conditions are contained in Appendix E.

Table 4: 2019 Existing Conditions – Intersection Capacity Analysis Results

No.	Intersection (Movement)	Effective Storage Length (ft.)*	AM Peak Hour				PM Peak Hour			
			LOS (s/veh)	Delay (s/veh)	50th % Queue (ft.)	95th % Queue (ft.)	LOS (s/veh)	Delay (s/veh)	50th % Queue (ft.)	95th % Queue (ft.)
1	**Leesburg Pike (E/W) at I-66 Off-Ramp (N/S)**									
	Overall Intersection (Signalized)		**A**	**6.4**			**B**	**12.3**		
	Eastbound Approach		***A***	***4.3***			***A***	***9.4***		
	Eastbound Thru		A	4.3	125	181	A	9.4	253	373
	Westbound Approach		***A***	***4.5***			***A***	***4.7***		
	Westbound Thru		A	4.5	270	126	A	4.7	146	200
	Northbound Approach		***D***	***46.6***			***D***	***46.0***		
	Northbound Left	220	D	46.6	44	73	D	46.0	145	188
2	**Leesburg Pike (E/W) at Dale Dr./ Falls Church Dr. (N/S)**									
	Overall Intersection (Unsignalized)									
	Northbound Approach		***C***	***19.4***			***D***	***27.8***		
	Northbound Right		C	19.4		5	D	27.8		5
3	**Leesburg Pike (E/W) at Mustang Alley (School Entr.) (N/S)**									
	Overall Intersection (Unsignalized)									
	Eastbound Approach									
	Eastbound Left	140	B	13.5		10	B	12.2		8
	Southbound Approach		***C***	***17.1***			***C***	***19.8***		
	Southbound Left/Right		C	17.1		15	C	19.8		10

NOTES:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.

[2] $: Delays (reported from Synchro) exceed 300 seconds in TWSC.

[3] #: 95th percentile queues (reported from Synchro) exceed capacity; actual queues may be longer. Queues shown are based on the maximum after two cycles.

[4] m: 95th percentile volume and queues (reported from Synchro) are metered by upstream signal.

[1] It should be noted that HCM 2000 methodology was used in lieu of HCM 2010 if the HCM 2010 methodology was not applicable. HCM 2010 could not be applicable in such cases as nonstandard National Electrical Manufacturers Association (NEMA) configurations, shared lane configurations, placement of loop detectors, etc. This condition was agreed to in the scoping document.

Table 4: 2019 Existing Conditions – Intersection Capacity Analysis Results (Continued)

No.	Intersection (Movement)	Effective Storage Length (ft.)*	AM Peak Hour				PM Peak Hour			
			LOS (s/veh)	Delay (s/veh)	50th % Queue (ft.)	95th % Queue (ft.)	LOS (s/veh)	Delay (s/veh)	50th % Queue (ft.)	95th % Queue (ft.)
4	**Leesburg Pike (E/W) at Chestnut St./ Grace Community Church Entr. (N/S)**									
	Overall Intersection (Unsignalized)									
	Westbound Approach									
	Westbound Left	200	C	23.1		5	A	0		0
	Northbound Approach		***F***	***197.1***			***D***	***26.5***		
	Northbound Left/Right		F	197.1		53	D	26.5		10
	Southbound Approach		***B***	***14.6***			***A***	***0***		
	Southbound Right		B	14.6		3	A	0		0
5	**Leesburg Pike (E/W) at Shreve Rd./ Haycock Rd. (N/S)**									
	Overall Intersection (Signalized)		**E**	**62.7**			**E**	**70.1**		
	Eastbound Approach		***D***	***35.1***			***D***	***52.4***		
	Eastbound Left	250	F	108.7	193	226	F	107.9	314	378
	Eastbound Thru		C	20.8	454	603	D	42.0	784	983
	Eastbound Right		A	8.0	3	15	B	16.0	111	164
	Westbound Approach		***C***	***32.4***			***E***	***69.4***		
	Westbound Left	225	F	102.1	36	76	F	234.0	~255	#429
	Westbound Thru/Right		C	30.8	505	658	D	45.4	598	725
	Northbound Approach		***F***	***85.5***			***E***	***74.0***		
	Northbound Left	115	E	64.5	65	108	E	75.3	129	191
	Northbound Thru/Right		F	88.0	347	408	E	73.4	193	246
	Southbound Approach		***F***	***194.0***			***F***	***127.4***		
	Southbound Left	295	E	67.0	19	35	E	59.1	61	101
	Southbound Thru		E	73.0	82	138	F	177.2	~597	#830
	Southbound Right		F	219.8	78	265	E	62.0	76	132
6	**Haycock Rd. (N/S) at Mustang Alley (E/W)**									
	Overall Intersection (Unsignalized)									
	Eastbound Approach		***C***	***23.3***			***D***	***34.8***		
	Eastbound Left/Right		C	23.3		60	D	34.8		78
	Northbound Approach									
	Northbound Left	110	A	9.6		10	A	9.2		5
7	**Haycock Rd. (N/S) at Falls Church Dr. (E/W)**									
	Overall Intersection (Signalized)		**B**	**11.7**			**B**	**18.6**		
	Eastbound Approach		***D***	***44.3***			***D***	***45.0***		
	Eastbound Left/Thru		D	46.7	37	66	D	53.9	135	204
	Eastbound Right	75	D	42.9	0	0	D	35.0	14	66
	Westbound Approach		***D***	***43.3***			***C***	***33.8***		
	Westbound Left/Thru/Right		D	43.3	9	32	C	33.8	6	26
	Northbound Approach		***A***	***7.7***			***B***	***14.1***		
	Northbound Left	205	A	6.2	78	166	A	5.4	29	m39
	Northbound Thru		A	8.3	128	252	B	15.0	353	422
	Northbound Right	290	A	4.8	0	m0	A	9.2	0	m0
	Southbound Approach		***A***	***7.9***			***A***	***7.4***		
	Southbound Left	125	A	7.5	0	m1	A	4.8	1	4
	Southbound Thru/Right		A	7.9	63	97	A	7.4	105	166
	Southbound Right		A	8.6		0	A	9		8

NOTES:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.

[2] $: Delays (reported from Synchro) exceed 300 seconds in TWSC.

[3] #: 95th percentile queues (reported from Synchro) exceed capacity; actual queues may be longer. Queues shown are based on the maximum after two cycles.

[4] m: 95th percentile volume and queues (reported from Synchro) are metered by upstream signal.

Table 4: 2019 Existing Conditions – Intersection Capacity Analysis Results (Continued)

No.	Intersection (Movement)	Effective Storage Length (ft.)*	AM Peak Hour				PM Peak Hour			
			LOS (s/veh)	Delay (s/veh)	50th % Queue (ft.)	95th % Queue (ft.)	LOS (s/veh)	Delay (s/veh)	50th % Queue (ft.)	95th % Queue (ft.)
8	**Haycock Rd. (N/S) at Grove Ave. (E/W)**									
	Overall Intersection (Unsignalized)									
	Westbound Approach		***D***	***28.2***			***E***	***38.7***		
	Westbound Left/Right		D	28.2		70	E	38.7		55
	Southbound Approach									
	Southbound Left		B	12.3		5	C	19		33
9	**Haycock Rd. (N/S) at WMATA Metro Entr. (E/W)**									
	Overall Intersection (Unsignalized)		**A**	**5.2**			**A**	**8.0**		
	Eastbound Approach		***E***	***55.2***			***D***	***48.3***		
	Eastbound Left		E	55.2	42	83	D	48.3	125	189
	Eastbound Right	125	A	0.0	0	22	A	0.0	0	32
	Northbound Approach		***A***	***0.3***			***A***	***0.6***		
	Northbound Left		A	3.0	2	8	A	5.2	3	m20
	Northbound Thru		A	0.2	26	42	A	0.5	156	352
	Southbound Approach		***A***	***5.5***			***A***	***7.9***		
	Southbound Thru/Right		A	5.5	80	125	A	7.9	65	156
10	**Haycock Rd. (N/S) at Highland Ave. (E/W)**									
	Overall Intersection (Unsignalized)									
	Westbound Approach		***D***	***27.2***			***C***	***24.5***		
	Westbound Left/Right		D	27.2		38	C	24.5		10
	Southbound Approach									
	Southbound Left		A	9.2		0	B	11.1		3
11	**Haycock Rd. (N/S) at Turner Ave. (E/W)**									
	Overall Intersection (Unsignalized)									
	Eastbound Approach		***C***	***18***			***C***	***15.2***		
	Eastbound Left		D	30.5		8	D	30.9		3
	Eastbound Right		B	13.7		8	B	12.3		5
	Northbound Approach									
	Northbound Left		A	9.1		3	A	8.8		5
12	**Haycock Rd. (N/S) at Great Falls St. (E/W)**									
	Overall Intersection (Signalized)		**D**	**43.9**			**D**	**46.5**		
	Eastbound Approach		***C***	***29.9***			***D***	***48.2***		
	Eastbound Left/Thru		C	32.6	373	549	D	54.5	544	#976
	Eastbound Right	75	C	20.2	31	73	C	23.7	48	117
	Westbound Approach		***C***	***22.0***			***C***	***26.1***		
	Westbound Left/Thru		C	22.5	161	240	C	26.5	166	296
	Westbound Right	75	B	19.3	0	0	C	22.1	0	0
	Northbound Approach		***E***	***57.3***			***D***	***42.6***		
	Northbound Left	180	D	40.4	124	184	D	38.1	73	115
	Northbound Thru/Right		E	63.4	489	#692	D	44.1	315	426
	Southbound Approach		***D***	***52.7***			***D***	***54.6***		
	Southbound Left	380	D	38.0	102	102	D	35.1	61	61
	Southbound Thru		E	61.2	583	583	E	62.7	666	666
	Southbound Right	225	D	42.9	148	148	D	41.5	143	143

NOTES:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.

[2] $: Delays (reported from Synchro) exceed 300 seconds in TWSC.

[3] #: 95th percentile queues (reported from Synchro) exceed capacity; actual queues may be longer. Queues shown are based on the maximum after two cycles.

[4] m: 95th percentile volume and queues (reported from Synchro) are metered by upstream signal.

Table 4: 2019 Existing Conditions – Intersection Capacity Analysis Results (Continued)

No.	Intersection (Movement)	Effective Storage Length (ft.)*	AM Peak Hour				PM Peak Hour			
			LOS (s/veh)	Delay (s/veh)	50th % Queue (ft.)	95th % Queue (ft.)	LOS (s/veh)	Delay (s/veh)	50th % Queue (ft.)	95th % Queue (ft.)
13	**Falls Church Dr. (E/W) at Nova Drwy. / WMATA Metro Entr. (N/S)**									
	Overall Intersection (Unsignalized)		**A**	**9.5**			**A**	**10**		
	Eastbound Approach		***A***	***9.1***			***B***	***10.2***		
	Eastbound Left	175	A	9.7		13	A	9.7		10
	Eastbound Thru/Right		A	8.6		13	B	10.4		35
	Westbound Approach		***B***	***10.1***			***A***	***9.1***		
	Westbound Left/Thru/Right		B	10.1		40	A	9.1		13
	Northbound Approach		***A***	***8.7***			***A***	***8.3***		
	Northbound Left/Thru/Right		A	8.7		0	A	8.3		0
	Southbound Approach		***A***	***8.8***			***B***	***10.1***		
	Southbound Left	135	A	9.5		8	B	11		28
	Southbound Thru/Right		A	8.1		8	A	8		8
14	**Falls Church Dr. (E/W) at Nova Drwy. / WMATA Park&Ride Garage Entr. (N/S)** **Overall Intersection (Unsignalized)**									
	Eastbound Approach									
	Eastbound Left		A	7.6		8	A	7.3		0
	Westbound Approach									
	Westbound Left	230	A	7.6		3	A	7.8		3
	Northbound Approach		***A***	***0***			***B***	***11.2***		
	Northbound Left/Thru/Right		A	0		0	B	11.2		3
	Southbound Approach		***A***	***8.6***			***A***	***9.4***		
	Southbound Left		A	0		0	B	11.8		3
	Southbound Right		A	8.6		0	A	9		8

NOTES:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.

[2] $: Delays (reported from Synchro) exceed 300 seconds in TWSC.

[3] #: 95th percentile queues (reported from Synchro) exceed capacity; actual queues may be longer. Queues shown are based on the maximum after two cycles.

[4] m: 95th percentile volume and queues (reported from Synchro) are metered by upstream signal.

Per the scoping meeting between the VDOT, County, and City staff, it is desirable to strive for an overall intersection LOS of D or better for traffic operations using the HCM methodology. The capacity analysis results indicate that all signalized intersections operate at an overall acceptable LOS under existing conditions with the exception of the Leesburg Pike and Haycock Road intersection. The intersection operates overall at a LOS E during both peak hours.

The results of the intersection capacity analyses for the existing conditions are illustrated in Figure 17 and in Figure 18.

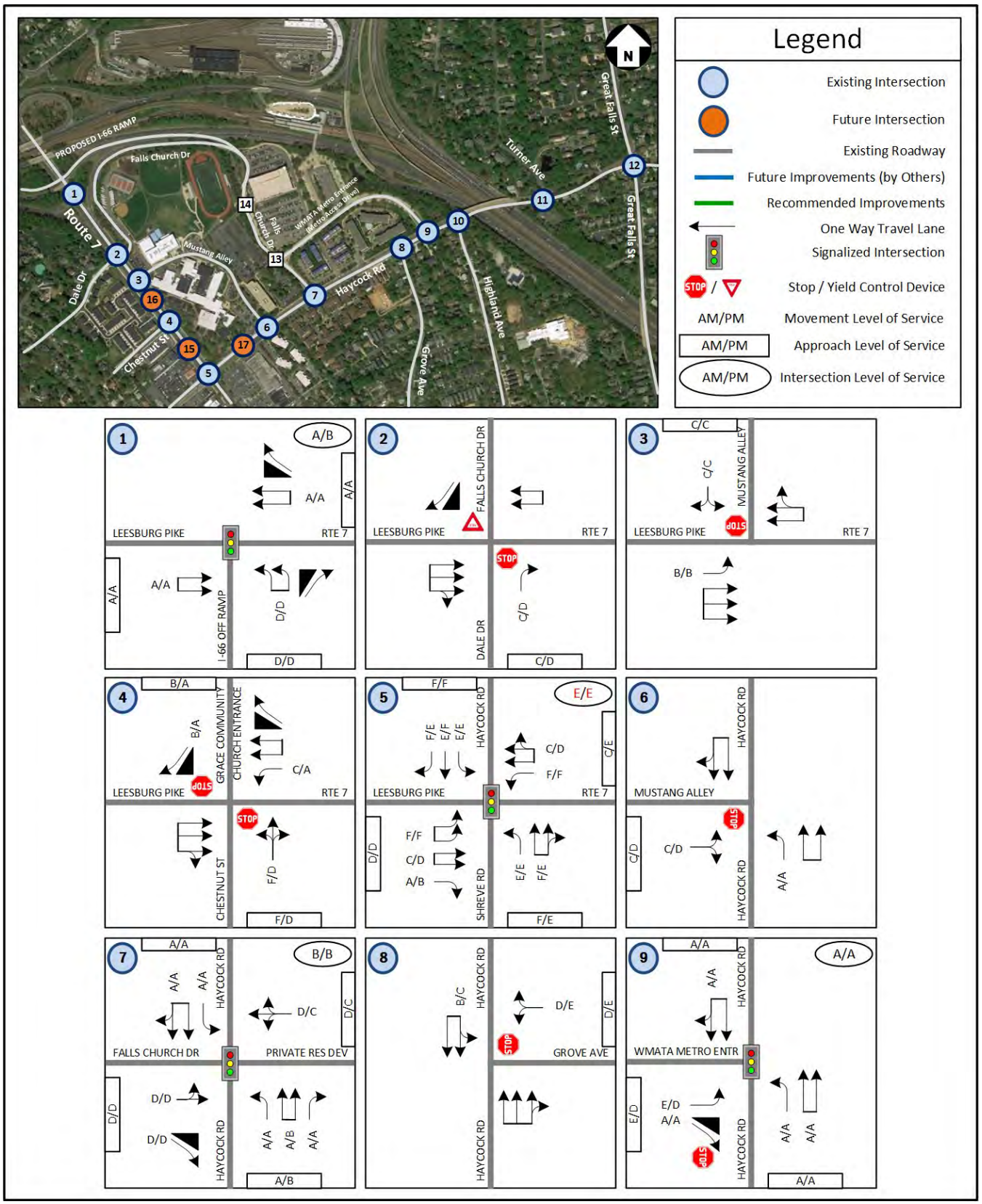


Figure 17: 2019 Existing Condition – Levels of Service Results (1 of 2)

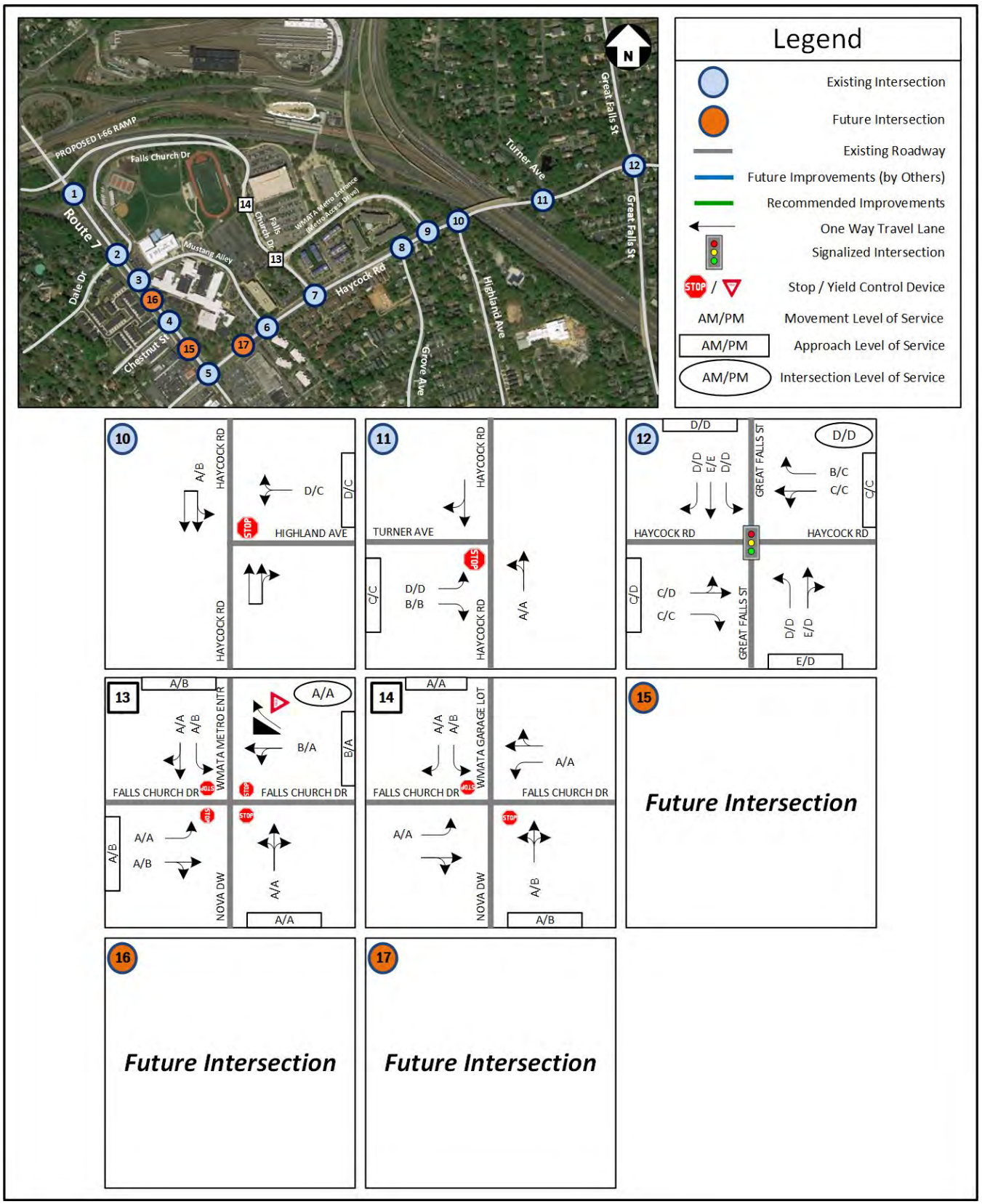


Figure 18: 2019 Existing Condition – Levels of Service Results (2 of 2)

FUTURE CONDITIONS WITHOUT DEVELOPMENT (2030)

The WMATA and VT developments are anticipated to be fully constructed and in operation by 2030.

Future Conditions without Development (2030) Traffic Volumes

Inherent Growth

The proposed WMATA and VT developments are anticipated to be fully constructed and in operation by 2030. To account for future conditions, and as agreed upon by VDOT, County, and City staff, an inherent growth rate of 1.0% annually over an eleven-year period (between 2019 and 2030), totaling 11.56% growth of the existing volumes, was applied to all movements at the intersection of Route 7 and Haycock Road. The growth in traffic demand at the subject intersection was carried to subsequent study intersections along Route 7 and along Haycock Road in order to balance the road network. It is anticipated that these growth volumes would account for any potential developments (not mentioned below) that would affect the surrounding vicinity and increased demand on the road network.

The inherent regional growth volumes are illustrated in Figure 20 and in Figure 21.

Potential Background Development(s)

In addition to the applied inherent regional growth accommodating increase traffic demand, one background development was identified in the meeting with VDOT, the County, and the City for inclusion in this study. The background development was the High School & West Falls Church Economic Development site, located immediate adjacent to the WMATA and VT developments.

The High School & West Falls Church Economic Development site is currently occupied by an 800-student high school and a 600-student middle school. The proposed development program includes a 1,500-student high school, a 600-student middle school, 330 kSF of office, 134 kSF of retail, 680 residential units, 225 senior housing units, a 10 kSF daycare, and a 150-room hotel. Total site buildout is planned for the year 2025. The background site's conceptual plan and approximate location is illustrated in Figure 19.

A traffic impact study for the background development was conducted by Gorove/Slade for the City of Falls Church Department of Public Works. The background study, titled *High School & West Falls Church Economic Development*, was submitted to VDOT, the City, and the County for review in conjunction with a Signal Justification Report (SJR) pertaining to the modification to the intersection of Route 7 and Chestnut Street. Both studies have been approved by VDOT.

The background development trips associated with the High School & West Falls Church Economic Development site are illustrated in Table 5 and graphically in Figure 22 and in Figure 23. The proposed background development is anticipated to generate approximately 1,092 additional trips in the AM peak hour and 912 additional trips in the PM peak hour along the road network after reductions.

Based on the study, a TDM/mode split reduction of 35% was assumed for the High School & West Falls Church Economic Development site, given the sufficient sidewalk access surrounding the site and connecting the site to the West Falls Church Metrorail station. The High School & West Falls Church Economic Development site background trips, illustrated in Figure 22 and in Figure 23, include a combination of anticipated site generated trips, anticipated pass-by trip diversions, and the removal of existing trips associated with the existing high school and middle school.



Figure 19: High School & West Falls Church Economic Development Background Development
For conceptual purposes only.

Table 5: High School & West Falls Church Economic Development Background Development Site Trip Generation

ITE Land Use Code					------ Weekday ------						
					AM Peak Hour			PM Peak Hour			Daily
Trip Generation, 10th Ed.			Quantity		*In*	*Out*	*Total*	*In*	*Out*	*Total*	*Total*
Existing Development*											
High School	530	High School	800	students	222	125	346	91	82	173	1,725
Middle School	522	Middle/Jr High School	600	students	221	124	346	91	81	172	1,725
		Existing Trips			**443**	**249**	**692**	**182**	**163**	**345**	**3,450**
Proposed Development											
High School	530	High School	1,500	students	523	257	780	101	109	210	3,035
Middle School	522	Middle/Jr High School	600	students	188	160	348	50	52	102	1,427
Office	710	General Office Building	330,000	sf	290	47	337	57	297	354	3,378
		Mode Split/TDM Reduction	*35%*		*-102*	*-16*	*-118*	*-20*	*-104*	*-124*	*-1,182*
		Internal Reduction	*(1) (3)*		*-9*	*-4*	*-13*	*-4*	*-14*	*-18*	*-220*
Retail[A]	820	Shopping Center	134,000	sf	136	83	219	324	351	675	7,336
		Pass-By Reduction	*25%/34%/26%*		*-34*	*-21*	*-55*	*-110*	*-119*	*-230*	*-1,834*
		Internal Reduction	*(2) (3)*		*-9*	*-6*	*-15*	*-15*	*-18*	*-33*	*-607*
Residential	220	Multifamily	680	du	68	227	295	205	120	325	5,100
		Mode Split/TDM Reduction	*35%*		*-24*	*-79*	*-103*	*-72*	*-42*	*-114*	*-1,785*
		Internal Reduction	*(1) (2)*		*-4*	*-6*	*-10*	*-15*	*-12*	*-27*	*-607*
Assisted Living	252	Senior Living	225	du	16	29	45	31	25	56	879
		Mode Split/TDM Reduction	*35%*		*-6*	*-10*	*-16*	*-11*	*-9*	*-20*	*-308*
Hotel	310	Hotel	150	rooms	41	29	70	44	42	86	1,267
		Mode Split/TDM Reduction	35%		*-14*	*-10*	*-25*	*-15*	*-15*	*-30*	*-443*
		Internal Reduction	*(4)*		*-3*	*-2*	*-5*	*-3*	*-3*	*-6*	*-82*
Day Care	565	Day Care Center	10,000	sf	58	52	110	52	59	111	476
		Pass-By/Diverted Reduction	*55%*		*-32*	*-29*	*-61*	*-29*	*-32*	*-61*	*-262*
		Proposed Development Site Trips			**1,084**	**700**	**1,784**	**570**	**687**	**1,257**	**15,568**
		New Site Trips (Proposed - Existing)			**641**	**451**	**1,092**	**388**	**524**	**912**	**12,118**

**Based on Existing Counts*

A) The pass by reduction for the shopping center is based on the ITE Trip Generation methodology, as provided in the 10th Edition Handbook. The average rate for shopping centers is 34% for the PM Peak. For all other time periods, the default pass by rate is 25%.

B) The pass-by/diverted trip reduction for the day care is based on the ITE Trip Generation methodology, as provided in the 10th Edition Handbook

(1) residential / office - smaller of 5% of residential trips or 5% of office trips

(2) residential / retail - smaller of X% of residential trips or X% of retail trips; AM: X = 5%, PM: X = 10%, Daily: X = 15%

(3) office/ retail - smaller of 5% of office trips or 5% of retail trips

(4) hotel/office - use 15% of hotel/motel trips, unless the overall volume of the office traffic is more than the overall volume of hotel/motel traffic use in which case use the smaller of 10% of the hotel/motel traffic or the office traffic

Potential Roadway Improvement(s)

Two roadway improvements were considered as part of the study per the scoping meeting:

- *VDOT Route 7 Connector Ramp* (currently under construction as part of VDOT's Inside the Beltway initiative)
    - The purpose of the VDOT Route 7 Connector Ramp is to provide vehicles on eastbound I-66 direct access to the West Falls Church Metrorail station parking. In addition, the ramp would provide an alternative pathway for vehicles traveling from eastbound I-66 towards northeast Haycock Road (by passing the Route 7 Corridor).
    - This approved project will include the addition of signage and pavement markings that direct traffic and promote wayfinding. Additional wayfinding will be explored during the SESP process.
- *Route 7 and Chestnut Street Roadway Improvements*
    - With the construction of the High School & West Falls Church Economic Development site, it is anticipated that the intersection of Chestnut Street will be converted to a four-legged full-movement intersection with

the construction of Commons Drive, the shift in the terminus of Chestnut Street at Route 7, and the closure of a partial-movement driveway along the south frontage of Route 7.

- Commons Drive is anticipated to act as the background development's "main street" and would replace a partial-movement driveway associated with the existing high school site.
- As noted previously, a Signal Justification Report (SJR) pertaining to the modification to the intersection of Route 7 and Chestnut Street / "future" Commons Drive has been approved by VDOT.

Based on multiple meetings with the City, a few additional improvements were identified for inclusion in the future condition with respect to the construction of the High School & West Falls Church Economic Development site:

- *Haycock Road and Street C Improvements*
  - A traffic signal with designated pedestrian crossings is planned to be installed.
- *Haycock Road and Mustang Alley*
  - A traffic signal with designated pedestrian crossing is planned to be installed.
- *Route 7 Corridor*
  - Per the request of VDOT and FCDOT, a third northwestbound lane on Route 7 will be installed along the frontage of High School & West Falls Church Economic Development site. The lane will serve as a right turn lane for the background site but is ultimately intended to be used a third through lane.

A graphic showing the location of the Route 7 Connector Ramp was shown previously in Figure 7. The reroute of traffic volumes, pertaining to the Route 7 Connector Ramp, are illustrated in Figure 24 and in Figure 25. The proposed roadway improvements along Route 7 associated with High School & West Falls Church Economic Development site are illustrated in Figure 26. As noted, previously, a partial-movement private driveway will be closed off with the realignment of Chestnut Street. Traffic associated with the private driveway was rerouted to utilize relocated Chestnut Street in order to provide a conservative assessment of future conditions. The reroute of traffic volumes, pertaining to the modifications to Chestnut Street, are illustrated in Figure 27.

The lane configuration for the Future without Development (2030) scenario is shown in Figure 28 and in Figure 29.

Future (2030) without Development Traffic Volumes

The background projects and roadway improvements were combined together with the inherent growth on the network and the existing traffic volumes in order to generate future conditions without development (2030). The traffic volumes for the Future (2030) without Development scenario are presented in Figure 30 and in Figure 31.

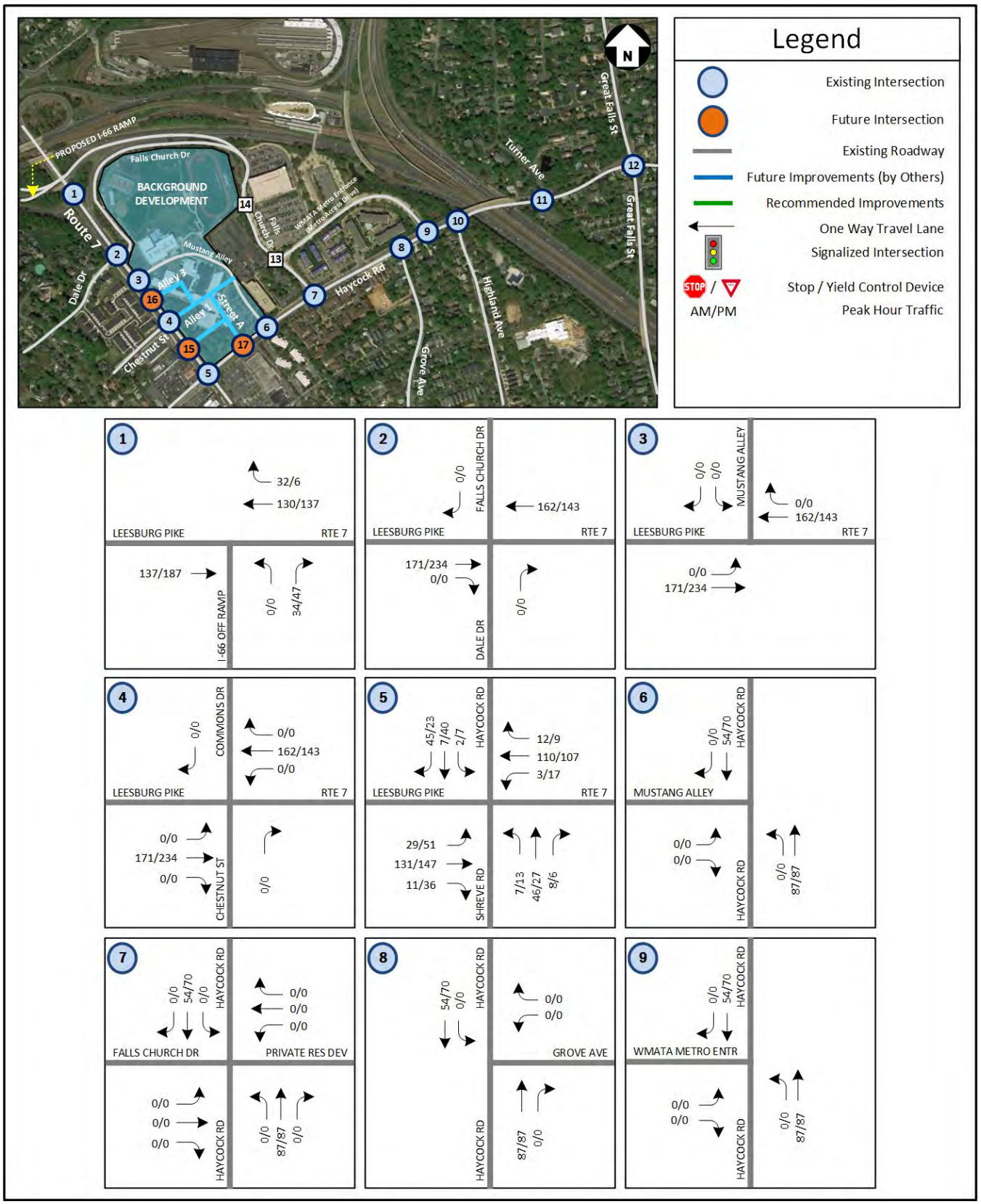


Figure 20: Inherent Growth (2019 to 2030) (1 of 2)

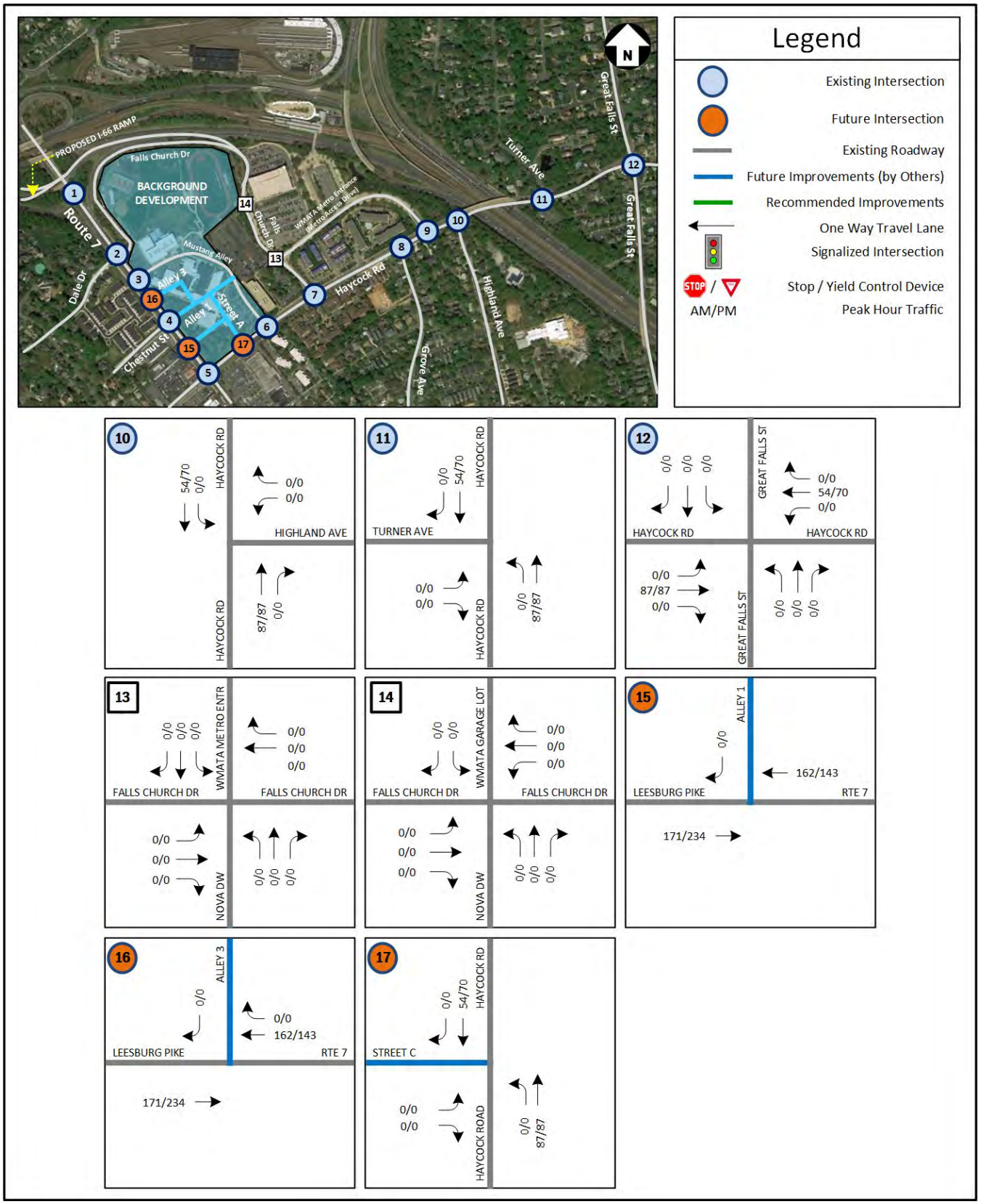


Figure 21: Inherent Growth (2019 to 2030) (2 of 2)

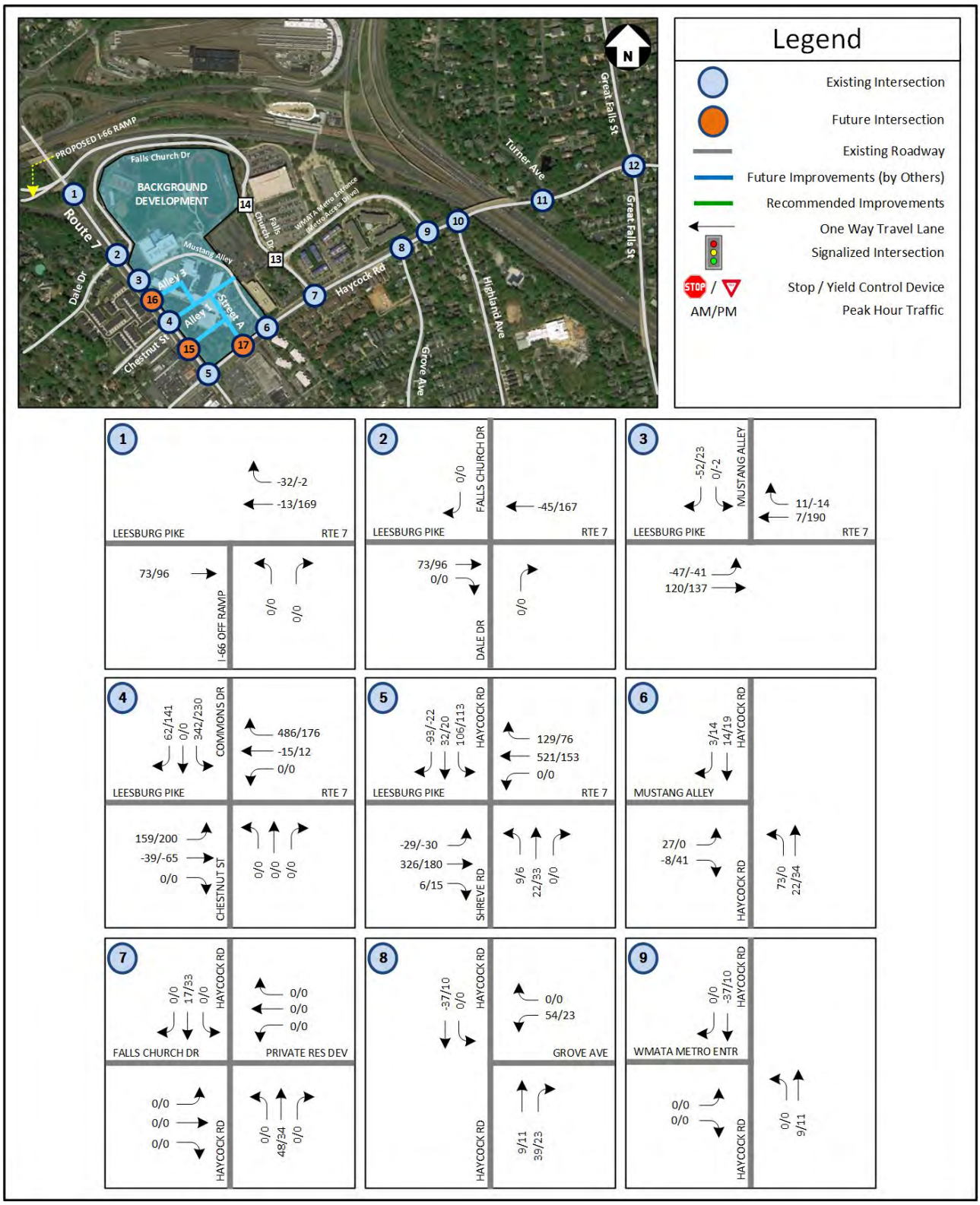


Figure 22: Background Development Traffic Volumes (1 of 2)

Note: The volumes above reflect a total of the subtraction of existing trips, addition of pass-by trips of the background development, and addition of new High School & West Falls Church Economic Development site trips, consistent with methodology of High School & West Falls Church Economic Development traffic study; therefore, volumes illustrated above may be shown as negative.

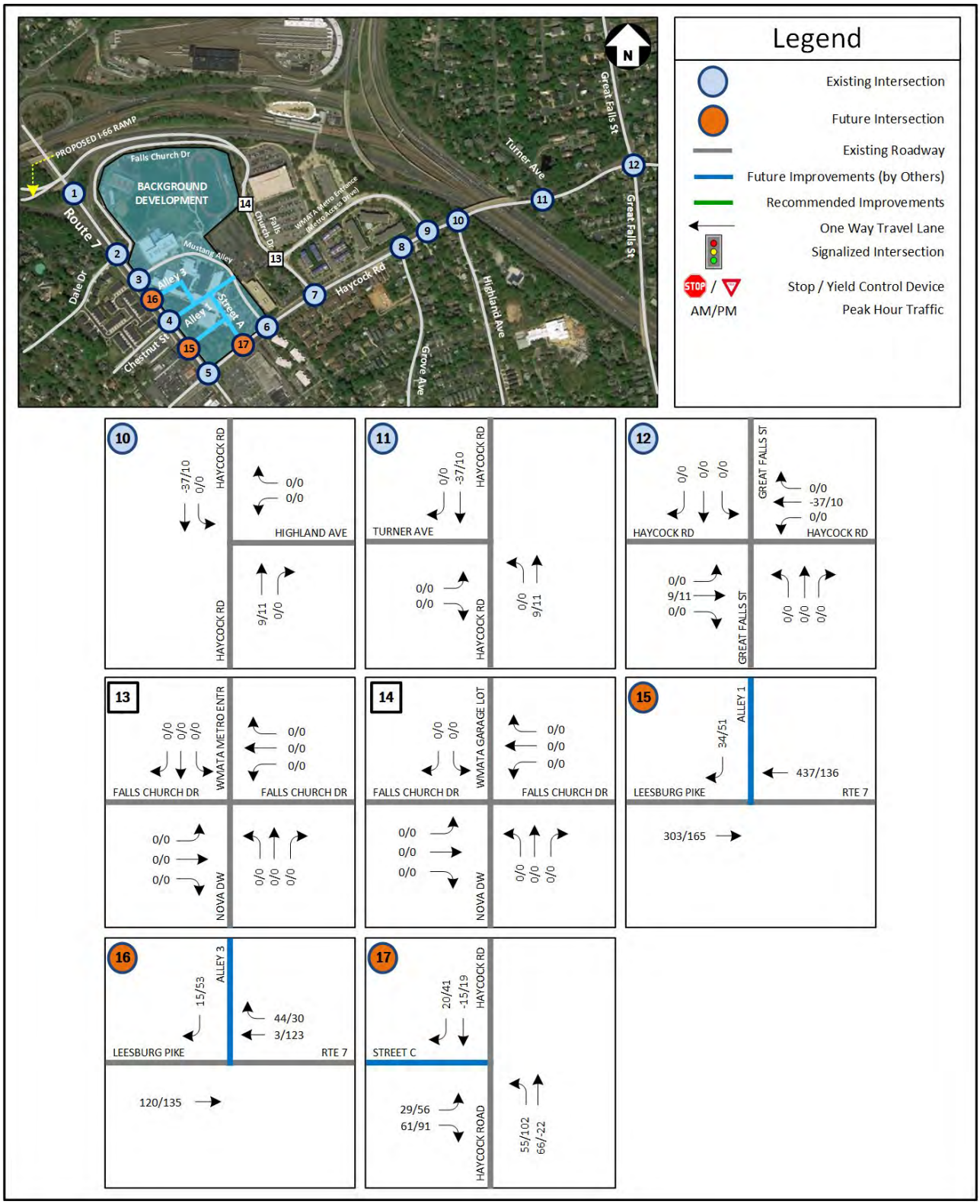


Figure 23: Background Development Traffic Volumes (2 of 2)

Note: The volumes above reflect a total of the subtraction of existing trips, addition of pass-by trips of the background development, and addition of new High School & West Falls Church Economic Development site trips, consistent with methodology of High School & West Falls Church Economic Development traffic study; therefore, volumes illustrated above may be shown as negative.

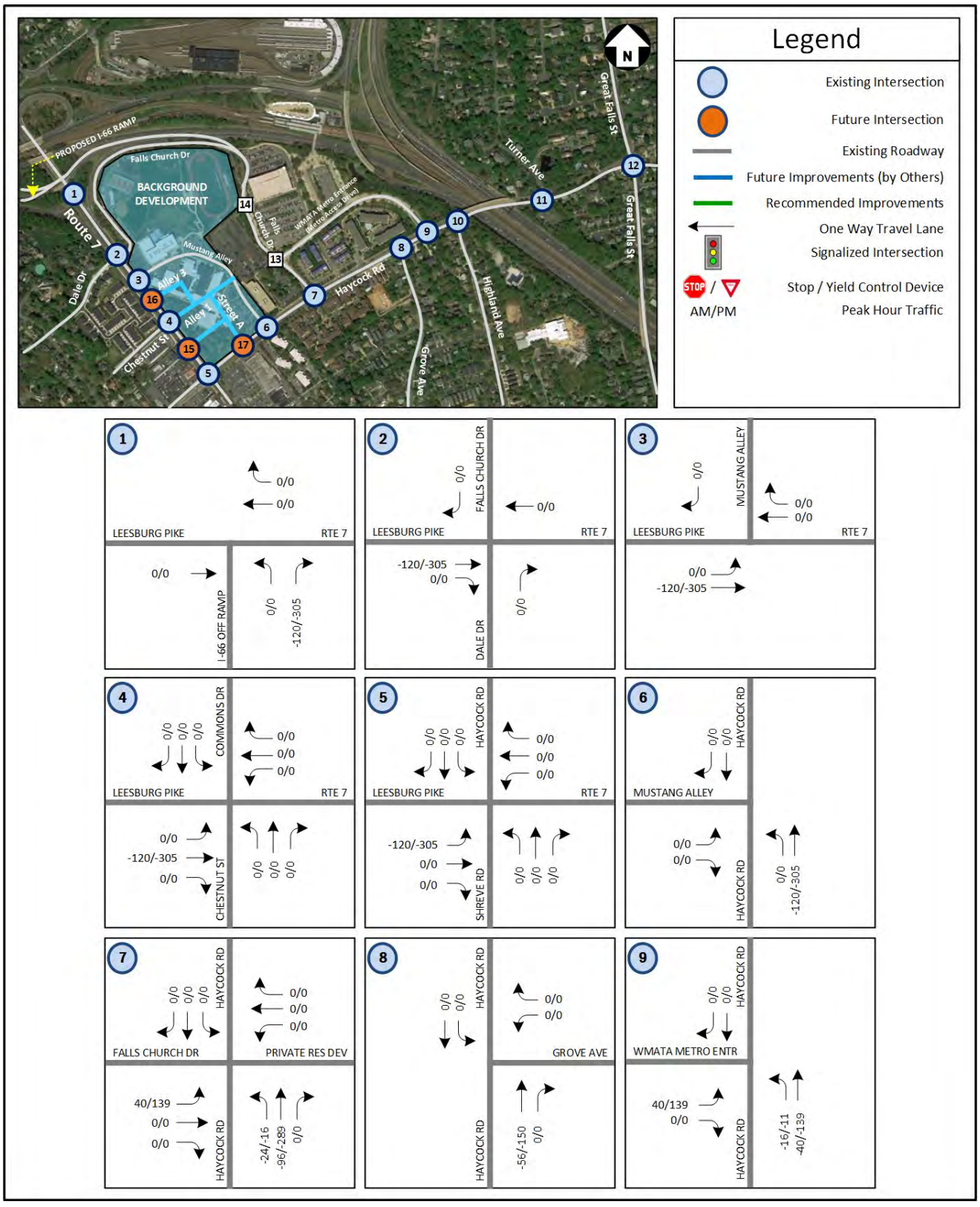


Figure 24: I-66 Ramp Rerouted Traffic Volumes (1 of 2)

Note: Methodology considered in rerouting the trips is per VDOT's Transform I-66: Inside the Beltway Route 7 Connector Ramp Modified Interchange Modification Report (IMR) (August 2017).

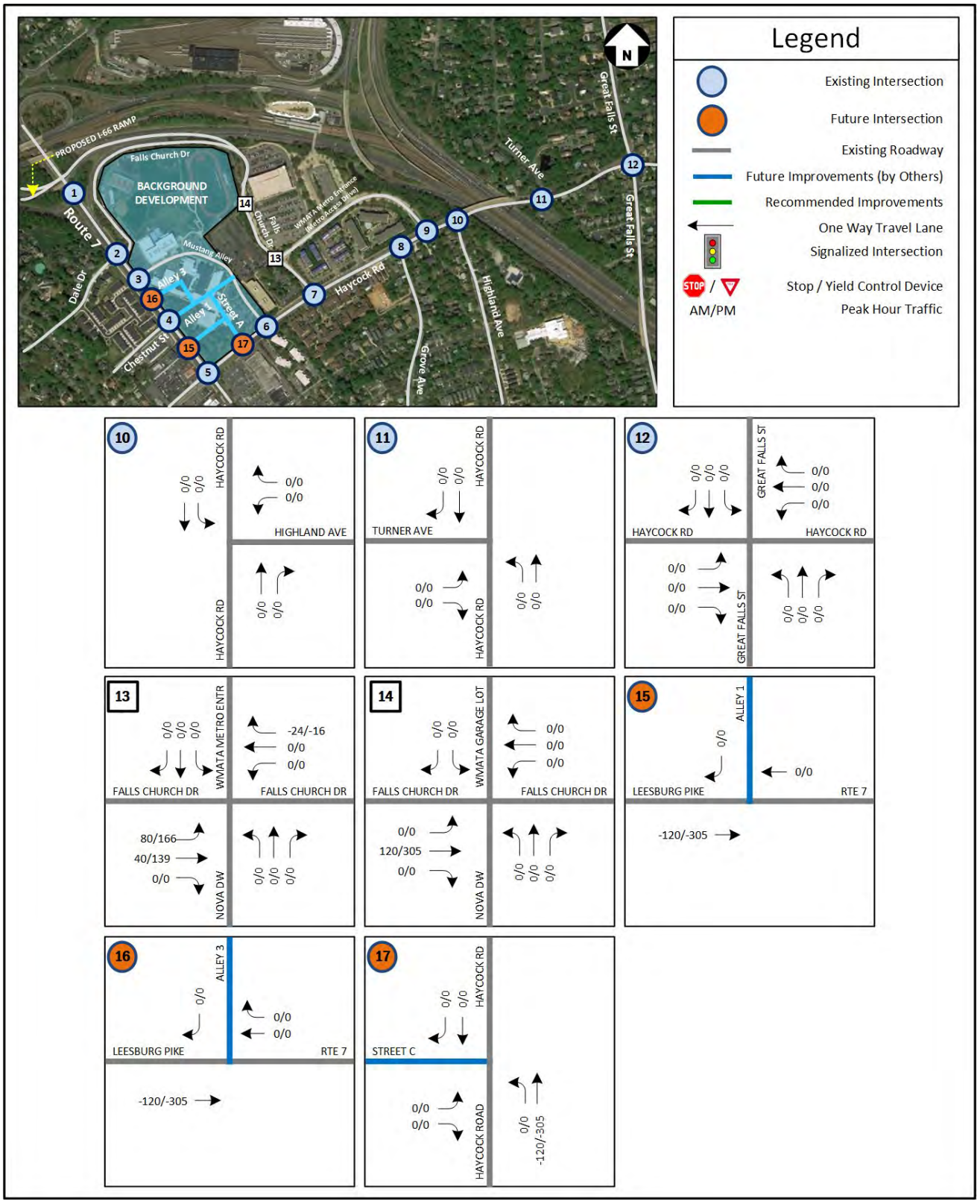


Figure 25: I-66 Ramp Rerouted Traffic Volumes (2 of 2)

Note: Methodology considered in rerouting the trips is per VDOT's Transform I-66: Inside the Beltway Route 7 Connector Ramp Modified Interchange Modification Report (IMR) (August 2017).

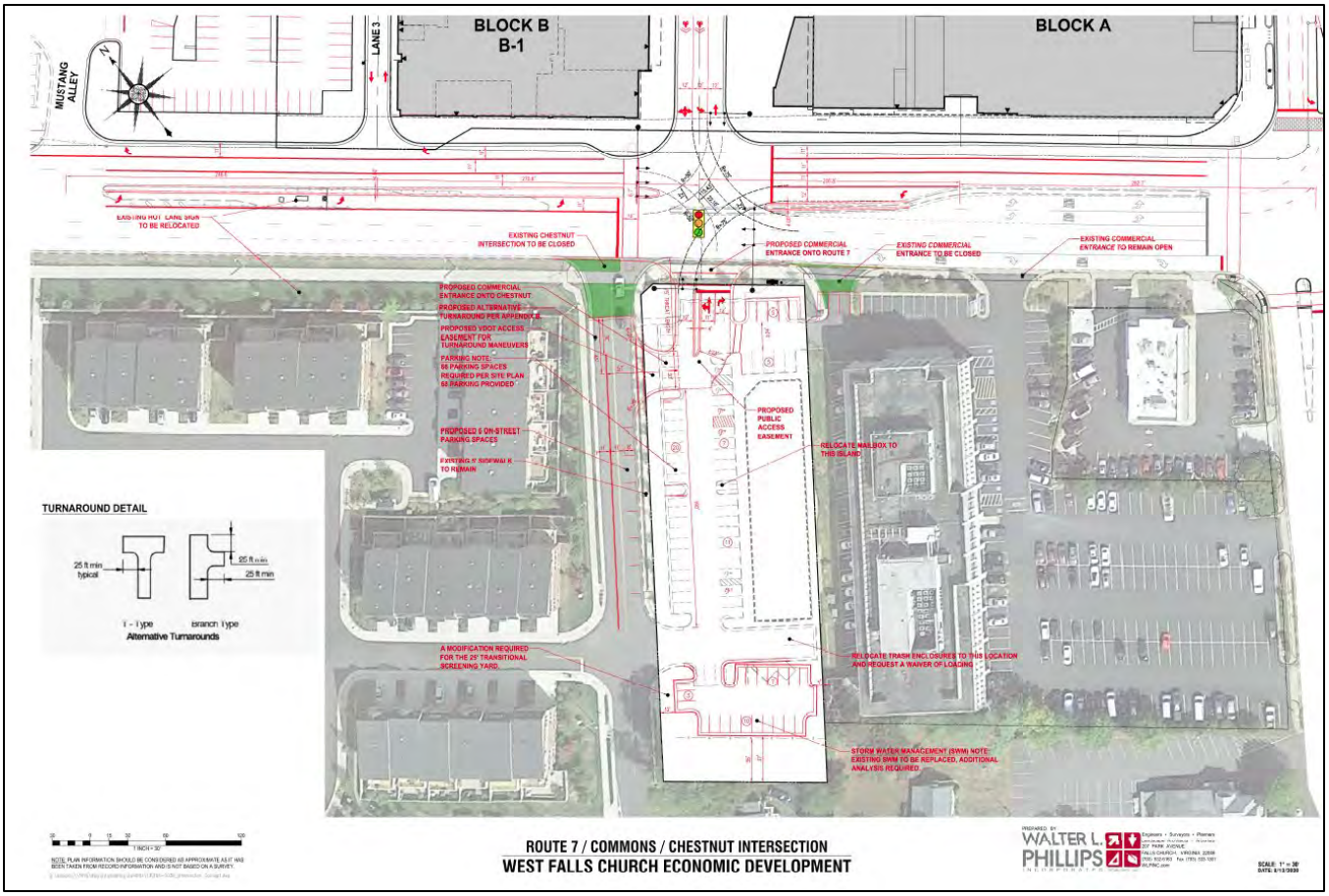


Figure 26: Route 7 Improvements Associated with The High School & West Falls Church Economic Development Site

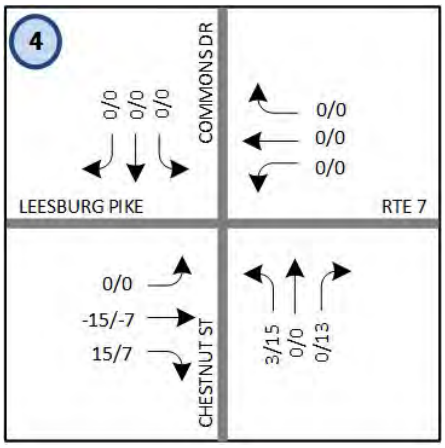


Figure 27: Chestnut Street Rerouted Traffic Volumes

Note: The reroute pertaining to the modification of Chestnut Street was based on the findings of the High School & West Falls Church Economic Development TIS.

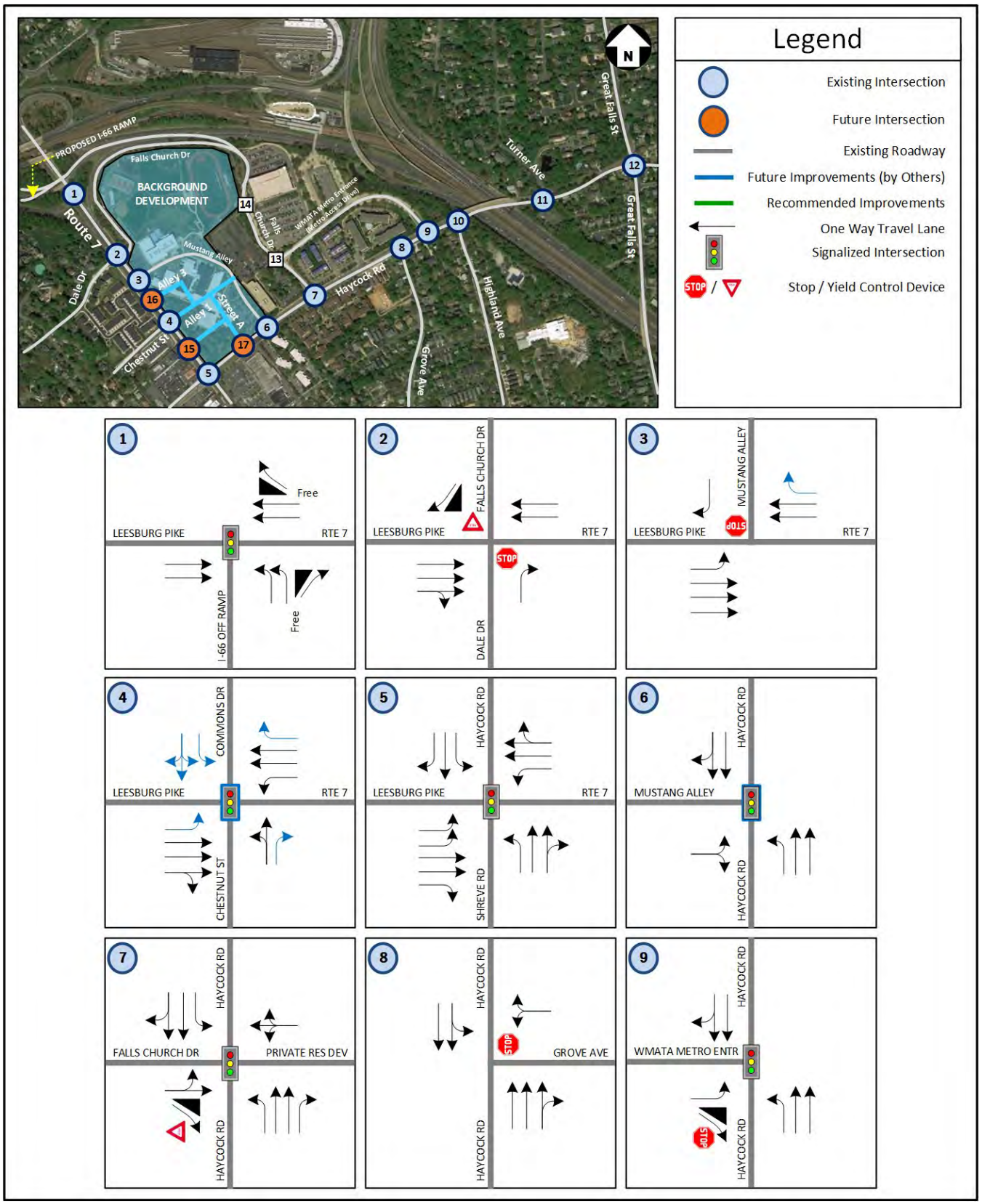


Figure 28: Future (2030) without Development Lane Configuration (1 of 2)

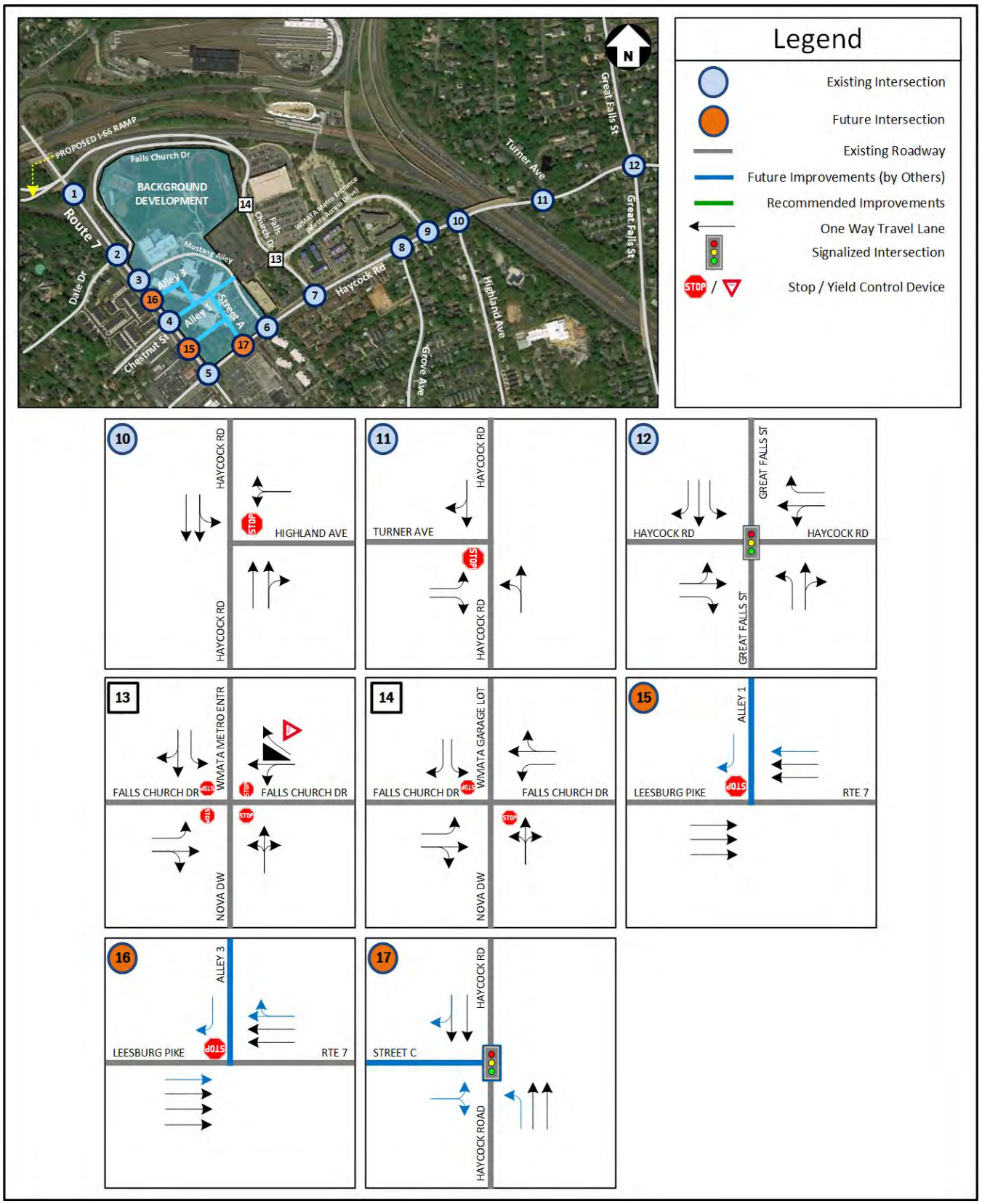


Figure 29: Future (2030) without Development Lane Configuration (2 of 2)



Figure 30: Future (2030) without Development Traffic Volumes (1 of 2)

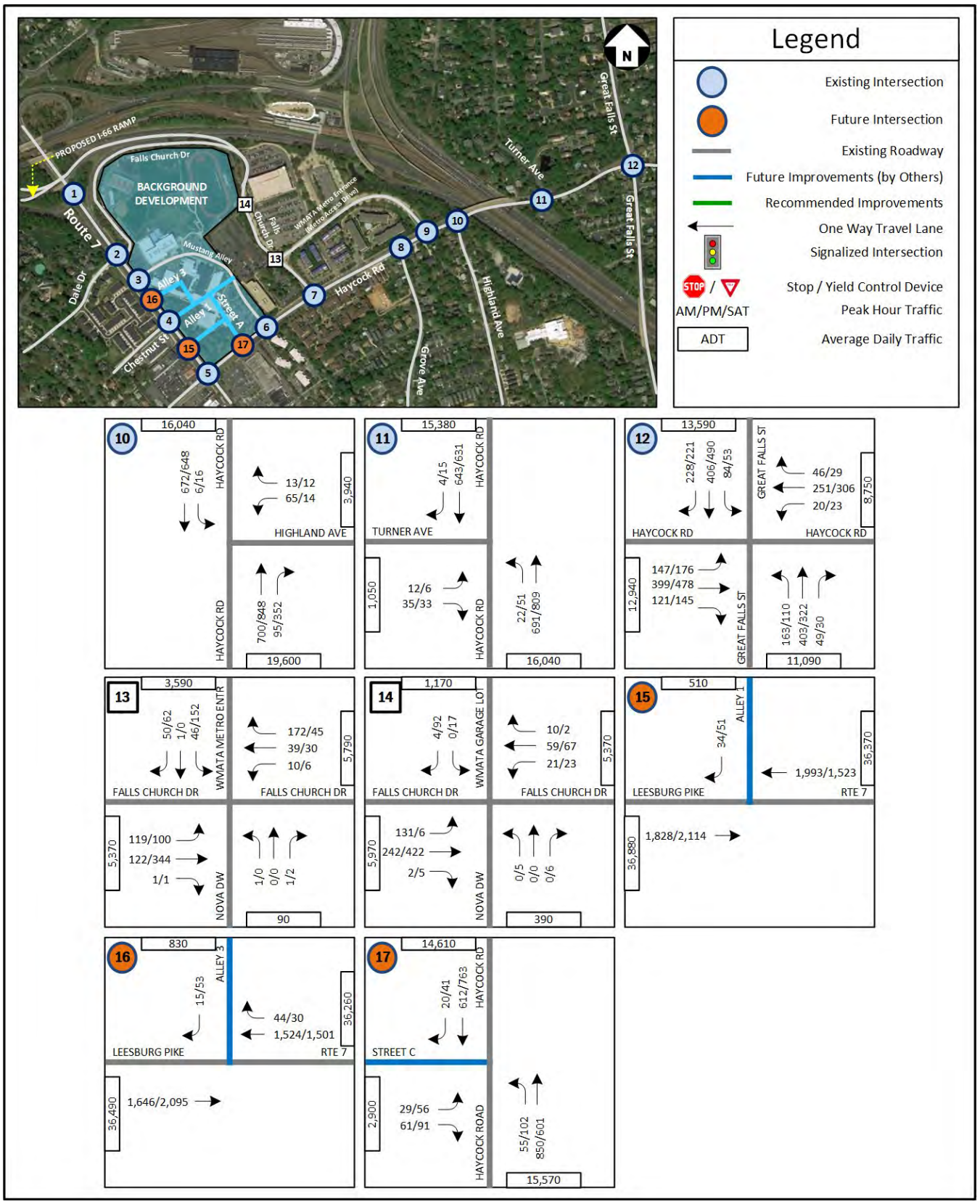


Figure 31: Future (2030) without Development Traffic Volumes (2 of 2)

Future Conditions without Development (2030) Intersection Capacity Analysis

Intersection capacity analyses were performed for the Future without Development (2030) scenario at the study area intersections during the weekday morning (AM) and afternoon peak (PM) peak hours. *Synchro,* version 10, was used to analyze the study intersections with results based on the Highway Capacity Manual (HCM) 2010 methodology and includes level of service (LOS), delay, and queue length comparisons for the turning movements analyzed.

The peak hour factors (by intersection) acquired from the traffic counts, with a minimum of 0.92, were used in the analysis of future conditions. Heavy vehicle percentages of major movements used in the analysis were based on the traffic counts conducted.

Per the scoping meeting between the VDOT, County, and City staff, it is desirable to strive for an overall intersection LOS of D or better for traffic operations using the HCM methodology. The results of the intersection capacity analyses from *Synchro* are presented in Table 6 and graphically in Figure 32 and in Figure 33. The results are expressed in LOS and delay (seconds per vehicles) for overall signalized intersections and per approach and lane group by intersection. The signalized intersections that operate overall at LOS E or F are shown in red. The 50th and 95th percentile queues were also determined from *Synchro* and are expressed in feet.

The detailed analysis worksheets of 2030 Future without Development Conditions are contained in Appendix F.

Table 6: 2030 Future Conditions without Development – Intersection Capacity Analysis Results

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour				PM Peak Hour			
			LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)	LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)
1	**Leesburg Pike (E/W) at I-66 Off-Ramp (N/S)**									
	Overall Intersection (Signalized)		**A**	**7.1**			**B**	**13.6**		
	Eastbound Approach		***A***	***5.1***			***B***	***12.1***		
	Eastbound Thru		A	5.1	171	247	B	12.1	371	548
	Westbound Approach		***A***	***5.8***			***A***	***6.7***		
	Westbound Thru		A	5.8	422	25	A	6.7	479	117
	Northbound Approach		***D***	***46.6***			***D***	***46.0***		
	Northbound Left	220	D	46.6	44	73	D	46.0	145	188
2	**Leesburg Pike (E/W) at Dale Dr./ Falls Church Dr. (N/S)** **Overall Intersection (Unsignalized)**									
	Northbound Approach		***C***	***21.2***			***D***	***28.2***		
	Northbound Right		C	21.2		5	D	28.2		5
3	**Leesburg Pike (E/W) at Mustang Alley (School Entr.) (N/S)** **Overall Intersection (Unsignalized)**									
	Eastbound Approach									
	Eastbound Left	140	B	14.1		3	B	13.9		0
	Southbound Approach		***C***	***16.7***			***C***	***16.1***		
	Southbound Left/Right		C	16.7		3	C	16.1		0

NOTES:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.

[2] $: Delays (reported from Synchro) exceed 300 seconds in TWSC.

[3] #: 95th percentile queues (reported from Synchro) exceed capacity; actual queues may be longer. Queues shown are based on the maximum after two cycles.

[4] m: 95th percentile volume and queues (reported from Synchro) are metered by upstream signal.

Table 6: 2030 Future Conditions without Development – Intersection Capacity Analysis Results (Continued)

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour				PM Peak Hour			
			LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)	LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)
4	**Leesburg Pike (E/W) at Chestnut St./ Grace Community Church Entr. (N/S)**									
	Overall Intersection (Signalized)		**D**	**37.9**			**D**	**40.1**		
	Eastbound Approach		***C***	***34.5***			***C***	***34.4***		
	Eastbound Left	405	F	100.8	~162	#300	E	67.0	138	m#254
	Eastbound Thru/Right		C	27.4	242	457	C	30.9	428	#571
	Westbound Approach		***D***	***39.5***			***D***	***46.9***		
	Westbound Left	180	D	52.6	13	m14	A	0	0	0
	Westbound Thru		D	43.6	471	m#1230	D	48.2	421	#985
	Westbound Right		C	27.9	124	m172	D	37.0	19	m59
	Northbound Approach		***E***	***58.9***			***D***	***50.7***		
	Northbound Left/Thru		E	61.7	13	39	E	57.6	10	34
	Northbound Right		D	47.7	0	0	D	47.4	0	0
	Southbound Approach		***D***	***42.1***			***D***	***42.0***		
	Southbound Left		D	47.8	149	214	D	46.9	136	195
	Southbound Left/Right		D	36.1	0	43	D	36.7	0	27
5	**Leesburg Pike (E/W) at Shreve Rd./ Haycock Rd. (N/S)**									
	Overall Intersection (Signalized)		**E**	**75.5**			**E**	**68.3**		
	Eastbound Approach		***E***	***59.9***			***E***	***69.0***		
	Eastbound Left	250	F	408.4	~139	#221	F	174.8	~126	#214
	Eastbound Thru		C	33.0	1117	692	E	66.9	~1305	#1435
	Eastbound Right		C	29.7	19	73	C	32.3	213	285
	Westbound Approach		***D***	***44.9***			***E***	***61.2***		
	Westbound Left	225	F	102.0	40	82	F	166.6	~245	#428
	Westbound Thru/Right		D	44.0	1214	1340	D	48.4	899	1011
	Northbound Approach		***F***	***181.2***			***E***	***79.7***		
	Northbound Left	115	E	71.6	81	134	F	104.0	135	#262
	Northbound Thru/Right		F	195.7	~494	#627	E	70.4	231	287
	Southbound Approach		***F***	***110.3***			***E***	***73.2***		
	Southbound Left	295	F	85.8	137	#244	D	47.3	167	221
	Southbound Thru		E	66.3	138	215	F	93.1	591	#777
	Southbound Right		F	132.9	194	#592	E	56.4	86	143
6	**Haycock Rd. (N/S) at Mustang Alley (E/W)**									
	Overall Intersection (Signalized)		**C**	**23.4**			**B**	**18.0**		
	Eastbound Approach		***D***	***52.8***			***D***	***52.3***		
	Eastbound Left/Right		D	52.8	58	122	D	52.3	75	141
	Northbound Approach		***A***	***1.9***			***A***	***0.8***		
	Northbound Left	110	A	9.0	19	53	A	7.9	2	5
	Northbound Thru		A	0.3	44	102	A	0.2	14	22
	Southbound Approach		***D***	***45.2***			***C***	***24.7***		
	Southbound Thru		D	45.1	155	233	C	24.7	18	246
	Southbound Thru/Right		D	45.3	155	233	C	24.7	18	246
7	**Haycock Rd. (N/S) at Falls Church Dr. (E/W)**									
	Overall Intersection (Signalized)		**B**	**11.0**			**C**	**27.4**		
	Eastbound Approach		***D***	***43.2***			***E***	***75.1***		
	Eastbound Left/Thru		D	46.3	62	108	F	97.8	~259	#439
	Eastbound Right	75	D	39.8	0	0	C	31.5	43	105
	Westbound Approach		***D***	***40.0***			***C***	***29.3***		
	Westbound Left/Thru/Right		D	40.0	8	32	C	29.3	6	27
	Northbound Approach		***A***	***4.8***			***A***	***8.9***		
	Northbound Left	205	A	4.2	19	64	A	7.1	9	22
	Northbound Thru		A	4.9	28	214	A	9.0	48	100
	Northbound Right	290	A	5.9	0	m0	B	11.8	0	0
	Southbound Approach		***A***	***8.8***			***A***	***9.4***		
	Southbound Left	125	A	8.7	0	m1	A	5.0	1	m3
	Southbound Thru/Right		A	8.8	67	100	A	9.5	143	42
8	**Haycock Rd. (N/S) at Grove Ave. (E/W)**									
	Overall Intersection (Unsignalized)									
	Westbound Approach		***E***	***46.5***			***F***	***78.2***		
	Westbound Left/Right		E	46.5		133	F	78.2		115
	Southbound Approach									
	Southbound Left		B	12.5		5	C	17.7		30

NOTES:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.

[2] $: Delays (reported from Synchro) exceed 300 seconds in TWSC.

[3] #: 95th percentile queues (reported from Synchro) exceed capacity; actual queues may be longer. Queues shown are based on the maximum after two cycles.

[4] m: 95th percentile volume and queues (reported from Synchro) are metered by upstream signal.

Table 6: 2030 Future Conditions without Development – Intersection Capacity Analysis Results (Continued)

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour				PM Peak Hour			
			LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)	LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)
9	**Haycock Rd. (N/S) at WMATA Metro Entr. (E/W)**									
	Overall Intersection (Signalized)		**A**	**6.4**			**C**	**21.5**		
	Eastbound Approach		***D***	***51.7***			***E***	***59.0***		
	Eastbound Left		D	51.7	69	120	E	59.0	217	#335
	Eastbound Right	125	A	0.0	0	21	A	0.0	5	35
	Northbound Approach		***A***	***0.3***			***B***	***15.5***		
	Northbound Left		A	3.8	4	15	A	8.5	2	m4
	Northbound Thru		A	0.2	78	190	B	15.5	157	m177
	Southbound Approach		***A***	***6.2***			***B***	***11.8***		
	Southbound Thru		A	6.2	54	144	B	11.8	104	196
	Southbound Thru/Right		A	6.3	54	144	B	11.8	104	196
10	**Haycock Rd. (N/S) at Highland Ave. (E/W)**									
	Overall Intersection (Unsignalized)									
	Westbound Approach		***D***	***33.5***			***D***	***29.7***		
	Westbound Left/Right		D	33.5		45	D	29.7		15
	Southbound Approach									
	Southbound Left		A	9.6		0	B	11.7		3
11	**Haycock Rd. (N/S) at Turner Ave. (E/W)**									
	Overall Intersection (Unsignalized)									
	Eastbound Approach		***C***	***19.5***			***C***	***17.1***		
	Eastbound Left		E	35.8		8	E	39.3		5
	Eastbound Right	60	B	13.9		8	B	13.1		5
	Northbound Approach									
	Northbound Left		A	9.2		3	A	9		5
12	**Haycock Rd. (N/S) at Great Falls St. (E/W)**									
	Overall Intersection (Signalized)		**D**	**49.9**			**E**	**67.9**		
	Eastbound Approach		***C***	***33.7***			***F***	***112.3***		
	Eastbound Left/Thru		D	36.8	502	731	F	132.0	~835	#1293
	Eastbound Right	75	B	19.6	31	73	C	23.7	48	117
	Westbound Approach		***C***	***21.5***			***C***	***29.7***		
	Westbound Left/Thru		C	21.9	173	257	C	30.4	246	435
	Westbound Right	75	B	18.6	0	0	C	22.1	0	0
	Northbound Approach		***E***	***69.0***			***D***	***42.6***		
	Northbound Left	180	D	52.6	124	#191	D	38.1	73	115
	Northbound Thru/Right		E	75.0	489	#692	D	44.1	315	426
	Southbound Approach		***E***	***61.2***			***D***	***54.6***		
	Southbound Left	380	D	44.2	61	102	D	35.1	34	61
	Southbound Thru		E	72.1	444	583	E	62.7	503	666
	Southbound Right	225	D	48.3	62	148	D	41.5	65	143
13	**Falls Church Dr. (E/W) at Nova Drwy. / WMATA Metro Entr. (N/S)**									
	Overall Intersection (Unsignalized)		**A**	**9.5**			**B**	**12**		
	Eastbound Approach		***A***	***9.5***			***B***	***13.1***		
	Eastbound Left		B	10.2		20	B	10.1		15
	Eastbound Thru/Right		A	8.9		18	B	14		80
	Westbound Approach		***A***	***9.8***			***A***	***9.3***		
	Westbound Left/Thru/Right		A	9.8		33	A	9.3		10
	Northbound Approach		***A***	***8.7***			***A***	***8.8***		
	Northbound Left/Thru/Right		A	8.7		0	A	8.8		0
	Southbound Approach		***A***	***8.9***			***B***	***10.8***		
	Southbound Left		A	9.6		8	B	11.8		30
	Southbound Thru/Right		A	8.2		5	A	8.5		8

NOTES:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.

[2] $: Delays (reported from Synchro) exceed 300 seconds in TWSC.

[3] #: 95th percentile queues (reported from Synchro) exceed capacity; actual queues may be longer. Queues shown are based on the maximum after two cycles.

[4] m: 95th percentile volume and queues (reported from Synchro) are metered by upstream signal.

Table 6: 2030 Future Conditions without Development – Intersection Capacity Analysis Results (Continued)

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour				PM Peak Hour			
			LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)	LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)
14	**Falls Church Dr. (E/W) at Nova Drwy. / WMATA Park&Ride Garage Entr. (N/S)**									
	Overall Intersection (Unsignalized)									
	Eastbound Approach									
	Eastbound Left		A	7.6		8	A	7.3		0
	Westbound Approach									
	Westbound Left	230	A	7.8		3	A	8.3		3
	Northbound Approach		***A***	***0***			***B***	***13***		
	Northbound Left/Thru/Right		A	0		0	B	13		3
	Southbound Approach		***A***	***8.6***			***A***	***9.8***		
	Southbound Left		A	0		0	B	14		3
	Southbound Right		A	8.6		0	A	9		8
15	**Leesburg Pike (E/W) at Alley 1 (N/S)**									
	Overall Intersection (Unsignalized)									
	Southbound Approach		***D***	***29.6***			***C***	***19.6***		
	Southbound Right		D	29.6		18	C	19.6		15
16	**Leesburg Pike (E/W) at Alley 3 (N/S)**									
	Overall Intersection (Unsignalized)									
	Southbound Approach		***B***	***10.8***			***B***	***10.7***		
	Southbound Right		B	10.8		2	B	10.7		7
17	**Haycock Road (N/S) at Street C (E/W)**									
	Overall Intersection (Signalized)		**A**	**9.6**			**A**	**7.1**		
	Eastbound Approach		***E***	***57.9***			***D***	***53.8***		
	Eastbound Left/Right		E	57.9	21	70	D	53.8	52	114
	Northbound Approach		***A***	***3.5***			***A***	***4.4***		
	Northbound Left	150	A	8.0	7	m7	A	5.2	40	m56
	Northbound Thru		A	3.2	91	m84	A	4.2	134	m157
	Southbound Approach		***B***	***11.4***			***A***	***1.0***		
	Southbound Thru		B	11.5	31	45	A	1.0	50	75
	Southbound Thru/Right		B	11.4	31	45	A	0.9	50	75

NOTES:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.

[2] $: Delays (reported from Synchro) exceed 300 seconds in TWSC.

[3] #: 95th percentile queues (reported from Synchro) exceed capacity; actual queues may be longer. Queues shown are based on the maximum after two cycles.

[4] m: 95th percentile volume and queues (reported from Synchro) are metered by upstream signal.

Per the scoping meeting between the VDOT, County, and City staff, it is desirable to strive for an overall intersection LOS of D or better for traffic operations using the HCM methodology.

The capacity analysis results indicate that all intersections operate at an overall acceptable LOS under 2030 future conditions without development conditions with the exception of the Leesburg Pike and Haycock Road intersection and the Haycock Road and Great Falls Street intersection. The intersection of the Leesburg Pike and Haycock Road is anticipated to continue to operate at an overall unacceptable level of service during both peak hours. The intersection of Haycock Road and Great Falls Street begins to operate at an overall unacceptable level of service during the PM peak hour.

The results of the intersection capacity analyses for the future conditions without development are illustrated in Figure 32 and in Figure 33.

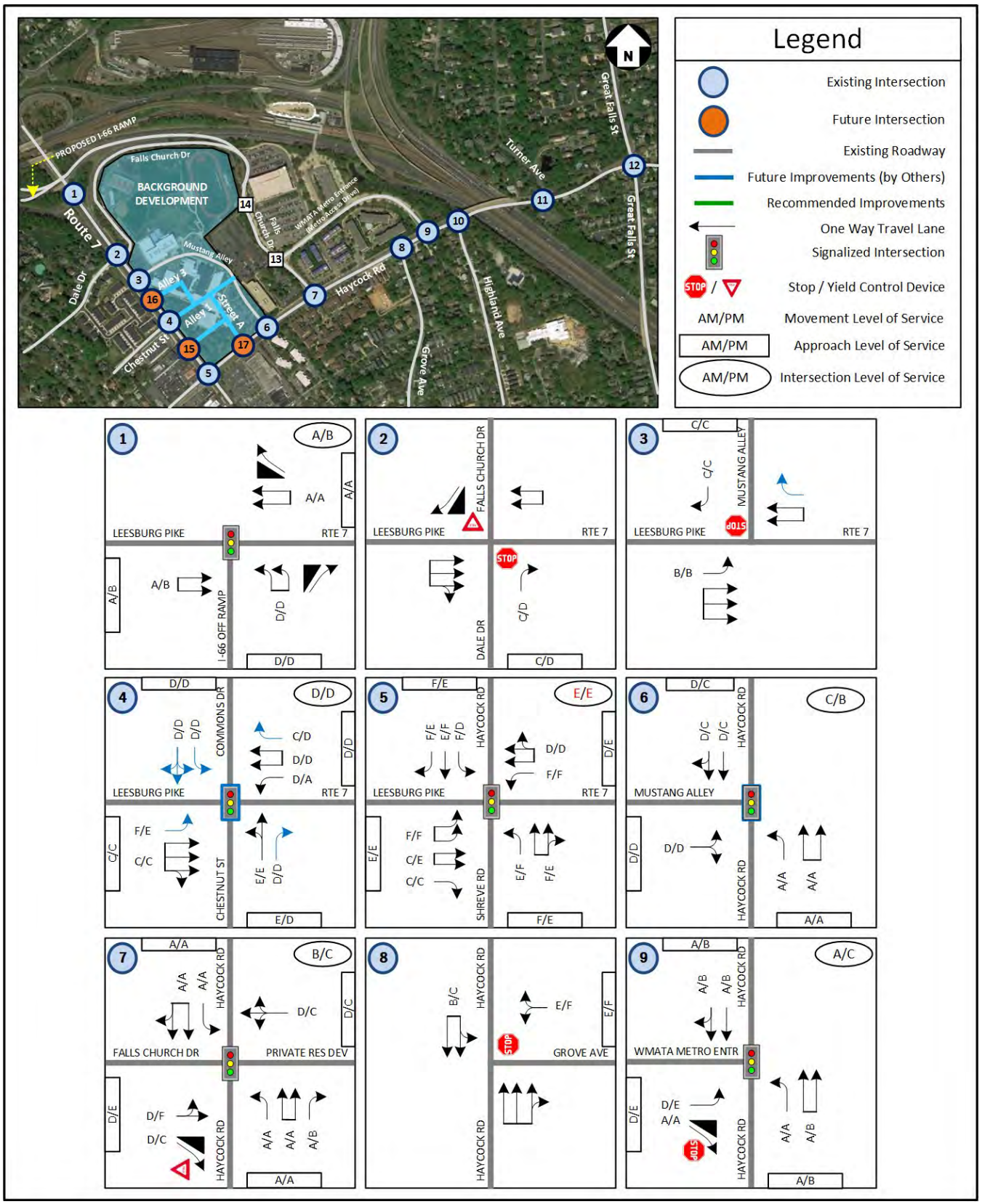


Figure 32: 2030 Future Conditions without Development – Levels of Service Results (1 of 2)

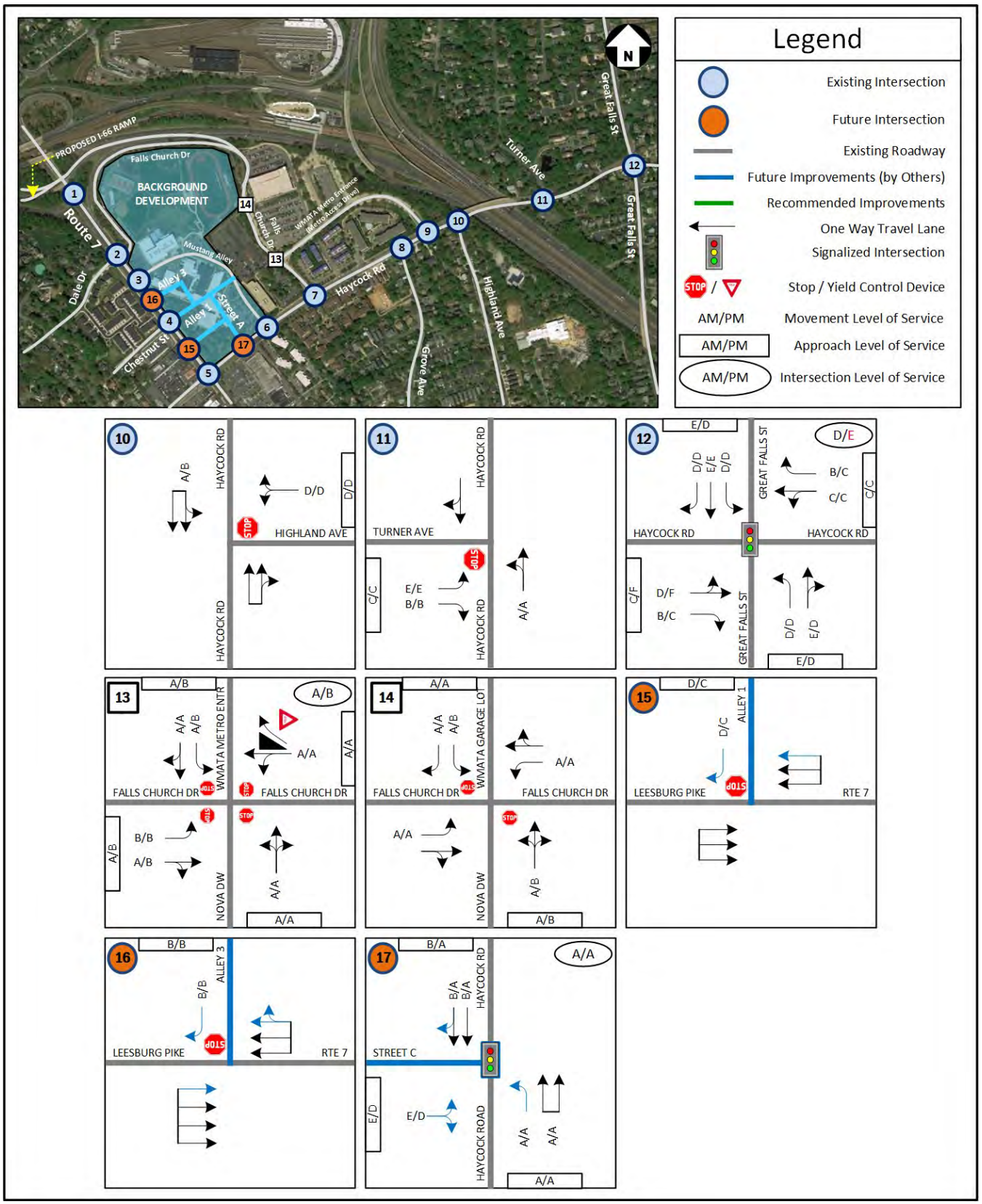


Figure 33: 2030 Future Conditions without Development – Levels of Service Results (2 of 2)

FUTURE BACKGROUND WITH CURRENT COMPREHENSIVE PLAN DEVELOPMENT CONDITIONS (2030)

Based on comments received by the County, the future conditions with the development of the proposed property under the existing *Comprehensive Plan* was analyzed. It was assumed that the WMATA and VT sites could develop approximately 962 multi-family residential units and 240 kSF of institutional uses under the current *Comprehensive Plan*. Of note, the current *Comprehensive Plan* allows for an alternative mixed-use development on the VT site that would replace the 240 kSF of institutional uses for 130 DU and 43.8 kSF of commercial. For the proposes of this analysis, it was assumed the developments would be redeveloped subject to the current *Comprehensive Plan* (with institutional use on the VT site). The "future background" development program was projected to be completed and in operation by 2030 in order to provide consistent comparison to both future without and with development conditions.

Site Description

The WMATA West Falls Church metro development (to be referred to in this study as the "WMATA site") will be reconstructed and is projected to consist of approximately 130 kSF of office space, 10 kSF of retail space, and 865 residential dwelling units (DU). The VT site is projected to consist of an additional 181 kSF of office space, 18 kSF of retail space, 440 residential DU, and 160 kSF of institutional uses. Combined, the site is anticipated to ultimately consist of 311 kSF of office space, 28 kSF of retail space, 1,305 residential DU, and 160 kSF of institutional uses.

Under the current *Comprehensive Plan* for Fairfax County, the WMATA and VT sites was considered to develop with approximately 962 multi-family residential units and 240 kSF of institutional uses.

Site Access

Primary site access will be provided via the access roads along the West Falls Church Metrorail Station roadway and Falls Church Drive. With the construction of the High School & West Falls Church Economic Development site to the southwest, additional access points to the development along Route 7 will be provided.

Two roadway improvements were considered as part of the study per the scoping meeting and would influence access to the site:

- *VDOT Route 7 Connector Ramp* (currently under construction as part of VDOT's Inside the Beltway initiative)
    - The purpose of the VDOT Route 7 Connector Ramp is to provide vehicles on eastbound I-66 direct access to the West Falls Church Metrorail station parking. In addition, the ramp would provide an alternative pathway for vehicles traveling from eastbound I-66 towards northeast Haycock Road (by passing the Route 7 Corridor).
    - This approved project will include the addition of signage and pavement markings that direct traffic and promote wayfinding. Additional wayfinding will be explored during the SESP process.
- *Route 7 and Chestnut Street Roadway Improvements*
    - With the construction of the High School & West Falls Church Economic Development site, it is anticipated that the intersection of Chestnut Street will be converted to a four-legged full-movement intersection with the construction of Commons Drive, the shift in the terminus of Chestnut Street at Route 7, and the closure of a partial-movement driveway along the south frontage of Route 7.

- Commons Drive is anticipated to act as the background development's "main street" and would replace a partial-movement driveway associated with the existing high school site.
- As noted previously, a Signal Justification Report (SJR) pertaining to the modification to the intersection of Route 7 and Chestnut Street / "future" Commons Drive has been submitted to VDOT, the City of Falls Church, and Fairfax County for review in tandem with a revised traffic study for the High School & West Falls Church Economic Development site.

Based on multiple meetings with the City, a few additional improvements were identified for inclusion in the future condition with respect to the construction of the High School & West Falls Church Economic Development site:

- *Haycock Road and Street C Improvements*
  - A traffic signal with designated pedestrian crossings is planned to be installed.
- *Haycock Road and Mustang Alley*
  - A traffic signal with designated pedestrian crossing is planned to be installed.
- *Route 7 Corridor*
  - Per the request of VDOT and FCDOT, a third northwestbound lane on Route 7 will be installed along the frontage of High School & West Falls Church Economic Development site. The lane will serve as a right turn lane for the background site but is ultimately intended to be used a third through lane.

A graphic showing the location of the Route 7 Connector Ramp was shown previously in Figure 7. The reroute of traffic volumes, pertaining to the Route 7 Connector Ramp, are illustrated in Figure 24 and in Figure 25. The proposed roadway improvements along Route 7 associated with High School & West Falls Church Economic Development site are illustrated in Figure 26. As noted, previously, a partial-movement private driveway will be closed off with the realignment of Chestnut Street. Traffic associated with the private driveway was rerouted to utilize relocated Chestnut Street in order to provide a conservative assessment of future conditions. The reroute of traffic volumes, pertaining to the modifications to Chestnut Street, are illustrated in Figure 27.

The lane configuration for the 2030 Future Background with Current Comprehensive Plan Development Conditions would be identical to the Future without Development (2030) scenario and is illustrated in Figure 28 and in Figure 29.

Current Comprehensive Plan Site Trip Generation

In order to calculate the trips generated by the development under future background current comprehensive plan conditions, the Institute of Transportation Engineer's (ITE's) Trip Generation Manual, 10th Edition publication, was used in order to determine the trips going into and out of the study site during the AM and PM peak hours, as well as, the typical number of weekday daily trips associated with the site.

The current comprehensive plan development's site trip generation is illustrated in Table 7.

As illustrated in Table 7 and as agreed to during the scoping meeting for this study, a TDM/mode split reduction of 45% was applied, consistent with Fairfax County trip reduction goals and other studies in the area. A 45% mode split reduction is justified given the sufficient sidewalk access surrounding the site and connecting the site to the West Falls Church Metrorail station.

Of note, though internal trip reductions and pass-by trip reductions were assumed under 2030 future with development conditions (as discussed in subsequent sections of this report), these reductions were not applied in Table 7. The internal reductions were not applied due to the lack of synergy between the residential and institutional uses. Similarly, pass-by reductions were not applied due to lack of anticipated retail development under current comprehensive plan conditions.

Table 7: Current Comprehensive Plan Site Trip Generation

			------ Weekday ------						
ITE Land Use Code			**AM Peak Hour**			**PM Peak Hour**			**Daily**
Trip Generation, 10th Ed.		**Quantity**	*In*	*Out*	*Total*	*In*	*Out*	*Total*	*Total*
Residential	221 Multifamily (Mid-Rise)	962 DU	82	233	315	237	152	389	5,241
Mode Split/TDM Reduction	*45% AM/PM/Daily*		*-37*	*-105*	*-142*	*-107*	*-68*	*-175*	*-2,358*
Residntial Subtotal			**45**	**128**	**173**	**130**	**84**	**214**	**2,883**
Academic	540 Junior /Community College	240 kSF	435	130	565	223	223	446	4,860
Mode Split/TDM Reduction	*45% AM/PM/Daily*		*-196*	*-59*	*-254*	*-100*	*-100*	*-201*	*-2,187*
Academic Subtotal			**239**	**72**	**311**	**123**	**123**	**245**	**2,673**
By-Right Site Trips with Reductions			**284**	**200**	**484**	**253**	**206**	**459**	**5,556**

The current comprehensive plan development of the site is anticipated to generate approximately 484 additional trips in the AM peak hour, 459 additional trips in the PM peak hour, and 5,556 daily trips after TDM reductions.

Current Comprehensive Plan Site Trip Distribution and Assignment

The distribution and assignment of the current comprehensive plan site generated trips was based on the existing and anticipated traffic patterns, engineering judgement, and the nature of the current comprehensive plan development. The current comprehensive plan trips were assigned based on the peak hour direction of approaches approved for the 2030 future with development conditions. The direction of approach are discussed in further detail in subsequent sections of this report and are illustrated in Figure 43 and in Figure 44 for the AM and PM peak hours, respectively.

Using the direction of approaches for the AM and PM peak hours and the anticipated future road network, the site generated trips were assigned to the road network as illustrated in Figure 34 and in Figure 35 for the current comprehensive plan residential portions of the developments and in Figure 36 and in Figure 37 for the current comprehensive plan institutional portions of the developments.

Current Comprehensive Plan Future Conditions (2030) Traffic Volumes

In order to determine the traffic volumes on the roadways in the vicinity of the development, the current comprehensive plan site generated traffic volumes for the proposed development under current comprehensive plan conditions were added to the 2030 Future without Development traffic volumes. The traffic volumes for the 2030 Future Background with Current Comprehensive Plan Development Conditions are presented in Figure 38 and in Figure 39.

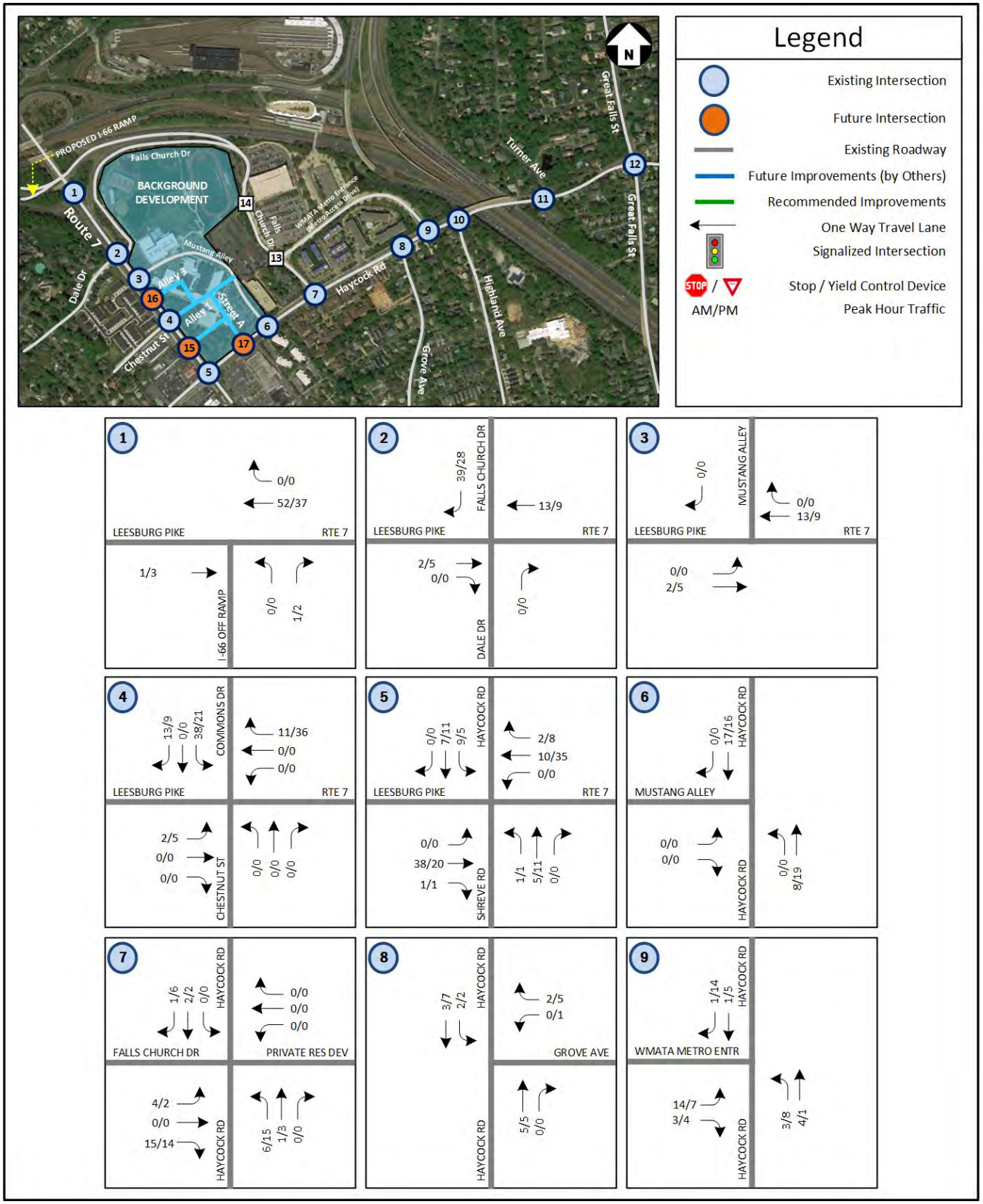


Figure 34: Future Background with Current Comprehensive Plan Development Residential Site Trip Assignment (1 of 2)

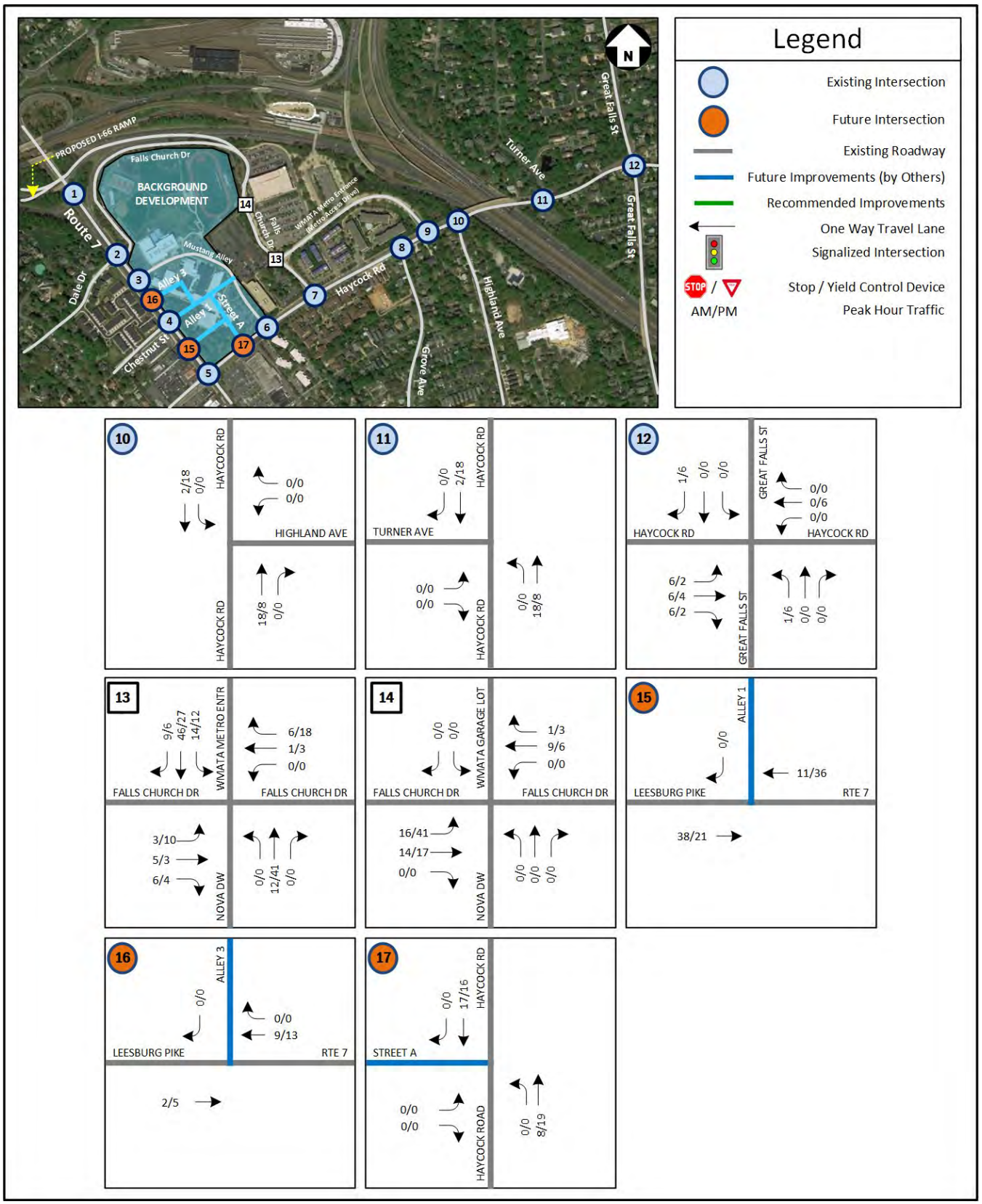


Figure 35: Future Background with Current Comprehensive Plan Development Residential Site Trip Assignment (2 of 2)

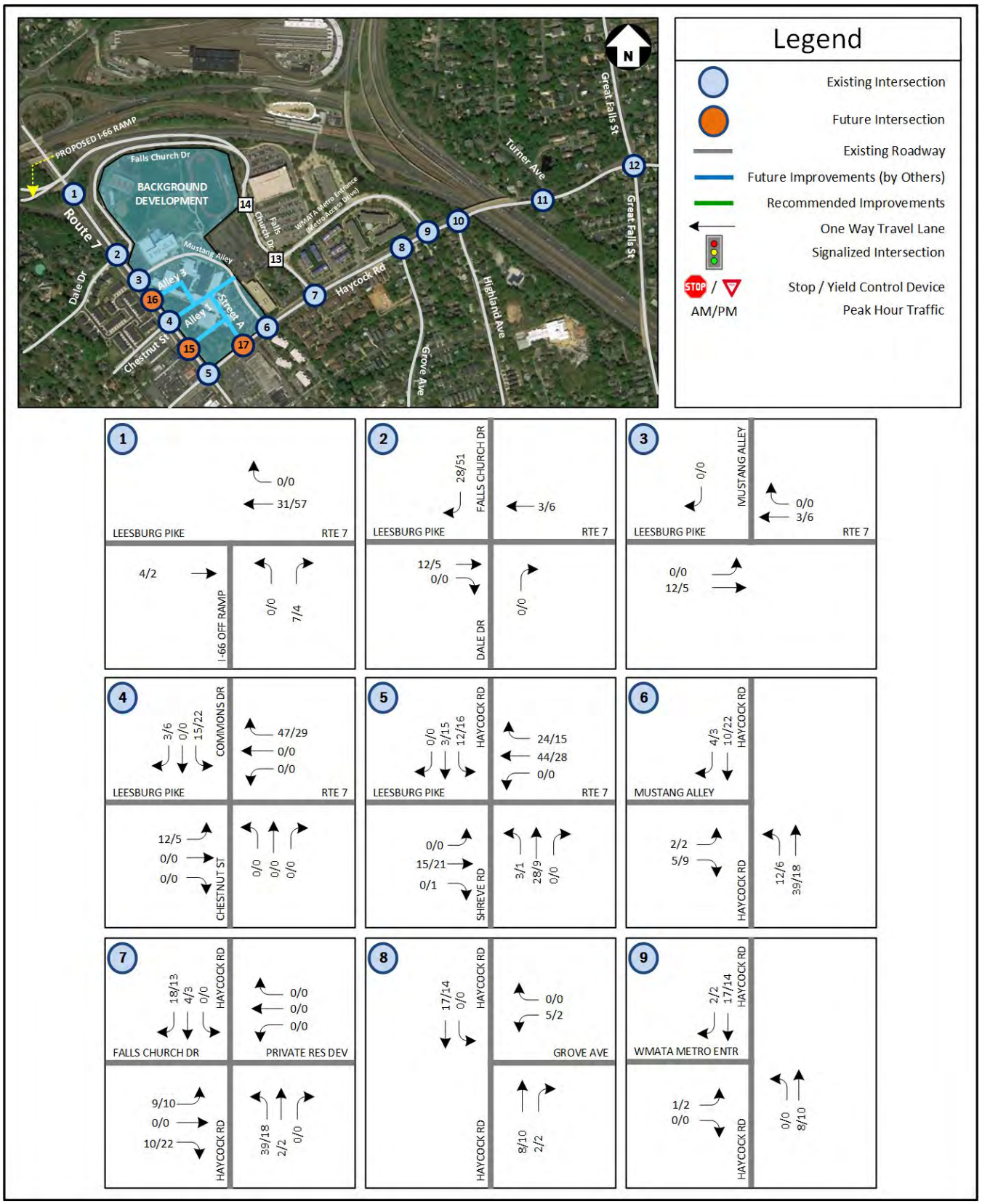


Figure 36: Future Background with Current Comprehensive Plan Development Institutional Site Trip Assignment (1 of 2)

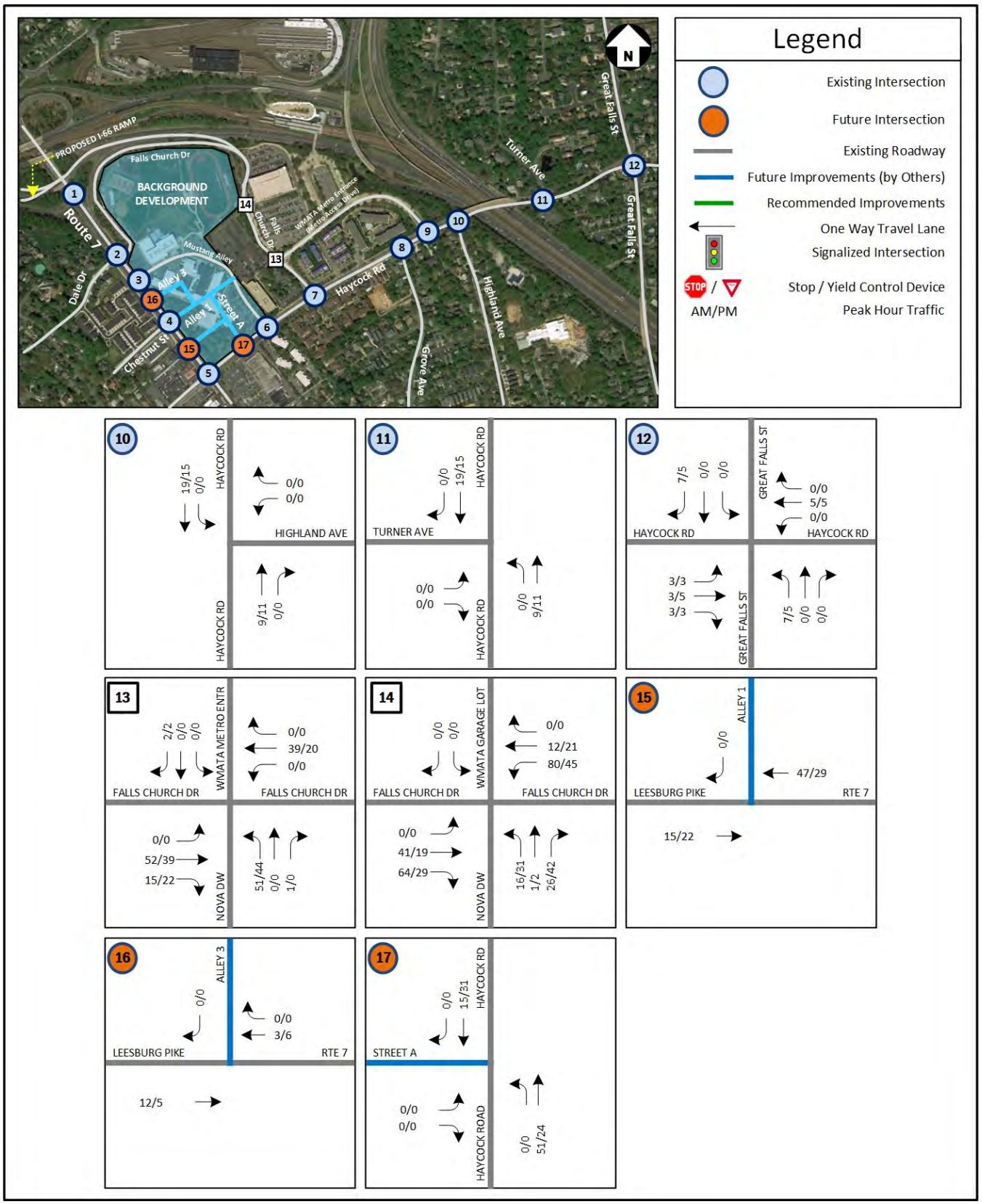


Figure 37: Future Background with Current Comprehensive Plan Development Institutional Site Trip Assignment (2 of 2)



Figure 38: Future Background with Current Comprehensive Plan Development Conditions (2030) Traffic Volumes (1 of 2)



Figure 39: Future Background with Current Comprehensive Plan Development Conditions (2030) Traffic Volumes (2 of 2)

Current Comprehensive Plan Future Conditions (2030) Intersection Capacity Analysis

Intersection capacity analyses were performed for the Future Background with Current Comprehensive Plan Development Conditions (2030) scenario at the study area intersections during the weekday morning (AM) and afternoon peak (PM) peak hours. *Synchro,* version 10, was used to analyze the study intersections with results based on the Highway Capacity Manual (HCM) 2010 methodology and includes level of service (LOS), delay, and queue length comparisons for the turning movements analyzed.

The peak hour factors (by intersection) acquired from the traffic counts, with a minimum of 0.92, were used in the analysis of future conditions. Heavy vehicle percentages of major movements used in the analysis were based on the traffic counts conducted.

Per the scoping meeting between the VDOT, County, and City staff, it is desirable to strive for an overall intersection LOS of D or better for traffic operations using the HCM methodology. The results of the intersection capacity analyses from *Synchro* are presented in Table 8 and graphically in Figure 40 and in Figure 41. The results are expressed in LOS and delay (seconds per vehicles) for overall signalized intersections and per approach and lane group by intersection. The signalized intersections that operate overall at LOS E or F are shown in red. The 50th and 95th percentile queues were also determined from *Synchro* and are expressed in feet.

The detailed analysis worksheets of 2030 Future Background with Current Comprehensive Plan Development Conditions (with Chestnut Street improvements) are contained in Appendix G.

Table 8: 2030 Future Background with Current Comprehensive Plan Development Conditions – Intersection Capacity Analysis Results

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour				PM Peak Hour			
			LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)	LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)
1	**Leesburg Pike (E/W) at I-66 Off-Ramp (N/S)**									
	Overall Intersection (Signalized)		**A**	**7.1**			**B**	**13.6**		
	Eastbound Approach		***A***	***5.1***			***B***	***12.1***		
	Eastbound Thru		A	5.1	172	248	B	12.1	374	551
	Westbound Approach		***A***	***5.7***			***A***	***7.0***		
	Westbound Thru		A	5.7	466	31	A	7.0	560	128
	Northbound Approach		***D***	***46.6***			***D***	***46.0***		
	Northbound Left	220	D	46.6	44	73	D	46.0	145	188
2	**Leesburg Pike (E/W) at Dale Dr./ Falls Church Dr. (N/S)** **Overall Intersection (Unsignalized)**									
	Northbound Approach		***C***	***21.3***			***D***	***28.4***		
	Northbound Right		C	21.3		5	D	28.4		5
3	**Leesburg Pike (E/W) at Mustang Alley (School Entr.) (N/S)** **Overall Intersection (Unsignalized)**									
	Eastbound Approach									
	Eastbound Left	140	B	14.2		3	B	14		0
	Southbound Approach		***C***	***16.9***			***C***	***16.2***		
	Southbound Left/Right		C	16.9		3	C	16.2		0

NOTES:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.

[2] $: Delays (reported from Synchro) exceed 300 seconds in TWSC.

[3] #: 95th percentile queues (reported from Synchro) exceed capacity; actual queues may be longer. Queues shown are based on the maximum after two cycles.

[4] m: 95th percentile volume and queues (reported from Synchro) are metered by upstream signal.

Table 8: 2030 Future Background with Current Comprehensive Plan Development Conditions – Intersection Capacity Analysis Results (Continued)

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour				PM Peak Hour			
			LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)	LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)
4	**Leesburg Pike (E/W) at Chestnut St./ Grace Community Church Entr. (N/S)**									
	Overall Intersection (Signalized)		**D**	**43.6**			**D**	**44.4**		
	Eastbound Approach		***D***	***38.4***			***D***	***36.4***		
	Eastbound Left	405	F	120.2	~184	#329	E	71.2	~145	m#271
	Eastbound Thru/Right		C	28.8	254	457	C	32.5	431	#571
	Westbound Approach		***D***	***47.9***			***E***	***55.2***		
	Westbound Left	180	D	52.3	12	m14				
	Westbound Thru		D	54.2	498	m#1128	E	59.8	486	#982
	Westbound Right		C	32.1	172	m178	C	29.6	63	m98
	Northbound Approach		***E***	***69.2***			***D***	***50.7***		
	Northbound Left/Thru		E	74.5	13	39	E	57.6	10	34
	Northbound Right		D	48.1	0	0	D	47.4	0	0
	Southbound Approach		***D***	***42.0***			***D***	***42.1***		
	Southbound Left		D	48.7	173	250	D	48.0	157	227
	Southbound Left/Right		D	35.1	7	70	D	35.7	0	47
5	**Leesburg Pike (E/W) at Shreve Rd./ Haycock Rd. (N/S)**									
	Overall Intersection (Signalized)		**F**	**82.8**			**E**	**76.0**		
	Eastbound Approach		***E***	***60.5***			***F***	***81.4***		
	Eastbound Left	250	F	409.0	~140	#221	F	174.1	~126	#214
	Eastbound Thru		C	34.5	1164	726	F	83.4	~1384	#1500
	Eastbound Right		C	30.8	22	71	C	32.3	217	285
	Westbound Approach		***D***	***54.5***			***E***	***67.8***		
	Westbound Left	225	F	102.0	40	82	F	166.6	~245	#428
	Westbound Thru/Right		D	53.8	1346	#1558	E	56.6	1015	1126
	Northbound Approach		***F***	***206.9***			***F***	***81.5***		
	Northbound Left	115	E	71.6	84	138	F	115.5	136	#294
	Northbound Thru/Right		F	224.4	~546	#682	E	69.0	244	304
	Southbound Approach		***F***	***108.1***			***E***	***74.3***		
	Southbound Left	295	F	104.1	169	#322	D	51.5	186	262
	Southbound Thru		E	65.7	154	236	F	94.0	637	#861
	Southbound Right		F	124.3	372	#585	D	54.7	87	145
6	**Haycock Rd. (N/S) at Mustang Alley (E/W)**									
	Overall Intersection (Signalized)		**C**	**23.6**			**B**	**18.5**		
	Eastbound Approach		***D***	***52.6***			***D***	***51.8***		
	Eastbound Left/Right		D	52.6	60	125	D	51.8	80	147
	Northbound Approach		***A***	***2.1***			***A***	***0.9***		
	Northbound Left	110	A	9.7	24	53	A	8.5	3	6
	Northbound Thru		A	0.3	56	102	A	0.2	16	22
	Southbound Approach		***D***	***46.2***			***C***	***25.7***		
	Southbound Thru		D	46.2	165	235	C	25.7	22	270
	Southbound Thru/Right		D	46.3	165	235	C	25.7	22	270
7	**Haycock Rd. (N/S) at Falls Church Dr. (E/W)**									
	Overall Intersection (Signalized)		**B**	**12.3**			**C**	**29.4**		
	Eastbound Approach		***D***	***43.5***			***E***	***79.6***		
	Eastbound Left/Thru		D	47.8	71	121	F	108.3	~276	#458
	Eastbound Right	75	D	39.3	0	10	C	32.4	60	133
	Westbound Approach		***D***	***39.3***			***C***	***29.3***		
	Westbound Left/Thru/Right		D	39.3	8	32	C	29.3	6	27
	Northbound Approach		***A***	***5.6***			***A***	***9.0***		
	Northbound Left	205	A	6.6	24	122	A	7.3	16	34
	Northbound Thru		A	5.2	30	204	A	9.2	54	106
	Northbound Right	290	A	6.1	0	m0	B	11.8	0	0
	Southbound Approach		***A***	***9.5***			***A***	***9.7***		
	Southbound Left	125	A	9.3	0	m1	A	5.0	1	m3
	Southbound Thru/Right		A	9.5	72	105	A	9.8	153	85
8	**Haycock Rd. (N/S) at Grove Ave. (E/W)**									
	Overall Intersection (Unsignalized)									
	Westbound Approach		***F***	***56.1***			***F***	***105.7***		
	Westbound Left/Right		F	56.1		155	F	105.7		143
	Southbound Approach									
	Southbound Left		B	12.7		5	C	18.2		30

NOTES:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.

[2] $: Delays (reported from Synchro) exceed 300 seconds in TWSC.

[3] #: 95th percentile queues (reported from Synchro) exceed capacity; actual queues may be longer. Queues shown are based on the maximum after two cycles.

[4] m: 95th percentile volume and queues (reported from Synchro) are metered by upstream signal.

Table 8: 2030 Future Background with Current Comprehensive Plan Development Conditions – Intersection Capacity Analysis Results (Continued)

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour				PM Peak Hour			
			LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)	LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)
9	**Haycock Rd. (N/S) at WMATA Metro Entr. (E/W)**									
	Overall Intersection (Signalized)		**A**	**7.1**			**C**	**22.1**		
	Eastbound Approach		***D***	***50.9***			***E***	***59.7***		
	Eastbound Left		D	50.9	80	133	E	59.7	222	#349
	Eastbound Right	125	A	0.0	0	22	A	0.0	6	36
	Northbound Approach		***A***	***0.3***			***B***	***15.8***		
	Northbound Left		A	4.1	4	16	A	8.9	4	m9
	Northbound Thru		A	0.2	72	194	B	15.9	164	m178
	Southbound Approach		***A***	***6.9***			***B***	***12.9***		
	Southbound Thru		A	6.8	60	157	B	12.9	112	210
	Southbound Thru/Right		A	6.9	60	157	B	12.9	112	210
10	**Haycock Rd. (N/S) at Highland Ave. (E/W)**									
	Overall Intersection (Unsignalized)									
	Westbound Approach		***E***	***36.4***			***D***	***31.4***		
	Westbound Left/Right		E	36.4		50	D	31.4		15
	Southbound Approach									
	Southbound Left		A	9.7		0	B	11.9		3
11	**Haycock Rd. (N/S) at Turner Ave. (E/W)**									
	Overall Intersection (Unsignalized)									
	Eastbound Approach		***C***	***20.4***			***C***	***17.9***		
	Eastbound Left		E	38.6		10	E	42.1		5
	Eastbound Right	60	B	14.2		8	B	13.5		5
	Northbound Approach									
	Northbound Left		A	9.3		3	A	9.2		5
12	**Haycock Rd. (N/S) at Great Falls St. (E/W)**									
	Overall Intersection (Signalized)		**D**	**51.7**			**E**	**74.6**		
	Eastbound Approach		***D***	***35.4***			***F***	***131.3***		
	Eastbound Left/Thru		D	39.0	536	#802	F	155.3	~891	#1345
	Eastbound Right	75	B	19.5	36	80	C	24.1	52	122
	Westbound Approach		***C***	***21.4***			***C***	***31.2***		
	Westbound Left/Thru		C	21.9	178	263	C	32.0	264	463
	Westbound Right	75	B	18.5	0	0	C	22.4	0	0
	Northbound Approach		***E***	***72.3***			***D***	***42.6***		
	Northbound Left	180	E	59.5	130	#222	D	39.2	80	123
	Northbound Thru/Right		E	77.1	489	#692	D	43.8	315	426
	Southbound Approach		***E***	***63.0***			***D***	***54.7***		
	Southbound Left	380	D	45.3	61	102	D	35.2	34	61
	Southbound Thru		E	74.6	444	583	E	62.9	507	666
	Southbound Right	225	D	49.4	65	152	D	41.9	70	150
13	**Falls Church Dr. (E/W) at Nova Drwy. / WMATA Metro Entr. (N/S)**									
	Overall Intersection (Unsignalized)		**B**	**12.1**			**C**	**17.1**		
	Eastbound Approach		***B***	***11.9***			***C***	***19.9***		
	Eastbound Left		B	12.4		38	C	15.9		73
	Eastbound Thru/Right		B	11.6		45	C	22.4		158
	Westbound Approach		***B***	***13.4***			***B***	***11.3***		
	Westbound Left/Thru/Right		B	13.4		60	B	11.3		23
	Northbound Approach		***B***	***10.9***			***B***	***11.8***		
	Northbound Left/Thru/Right		B	10.9		13	B	11.8		18
	Southbound Approach		***B***	***10.2***			***B***	***12.7***		
	Southbound Left		B	10.3		5	B	13.5		33
	Southbound Thru/Right		B	10.2		15	A	10		8
14	**Falls Church Dr. (E/W) at Nova Drwy. / WMATA Park&Ride Garage Entr. (N/S)**									
	Overall Intersection (Unsignalized)									
	Eastbound Approach									
	Eastbound Left		A	8		10	A	7.5		5
	Westbound Approach									
	Westbound Left	230	A	8.7		8	A	9.4		8
	Northbound Approach		***C***	***20.6***			***D***	***28.2***		
	Northbound Left/Thru/Right		C	20.6		15	D	28.2		40
	Southbound Approach		***A***	***8.9***			***A***	***8.9***		
	Southbound Left		A	0		0	A	0		0
	Southbound Right		A	8.9		0	A	8.9		8

NOTES:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.

[2] $: Delays (reported from Synchro) exceed 300 seconds in TWSC.

[3] #: 95th percentile queues (reported from Synchro) exceed capacity; actual queues may be longer. Queues shown are based on the maximum after two cycles.

[4] m: 95th percentile volume and queues (reported from Synchro) are metered by upstream signal.

Table 8: 2030 Future Background with Current Comprehensive Plan Development Conditions – Intersection Capacity Analysis Results (Continued)

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour				PM Peak Hour			
			LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)	LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)
15	**Leesburg Pike (E/W) at Alley 1 (N/S)**									
	Overall Intersection (Unsignalized)									
	Southbound Approach		***D***	***31.2***			***C***	***20.4***		
	Southbound Right		D	31.2		20	C	20.4		15
16	**Leesburg Pike (E/W) at Alley 3 (N/S)**									
	Overall Intersection (Unsignalized)									
	Southbound Approach		***B***	***10.7***			***B***	***10.7***		
	Southbound Right		B	10.7		2	B	10.7		7
17	**Haycock Road (N/S) at Street C (E/W)**									
	Overall Intersection (Signalized)		**A**	**9.6**			**A**	**7.0**		
	Eastbound Approach		***E***	***57.9***			***D***	***53.8***		
	Eastbound Left/Right		E	57.9	21	70	D	53.8	52	114
	Northbound Approach		***A***	***3.6***			***A***	***4.4***		
	Northbound Left	150	A	8.3	7	m7	A	5.2	37	m52
	Northbound Thru		A	3.3	94	m82	A	4.3	135	m160
	Southbound Approach		***B***	***11.7***			***A***	***1.0***		
	Southbound Thru		B	11.8	33	47	A	1.1	62	80
	Southbound Thru/Right		B	11.7	33	47	A	1.0	62	80

NOTES:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.

[2] $: Delays (reported from Synchro) exceed 300 seconds in TWSC.

[3] #: 95th percentile queues (reported from Synchro) exceed capacity; actual queues may be longer. Queues shown are based on the maximum after two cycles.

[4] m: 95th percentile volume and queues (reported from Synchro) are metered by upstream signal.

Per the scoping meeting between the VDOT, County, and City staff, it is desirable to strive for an overall intersection LOS of D or better for traffic operations using the HCM methodology.

The capacity analysis results indicate that all intersections operate at an overall acceptable LOS under 2030 Future Background with Current Comprehensive Plan Development Conditions with the exception of the Leesburg Pike and Haycock Road intersection and the Haycock Road and Great Falls Street intersection. The intersection of the Leesburg Pike and Haycock Road and the intersection of Haycock Road and Great Falls Street are anticipated to continue to operate at an overall unacceptable level of service during at least one peak period as compared to the future without development scenario.

The results of the intersection capacity analyses for the 2030 Future Background with Current Comprehensive Plan Development Conditions are illustrated in Figure 40 and in Figure 41.

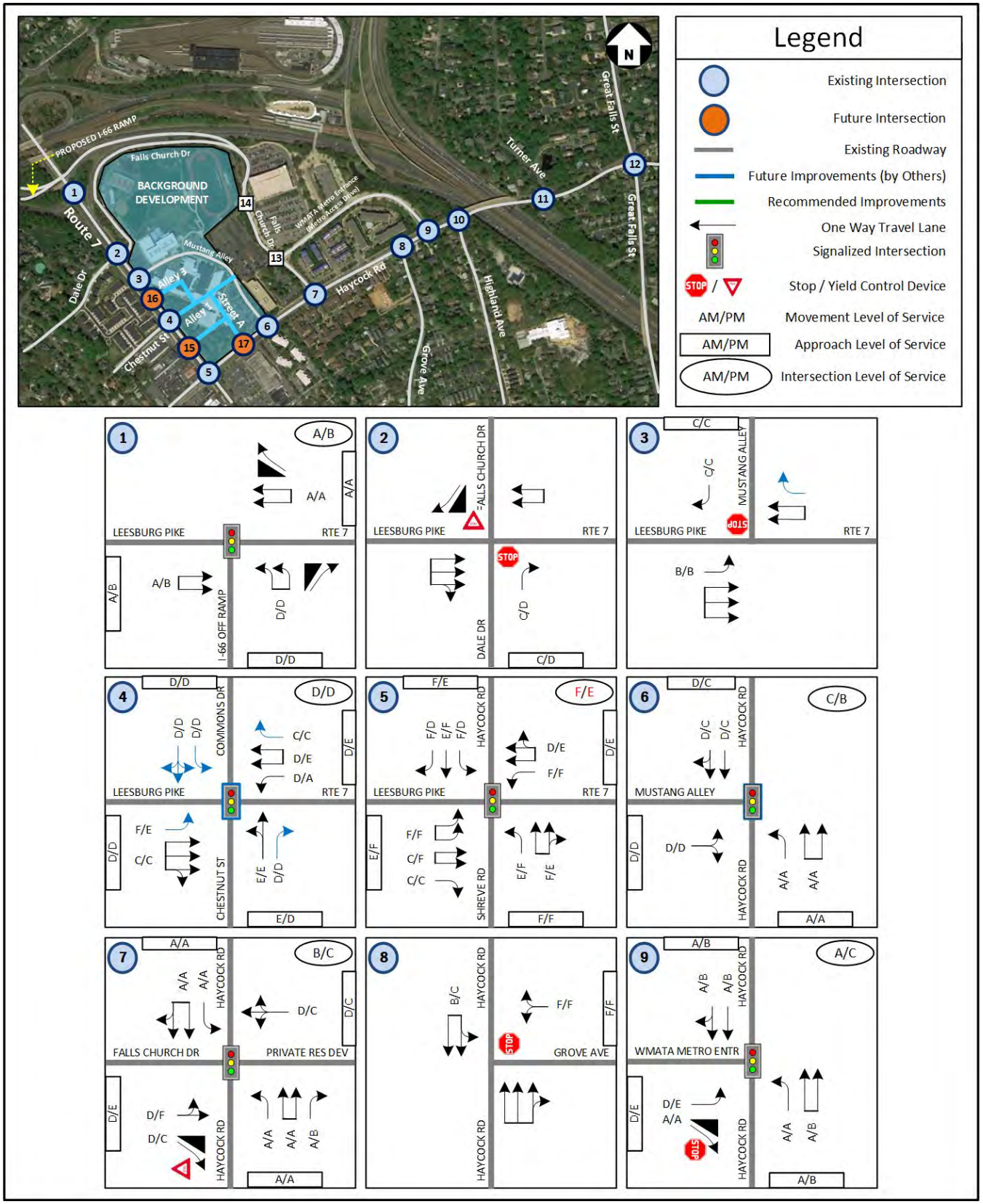


Figure 40: 2030 Future Background with Current Comprehensive Plan Development Conditions – Levels of Service Results (1 of 2)

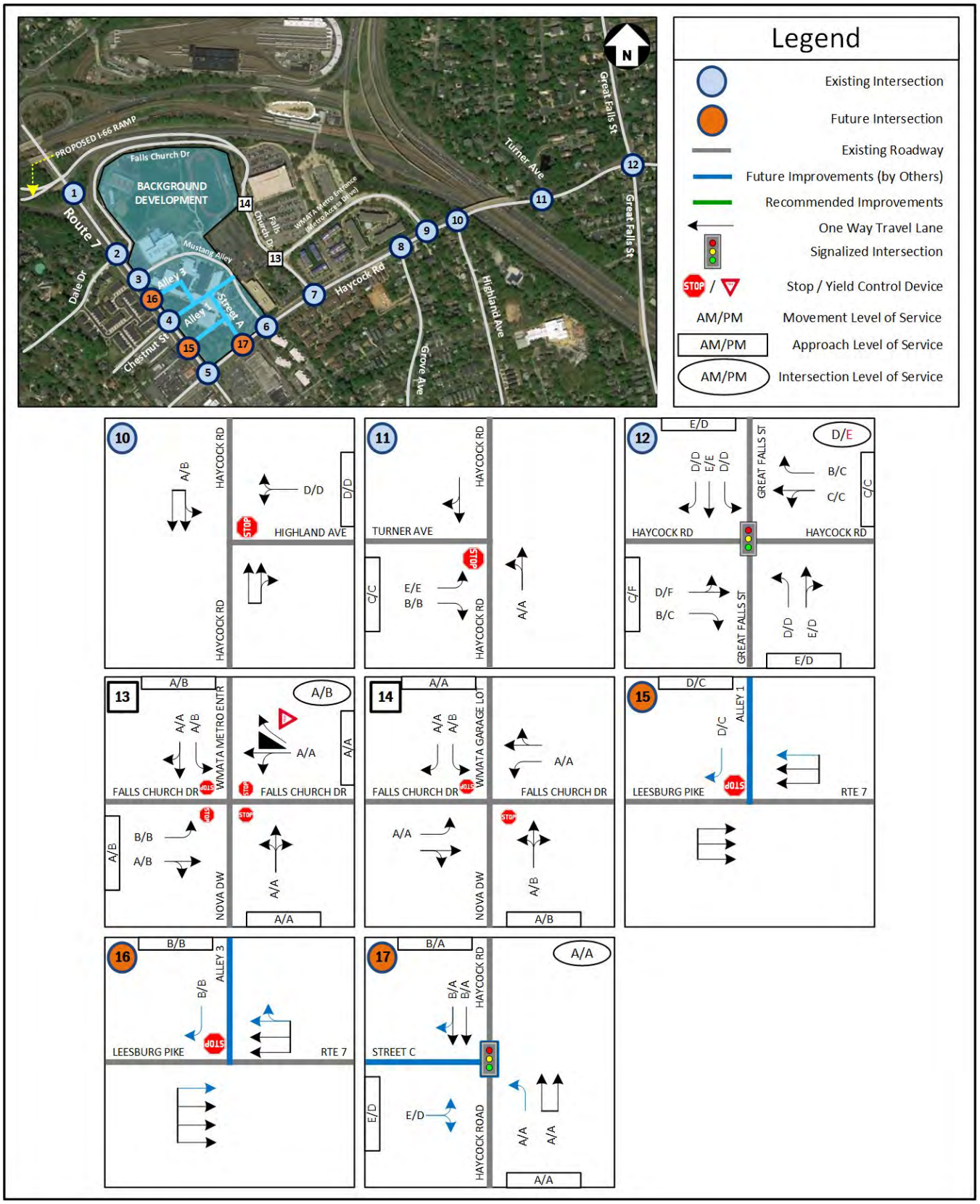


Figure 41: 2030 Future Background with Current Comprehensive Plan Development Conditions – Levels of Service Results (2 of 2)

FUTURE CONDITIONS WITH DEVELOPMENT (2030)

The WMATA and VT developments are anticipated to be fully constructed and in operation by 2030.

Site Description

The WMATA West Falls Church metro development (to be referred to in this study as the "WMATA site") will be reconstructed and is projected to consist of approximately 130 kSF of office space, 10 kSF of retail space, and 865 residential dwelling units (DU). The VT site is projected to consist of an additional 181 kSF of office space, 18 kSF of retail space, 440 residential DU, and 160 kSF of institutional uses. Combined, the site is anticipated to ultimately consist of 311 kSF of office space, 28 kSF of retail space, 1,305 residential DU, and 160 kSF of institutional uses.

Figure 42 illustrated the proposed conceptual plans for the WMATA and VT sites.



Figure 42: WMATA and VT Site Development Plans
Note: For conceptual purposes only.

Site Access

Primary site access will be provided via the access roads along the West Falls Church Metrorail Station roadway and Falls Church Drive. With the construction of the High School & West Falls Church Economic Development site to the southwest, additional access points to the development along Route 7 will be provided.

Site Trip Generation

In order to calculate the trips generated by the proposed developments, the Institute of Transportation Engineer's (ITE's) Trip Generation Manual, 10th Edition publication, was used in order to determine the trips going into and out of the study site during the AM and PM peak hours, as well as, the typical number of weekday daily trips associated with the site.

The proposed development's site trip generation is illustrated in Table 9. Of note, the proposed development program presented in the scoping meeting was slightly higher in intensity than what is presented in this study. As discussed in subsequent meetings between representatives of the Applicant and the reviewing agencies, the trip generation was revised to more accurately match the proposed intensity within the current Comprehensive Plan Amendment.

As illustrated in Table 9 and as agreed to during the scoping meeting for this study, internal trip reductions and pass-by trip reductions were applied to the trip generation in order to account for anticipated inner-development interactions and existing capture. Furthermore, a TDM/mode split reduction of 45% was applied to the trip generation as agreed to by VDOT, County, and City scoping meeting. A 45% mode split reduction is justified given the sufficient sidewalk access surrounding the site and connecting the site to the West Falls Church Metrorail station.

Table 9: Site Trip Generation (Peak Hour of the Adjacent Streets)

ITE Land Use Code / Trip Generation, 10th Ed.			Quantity	Weekday AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	Weekday PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily Total
Proposed Development										
Office	710	General Office Building	311 KSF	274	45	319	54	281	335	3,189
(WMATA: 130KSF & VT: 181 KSF)		*Internal Capture Office - Residential*		-14	-2	-16	-3	-14	-17	-159
		Internal Capture Office - Retail		-3	-2	-5	-3	-5	-8	-127
Office with Internal Reductions				*257*	*41*	*298*	*48*	*262*	*310*	*2,903*
Mode Split/TDM Reduction	*45%*	*AM/PM/Daily*		*-116*	*-18*	*-134*	*-22*	*-118*	*-140*	*-1,306*
Office Subtotal				**141**	**23**	**164**	**26**	**144**	**170**	**1,597**
Retail	820	Shopping Center	28 KSF	103	63	166	102	110	212	2,530
(WMATA: 10KSF & VT: 18 KSF)		*Internal Capture - Retail - Residential*		*-5*	*-3*	-8	*-10*	*-11*	-21	*-380*
		Internal Capture - Retail - Office		*-2*	*-3*	-5	*-5*	*-3*	-8	*-127*
		Internal Capture - Retail - Academic		-10	-6	-16	-10	-11	-21	-253
Retail with Internal Reductions				*86*	*51*	*137*	*77*	*85*	*162*	*1,770*
Pass-By Reduction[A]	*25%/34%/25%*	*AM/PM/Daily*		*-22*	*-13*	*-35*	*-26*	*-29*	*-55*	*-443*
Retail Subtotal				**64**	**38**	**102**	**51**	**56**	**107**	**1,327**
Residential	221	Multifamily (Mid-Rise) (Urban/Suburban)	1,305 DU	110	314	424	318	204	522	7,111
(WMATA: 780 DU + 85 Towns & VT: 440 DU)		Internal Capture - Residential - Office		-2	-14	-16	-14	-3	-17	-159
		Internal Capture - Residential - Retail		-3	-5	-8	-11	-10	-21	-380
Residential with Internal Reductions				*105*	*295*	*400*	*293*	*191*	*484*	*6,572*
Mode Split/TDM Reduction	*45%*	*AM/PM/Daily*		*-47*	*-133*	*-180*	*-132*	*-86*	*-218*	*-2,957*
Residential Subtotal				**58**	**162**	**220**	**161**	**105**	**266**	**3,615**
Academic	540	Junior /Community College	160 KSF	325	97	422	149	149	298	3,240
(VT: 160KSF)		*Internal Capture - Academic - Retail*		-6	-10	-16	-11	-10	-21	-253
Academic with Internal Reductions				*319*	*87*	*406*	*138*	*139*	*277*	*2,987*
Mode Split/TDM Reduction	*45%*	*AM/PM/Daily*		*-144*	*-39*	*-183*	*-62*	*-63*	*-125*	*-1,344*
Academic Subtotal				**175**	**48**	**223**	**76**	**76**	**152**	**1,643**
Proposed Development Site Trips with Reductions				**438**	**271**	**709**	**314**	**381**	**695**	**8,182**

A) The pass by reduction for the shopping center is based on the ITE Trip Generation methodology, as provided in the 10th Edition Handbook. The average rate for shopping centers is 34% for the PM Peak. For all other time periods, the default pass by rate is 25%.

(1) residential / office - smaller of 5% of residential trips or 5% of office trips

(2) residential / retail - smaller of X% of residential trips or X% of retail trips; AM: X = 5%, PM: X = 10%, Sat: X= 10%, Daily: X = 15%

(3) office/ retail - smaller of 5% of office trips or 5% of retail trips

(4) academic/retail - use the smaller of 10% of academic traffic or 10% of retail traffic

The proposed developments are anticipated to generate approximately 709 additional trips in the AM peak hour, 695 additional trips in the PM peak hour, and 8,182 daily trips after TDM, internal, and external pass-by reductions.

Site Trip Distribution and Assignment

The distribution and assignment of the site generated trips was based on the existing and anticipated traffic patterns, engineering judgement, and the nature of the proposed development with guidance and input from VDOT, FCDOT and the City of Falls Church staff.

The site direction of approach for the analyzed peak hours is illustrated in Figure 43 and in Figure 44 for the AM and PM peak hours, respectively. As agreed to in the scoping document, separate direction of approaches were utilized between peak hours in order to more precisely model roadway conditions.

Using the direction of approaches for the AM and PM peak hours and the current design of the proposed development, the site generated trips were assigned to the road network as illustrated in Figure 45 and in Figure 46 for the residential portions of the developments and in Figure 47 and in Figure 48 for the commercial/non-residential portions of the developments.

The pass-by trips, associated with the development's commercial services, were assigned to the road network, as illustrated in Figure 49 and in Figure 50.

Future Conditions with Development (2030) Traffic Volumes

In order to determine the traffic volumes on the roadways in the vicinity of the development, the site generated traffic volumes and associated pass-by trips for the proposed development were added to the 2030 Future without Development traffic volumes. The traffic volumes for the 2030 Future with Development conditions are presented in Figure 51 and in Figure 52.

It should be noted that the 2030 future with development traffic volumes at the internal intersections (Intersection 13 and 14; shown on Figure 52) vary from the combination of the 2030 future without development traffic volume, external site generated trips, and external pass-by trips, as the internal configuration of the site will be modified with the redevelopment (thus impacting the internal routing of metro buses as well as vehicles associated with park-and-ride garage and utilizing the kiss-and-ride)

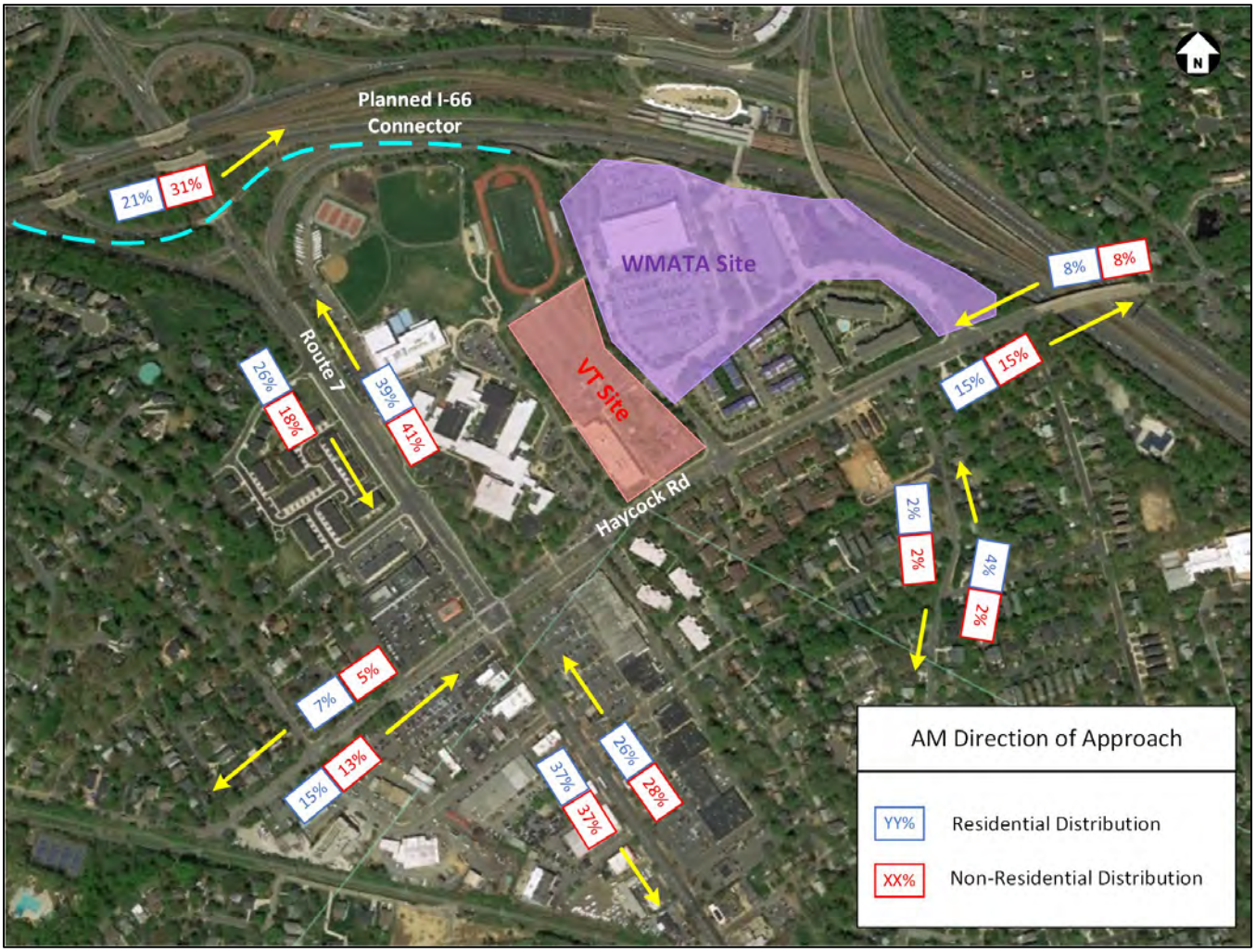


Figure 43: Vehicular Trip Distribution (AM Peak Hour)

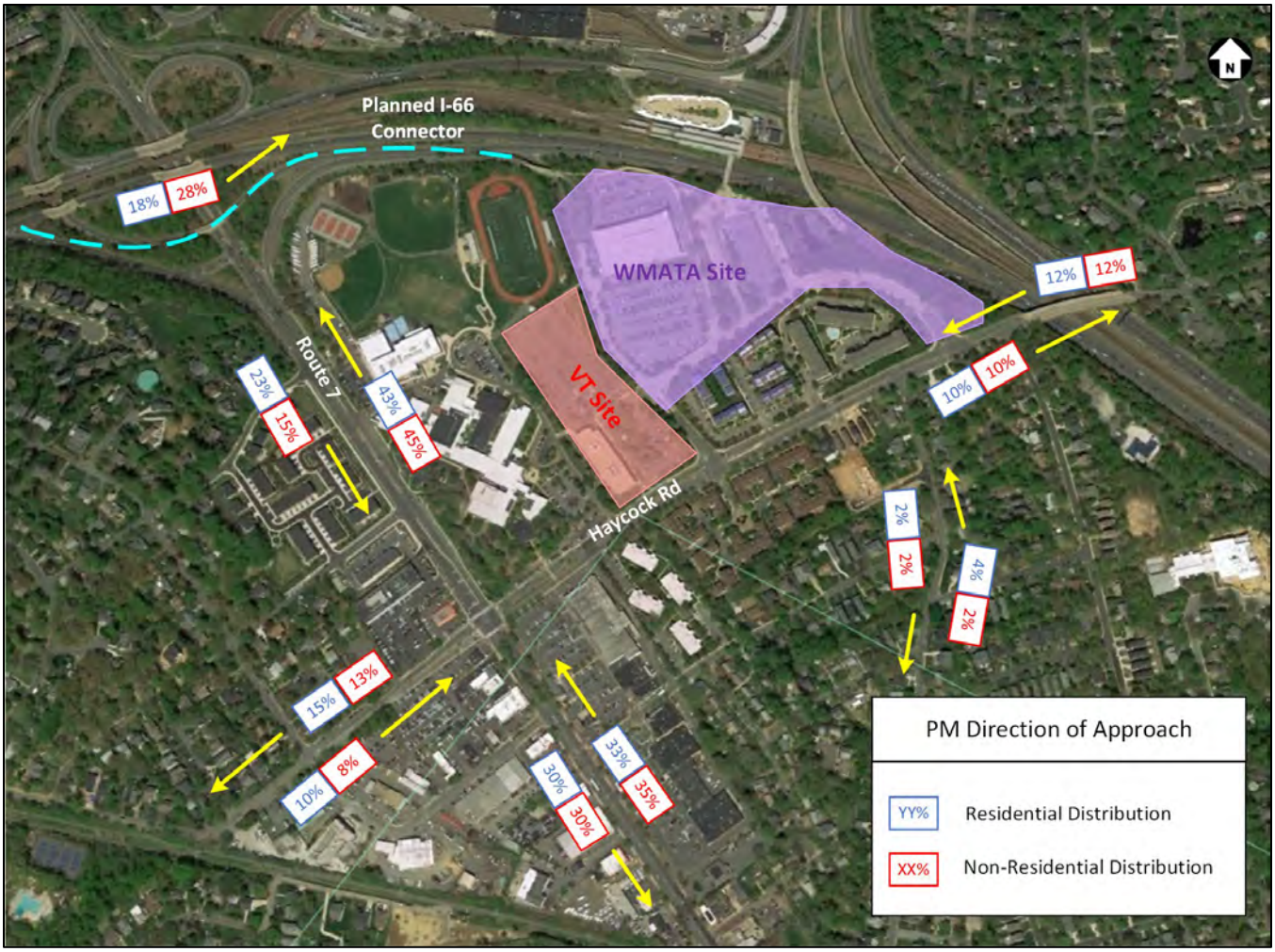


Figure 44: Vehicular Trip Distribution (PM Peak Hour)

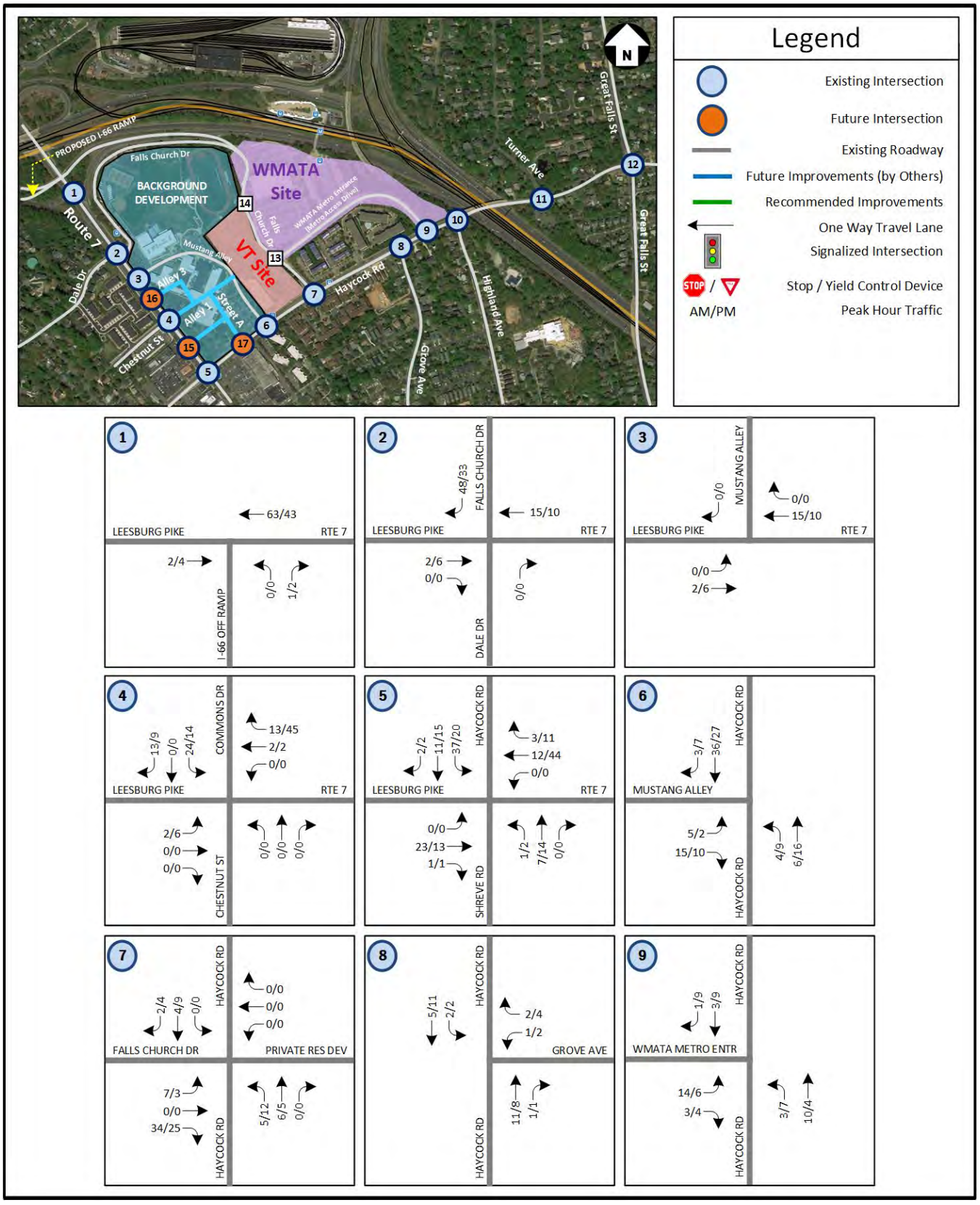


Figure 45: Residential Site Trip Assignment (1 of 2)

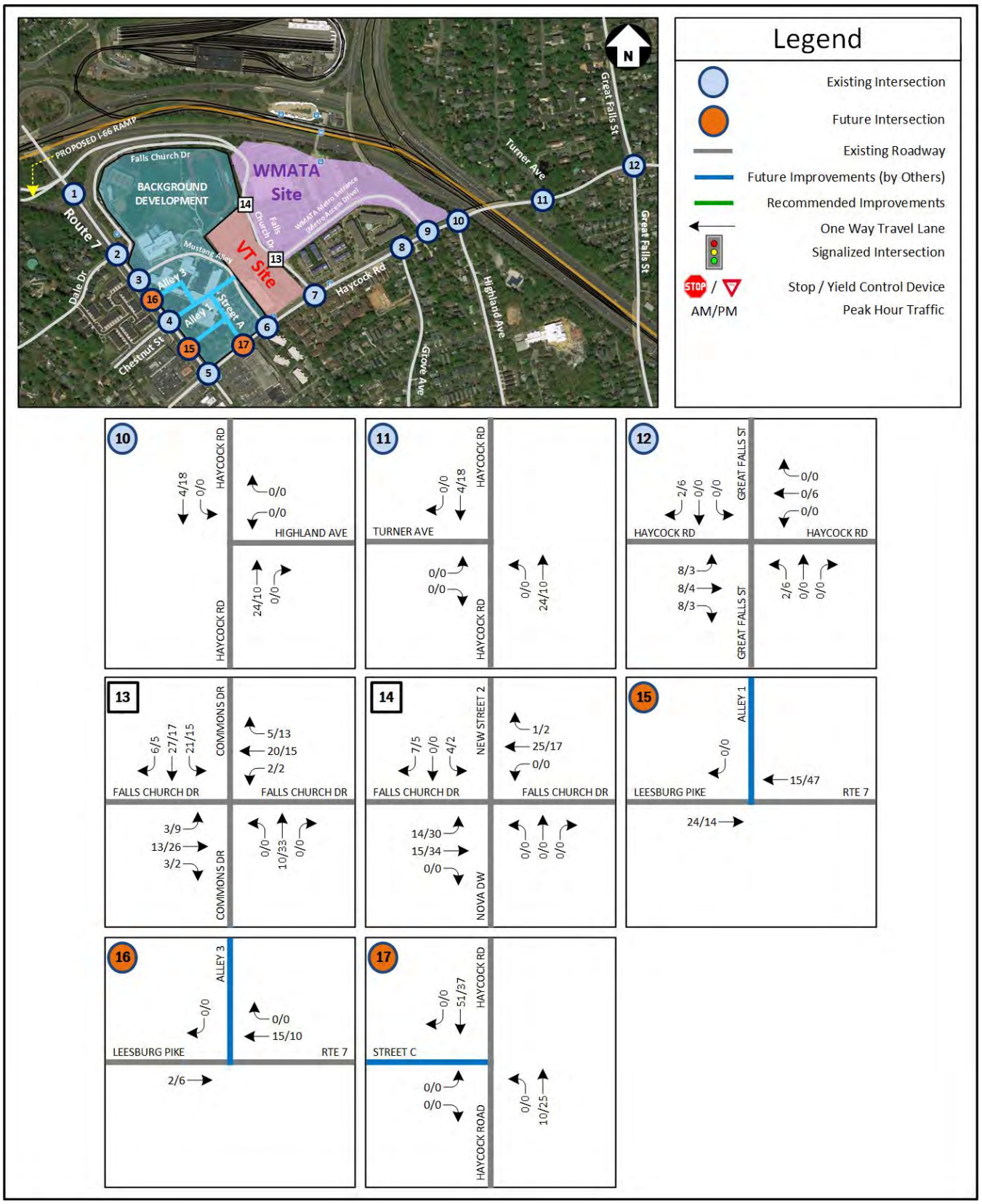


Figure 46: Residential Site Trip Assignment (2 of 2)

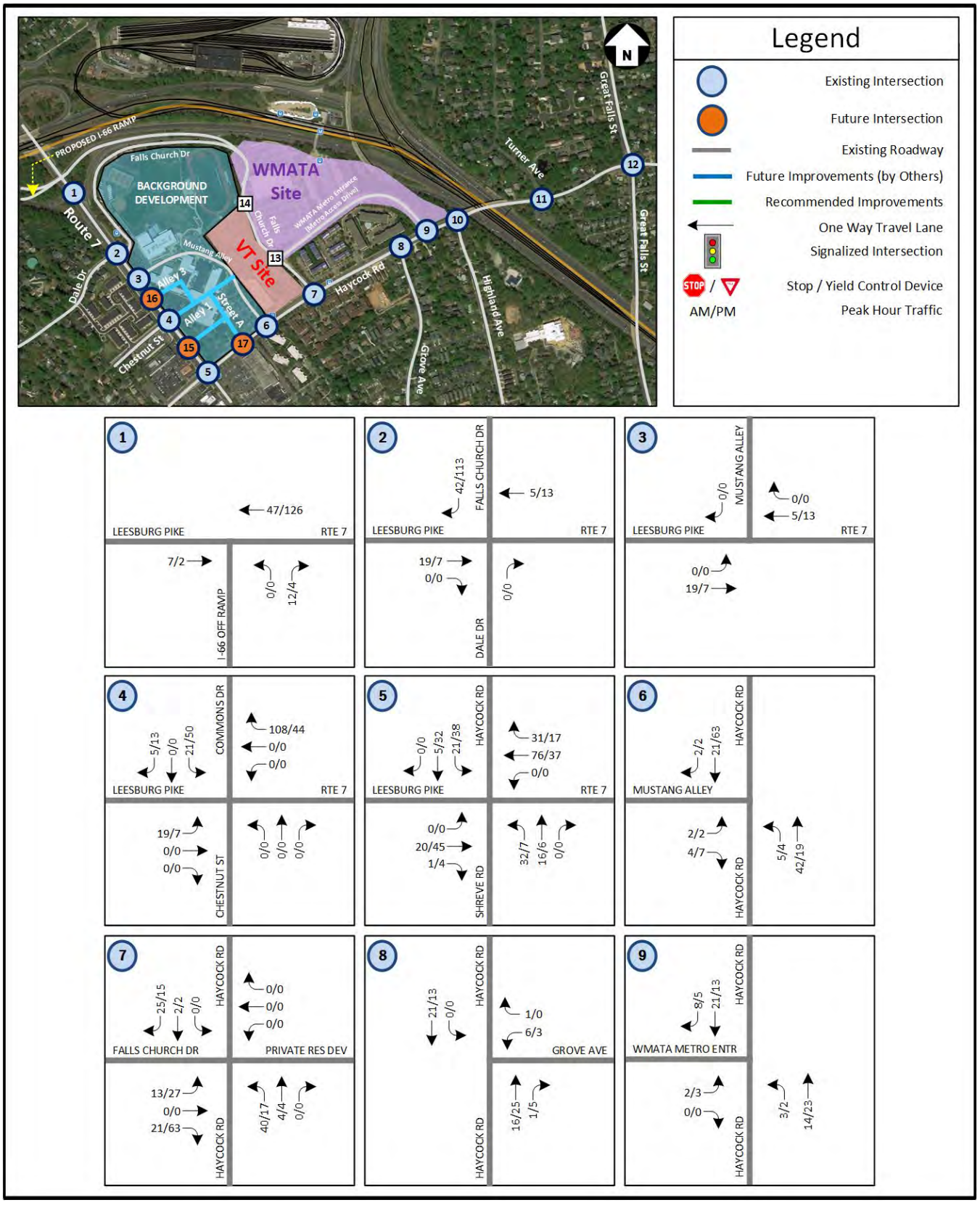


Figure 47: Commercial Site Trip Assignment (1 of 2)

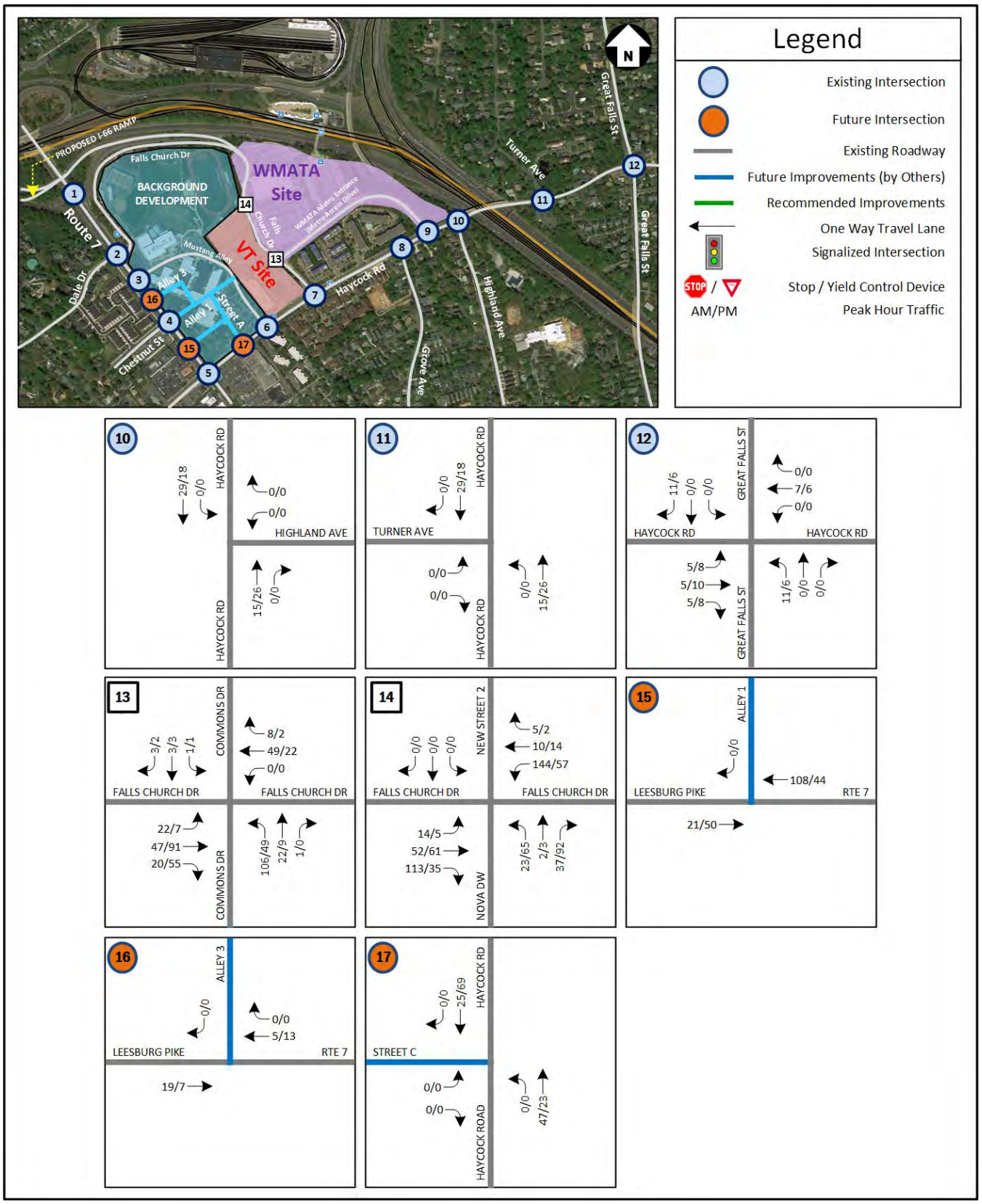


Figure 48: Commercial Site Trip Assignment (2 of 2)

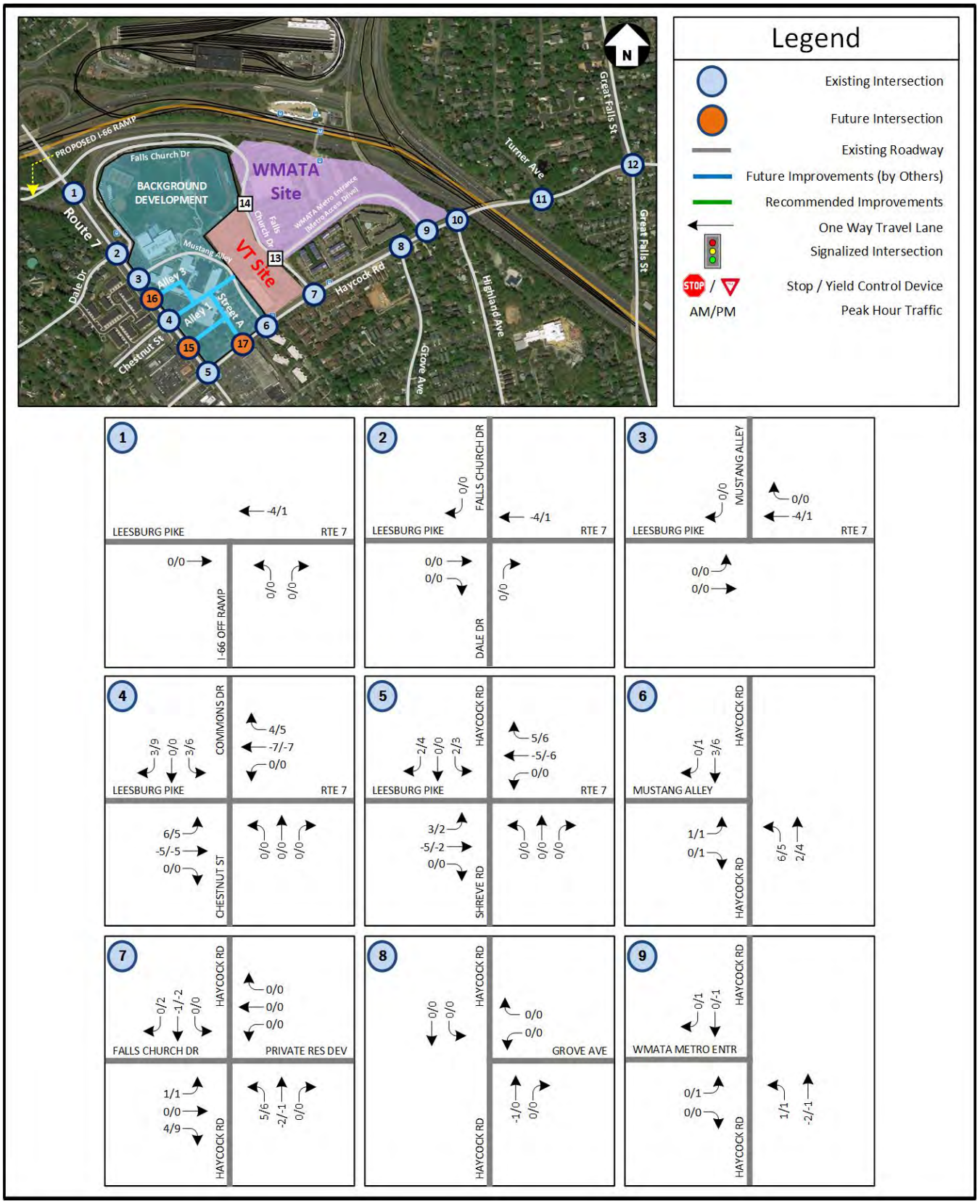


Figure 49: Commercial Pass-By Trip Assignment (1 of 2)

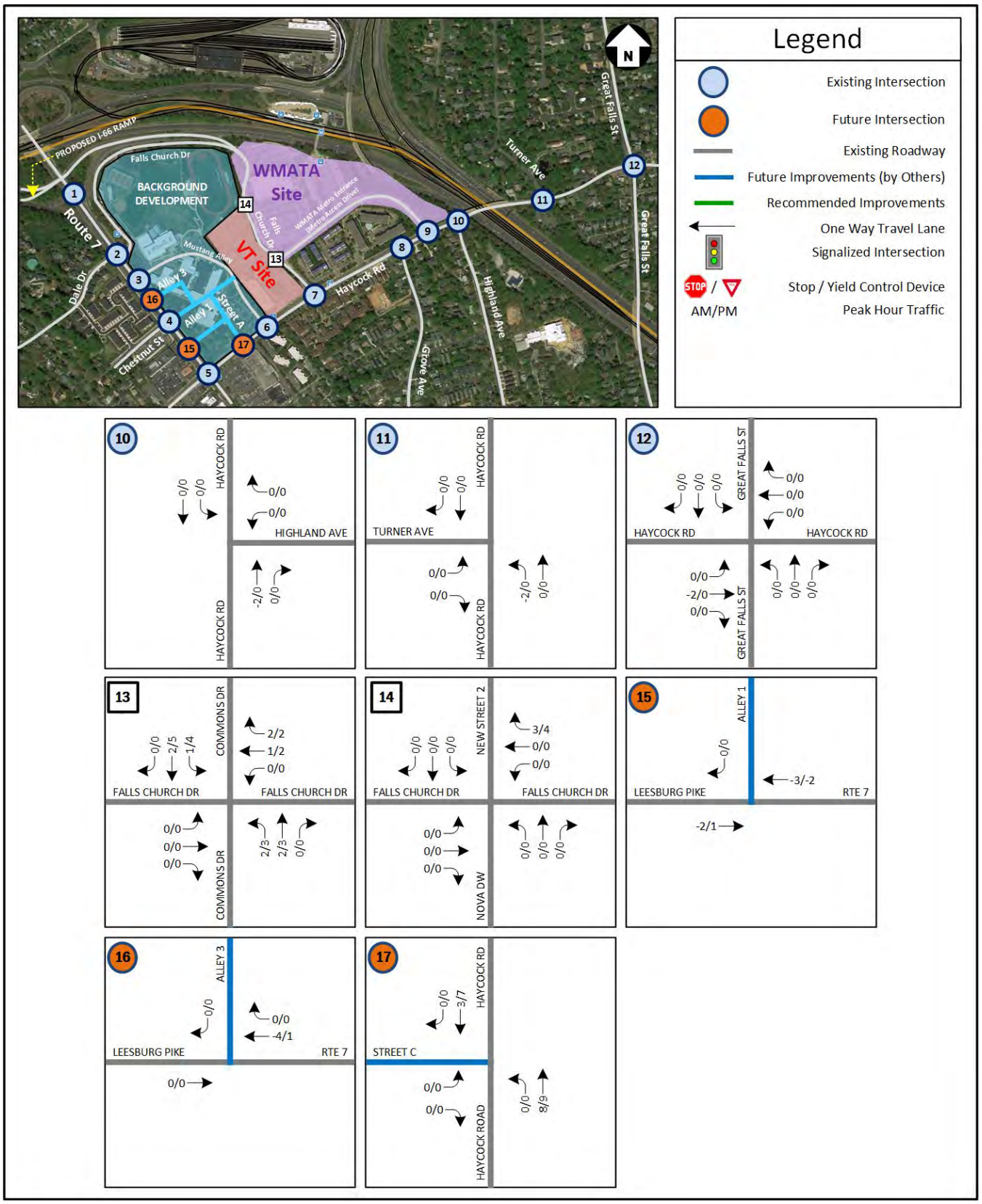


Figure 50: Commercial Pass-By Trip Assignment (2 of 2)

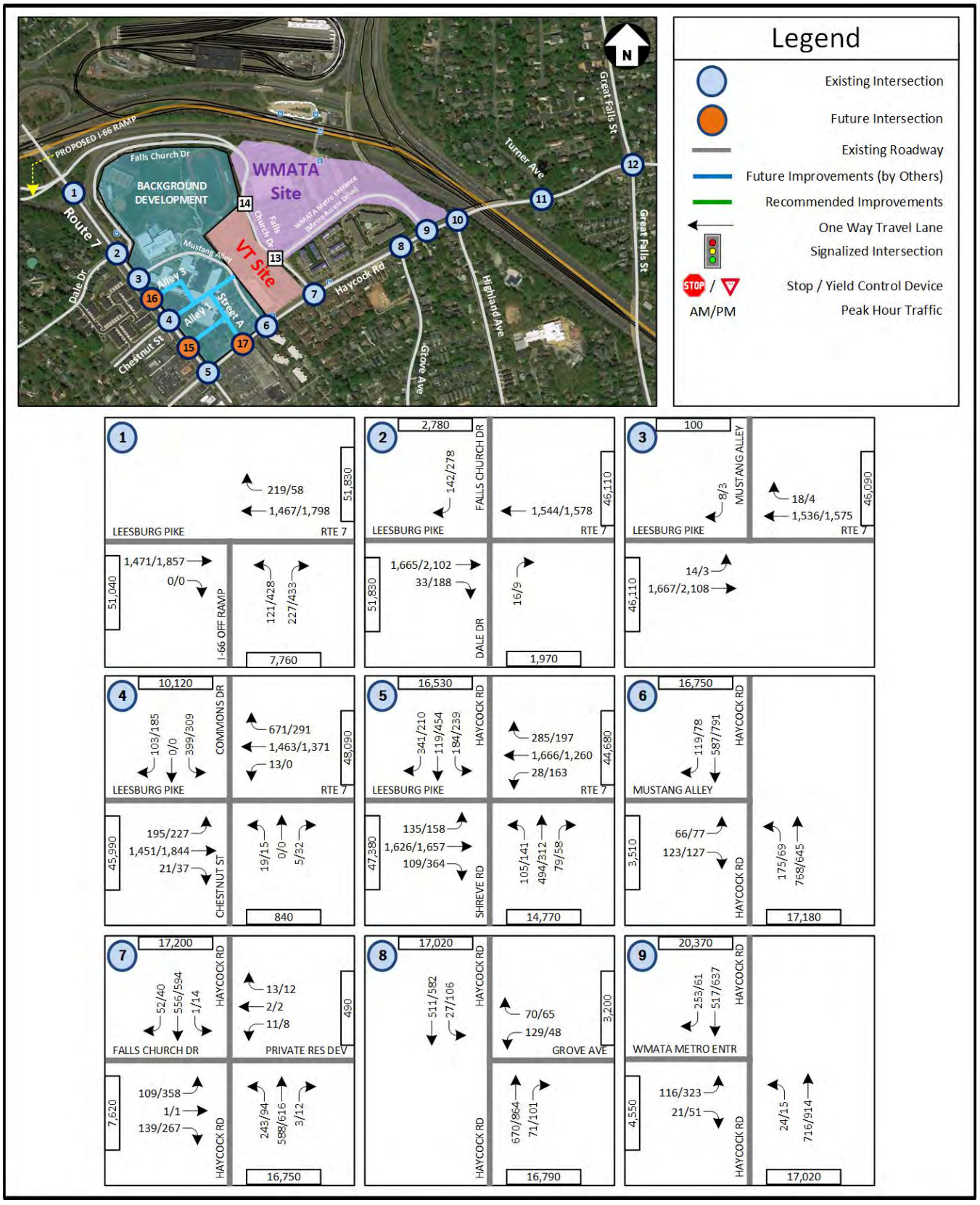


Figure 51: 2030 Future with Development – Vehicular Traffic Volumes (1 of 2)

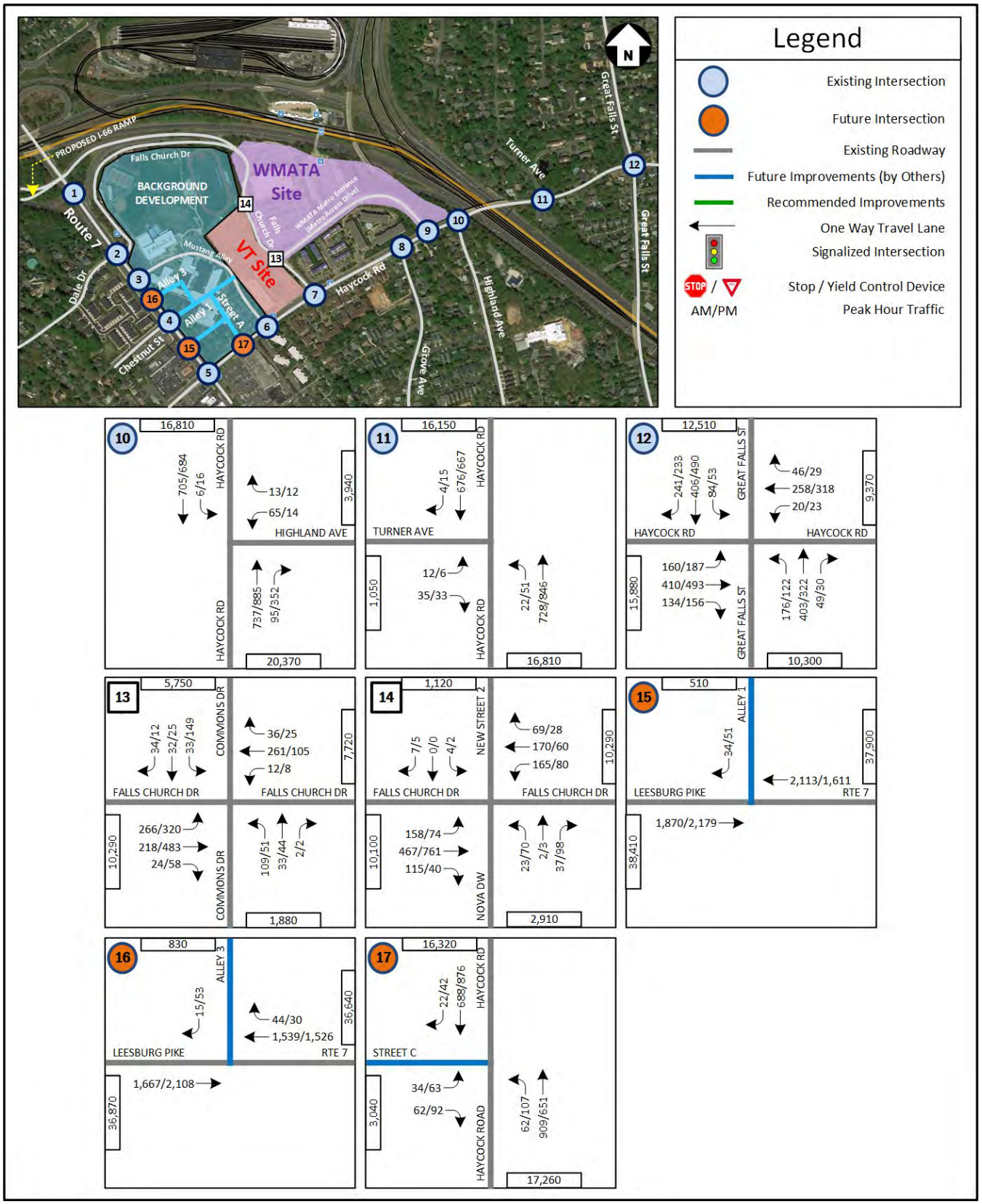


Figure 52: 2030 Future with Development – Vehicular Traffic Volumes (2 of 2)

Future Conditions with Development (2030) – Roadway Improvement Strategy

The WMATA and VT developments are anticipated to be fully constructed and in operation by 2030.

Due to increased traffic demand on the future road network, road improvements will be necessary in order to achieve acceptable levels of service or maintain similar traffic operation conditions as compared to future without development conditions during the weekday morning (AM) and weekday afternoon (PM) peak hours.

The analysis presented herein provides possible roadway improvements strategies along Route 7, along Haycock Road, and at the major intersection connecting the two corridors. Furthermore, the analysis herein provides a baseline scenario (i.e., 2030 Future with Development but without any roadway improvements implemented) to illustrate how the improvements would impact road conditions.

The individual scenarios are listed below along with intersections targeted for improvement:

- Baseline
  - No Improvements along Route 7
  - No Improvements along Haycock Road
- Proposed Mitigations
  - Improvements recommended along Haycock Road (at Falls Church Drive, at Grove Avenue, and at Great Falls Street)
  - Optimization of the traffic signals along Route 7 and along Haycock Road

Of note, the signal at Chestnut Street along Route 7 was assumed to be constructed as a background condition. The individual improvements by intersection are described in subsequent subsections.

In addition to the aforementioned roadway improvements, the two study intersections within the site along Falls Church Drive may be signalized at the ultimate build-out in order to promote connectivity and improve internal circulation. As the current layout of the development is conceptual and may change prior to site plan, the baseline scenario herein assumes that both internal intersections (Study Intersections 13 and 14) continue to operate similar under existing conditions, whereas the mitigated scenario discussed in this study assumes that both internal intersections would operate under signal control. The final configuration and control type used at these two intersections will be determined prior site plan and when the internal circulation characteristics of the site are finalized.

Future Conditions with Development (2030) – Baseline Scenario

Intersection Capacity Analysis

Intersection capacity analyses were performed for the Future with Development (2030) "baseline" scenario at the study area intersections during the weekday morning (AM) and afternoon peak (PM) peak hours. *Synchro,* version 10, was used to analyze the study intersections with results based on the Highway Capacity Manual (HCM) 2010 methodology and includes level of service (LOS), delay, and queue length comparisons for the turning movements analyzed.

The peak hour factors (by intersection) acquired from the traffic counts, with a minimum of 0.92, were used in the analysis of future conditions. Heavy vehicle percentages of major movements used in the analysis were based on the traffic counts conducted.

Per the scoping meeting between the VDOT, County, and City staff, it is desirable to strive for an overall intersection LOS of D or better for traffic operations using the HCM methodology. The results of the intersection capacity analyses from *Synchro* are presented in Table 10. The results are expressed in LOS and delay (seconds per vehicles) for overall signalized intersections and per approach and lane group by intersection. The signalized intersections that operate overall at LOS E or F are shown in red. The 50th and 95th percentile queues were also determined from *Synchro* and are expressed in feet.

The detailed analysis worksheets of 2030 Future with Development Conditions (Baseline) are contained in Appendix H.

Table 10: 2030 Future Conditions with Development – Baseline – Intersection Capacity Analysis Results

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour				PM Peak Hour			
			LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)	LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)
1	**Leesburg Pike (E/W) at I-66 Off-Ramp (N/S)**									
	Overall Intersection (Signalized)		**A**	**7.0**			**B**	**13.6**		
	Eastbound Approach		***A***	***5.2***			***B***	***12.1***		
	Eastbound Thru		A	5.2	173	249	B	12.1	374	552
	Westbound Approach		***A***	***5.6***			***A***	***7.5***		
	Westbound Thru		A	5.6	481	28	A	7.5	599	133
	Northbound Approach		***D***	***46.6***			***D***	***46.0***		
	Northbound Left	220	D	46.6	44	73	D	46.0	145	188
2	**Leesburg Pike (E/W) at Dale Dr./ Falls Church Dr. (N/S)** **Overall Intersection (Unsignalized)**									
	Northbound Approach		***C***	***21.4***			***D***	***28.6***		
	Northbound Right		C	21.4		5	D	28.6		5
3	**Leesburg Pike (E/W) at Mustang Alley (School Entr.) (N/S)** **Overall Intersection (Unsignalized)**									
	Eastbound Approach									
	Eastbound Left	140	B	14.2		3	B	14.1		0
	Southbound Approach		***C***	***16.9***			***C***	***16.3***		
	Southbound Right		C	16.9		3	C	16.3		0

NOTES:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.

[2] $: Delays (reported from Synchro) exceed 300 seconds in TWSC.

[3] #: 95th percentile queues (reported from Synchro) exceed capacity; actual queues may be longer. Queues shown are based on the maximum after two cycles.

[4] m: 95th percentile volume and queues (reported from Synchro) are metered by upstream signal.

[6] 50th Percentile Queues are not reported for TWSC intersections under HCM 2010 Methodology.

Table 10: 2030 Future Conditions with Development – Baseline – Intersection Capacity Analysis Results (Continued)

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour				PM Peak Hour			
			LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)	LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)
4	**Leesburg Pike (E/W) at Chestnut St./ Commons Dr. (N/S)**									
	Overall Intersection (Signalized)		**D**	**45.1**			**D**	**48.7**		
	Eastbound Approach		***D***	***44.1***			***D***	***38.9***		
	Eastbound Left	405	F	158.1	~217	#368	F	81.2	~177	m#304
	Eastbound Thru/Right		C	29.0	253	452	C	33.8	430	#559
	Westbound Approach		***D***	***46.1***			***E***	***62.9***		
	Westbound Left	180	D	52.3	12	m14	A	0.0	0	0
	Westbound Thru		D	51.6	510	m#915	E	69.1	496	m#938
	Westbound Right		C	34.1	214	m189	C	33.6	75	m106
	Northbound Approach		***E***	***76.5***			***D***	***52.7***		
	Northbound Left/Thru		F	83.6	13	39	E	62.8	10	34
	Northbound Right		D	48.2	0	0	D	48.0	0	0
	Southbound Approach		***D***	***42.5***			***D***	***42.5***		
	Southbound Left		D	49.6	180	261	D	49.6	183	265
	Southbound Left/Thru/Right		D	35.1	12	78	C	34.7	5	69
5	**Leesburg Pike (E/W) at Shreve Rd./ Haycock Rd. (N/S)**									
	Overall Intersection (Signalized)		**F**	**88.0**			**F**	**82.4**		
	Eastbound Approach		***E***	***61.9***			***F***	***90.9***		
	Eastbound Left	250	F	423.8	~143	#225	F	176.5	~128	#219
	Eastbound Thru		C	34.1	1139	721	F	95.6	~1413	#1528
	Eastbound Right		C	28.6	19	71	C	32.3	218	282
	Westbound Approach		***E***	***61.2***			***E***	***72.1***		
	Westbound Left	225	F	102.0	40	82	F	166.6	~245	#428
	Westbound Thru/Right		E	60.6	~1431	#1626	E	61.5	1044	1158
	Northbound Approach		***F***	***192.8***			***F***	***88.0***		
	Northbound Left	115	E	71.8	119	183	F	141.0	~161	#335
	Northbound Thru/Right		F	214.9	~530	#665	E	67.8	245	305
	Southbound Approach		***F***	***135.7***			***E***	***77.0***		
	Southbound Left	295	F	174.8	~260	#448	E	63.2	220	#320
	Southbound Thru		E	66.3	163	242	F	95.7	673	#903
	Southbound Right		F	138.9	~383	#600	D	52.0	96	151
6	**Haycock Rd. (N/S) at Mustang Alley (E/W)**									
	Overall Intersection (Signalized)		**C**	**24.8**			**B**	**19.6**		
	Eastbound Approach		***D***	***51.7***			***D***	***51.4***		
	Eastbound Left/Right		D	51.7	72	141	D	51.4	85	154
	Northbound Approach		***A***	***2.4***			***A***	***1.1***		
	Northbound Left	110	B	11.5	22	54	A	9.5	4	7
	Northbound Thru		A	0.3	50	104	A	0.2	18	24
	Southbound Approach		***D***	***47.4***			***C***	***27.3***		
	Southbound Thru		D	47.4	175	255	C	27.3	40	291
	Southbound Thru/Right		D	47.5	175	255	C	27.3	40	291
7	**Haycock Rd. (N/S) at Falls Church Dr. (E/W)**									
	Overall Intersection (Signalized)		**B**	**13.2**			**C**	**33.8**		
	Eastbound Approach		***D***	***43.7***			***F***	***87.7***		
	Eastbound Left/Thru		D	49.3	77	129	F	130.1	~307	#492
	Eastbound Right		D	39.2	0	37	C	30.6	0	64
	Westbound Approach		***D***	***39.1***			***C***	***29.4***		
	Westbound Left/Thru/Right		D	39.1	8	32	C	29.4	6	27
	Northbound Approach		***A***	***6.0***			***A***	***8.9***		
	Northbound Left	205	A	6.9	26	131	A	7.3	16	34
	Northbound Thru		A	5.6	31	203	A	9.0	54	105
	Northbound Right	290	A	6.3	0	m0	B	11.8	0	0
	Southbound Approach		***A***	***9.6***			***A***	***9.8***		
	Southbound Left	125	A	9.4	0	m1	A	5.1	1	m3
	Southbound Thru/Right		A	9.6	73	106	A	9.9	154	85

NOTES:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.

[2] $: Delays (reported from Synchro) exceed 300 seconds in TWSC.

[3] #: 95th percentile queues (reported from Synchro) exceed capacity; actual queues may be longer. Queues shown are based on the maximum after two cycles.

[4] m: 95th percentile volume and queues (reported from Synchro) are metered by upstream signal.

[6] 50th Percentile Queues are not reported for TWSC intersections under HCM 2010 Methodology.

Table 10: 2030 Future Conditions with Development – Baseline – Intersection Capacity Analysis Results (Continued)

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour				PM Peak Hour			
			LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)	LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)
8	**Haycock Rd. (N/S) at Grove Ave. (E/W)**									
	Overall Intersection (Unsignalized)									
	Westbound Approach		***F***	***61***			***F***	***129.5***		
	Westbound Left/Right		F	61		165	F	129.5		160
	Southbound Approach									
	Southbound Left		B	12.8		5	C	18.7		33
9	**Haycock Rd. (N/S) at WMATA Metro Entr. (E/W)**									
	Overall Intersection (Signalized)		**A**	**7.1**			**C**	**22.2**		
	Eastbound Approach		***D***	***50.9***			***E***	***59.9***		
	Eastbound Left		D	50.9	80	134	E	59.9	223	#352
	Eastbound Right	125	A	0.0	0	22	A	0.0	6	37
	Northbound Approach		***A***	***0.4***			***B***	***16.0***		
	Northbound Left		A	4.2	5	18	A	9.0	5	m10
	Northbound Thru		A	0.2	76	180	B	16.1	168	m175
	Southbound Approach		***A***	***7.1***			***B***	***13.1***		
	Southbound Thru		A	7.1	102	161	B	13.1	113	211
	Southbound Thru/Right		A	7.1	102	161	B	13.1	113	211
10	**Haycock Rd. (N/S) at Highland Ave. (E/W)**									
	Overall Intersection (Unsignalized)									
	Westbound Approach		***E***	***37.5***			***D***	***32.1***		
	Westbound Left/Right		E	37.5		50	D	32.1		15
	Southbound Approach									
	Southbound Left		A	9.7		0	B	12		3
11	**Haycock Rd. (N/S) at Turner Ave. (E/W)**									
	Overall Intersection (Unsignalized)									
	Eastbound Approach		***C***	***20.9***			***C***	***18.2***		
	Eastbound Left		E	39.9		10	E	43.7		5
	Eastbound Right	60	B	14.4		8	B	13.6		5
	Northbound Approach									
	Northbound Left		A	9.3		3	A	9.2		5
12	**Haycock Rd. (N/S) at Great Falls St. (E/W)**									
	Overall Intersection (Signalized)		**D**	**52.1**			**E**	**78.5**		
	Eastbound Approach		***D***	***36.3***			***F***	***141.4***		
	Eastbound Left/Thru		D	40.2	548	#841	F	168.4	~923	#1382
	Eastbound Right	75	B	19.6	39	84	C	24.3	56	129
	Westbound Approach		***C***	***21.5***			***C***	***32.1***		
	Westbound Left/Thru		C	22.0	180	265	C	32.9	269	473
	Westbound Right	75	B	18.5	0	0	C	22.4	0	0
	Northbound Approach		***E***	***72.7***			***D***	***42.6***		
	Northbound Left	180	E	62.0	134	#243	D	39.2	81	125
	Northbound Thru/Right		E	76.8	489	#692	D	43.7	315	426
	Southbound Approach		***E***	***63.3***			***D***	***54.6***		
	Southbound Left	380	D	45.3	61	102	D	35.1	34	61
	Southbound Thru		E	75.1	444	583	E	62.7	507	666
	Southbound Right	225	D	49.6	66	154	D	41.9	70	150
13	**Falls Church Dr. (E/W) at Commons Drive (N/S)**									
	Overall Intersection (Unsignalized)		**C**	**19.5**			**E**	**44.5**		
	Eastbound Approach		***C***	***23.6***			***F***	***59.9***		
	Eastbound Left/Thru		D	28.2		168	F	84.2		445
	Eastbound Thru/Right		B	10.5		23	B	14.3		73
	Westbound Approach		***C***	***18***			***B***	***12.2***		
	Westbound Left/Thru/Right		C	18		95	B	12.2		28
	Northbound Approach		***B***	***14***			***B***	***12.6***		
	Northbound Left/Thru/Right		B	14		35	B	12.6		20
	Southbound Approach		***B***	***11.2***			***B***	***13.9***		
	Southbound Left		B	11.5		8	B	14.7		38
	Southbound Thru/Right		B	11		13	B	10.6		5

NOTES:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.

[2] $: Delays (reported from Synchro) exceed 300 seconds in TWSC.

[3] #: 95th percentile queues (reported from Synchro) exceed capacity; actual queues may be longer. Queues shown are based on the maximum after two cycles.

[4] m: 95th percentile volume and queues (reported from Synchro) are metered by upstream signal.

[6] 50th Percentile Queues are not reported for TWSC intersections under HCM 2010 Methodology.

Table 10: 2030 Future Conditions with Development – Baseline – Intersection Capacity Analysis Results (Continued)

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour				PM Peak Hour			
			LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)	LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)
14	**Falls Church Dr. (E/W) at Nova Drwy. / New Street 2 (N/S)**									
	Overall Intersection (Unsignalized)									
	Eastbound Approach									
	Eastbound Left		A	8.1		10	A	7.5		5
	Westbound Approach									
	Westbound Left		A	9.6		18	A	10		8
	Northbound Approach		***F***	***51.4***			***F***	***59.5***		
	Northbound Left/Thru/Right		F	51.4		55	F	59.5		138
	Southbound Approach		***C***	***21.5***			***B***	***12.8***		
	Southbound Left/Thru/Right		C	21.5		5	B	12.8		0
15	**Leesburg Pike (E/W) at Alley 1 (N/S)**									
	Overall Intersection (Unsignalized)									
	Southbound Approach		***D***	***33***			***C***	***20.8***		
	Southbound Right		D	33		20	C	20.8		18
16	**Leesburg Pike (E/W) at Alley 3 (N/S)**									
	Overall Intersection (Unsignalized)									
	Southbound Approach		***B***	***10.7***			***B***	***10.6***		
	Southbound Right		B	10.7		2	B	10.6		7
17	**Haycock Road (N/S) at Street C (E/W)**									
	Overall Intersection (Signalized)		**B**	**10.1**			**A**	**7.0**		
	Eastbound Approach		***E***	***57.3***			***D***	***53.4***		
	Eastbound Left/Right		E	57.3	24	74	D	53.4	62	125
	Northbound Approach		***A***	***3.8***			***A***	***4.6***		
	Northbound Left	150	A	9.1	7	m8	A	5.4	39	m54
	Northbound Thru		A	3.4	97	m86	A	4.5	139	m163
	Southbound Approach		***B***	***12.3***			***A***	***1.2***		
	Southbound Thru		B	12.4	38	54	A	1.2	50	85
	Southbound Thru/Right		B	12.2	38	54	A	1.2	50	85

NOTES:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.

[2] $: Delays (reported from Synchro) exceed 300 seconds in TWSC.

[3] #: 95th percentile queues (reported from Synchro) exceed capacity; actual queues may be longer. Queues shown are based on the maximum after two cycles.

[4] m: 95th percentile volume and queues (reported from Synchro) are metered by upstream signal.

[6] 50th Percentile Queues are not reported for TWSC intersections under HCM 2010 Methodology.

Per the scoping meeting between the VDOT, County, and City staff, it is desirable to strive for an overall intersection LOS of D or better for traffic operations using the HCM methodology. The capacity analysis results indicate that all signalized intersections operate at an overall acceptable LOS under 2030 future conditions with development conditions with the exception of the Leesburg Pike and Haycock Road intersection and the Haycock Road and Great Falls Street intersection.

Due to the increased demand on the road network with the developments in-place, the following mitigation strategy was assessed along the Route 7 and Haycock Road corridors as part of this study.

Future Conditions with Development (2030) – Proposed Mitigation

In order to achieve acceptable levels of service or maintain similar traffic operation conditions as compared to future without development conditions, the following roadway improvements are recommended (by intersection):

- Route 7 at Haycock Road
    - Add southbound thru lane on Haycock Road; and
    - Adjust signal timings to accommodate new configuration.
- Haycock Road and Falls Church Drive
    - Restripe the eastbound approach on Falls Church Drive to a shared thru/right and an exclusive left turn lane which will operate under permitted + protected phasing.
    - Adjust signal timings to accommodate new configuration.
- Haycock Road at Great Falls Street
    - Change eastbound and westbound Haycock Road lane configuration from left/thru, right to left, thru/right; and
    - Modify signal timings to account for the change in roadway geometry.
- Haycock Road at Grove Avenue
    - Add a northbound right turn lane to provide an exclusive left lane and an exclusive right lane.
- Route 7 Corridor
    - Optimize traffic signal timings along Route 7 to promote progression and to account for the modifications to the Route 7 and Haycock Road intersection.
- Haycock Road Corridor
    - Optimize traffic signal timings along Haycock to promote progression and to account for the modifications to the Route 7 and Haycock Road intersection.

In addition to the aforementioned roadway improvements, the two study intersections within the site along Falls Church Drive may be signalized at the ultimate build-out in order to promote connectivity and improve internal circulation. As the current layout of the development is conceptual and may change prior to site plan, the baseline scenario assumed that both internal intersections (Study Intersections 13 and 14) continued to operate similar under existing conditions, whereas the mitigated scenario discussed in this study assumes that both internal intersections would operate under signal control. The final configuration and control type used at these two intersections will be determined prior site plan and when the internal circulation characteristics of the site are finalized.

The traffic volumes for the 2030 Future with Development conditions are presented in Figure 51 and in Figure 52. The lane configuration with the recommended improvements is illustrated in Figure 53 and Figure 54.

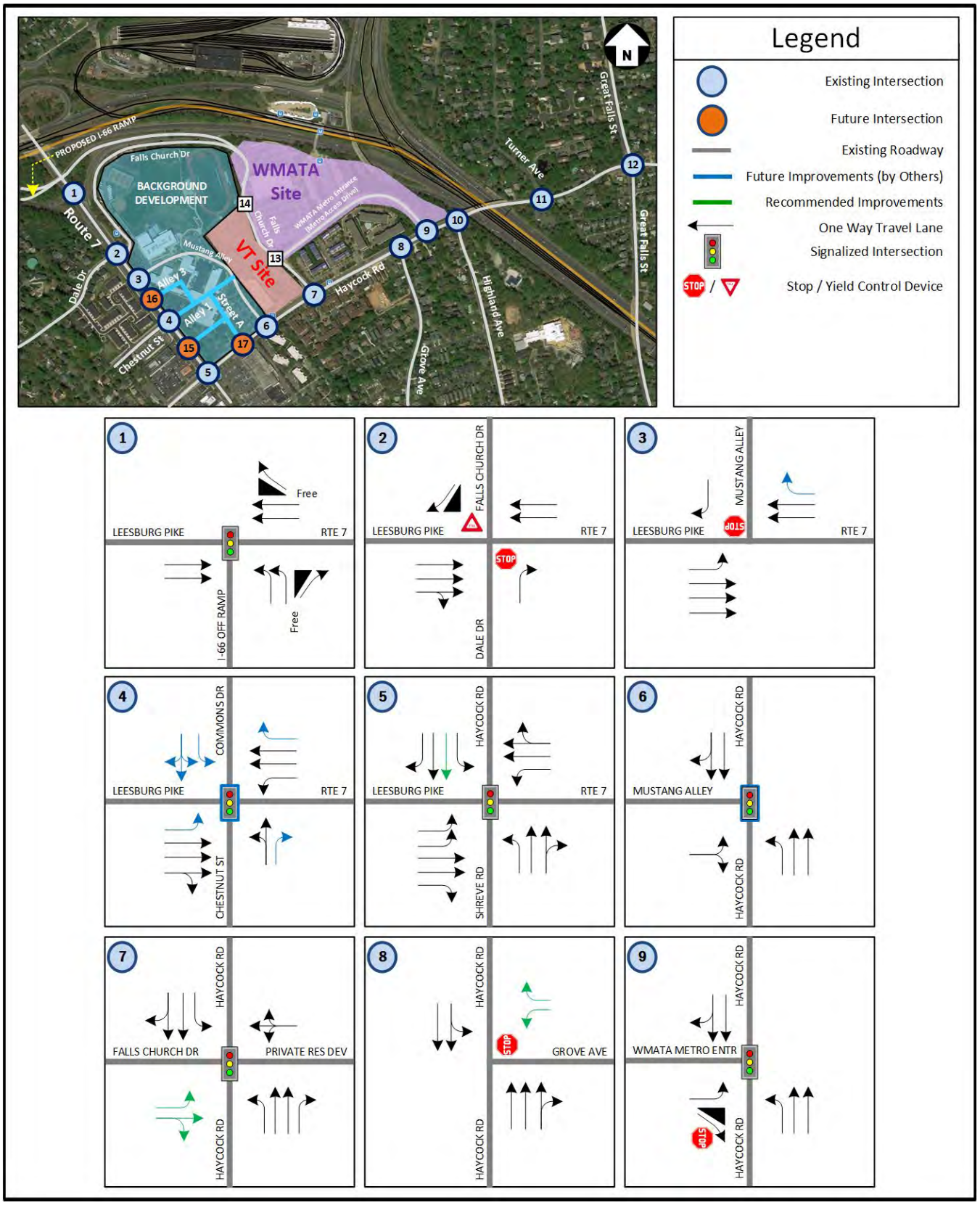


Figure 53: 2030 Future Conditions with Development and with Proposed Mitigations – Roadway Lane Configuration and Traffic Control Devices (1 of 2)

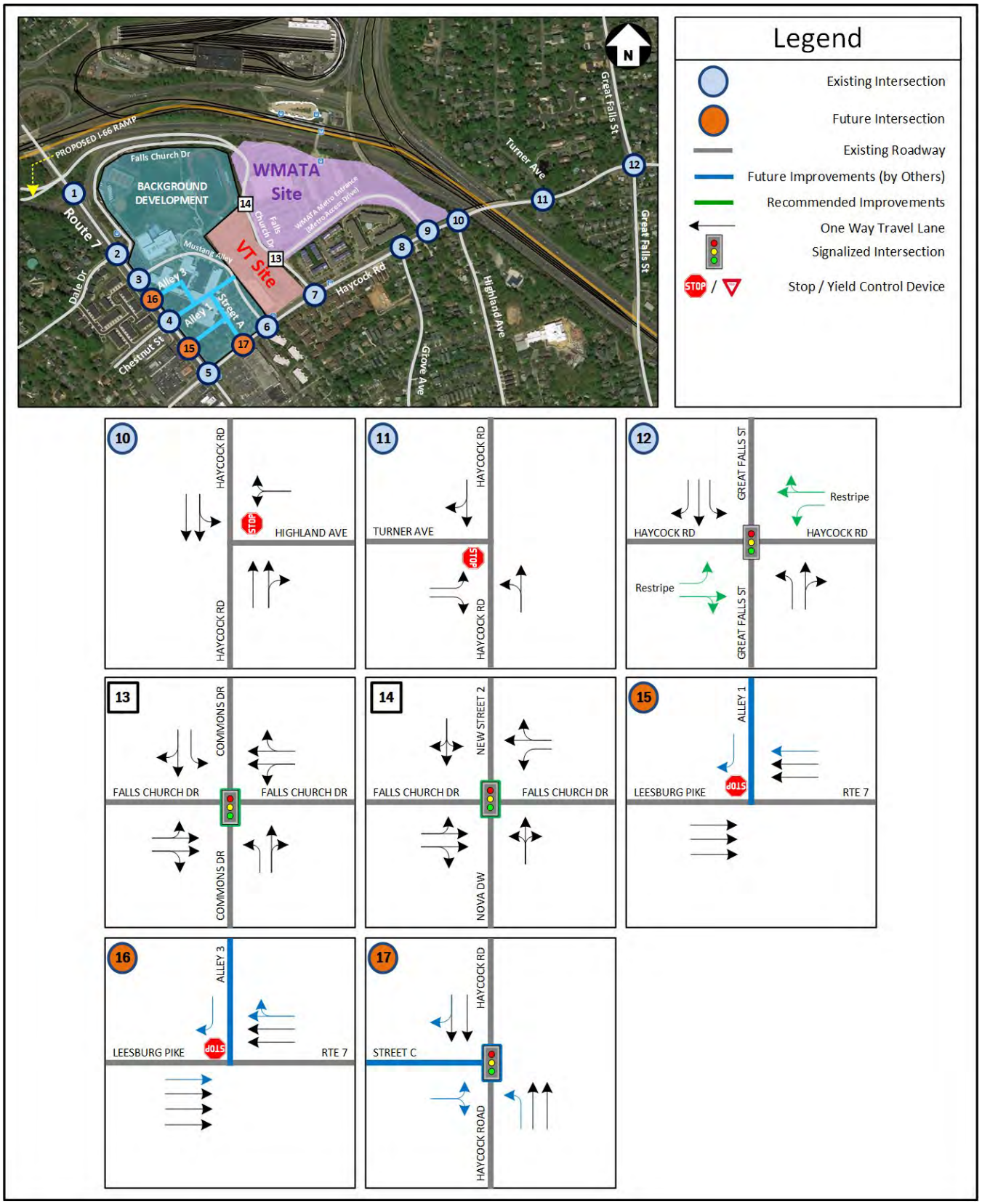


Figure 54: 2030 Future Conditions with Development and with Proposed Mitigations – Roadway Lane Configuration and Traffic Control Devices (2 of 2)

Intersection Capacity Analysis

In order to assess the impacts of the proposed roadway improvements presented in this scenario, intersection capacity analyses were performed for the Future with Development (2030) scenario at the study area intersections during the weekday morning (AM) and afternoon peak (PM) peak hours. *Synchro,* version 10, was used to analyze the study intersections with results based on the Highway Capacity Manual (HCM) 2010 methodology and includes level of service (LOS), delay, and queue length comparisons for the turning movements analyzed.

The peak hour factors (by intersection) acquired from the traffic counts, with a minimum of 0.92, were used in the analysis of future conditions. Heavy vehicle percentages of major movements used in the analysis were based on the traffic counts conducted.

Per the scoping meeting between the VDOT, County, and City staff, it is desirable to strive for an overall intersection LOS of D or better for traffic operations using the HCM methodology. The results of the intersection capacity analyses from *Synchro* are presented in Table 11. The results are expressed in LOS and delay (seconds per vehicles) for overall signalized intersections and per approach and lane group by intersection. The signalized intersections that operate overall at LOS E or F are shown in red. The 50th and 95th percentile queues were also determined from *Synchro* and are expressed in feet.

The detailed analysis worksheets of 2030 Future with Development Conditions – Proposed Mitigations are contained in Appendix I.

Table 11: 2030 Future Conditions with Development – Proposed Mitigations – Intersection Capacity Analysis Results

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour				PM Peak Hour			
			LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)	LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)
1	**Leesburg Pike (E/W) at I-66 Off-Ramp (N/S)** **Overall Intersection (Signalized)** **(MIT: Optimize Corridor Timings)**		**A**	**8.9**			**C**	**20.7**		
	Eastbound Approach		***B***	***11.3***			***B***	***18.7***		
	Eastbound Thru		B	11.3	373	433	B	18.7	616	711
	Westbound Approach		***A***	***2.9***			***B***	***14.9***		
	Westbound Thru		A	2.9	65	74	B	14.9	257	423
	Northbound Approach		***D***	***53.2***			***D***	***54.1***		
	Northbound Left	220	D	53.2	57	90	D	54.1	196	254
2	**Leesburg Pike (E/W) at Dale Dr./ Falls Church Dr. (N/S)** **Overall Intersection (Unsignalized)**									
	Northbound Approach		***C***	***21.4***			***D***	***28.6***		
	Northbound Right		C	21.4		5	D	28.6		5
3	**Leesburg Pike (E/W) at Mustang Alley (School Entr.) (N/S)** **Overall Intersection (Unsignalized)**									
	Eastbound Approach									
	Eastbound Left	140	B	14.2		3	B	14.1		0
	Southbound Approach		***C***	***16.9***			***C***	***16.3***		
	Southbound Left/Right		C	16.9		3	C	16.3		0

NOTES:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.

[2] $: Delays (reported from Synchro) exceed 300 seconds in TWSC.

[3] #: 95th percentile queues (reported from Synchro) exceed capacity; actual queues may be longer. Queues shown are based on the maximum after two cycles.

[4] m: 95th percentile volume and queues (reported from Synchro) are metered by upstream signal.

[6] 50th Percentile Queues are not reported for TWSC intersections under HCM 2010 Methodology.

Table 11: 2030 Future Conditions with Development – Proposed Mitigations – Intersection Capacity Analysis Results (Continued)

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour				PM Peak Hour			
			LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)	LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)
4	**Leesburg Pike (E/W) at Chestnut St./ Commons Dr. (N/S)**									
	Overall Intersection (Signalized)		**D**	**36.7**			**C**	**30.9**		
	Eastbound Approach		***C***	***20.6***			***B***	***15.4***		
	Eastbound Left	405	E	63.6	200	#344	E	72.9	233	m#357
	Eastbound Thru/Right		B	14.9	194	287	A	8.4	149	196
	Westbound Approach		***D***	***42.2***			***D***	***39.3***		
	Westbound Left	180	F	84.6	15	m17	A	0.0	0	0
	Westbound Thru		D	44.5	624	m622	D	40.9	495	#923
	Westbound Right		D	36.5	190	m156	C	31.9	66	m111
	Northbound Approach		***E***	***73.5***			***E***	***70.3***		
	Northbound Left/Thru		E	75.3	19	49	E	71.8	15	42
	Northbound Right		E	66.2	0	0	E	69.6	0	0
	Southbound Approach		***E***	***64.7***			***E***	***65.3***		
	Southbound Left		E	74.8	268	365	E	75.7	272	370
	Southbound Left/Thru/Right		D	54.2	84	176	D	53.8	71	164
5	**Leesburg Pike (E/W) at Shreve Rd./ Haycock Rd. (N/S)**									
	Overall Intersection (Signalized)									
	(MIT: Install second SBT and Optimize Corridor Timings)		**E**	**79.2**			**D**	**52.8**		
	Eastbound Approach		***C***	***31.0***			***D***	***44.8***		
	Eastbound Left	250	F	99.7	74	m#135	F	90.2	88	m#130
	Eastbound Thru		C	26.7	340	433	D	46.8	753	#1103
	Eastbound Right		B	10.2	6	m15	B	15.9	70	127
	Westbound Approach		***F***	***120.0***			***D***	***54.3***		
	Westbound Left	225	F	81.6	28	64	F	162.9	~187	#345
	Westbound Thru/Right		F	120.5	~1232	#1365	D	42.1	697	#922
	Northbound Approach		***F***	***92.0***			***E***	***68.1***		
	Northbound Left	115	D	48.3	80	134	E	64.0	113	#177
	Northbound Thru/Right		F	100.0	~309	#441	E	69.7	196	248
	Southbound Approach		***F***	***80.7***			***E***	***60.6***		
	Southbound Left	200	F	211.1	~195	#347	F	114.8	~197	#356
	Southbound Thru		C	30.5	36	56	D	45.3	245	286
	Southbound Right		C	27.9	215	#179	C	32.0	107	153
6	**Haycock Rd. (N/S) at Mustang Alley (E/W)**									
	Overall Intersection (Signalized)									
	(MIT: Optimize Corridor Timings)		**A**	**7.3**			**A**	**7.4**		
	Eastbound Approach		***D***	***54.5***			***D***	***54.8***		
	Eastbound Left/Right		D	54.5	123	207	D	54.8	137	223
	Northbound Approach		***A***	***2.4***			***A***	***1.3***		
	Northbound Left	110	B	11.0	12	52	B	10.3	6	12
	Northbound Thru		A	0.4	13	28	A	0.3	27	38
	Southbound Approach		***A***	***1.2***			***A***	***1.2***		
	Southbound Thru		A	1.2	53	83	A	1.2	78	116
	Southbound Thru/Right		A	1.2	53	83	A	1.2	78	116

NOTES:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.

[2] $: Delays (reported from Synchro) exceed 300 seconds in TWSC.

[3] #: 95th percentile queues (reported from Synchro) exceed capacity; actual queues may be longer. Queues shown are based on the maximum after two cycles.

[4] m: 95th percentile volume and queues (reported from Synchro) are metered by upstream signal.

[6] 50th Percentile Queues are not reported for TWSC intersections under HCM 2010 Methodology.

Table 11: 2030 Future Conditions with Development – Proposed Mitigations – Intersection Capacity Analysis Results (Continued)

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour				PM Peak Hour			
			LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)	LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)
7	**Haycock Rd. (N/S) at Falls Church Dr. (E/W) Overall Intersection (Signalized) (MIT: Convert EB app to a L,TR config., Modify timings to allow cuncucrent phasing on side streets, Optimize Corridor Timings)**		**B**	**18.1**			**C**	**31.6**		
	Eastbound Approach		***D***	***40.9***			***D***	***35.9***		
	Eastbound Left		D	42.0	88	137	D	39.2	286	387
	Eastbound Thru/Right		D	40.0	1	53	C	31.5	22	87
	Westbound Approach		***D***	***53.6***			***D***	***53.5***		
	Westbound Left/Thru/Right		D	53.6	12	43	D	53.5	9	38
	Northbound Approach		***B***	***13.4***			***D***	***37.1***		
	Northbound Left	205	B	20.0	76	183	C	27.4	47	81
	Northbound Thru		B	10.6	63	192	D	38.9	311	401
	Northbound Right	290	B	13.4	0	m0	C	21.6	0	m1
	Southbound Approach		***B***	***13.8***			***C***	***20.6***		
	Southbound Left	125	B	10.5	0	m1	B	10.3	5	m7
	Southbound Thru/Right		B	13.8	201	269	C	20.9	264	343
8	**Haycock Rd. (N/S) at Grove Ave. (E/W) Overall Intersection (Unsignalized) (MIT: Change the WB lane configuration from LR to L,R)**									
	Westbound Approach		***E***	***38.5***			***F***	***74.4***		
	Westbound Left		F	52.1		105	F	154.9		90
	Westbound Right	150	B	13.4		13	C	15		15
	Southbound Approach									
	Southbound Left		B	13.4		13	C	15		15
9	**Haycock Rd. (N/S) at WMATA Metro Entr. (E/W) Overall Intersection (Signalized) (MIT: Optimize Corridor Timings)**		**C**	**20.9**			**C**	**34.1**		
	Eastbound Approach		***D***	***46.6***			***D***	***52.1***		
	Eastbound Left		D	46.6	97	158	D	52.1	301	418
	Eastbound Right	125	A	0.0	0	24	A	0.0	16	52
	Northbound Approach		***C***	***20.2***			***D***	***38.1***		
	Northbound Left		B	12.3	10	23	B	15.0	2	m13
	Northbound Thru		C	20.5	207	238	D	38.5	108	317
	Southbound Approach		***B***	***17.6***			***C***	***20.5***		
	Southbound Thru		B	17.5	200	251	C	20.6	182	278
	Southbound Thru/Right		B	17.6	200	251	C	20.5	182	278
10	**Haycock Rd. (N/S) at Highland Ave. (E/W) Overall Intersection (Unsignalized)**									
	Westbound Approach		***E***	***37.5***			***D***	***32.1***		
	Westbound Left/Right		E	37.5		50	D	32.1		15
	Southbound Approach									
	Southbound Left		A	9.7		0	B	12		3
11	**Haycock Rd. (N/S) at Turner Ave. (E/W) Overall Intersection (Unsignalized)**									
	Eastbound Approach		***C***	***20.9***			***C***	***18.2***		
	Eastbound Left		E	39.9		10	E	43.7		5
	Eastbound Right	60	B	14.4		8	B	13.6		5
	Northbound Approach									
	Northbound Left		A	9.3		3	A	9.2		5

NOTES:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.

[2] $: Delays (reported from Synchro) exceed 300 seconds in TWSC.

[3] #: 95th percentile queues (reported from Synchro) exceed capacity; actual queues may be longer. Queues shown are based on the maximum after two cycles.

[4] m: 95th percentile volume and queues (reported from Synchro) are metered by upstream signal.

[6] 50th Percentile Queues are not reported for TWSC intersections under HCM 2010 Methodology.

Table 11: 2030 Future Conditions with Development – Proposed Mitigations – Intersection Capacity Analysis Results (Continued)

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour				PM Peak Hour			
			LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)	LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)
12	**Haycock Rd. (N/S) at Great Falls St. (E/W)**									
	Overall Intersection (Signalized)									
	(MIT: Change the EB and WB lane configuration from LT,R to L,TR)		**C**	**33.8**			**D**	**40.3**		
	Eastbound Approach		***C***	***31.2***			***D***	***41.1***		
	Eastbound Left	250	C	25.1	76	149	C	29.9	107	180
	Eastbound Thru/Right		C	33.0	329	563	D	44.3	521	779
	Westbound Approach		***D***	***40.6***			***D***	***47.4***		
	Westbound Left	125	C	32.3	11	36	D	38.9	16	46
	Westbound Thru/Right		D	41.1	196	336	D	48.0	283	426
	Northbound Approach		***D***	***36.1***			***C***	***34.1***		
	Northbound Left	180	C	24.0	72	146	C	29.9	65	135
	Northbound Thru/Right		D	40.8	292	498	D	35.5	262	452
	Southbound Approach		***C***	***31.4***			***D***	***39.7***		
	Southbound Left	380	C	23.7	33	76	C	27.4	27	67
	Southbound Thru		D	39.0	258	439	D	48.9	414	677
	Southbound Right	225	C	21.2	19	76	C	23.2	36	112
13	**Falls Church Dr. (E/W) at Commons Drive (N/S)**									
	Overall Intersection (Signalized)									
	(MIT: Install Signal)		**A**	**6.9**			**A**	**7.5**		
	Eastbound Approach		***A***	***6.3***			***A***	***6.6***		
	Eastbound Left/Thru		A	7.4	33	71	A	7.0	78	145
	Eastbound Thru/Right		A	5.1	33	71	A	6.3	78	145
	Westbound Approach		***A***	***4.5***			***A***	***4.2***		
	Westbound Left/Thru		A	4.5	15	34	A	4.2	7	18
	Westbound Thru/Right		A	4.5	15	34	A	4.2	7	18
	Northbound Approach		***B***	***11.4***			***B***	***11.0***		
	Northbound Left	100	B	11.8	18	59	B	11.3	12	39
	Northbound Thru/Right		A	9.9	5	23	B	10.7	10	35
	Southbound Approach		***B***	***10.5***			***B***	***12.3***		
	Southbound Left	135	B	10.3	5	23	B	12.7	37	96
	Southbound Thru/Right		B	10.5	6	31	B	10.7	6	27
14	**Falls Church Dr. (E/W) at Nova Drwy. / New Street 2 (N/S)**									
	Overall Intersection (Signalized)									
	(MIT: Install Signal)		**A**	**5.3**			**A**	**7.1**		
	Eastbound Approach		***A***	***4.6***			***A***	***6.5***		
	Eastbound Left/Thru		A	4.5	0	80	A	6.3	62	115
	Eastbound Thru/Right		A	4.8	0	80	A	6.7	62	115
	Westbound Approach		***A***	***5.4***			***A***	***6.9***		
	Westbound Left		A	7.7	0	60	A	9.3	9	34
	Westbound Thru/Right		A	3.8	0	45	A	4.7	6	23
	Northbound Approach		***B***	***11.3***			***B***	***10.1***		
	Northbound Left/Thru/Right		B	11.3	1	28	B	10.1	27	77
	Southbound Approach		***B***	***10.7***			***A***	***8.7***		
	Southbound Left/Thru/Right		B	10.7	0	9	A	8.7	0	5
15	**Leesburg Pike (E/W) at Alley 1 (N/S)**									
	Overall Intersection (Unsignalized)									
	Southbound Approach		***D***	***33***			***C***	***20.8***		
	Southbound Right		D	33		20	C	20.8		18
16	**Leesburg Pike (E/W) at Alley 3 (N/S)**									
	Overall Intersection (Unsignalized)									
	Southbound Approach		***B***	***10.8***			***B***	***10.7***		
	Southbound Right		B	10.8		2	B	10.7		7

NOTES:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.

[2] $: Delays (reported from Synchro) exceed 300 seconds in TWSC.

[3] #: 95th percentile queues (reported from Synchro) exceed capacity; actual queues may be longer. Queues shown are based on the maximum after two cycles.

[4] m: 95th percentile volume and queues (reported from Synchro) are metered by upstream signal.

[6] 50th Percentile Queues are not reported for TWSC intersections under HCM 2010 Methodology.

Table 11: 2030 Future Conditions with Development – Proposed Mitigations – Intersection Capacity Analysis Results (Continued)

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour				PM Peak Hour			
			LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)	LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)
17	**Haycock Road (N/S) at Street C (E/W)**									
	Overall Intersection (Signalized)									
	(MIT: Optimize Corridor Timings)		**A**	**8.1**			**B**	**13.4**		
	Eastbound Approach		***D***	***51.9***			***D***	***51.2***		
	Eastbound Left/Right		D	51.9	41	98	D	51.2	101	176
	Northbound Approach		***A***	***5.0***			***B***	***13.0***		
	Northbound Left	100	A	4.8	11	m12	B	17.3	41	m59
	Northbound Thru		A	5.0	104	m103	B	12.2	147	m164
	Southbound Approach		***A***	***6.4***			***A***	***7.3***		
	Southbound Thru/Right		A	6.4	63	77	A	7.3	78	91

NOTES:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.

[2] $: Delays (reported from Synchro) exceed 300 seconds in TWSC.

[3] #: 95th percentile queues (reported from Synchro) exceed capacity; actual queues may be longer. Queues shown are based on the maximum after two cycles.

[4] m: 95th percentile volume and queues (reported from Synchro) are metered by upstream signal.

[6] 50th Percentile Queues are not reported for TWSC intersections under HCM 2010 Methodology.

Per the scoping meeting between the VDOT, County, and City staff, it is desirable to strive for an overall intersection LOS of D or better for traffic operations using the HCM methodology. The capacity analysis for 2030 future with development conditions and with the proposed improvements indicates that all of the signalized study intersection would operate similar to 2030 future without development conditions or better. The intersection of Haycock Road and Leesburg Pike would continue to operate at unacceptable levels of service during the AM peak hour but would improve over future background conditions and would begin to operate acceptably (overall) during the PM peak hour.

The results of the intersection capacity analyses for the 2030 future conditions with development and proposed mitigation strategies are illustrated in Figure 55 and in Figure 56.

Of note, with respect to the intersection of Falls Church Drive at New Street 2 / Nova Driveway (Study Intersection 14), a signal was assessed as a proposed roadway improvement internal to the site. Based on the analysis above, a signal would allow the side streets at the intersection to operate at acceptable levels of service during the peak hours but would consequently interrupt traffic flow along Falls Church Drive. Given these conditions, further analysis regarding the implementation of a signal at this location should be conducted prior to site plan and when the internal circulation characteristics of the site are finalized.

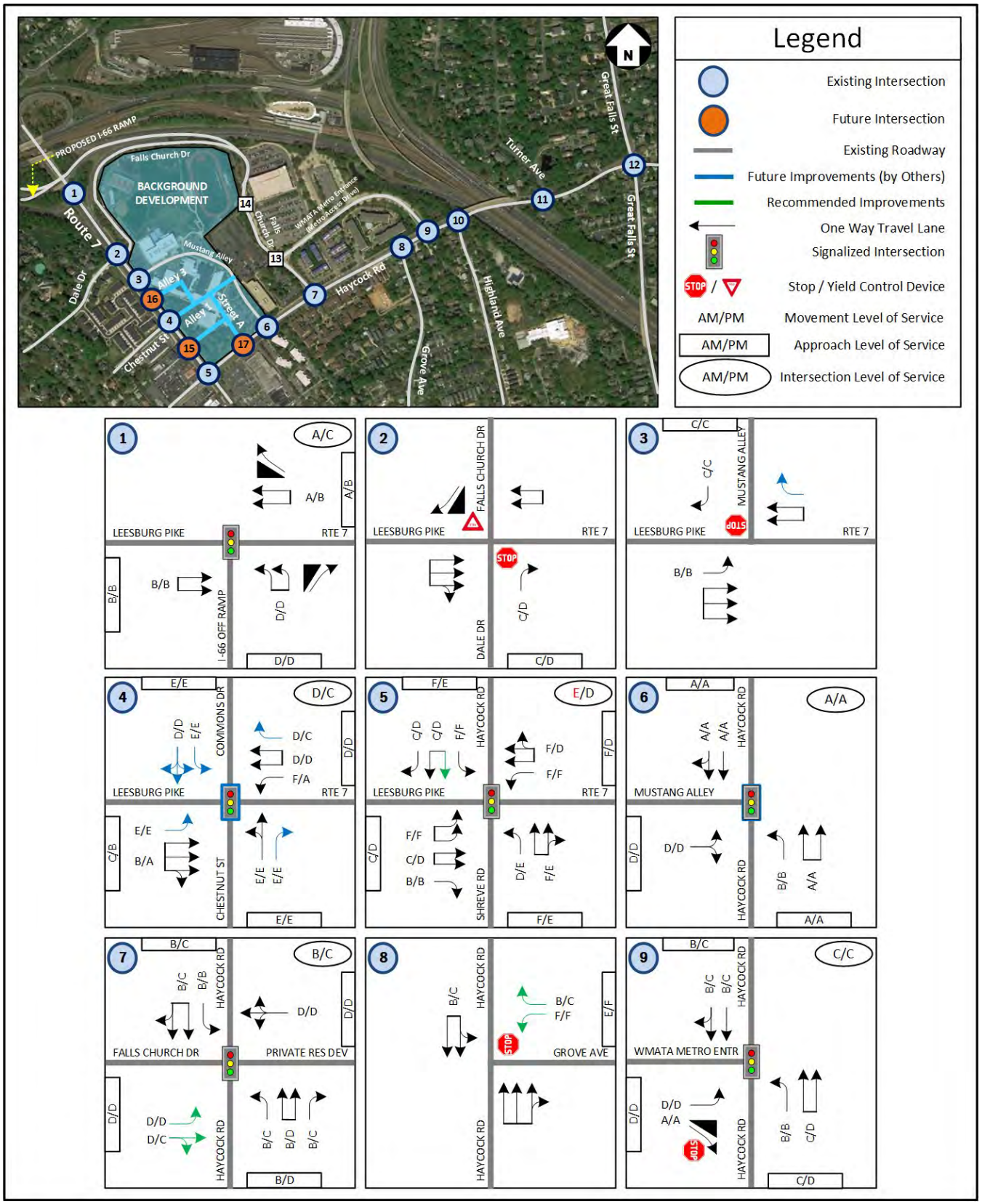


Figure 55: 2030 Future Conditions with Development and with Proposed Mitigations – Levels of Service Results (1 of 2)

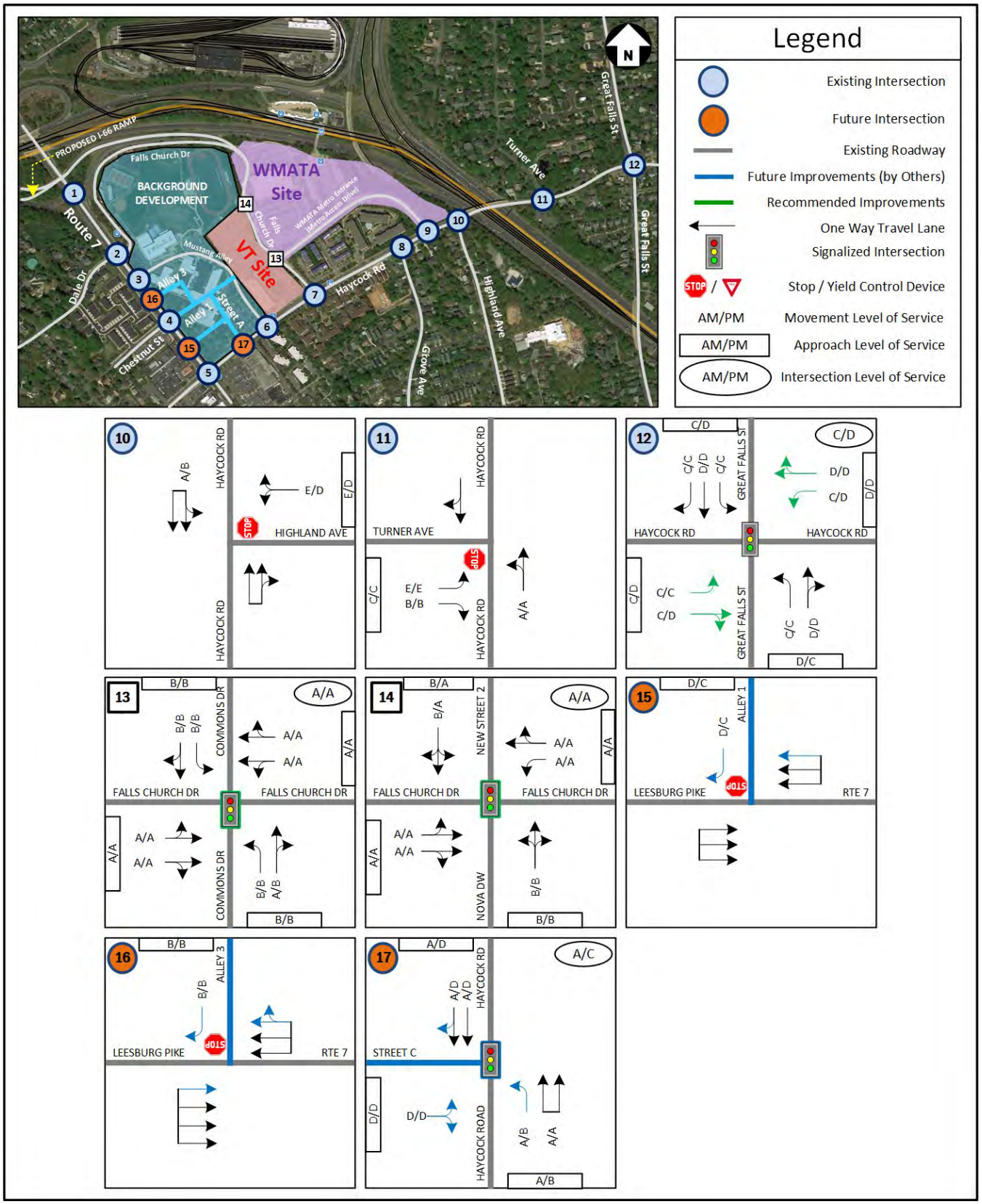


Figure 56: 2030 Future Conditions with Development and with Proposed Mitigations – Levels of Service Results (2 of 2)

FUTURE CONDITIONS WITH DEVELOPMENT (2030) – ALTERNATIVE WITHOUT VT SCENARIO

This scenario presented to provide analysis without the Virginia Tech redevelopment. It is noted that the Comprehensive Plan Amendment continues to call for the redevelopment of both sites and it is not anticipated that this scenario will be realized; it is only included to present a worst-case evaluation in terms of road connectivity. Under this scenario, WMATA is anticipated to be fully constructed and in operation by 2030 without the VT development.

Site Description and Site Access

The WMATA site will be reconstructed and is projected to consist of approximately 130 kSF of office space, 10 kSF of retail space, and 865 residential dwelling units (DU).

Under this scenario, primary site access will continue to be provided via the access roads along the West Falls Church Metrorail Station roadway and Falls Church Drive. However, this scenario does not have a direct connection between the site and Route 7.

Site Trip Generation

In order to calculate the trips generated by the proposed developments, the Institute of Transportation Engineer's (ITE's) Trip Generation Manual, 10th Edition publication, was used in order to determine the trips going into and out of the study site during the AM and PM peak hours, as well as the typical number of weekday daily trips associated with the site. The WMATA development's site trip generation is illustrated in Table 12.

As illustrated in Table 12 and as agreed to during the scoping meeting for this study, internal trip reductions and pass-by trip reductions were applied to the trip generation in order to account for anticipated inner-development interactions and existing capture. Furthermore, a TDM/mode split reduction of 45% was applied to the trip generation as agreed to by VDOT, County, and City scoping meeting. A 45% mode split reduction is justified given the sufficient sidewalk access surrounding the site and connecting the site to the West Falls Church Metrorail station.

Table 12: WMATA Trip Generation (Peak Hour of the Adjacent Streets)

ITE Land Use Code					------ Weekday ------						
					AM Peak Hour			PM Peak Hour			Daily
Trip Generation, 10th Ed.				Quantity	*In*	*Out*	*Total*	*In*	*Out*	*Total*	*Total*
Proposed Development											
Office		710	General Office Building	130 KSF	128	21	149	23	123	146	1,369
(WMATA: 130KSF)			*Internal Capture Office - Residential*		-6	-1	-7	-1	-6	-7	-68
			Internal Capture Office - Retail		0	0	0	-1	-1	-2	-19
Office with Internal Reductions					*122*	*20*	*142*	*21*	*116*	*137*	*1,282*
Mode Split/TDM Reduction	*45%*	*AM/PM/Daily*			*-55*	*-9*	*-64*	*-9*	*-52*	*-61*	*-577*
Office Subtotal					**67**	**11**	**78**	**12**	**64**	**76**	**705**
Retail		820	Shopping Center	10 KSF	6	3	9	18	20	38	378
(WMATA: 10KSF)			*Internal Capture - Retail - Residential*		*0*	*0*	0	*-2*	*-2*	-4	*-57*
			Internal Capture - Retail - Office		*0*	*0*	0	*-1*	*-1*	-2	*-19*
Retail with Internal Reductions					*6*	*3*	*9*	*15*	*17*	*32*	*302*
Pass-By Reduction [A]	*25%/34%/25%*	*AM/PM/Daily*			*-2*	*-1*	*-3*	*-5*	*-6*	*-11*	*-76*
Retail Subtotal					**4**	**2**	**6**	**10**	**11**	**21**	**226**
Residential		221	Multifamily (Mid-Rise) (Urban/Suburban)	865 DU	74	210	284	215	137	352	4,713
(WMATA: 780 DU + 85 Towns)			Internal Capture - Residential - Office		-1	-6	-7	-6	-1	-7	-68
			Internal Capture - Residential - Retail		0	0	0	-2	-2	-4	-57
Residential with Internal Reductions					*73*	*204*	*277*	*207*	*134*	*341*	*4,588*
Mode Split/TDM Reduction	*45%*	*AM/PM/Daily*			*-33*	*-92*	*-125*	*-93*	*-60*	*-153*	*-2,065*
Residential Subtotal					**40**	**112**	**152**	**114**	**74**	**188**	**2,523**
Proposed Development Site Trips with Reductions					**111**	**125**	**236**	**136**	**149**	**285**	**3,454**

A) The pass by reduction for the shopping center is based on the ITE Trip Generation methodology, as provided in the 10th Edition Handbook. The average rate for shopping centers is 34% for the PM Peak. For all other time periods, the default pass by rate is 25%.

(1) residential / office - smaller of 5% of residential trips or 5% of office trips

(2) residential / retail - smaller of X% of residential trips or X% of retail trips; AM: X = 5%, PM: X = 10%, Sat: X= 10%, Daily: X = 15%

(3) office/ retail - smaller of 5% of office trips or 5% of retail trips

(4) academic/retail - use the smaller of 10% of academic traffic or 10% of retail traffic

The proposed WMATA development is anticipated to generate approximately 236 additional trips in the AM peak hour, 285 additional trips in the PM peak hour, and 3,454 daily trips after TDM, internal, and external pass-by reductions.

Site Trip Distribution and Assignment

The distribution and assignment of the site generated trips is consistent with what was shown in the previous scenarios. Using the direction of approaches for the AM and PM peak hours and the current design of the proposed development, the WMATA generated trips were assigned to the road network as illustrated in Figure 57 and in Figure 58 for the residential portions of the developments and in Figure 59 and in Figure 60 for the commercial/non-residential portions of the developments.

The pass-by trips, associated with the development's commercial services, were assigned to the road network, as illustrated in Figure 61 and in Figure 62.

Future Conditions with Development (2030) Traffic Volumes

In order to determine the traffic volumes on the roadways in the vicinity of the development, the site generated traffic volumes and associated pass-by trips for the proposed development were added to the 2030 Future without Development traffic volumes. The traffic volumes for the 2030 Future with Development conditions are presented in Figure 63 and in Figure 64.

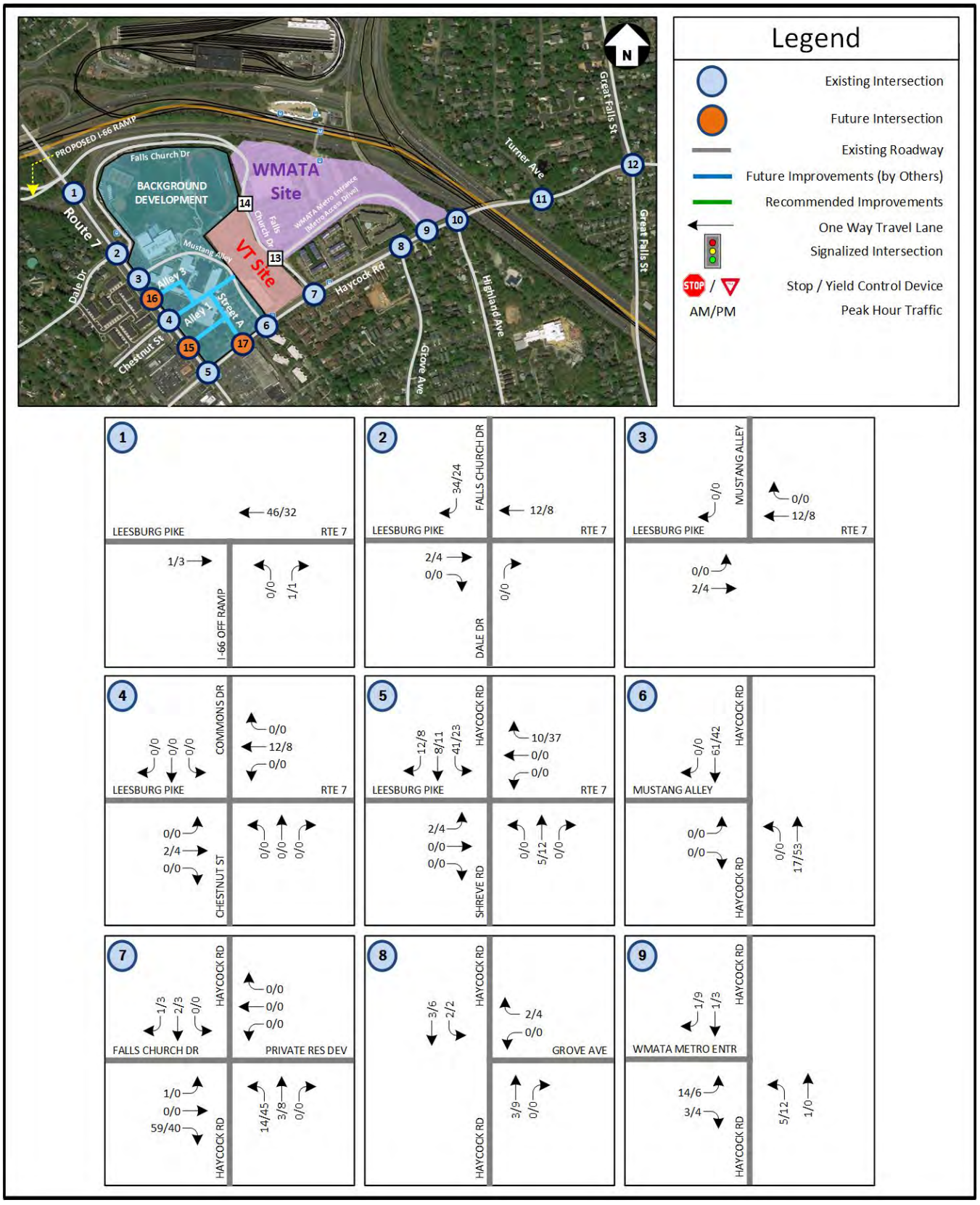


Figure 57: WMATA - Residential Site Trip Assignment (1 of 2)

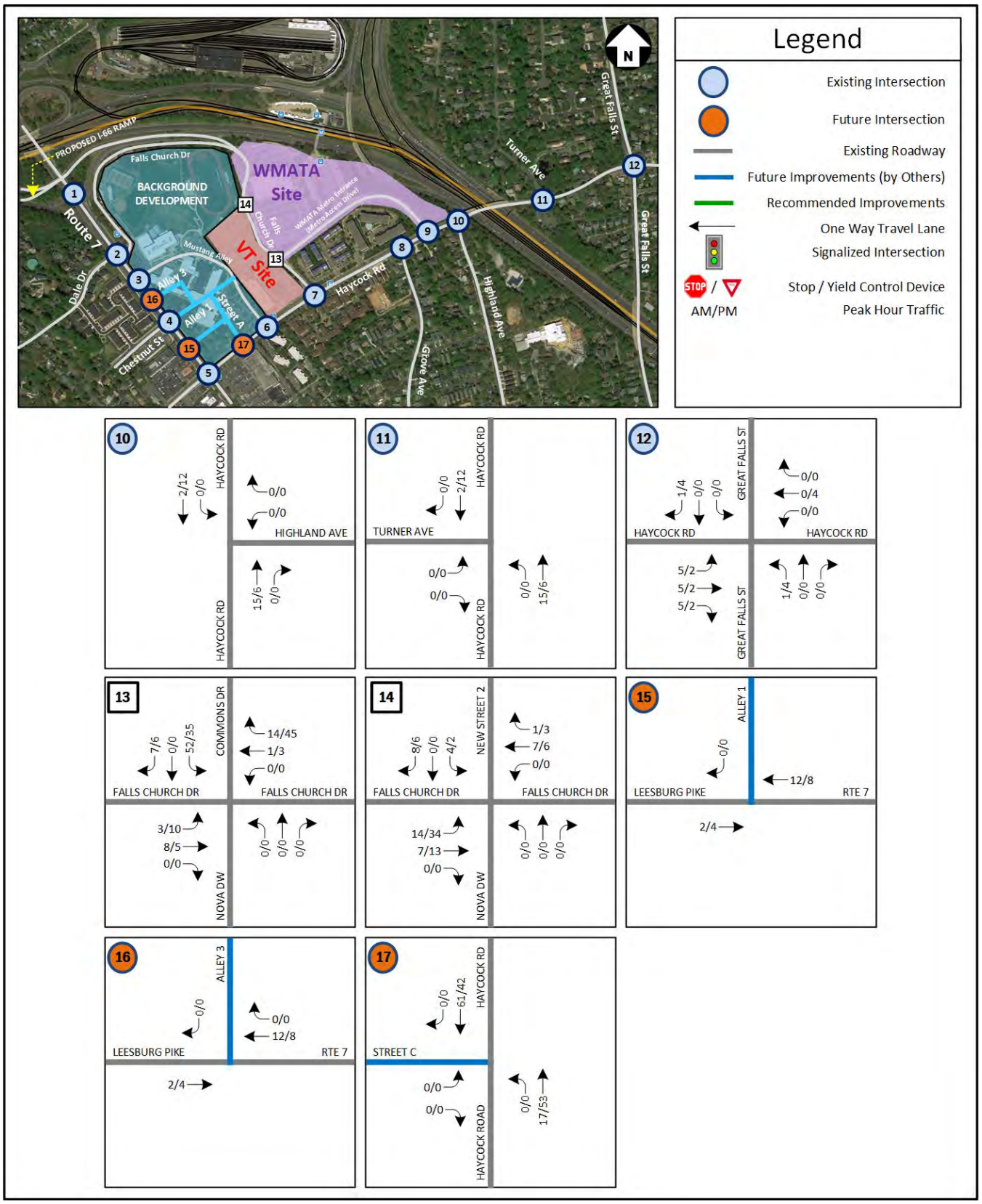


Figure 58: WMATA - Residential Site Trip Assignment (2 of 2)

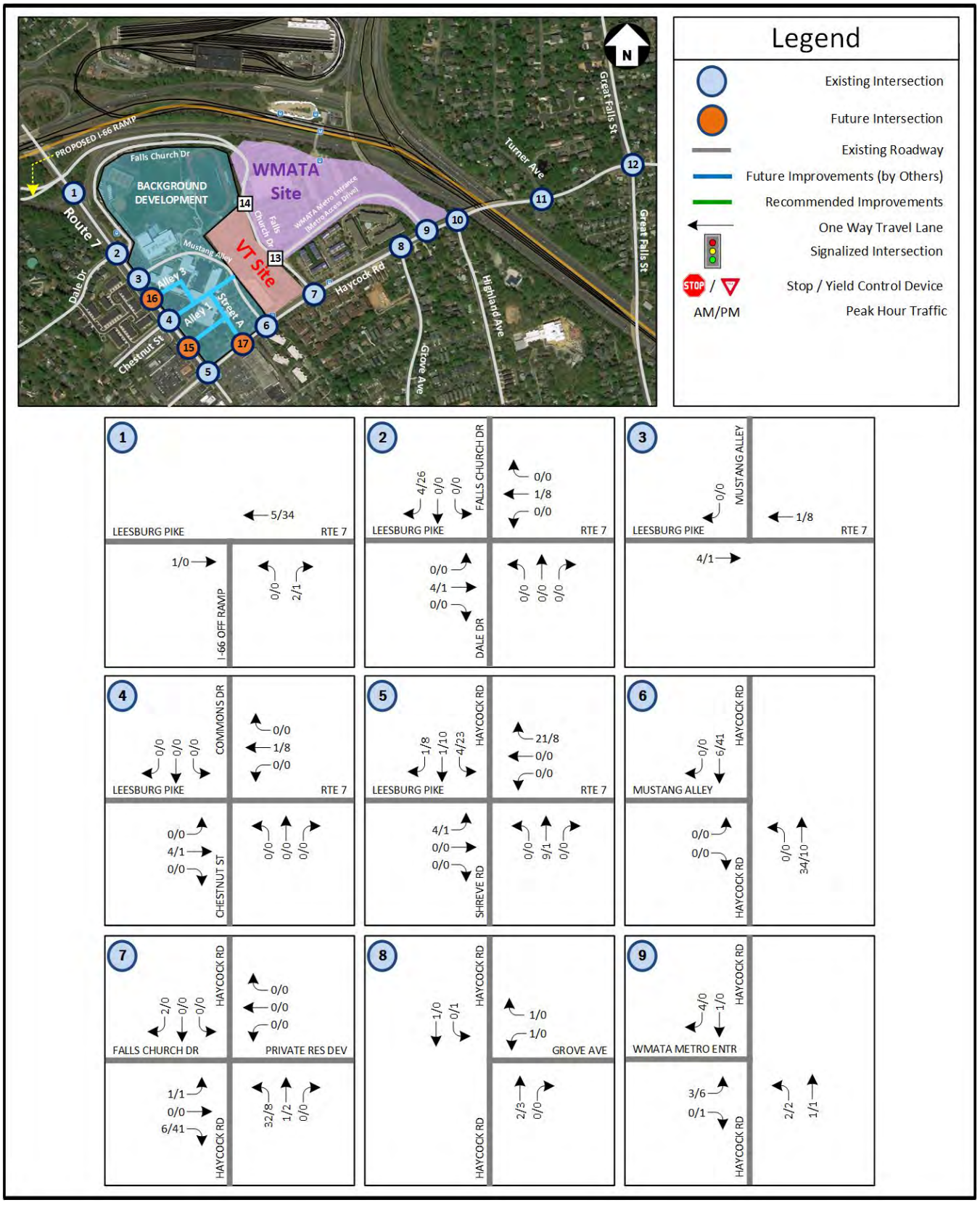


Figure 59: WMATA - Commercial Site Trip Assignment (1 of 2)

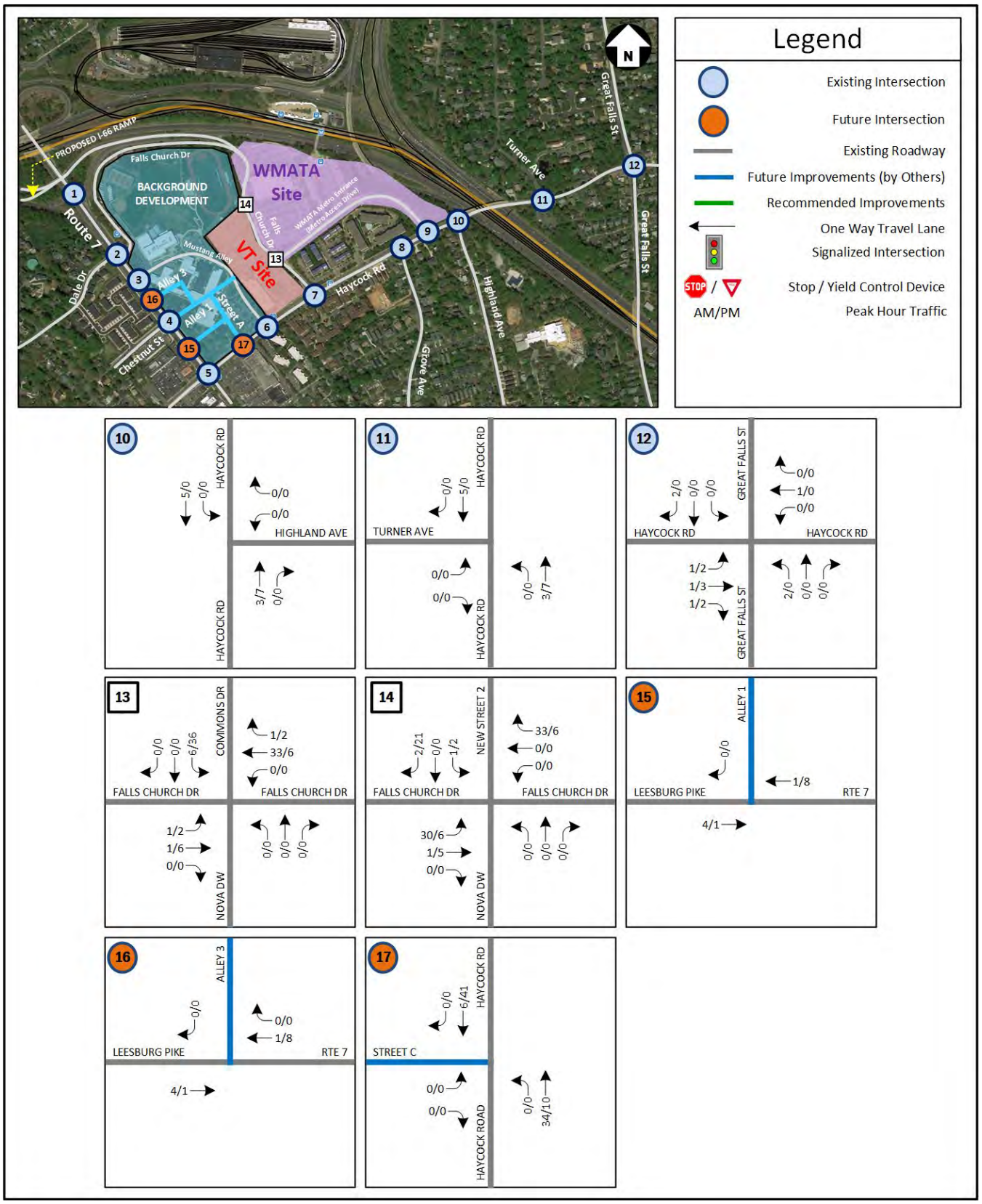


Figure 60: WMATA - Commercial Site Trip Assignment (2 of 2)

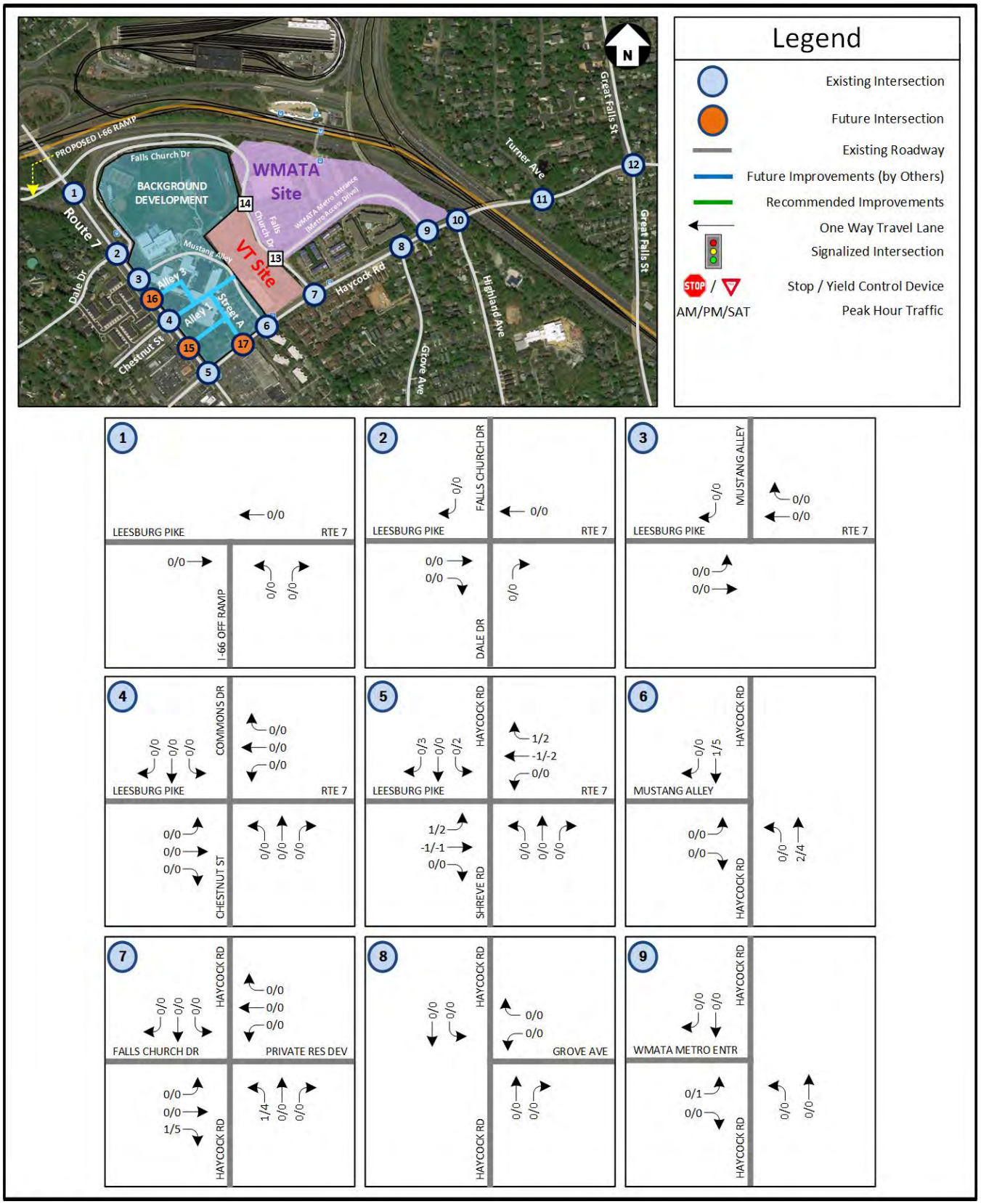


Figure 61: WMATA - Commercial Pass-By Trip Assignment (1 of 2)

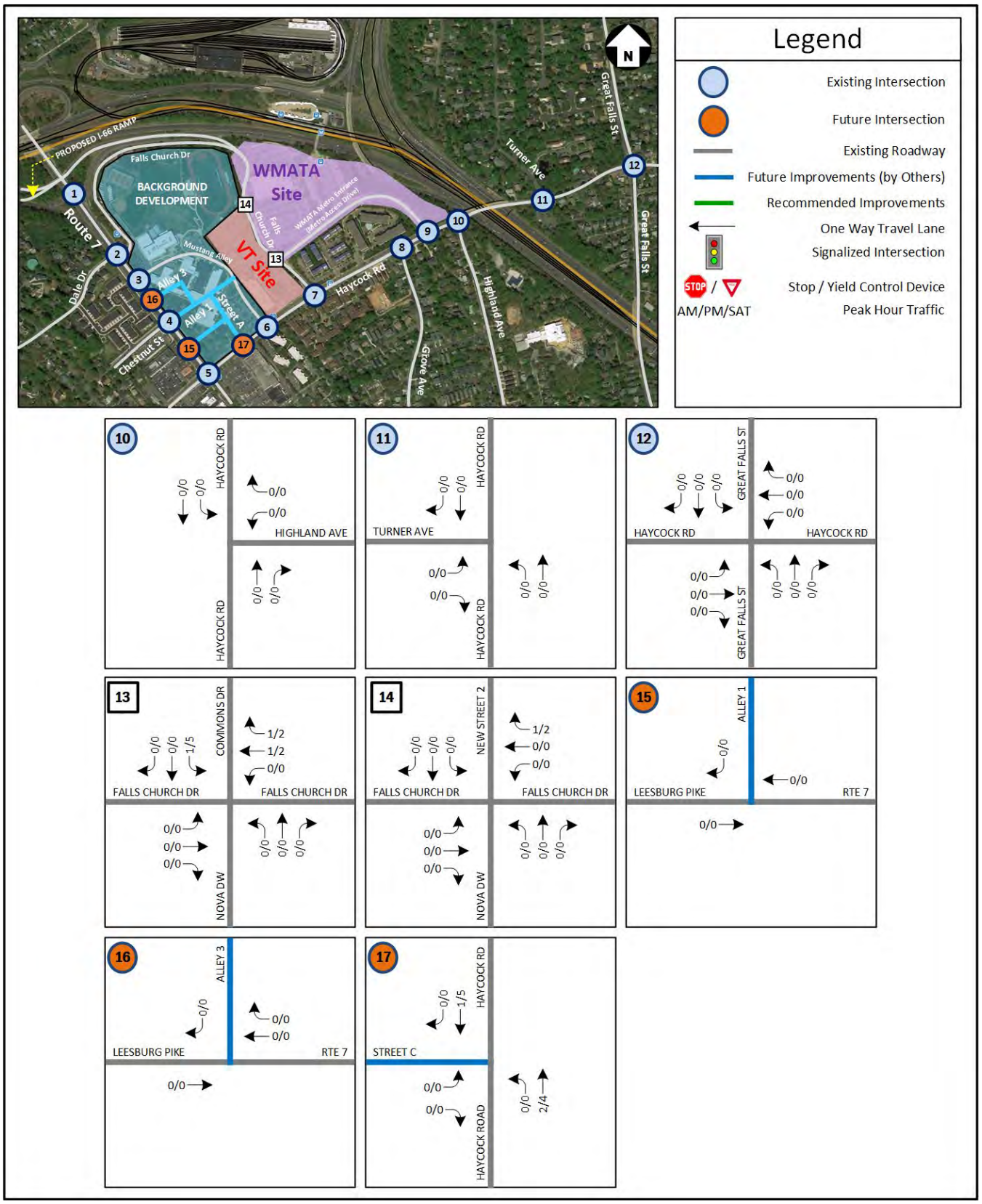


Figure 62: WMATA - Commercial Pass-By Trip Assignment (2 of 2)

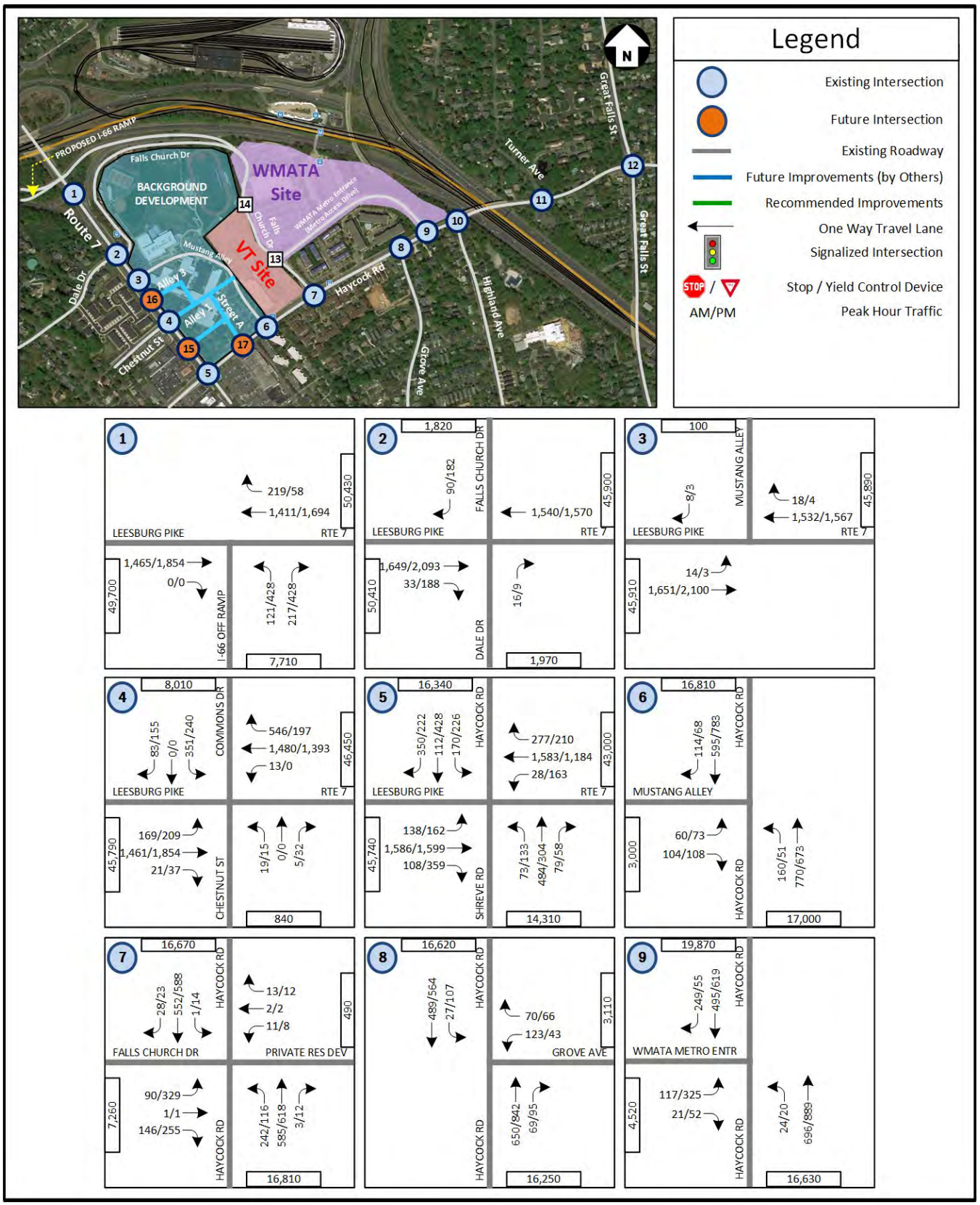


Figure 63: 2030 Future with Development – Alternative No VT Scenario – Vehicular Traffic Volumes (1 of 2)

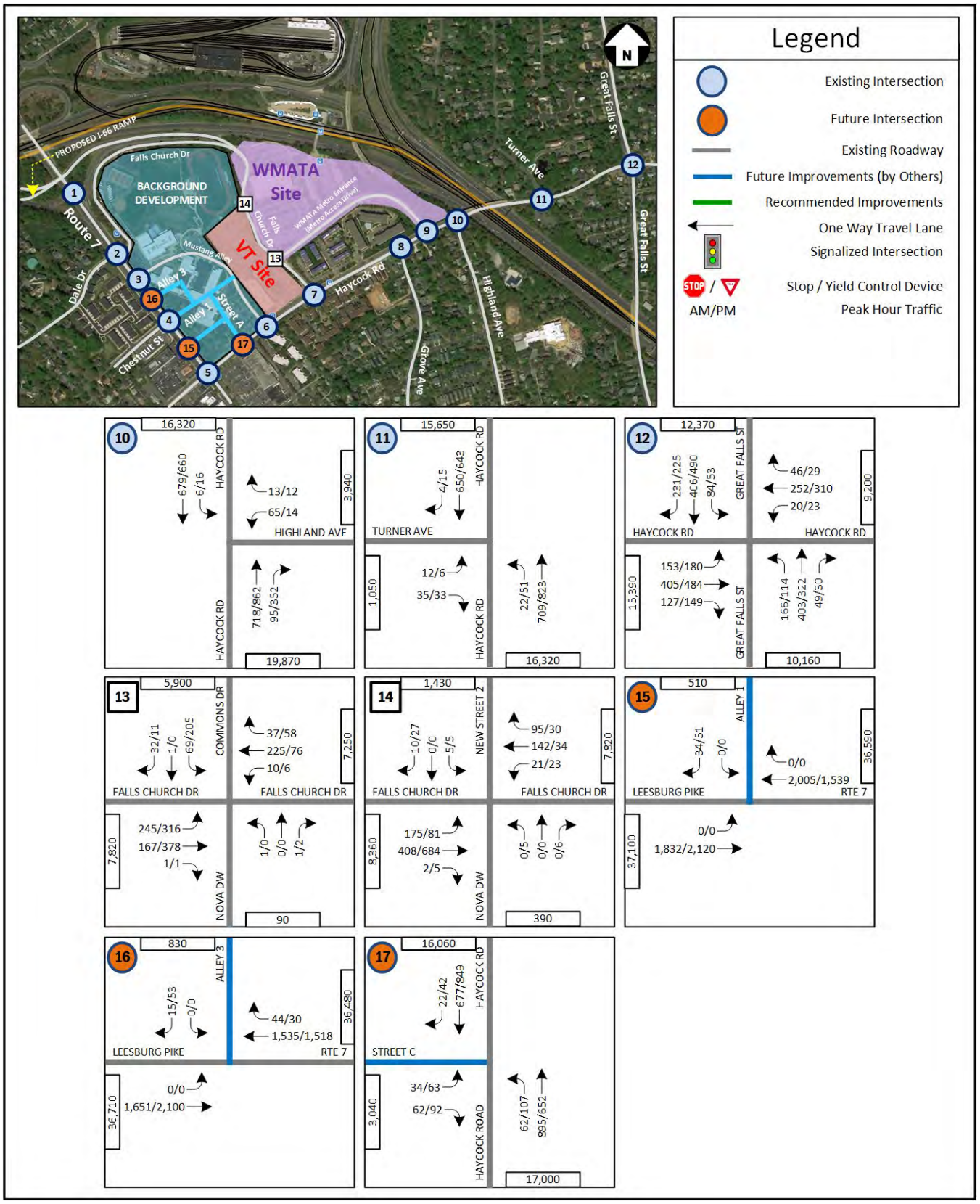


Figure 64: 2030 Future with Development – Alternative No VT Scenario - Vehicular Traffic Volumes (2 of 2)

Future Conditions with Development (2030) – Alternative Without VT Scenario – Roadway Improvement Strategy

The analysis presented herein includes the two following scenarios:

- Baseline
  - No Improvements along Route 7
  - No Improvements along Haycock Road
- Proposed Mitigations
  - Improvements recommended along Haycock Road (at Falls Church Drive and at Great Falls Street)
  - Optimization of the traffic signals along Route 7 and along Haycock Road
  - The proposed mitigations for this scenario are consistent with the Future with Development (2030) – Proposed Mitigations scenario.

Future Conditions with Development (2030) – Alternative without Virginia Tech - Baseline Scenario

Intersection Capacity Analysis

Intersection capacity analyses were performed for the Future with Development (2030) – Alternative No VT – "baseline" scenario at the study area intersections during the weekday morning (AM) and afternoon peak (PM) peak hours. *Synchro,* version 10, was used to analyze the study intersections with results based on the Highway Capacity Manual (HCM) 2010 methodology and includes level of service (LOS), delay, and queue length comparisons for the turning movements analyzed.

The peak hour factors (by intersection) acquired from the traffic counts, with a minimum of 0.92, were used in the analysis of future conditions. Heavy vehicle percentages of major movements used in the analysis were based on the traffic counts conducted.

Per the scoping meeting between the VDOT, County, and City staff, it is desirable to strive for an overall intersection LOS of D or better for traffic operations using the HCM methodology. The results of the intersection capacity analyses from *Synchro* are presented in Table 14. The results are expressed in LOS and delay (seconds per vehicles) for overall signalized intersections and per approach and lane group by intersection. The signalized intersections that operate overall at LOS E or F are shown in red. The 50th and 95th percentile queues were also determined from *Synchro* and are expressed in feet.

The detailed analysis worksheets of 2030 Future with Development Conditions – Alternative No VT - (Baseline) are contained in Appendix J.

Table 13: 2030 Future Conditions with Development – Alternative No VT (Baseline) – Intersection Capacity Analysis Results

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour				PM Peak Hour			
			LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)	LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)
1	**Leesburg Pike (E/W) at I-66 Off-Ramp (N/S)**									
	Overall Intersection (Signalized)		**A**	**7.1**			**B**	**13.5**		
	Eastbound Approach		***A***	***5.1***			***B***	***12.1***		
	Eastbound Thru		A	5.1	171	246	B	12.1	373	550
	Westbound Approach		***A***	***5.8***			***A***	***6.9***		
	Westbound Thru		A	5.8	442	28	A	6.9	537	126
	Northbound Approach		***D***	***46.6***			***D***	***46.0***		
	Northbound Left	220	D	46.6	44	73	D	46.0	145	188
2	**Leesburg Pike (E/W) at Dale Dr./ Falls Church Dr. (N/S)** **Overall Intersection (Unsignalized)**									
	Northbound Approach		***C***	***21.2***			***D***	***28.4***		
	Northbound Right		C	21.2		5	D	28.4		5
3	**Leesburg Pike (E/W) at Mustang Alley (School Entr.) (N/S)** **Overall Intersection (Unsignalized)**									
	Eastbound Approach									
	Eastbound Left	140	B	14.2		3	B	14		0
	Southbound Approach		***C***	***16.9***			***C***	***16.2***		
	Southbound Right		C	16.9		3	C	16.2		0
4	**Leesburg Pike (E/W) at Chestnut St./ Commons Dr. (N/S)** **Overall Intersection (Signalized)**		**D**	**39.7**			**D**	**42.4**		
	Eastbound Approach		***D***	***36.9***			***D***	***35.5***		
	Eastbound Left	405	F	117.5	~178	#321	E	70.6	~144	m#271
	Eastbound Thru/Right		C	27.7	244	456	C	31.6	428	#568
	Westbound Approach		***D***	***41.3***			***D***	***51.5***		
	Westbound Left	180	D	51.8	13	m14	A	0.0	0	0
	Westbound Thru		D	45.6	478	m#1182	D	53.8	466	#987
	Westbound Right		C	29.3	136	m162	D	35.5	30	m64
	Northbound Approach		***E***	***58.9***			***D***	***50.7***		
	Northbound Left/Thru		E	61.7	13	39	E	57.6	10	34
	Northbound Right		D	47.7	0	0	D	47.4	0	0
	Southbound Approach		***D***	***42.1***			***D***	***42.1***		
	Southbound Left		D	48.1	155	224	D	47.4	146	210
	Southbound Left/Thru/Right		D	35.8	0	52	D	36.2	0	34
5	**Leesburg Pike (E/W) at Shreve Rd./ Haycock Rd. (N/S)** **Overall Intersection (Signalized)**		**F**	**82.9**			**E**	**72.7**		
	Eastbound Approach		***E***	***64.4***			***E***	***75.4***		
	Eastbound Left	250	F	439.0	~149	#229	F	188.7	~137	#227
	Eastbound Thru		C	34.1	1110	694	E	73.4	~1317	#1433
	Eastbound Right		C	31.1	19	72	C	32.6	217	285
	Westbound Approach		***D***	***50.3***			***E***	***65.4***		
	Westbound Left	225	F	102.0	40	82	F	166.6	~245	#428
	Westbound Thru/Right		D	49.5	1269	1397	D	53.6	966	1075
	Northbound Approach		***F***	***191.0***			***F***	***80.5***		
	Northbound Left	115	E	71.6	81	134	F	110.2	134	#284
	Northbound Thru/Right		F	206.4	~515	#650	E	69.6	239	299
	Southbound Approach		***F***	***125.6***			***E***	***74.7***		
	Southbound Left	295	F	144.1	~220	#399	E	61.4	208	#323
	Southbound Thru		E	65.0	149	228	F	93.4	623	#843
	Southbound Right		F	135.9	206	#636	D	52.1	105	160

NOTES:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.

[2] $: Delays (reported from Synchro) exceed 300 seconds in TWSC.

[3] #: 95th percentile queues (reported from Synchro) exceed capacity; actual queues may be longer. Queues shown are based on the maximum after two cycles.

[4] m: 95th percentile volume and queues (reported from Synchro) are metered by upstream signal.

[6] 50th Percentile Queues are not reported for TWSC intersections under HCM 2010 Methodology.

Table 13: 2030 Future Conditions with Development – Alternative No VT (Baseline) – Intersection Capacity Analysis Results (Continued)

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour				PM Peak Hour			
			LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)	LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)
6	**Haycock Rd. (N/S) at Mustang Alley (E/W)**									
	Overall Intersection (Signalized)		**C**	**24.5**			**B**	**18.3**		
	Eastbound Approach		***D***	***52.8***			***D***	***52.3***		
	Eastbound Left/Right		D	52.8	58	122	D	52.3	75	141
	Northbound Approach		***A***	***2.0***			***A***	***0.8***		
	Northbound Left	110	A	9.8	18	51	A	8.6	3	6
	Northbound Thru		A	0.3	46	105	A	0.3	17	25
	Southbound Approach		***D***	***47.6***			***C***	***25.8***		
	Southbound Thru		D	47.5	152	235	C	25.8	36	274
	Southbound Thru/Right		D	47.6	152	235	C	25.8	36	274
7	**Haycock Rd. (N/S) at Falls Church Dr. (E/W)**									
	Overall Intersection (Signalized)		**B**	**12.4**			**C**	**27.5**		
	Eastbound Approach		***D***	***42.5***			***E***	***69.9***		
	Eastbound Left/Thru		D	46.6	64	110	F	100.3	~263	#444
	Eastbound Right		D	40.0	0	43	C	30.6	0	63
	Westbound Approach		***D***	***39.9***			***C***	***29.3***		
	Westbound Left/Thru/Right		D	39.9	8	32	C	29.3	6	27
	Northbound Approach		***A***	***5.1***			***A***	***8.8***		
	Northbound Left	205	A	5.9	25	114	A	7.3	21	38
	Northbound Thru		A	4.8	30	207	A	9.0	57	101
	Northbound Right	290	A	5.9	0	m0	B	11.8	0	0
	Southbound Approach		***A***	***9.2***			***B***	***10.1***		
	Southbound Left	125	A	9.0	0	m1	A	5.4	2	m3
	Southbound Thru/Right		A	9.2	68	104	B	10.2	150	105
8	**Haycock Rd. (N/S) at Grove Ave. (E/W)**									
	Overall Intersection (Unsignalized)									
	Westbound Approach		***E***	***49.9***			***F***	***89.7***		
	Westbound Left/Right		E	49.9		140	F	89.7		128
	Southbound Approach									
	Southbound Left		B	12.6		5	C	18.2		30
9	**Haycock Rd. (N/S) at WMATA Metro Entr. (E/W)**									
	Overall Intersection (Signalized)		**A**	**7.2**			**C**	**22.5**		
	Eastbound Approach		***D***	***50.8***			***E***	***60.0***		
	Eastbound Left		D	50.8	81	135	E	60.0	224	#356
	Eastbound Right	125	A	0.0	0	22	A	0.0	6	38
	Northbound Approach		***A***	***0.4***			***B***	***15.8***		
	Northbound Left		A	4.1	5	20	A	9.1	6	m13
	Northbound Thru		A	0.2	82	196	B	16.0	158	m181
	Southbound Approach		***A***	***7.0***			***B***	***13.3***		
	Southbound Thru		A	7.0	96	153	B	13.3	109	205
	Southbound Thru/Right		A	7.0	96	153	B	13.3	109	205
10	**Haycock Rd. (N/S) at Highland Ave. (E/W)**									
	Overall Intersection (Unsignalized)									
	Westbound Approach		***D***	***34.9***			***D***	***30.6***		
	Westbound Left/Right		D	34.9		48	D	30.6		15
	Southbound Approach									
	Southbound Left		A	9.6		0	B	11.8		3
11	**Haycock Rd. (N/S) at Turner Ave. (E/W)**									
	Overall Intersection (Unsignalized)									
	Eastbound Approach		***C***	***19.9***			***C***	***17.5***		
	Eastbound Left		E	37.1		8	E	40.7		5
	Eastbound Right	60	B	14		8	B	13.3		5
	Northbound Approach									
	Northbound Left		A	9.2		3	A	9.1		5

NOTES:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.

[2] $: Delays (reported from Synchro) exceed 300 seconds in TWSC.

[3] #: 95th percentile queues (reported from Synchro) exceed capacity; actual queues may be longer. Queues shown are based on the maximum after two cycles.

[4] m: 95th percentile volume and queues (reported from Synchro) are metered by upstream signal.

[6] 50th Percentile Queues are not reported for TWSC intersections under HCM 2010 Methodology.

Table 13: 2030 Future Conditions with Development – Alternative No VT (Baseline) – Intersection Capacity Analysis Results (Continued)

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour				PM Peak Hour			
			LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)	LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)
12	**Haycock Rd. (N/S) at Great Falls St. (E/W)**									
	Overall Intersection (Signalized)		**D**	**51.2**			**E**	**71.6**		
	Eastbound Approach		***C***	***34.3***			***F***	***122.4***		
	Eastbound Left/Thru		D	37.7	522	762	F	144.5	~868	#1329
	Eastbound Right	75	B	19.5	34	77	C	23.9	51	120
	Westbound Approach		***C***	***21.3***			***C***	***30.5***		
	Westbound Left/Thru		C	21.8	175	258	C	31.2	254	449
	Westbound Right	75	B	18.5	0	0	C	22.2	0	0
	Northbound Approach		***E***	***71.6***			***D***	***42.6***		
	Northbound Left	180	E	56.7	126	#208	D	38.5	75	117
	Northbound Thru/Right		E	77.1	489	#692	D	43.9	315	426
	Southbound Approach		***E***	***62.8***			***D***	***54.7***		
	Southbound Left	380	D	45.3	61	102	D	35.1	34	61
	Southbound Thru		E	74.3	444	583	E	62.8	505	666
	Southbound Right	225	D	49.2	63	148	D	41.6	67	145
13	**Falls Church Dr. (E/W) at Commons Drive (N/S)**									
	Overall Intersection (Unsignalized)		**B**	**13.6**			**D**	**28.6**		
	Eastbound Approach		***C***	***15.1***			***E***	***36.2***		
	Eastbound Left/Thru		C	16.7		95	E	45.7		293
	Eastbound Thru/Right		A	8.7		10	B	10.9		33
	Westbound Approach		***B***	***12.5***			***B***	***11.2***		
	Westbound Left/Thru/Right		B	12.5		55	B	11.2		25
	Northbound Approach		***A***	***9.6***						
	Northbound Left/Thru/Right		A	9.6		0	A	9.8		0
	Southbound Approach		***B***	***10.2***			***C***	***15.5***		
	Southbound Left		B	10.9		13	C	15.9		58
	Southbound Thru/Right		A	8.8		5	A	9		3
14	**Falls Church Dr. (E/W) at Nova Drwy. / New Street 2 (N/S)**									
	Overall Intersection (Unsignalized)									
	Eastbound Approach									
	Eastbound Left		A	8.2		13	A	7.5		5
	Westbound Approach									
	Westbound Left		A	8.3		3	A	9.1		3
	Northbound Approach		***A***	***0***			***C***	***17.2***		
	Northbound Left/Thru/Right		A	0		0	C	17.2		3
	Southbound Approach		***B***	***13.3***			***A***	***9.8***		
	Southbound Left/Thru/Right		B	13.3		3	A	9.8		3
15	**Leesburg Pike (E/W) at Alley 1 (N/S)**									
	Overall Intersection (Unsignalized)									
	Southbound Approach		***D***	***29.9***			***C***	***19.7***		
	Southbound Right		D	29.9		18	C	19.7		15
16	**Leesburg Pike (E/W) at Alley 3 (N/S)**									
	Overall Intersection (Unsignalized)									
	Southbound Approach		***B***	***10.9***			***B***	***10.8***		
	Southbound Right		B	10.9		2	B	10.8		7
17	**Haycock Road (N/S) at Street C (E/W)**									
	Overall Intersection (Signalized)		**B**	**10.1**			**A**	**7.1**		
	Eastbound Approach		***E***	***57.3***			***D***	***53.4***		
	Eastbound Left/Right		E	57.3	24	74	D	53.4	62	125
	Northbound Approach		***A***	***3.7***			***A***	***4.6***		
	Northbound Left	150	A	8.9	8	m8	A	5.4	40	m55
	Northbound Thru		A	3.4	100	m90	A	4.5	146	m173
	Southbound Approach		***B***	***12.2***			***A***	***1.1***		
	Southbound Thru		B	12.2	31	45	A	1.2	43	76
	Southbound Thru/Right		B	12.1	31	45	A	1.1	43	76

NOTES:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.

[2] $: Delays (reported from Synchro) exceed 300 seconds in TWSC.

[3] #: 95th percentile queues (reported from Synchro) exceed capacity; actual queues may be longer. Queues shown are based on the maximum after two cycles.

[4] m: 95th percentile volume and queues (reported from Synchro) are metered by upstream signal.

[6] 50th Percentile Queues are not reported for TWSC intersections under HCM 2010 Methodology.

Per the scoping meeting between the VDOT, County, and City staff, it is desirable to strive for an overall intersection LOS of D or better for traffic operations using the HCM methodology. The capacity analysis results indicate that all signalized intersections operate at an overall acceptable LOS under 2030 future conditions with development conditions with the exception of the Leesburg Pike and Haycock Road intersection and the Haycock Road and Great Falls Street intersection.

Due to the increased demand on the road network with the developments in-place, the following mitigation strategy was assessed along the Route 7 and Haycock Road corridors as part of this study.

Future Conditions with Development (2030) – Alternative without Virginia Tech Scenario - Proposed Mitigation

As discussed in the previous sections, roadway improvements are proposed in order to achieve acceptable levels of service or maintain similar traffic operation conditions as compared to future without development conditions. The same mitigations that were proposed in the previous section are also proposed for the Alternative No VT Scenario and include:

- Route 7 at Haycock Road
    - Add southbound thru lane on Haycock Road; and
    - Adjust signal timings to accommodate new configuration.
- Haycock Road and Falls Church Drive
    - Restripe the eastbound approach on Falls Church Drive to a shared thru/right and an exclusive left turn lane which will operate under permitted + protected phasing.
    - Adjust signal timings to accommodate new configuration.
- Haycock Road at Great Falls Street
    - Change eastbound and westbound Haycock Road lane configuration from left/thru, right to left, thru/right; and
    - Modify signal timings to account for the change in roadway geometry.
- Haycock Road at Grove Avenue
    - Add a northbound right turn lane to provide an exclusive left lane and an exclusive right lane.
- Route 7 Corridor
    - Optimize traffic signal timings along Route 7 to promote progression and to account for the modifications to the Route 7 and Haycock Road intersection.
- Haycock Road Corridor
    - Optimize traffic signal timings along Haycock to promote progression and to account for the modifications to the Route 7 and Haycock Road intersection.

In addition to the aforementioned roadway improvements, the two study intersections within the site along Falls Church Drive may be signalized at the ultimate build-out in order to promote connectivity and improve internal circulation. As the current layout of the development is conceptual and may change prior to site plan, the baseline scenario assumed that both internal intersections (Study Intersections 13 and 14) continued to operate similar under existing conditions, whereas the mitigated scenario discussed in this study assumes that both internal intersections would operate under signal control. The final configuration and control type used at these two intersections will be determined prior site plan and when the internal circulation characteristics of the site are finalized.

The lane configuration with the recommended improvements under are again illustrated in Figure 65 and Figure 66.

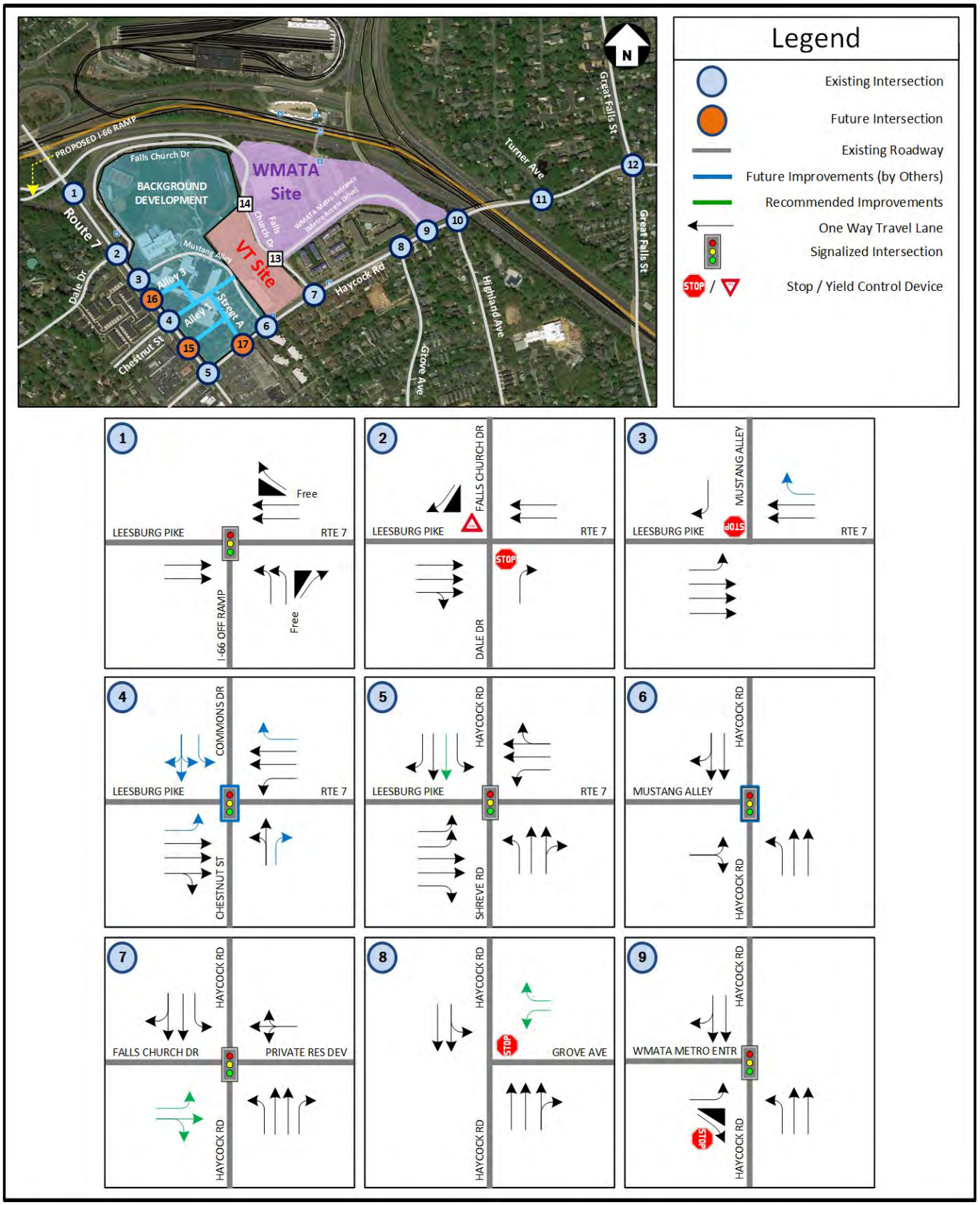


Figure 65: 2030 Future Conditions with Development – Alternative No VT Scenario – Roadway Lane Configuration and Traffic Control Devices (1 of 2)

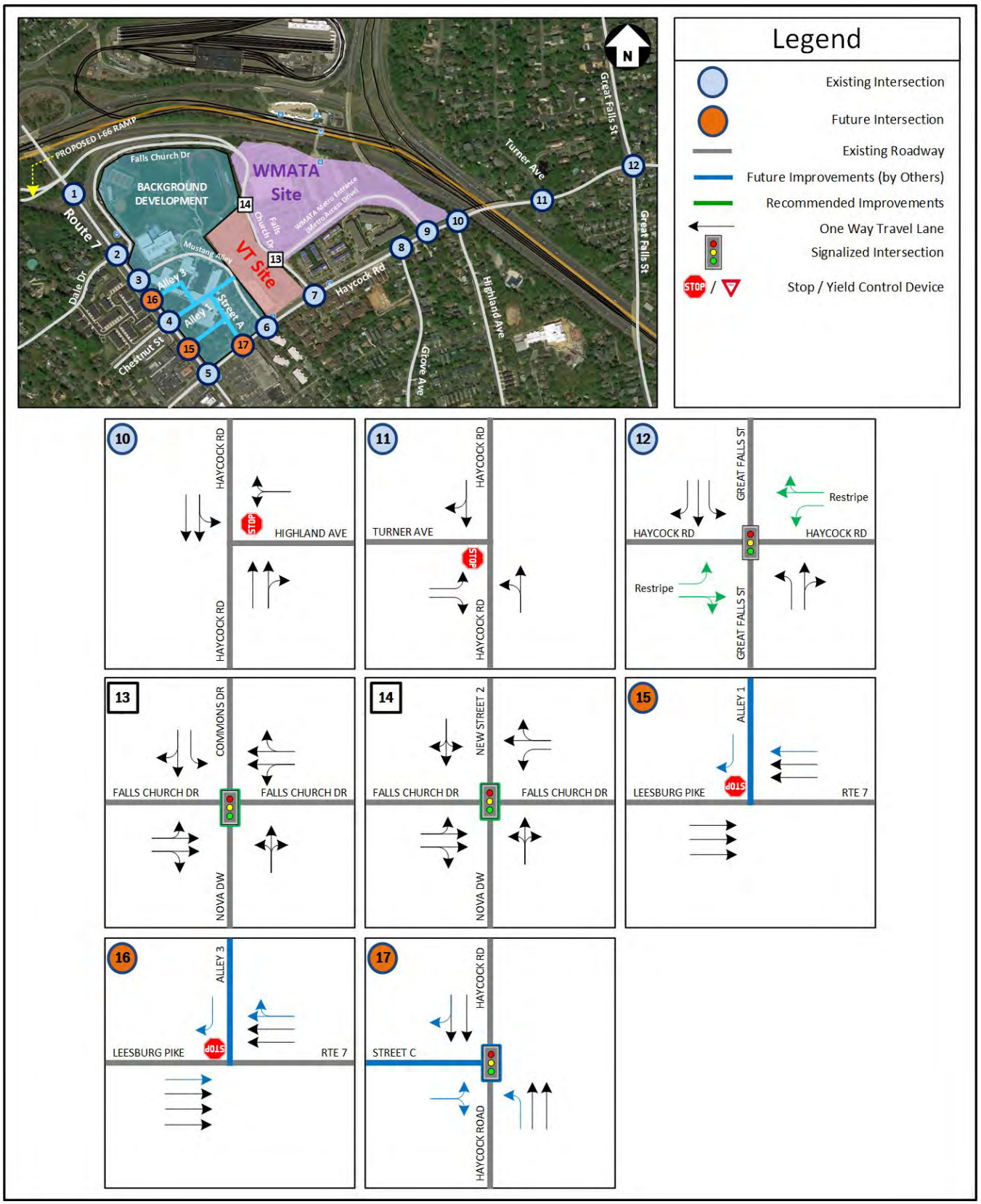


Figure 66: 2030 Future Conditions with Development – Alternative No VT Scenario – Roadway Lane Configuration and Traffic Control Devices (2 of 2)

Intersection Capacity Analysis

In order to assess the impacts of the proposed roadway improvements presented in this scenario, intersection capacity analyses were performed for the Future with Development (2030) scenario at the study area intersections during the weekday morning (AM) and afternoon peak (PM) peak hours. *Synchro,* version 10, was used to analyze the study intersections with results based on the Highway Capacity Manual (HCM) 2010 methodology and includes level of service (LOS), delay, and queue length comparisons for the turning movements analyzed.

The peak hour factors (by intersection) acquired from the traffic counts, with a minimum of 0.92, were used in the analysis of future conditions. Heavy vehicle percentages of major movements used in the analysis were based on the traffic counts conducted.

Per the scoping meeting between the VDOT, County, and City staff, it is desirable to strive for an overall intersection LOS of D or better for traffic operations using the HCM methodology. The results of the intersection capacity analyses from *Synchro* are presented in Table 14. The results are expressed in LOS and delay (seconds per vehicles) for overall signalized intersections and per approach and lane group by intersection. The signalized intersections that operate overall at LOS E or F are shown in red. The 50th and 95th percentile queues were also determined from *Synchro* and are expressed in feet.

The detailed analysis worksheets of 2030 Future with Development Conditions - Alternative No VT Scenario are contained in Appendix K.

Table 14: 2030 Future Conditions with Development – Alternative No VT Scenario – Intersection Capacity Analysis Results

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour				PM Peak Hour			
			LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)	LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)
1	**Leesburg Pike (E/W) at I-66 Off-Ramp (N/S)** **Overall Intersection (Signalized)** **(MIT: Optimize Corridor Timings)**		**A**	**8.8**			**B**	**19.7**		
	Eastbound Approach		***B***	***11.2***			***B***	***18.6***		
	Eastbound Thru		B	11.2	370	430	B	18.6	614	708
	Westbound Approach		***A***	***2.4***			***B***	***12.2***		
	Westbound Thru		A	2.4	46	56	B	12.2	203	338
	Northbound Approach		***D***	***53.2***			***D***	***54.1***		
	Northbound Left	220	D	53.2	57	90	D	54.1	196	254
2	**Leesburg Pike (E/W) at Dale Dr./ Falls Church Dr. (N/S)** **Overall Intersection (Unsignalized)**									
	Northbound Approach		***C***	***21.2***			***D***	***28.4***		
	Northbound Right		C	21.2		5	D	28.4		5
3	**Leesburg Pike (E/W) at Mustang Alley (School Entr.) (N/S)** **Overall Intersection (Unsignalized)**									
	Eastbound Approach									
	Eastbound Left	140	B	14.2		3	B	14		0
	Southbound Approach		***C***	***16.9***			***C***	***16.2***		
	Southbound Left/Right		C	16.9		3	C	16.2		0

NOTES:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.

[2] $: Delays (reported from Synchro) exceed 300 seconds in TWSC.

[3] #: 95th percentile queues (reported from Synchro) exceed capacity; actual queues may be longer. Queues shown are based on the maximum after two cycles.

[4] m: 95th percentile volume and queues (reported from Synchro) are metered by upstream signal.

[6] 50th Percentile Queues are not reported for TWSC intersections under HCM 2010 Methodology.

Table 14: 2030 Future Conditions with Development – Alternative No VT Scenario – Intersection Capacity Analysis Results (Continued)

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour				PM Peak Hour			
			LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)	LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)
4	**Leesburg Pike (E/W) at Chestnut St./ Commons Dr. (N/S)**									
	Overall Intersection (Signalized)		**C**	**33.8**			**C**	**27.7**		
	Eastbound Approach		***B***	***18.2***			***B***	***12.9***		
	Eastbound Left	405	E	57.6	170	#280	E	63.2	212	m#313
	Eastbound Thru/Right		B	13.7	193	286	A	7.3	144	166
	Westbound Approach		***D***	***39.5***			***D***	***36.7***		
	Westbound Left	180	F	83.2	14	m17	A	0.0	0	0
	Westbound Thru		D	41.4	558	m#726	D	37.4	438	#917
	Westbound Right		C	33.3	147	m134	C	31.2	37	m80
	Northbound Approach		***E***	***73.5***			***E***	***70.3***		
	Northbound Left/Thru		E	75.3	19	49	E	71.8	15	42
	Northbound Right		E	66.2	0	0	E	69.6	0	0
	Southbound Approach		***E***	***63.9***			***E***	***64.9***		
	Southbound Left		E	72.6	232	314	E	73.7	217	300
	Southbound Left/Thru/Right		D	54.9	51	133	E	55.1	28	104
5	**Leesburg Pike (E/W) at Shreve Rd./ Haycock Rd. (N/S)**									
	Overall Intersection (Signalized)									
	(MIT: Install second SBT and Optimize Corridor Timings)		**E**	**68.5**			**D**	**48.9**		
	Eastbound Approach		***C***	***30.6***			***D***	***40.0***		
	Eastbound Left	250	F	104.6	75	#139	F	96.0	91	#136
	Eastbound Thru		C	25.6	314	406	D	40.1	648	#1039
	Eastbound Right		A	9.3	4	15	B	14.3	67	126
	Westbound Approach		***F***	***97.8***			***D***	***51.8***		
	Westbound Left	225	F	81.6	28	64	F	162.9	~187	#345
	Westbound Thru/Right		F	98.1	~1132	#1266	D	38.8	641	#818
	Northbound Approach		***F***	***90.0***			***E***	***66.1***		
	Northbound Left	115	D	47.4	55	99	E	57.7	107	161
	Northbound Thru/Right		F	95.5	301	#430	E	69.2	192	243
	Southbound Approach		***E***	***68.7***			***E***	***55.8***		
	Southbound Left	200	F	175.0	~162	#316	F	91.7	~192	#319
	Southbound Thru		C	30.5	34	53	D	45.2	230	286
	Southbound Right		C	29.4	219	#312	D	39.6	135	220
6	**Haycock Rd. (N/S) at Mustang Alley (E/W)**									
	Overall Intersection (Signalized)									
	(MIT: Optimize Corridor Timings)		**A**	**6.4**			**A**	**6.5**		
	Eastbound Approach		***D***	***52.4***			***D***	***52.9***		
	Eastbound Left/Right		D	52.4	101	176	D	52.9	120	199
	Northbound Approach		***A***	***2.2***			***A***	***1.0***		
	Northbound Left	110	B	10.9	10	40	B	10.2	4	12
	Northbound Thru		A	0.4	14	31	A	0.3	30	51
	Southbound Approach		***A***	***1.2***			***A***	***1.2***		
	Southbound Thru		A	1.2	54	85	A	1.2	64	103
	Southbound Thru/Right		A	1.2	54	85	A	1.2	64	103

NOTES:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.

[2] $: Delays (reported from Synchro) exceed 300 seconds in TWSC.

[3] #: 95th percentile queues (reported from Synchro) exceed capacity; actual queues may be longer. Queues shown are based on the maximum after two cycles.

[4] m: 95th percentile volume and queues (reported from Synchro) are metered by upstream signal.

[6] 50th Percentile Queues are not reported for TWSC intersections under HCM 2010 Methodology.

Table 14: 2030 Future Conditions with Development – Alternative No VT Scenario – Intersection Capacity Analysis Results (Continued)

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour				PM Peak Hour			
			LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)	LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)
7	**Haycock Rd. (N/S) at Falls Church Dr. (E/W) Overall Intersection (Signalized) (MIT: Convert EB app to a L,TR config., Modify timings to allow cuncucrent phasing on side streets, Optimize Corridor Timings)**		**B**	**17.3**			**C**	**28.8**		
	Eastbound Approach		***D***	***41.5***			***D***	***39.3***		
	Eastbound Left		D	42.5	73	119	D	43.3	276	381
	Eastbound Thru/Right		D	41.0	1	56	C	34.2	4	67
	Westbound Approach		***D***	***53.6***			***D***	***53.5***		
	Westbound Left/Thru/Right		D	53.6	12	43	D	53.5	9	38
	Northbound Approach		***B***	***12.3***			***C***	***30.6***		
	Northbound Left	205	B	17.3	69	126	C	22.9	55	79
	Northbound Thru		B	10.3	61	187	C	32.3	155	384
	Northbound Right	290	B	12.9	0	m0	B	18.9	0	m1
	Southbound Approach		***B***	***13.0***			***B***	***16.1***		
	Southbound Left	125	A	9.5	0	m1	A	9.9	2	m8
	Southbound Thru/Right		B	13.0	187	250	B	16.2	238	308
8	**Haycock Rd. (N/S) at Grove Ave. (E/W) Overall Intersection (Unsignalized) (MIT: Change the WB lane configuration from LR to L,R)**									
	Westbound Approach		***D***	***33.2***			***F***	***55.3***		
	Westbound Left		E	44.6		90	F	117.5		73
	Westbound Right	150	B	13.2		13	B	14.8		15
	Southbound Approach									
	Southbound Left		B	13.2		13	B	14.8		15
9	**Haycock Rd. (N/S) at WMATA Metro Entr. (E/W) Overall Intersection (Signalized) (MIT: Optimize Corridor Timings)**		**C**	**20.7**			**C**	**34.1**		
	Eastbound Approach		***D***	***46.6***			***D***	***52.3***		
	Eastbound Left		D	46.6	98	160	D	52.3	303	420
	Eastbound Right	125	A	0.0	0	24	A	0.0	17	53
	Northbound Approach		***C***	***20.0***			***D***	***37.5***		
	Northbound Left		B	12.1	11	24	B	15.0	3	m11
	Northbound Thru		C	20.3	199	231	D	38.0	107	201
	Southbound Approach		***B***	***17.4***			***C***	***20.6***		
	Southbound Thru		B	17.3	189	238	C	20.7	216	269
	Southbound Thru/Right		B	17.4	189	238	C	20.6	216	269
10	**Haycock Rd. (N/S) at Highland Ave. (E/W) Overall Intersection (Unsignalized)**									
	Westbound Approach		***D***	***34.9***			***D***	***30.6***		
	Westbound Left/Right		D	34.9		48	D	30.6		15
	Southbound Approach									
	Southbound Left		A	9.6		0	B	11.8		3
11	**Haycock Rd. (N/S) at Turner Ave. (E/W) Overall Intersection (Unsignalized)**									
	Eastbound Approach		***C***	***19.9***			***C***	***17.5***		
	Eastbound Left		E	37.1		8	E	40.7		5
	Eastbound Right	60	B	14		8	B	13.3		5
	Northbound Approach									
	Northbound Left		A	9.2		3	A	9.1		5

NOTES:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.

[2] $: Delays (reported from Synchro) exceed 300 seconds in TWSC.

[3] #: 95th percentile queues (reported from Synchro) exceed capacity; actual queues may be longer. Queues shown are based on the maximum after two cycles.

[4] m: 95th percentile volume and queues (reported from Synchro) are metered by upstream signal.

[6] 50th Percentile Queues are not reported for TWSC intersections under HCM 2010 Methodology.

Table 14: 2030 Future Conditions with Development – Alternative No VT Scenario – Intersection Capacity Analysis Results (Continued)

No.	Intersection (Movement)	Effective Storage Length (ft.) [1]	AM Peak Hour				PM Peak Hour			
			LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)	LOS	Delay [2] (s/veh)	50th % Queue [6] (ft.)	95th % Queue [3][4] (ft.)
12	**Haycock Rd. (N/S) at Great Falls St. (E/W)**									
	Overall Intersection (Signalized)									
	(MIT: Change the EB and WB lane configuration from LT,R to L,TR)		**C**	**33.3**			**D**	**39.1**		
	Eastbound Approach		***C***	***30.7***			***D***	***39.7***		
	Eastbound Left	250	C	24.6	71	143	C	29.1	101	175
	Eastbound Thru/Right		C	32.5	317	547	D	42.7	492	749
	Westbound Approach		***D***	***40.8***			***D***	***47.4***		
	Westbound Left	125	C	32.4	11	37	D	38.5	16	46
	Westbound Thru/Right		D	41.3	191	330	D	48.0	273	416
	Northbound Approach		***D***	***35.4***			***C***	***33.0***		
	Northbound Left	180	C	22.9	67	136	C	28.3	58	123
	Northbound Thru/Right		D	40.0	289	489	C	34.5	254	440
	Southbound Approach		***C***	***30.6***			***D***	***38.4***		
	Southbound Left	380	C	23.2	32	74	C	26.5	26	65
	Southbound Thru		D	37.9	255	430	D	47.1	402	658
	Southbound Right	225	C	20.6	18	72	C	22.2	33	104
13	**Falls Church Dr. (E/W) at Commons Drive (N/S)**									
	Overall Intersection (Signalized)									
	(MIT: Install Signal)		**A**	**5.8**			**A**	**7.4**		
	Eastbound Approach		***A***	***5.9***			***A***	***6.7***		
	Eastbound Left/Thru		A	6.7	23	48	A	7.3	81	122
	Eastbound Thru/Right		A	4.6	23	48	A	6.1	81	122
	Westbound Approach		***A***	***4.3***			***A***	***4.6***		
	Westbound Left/Thru		A	4.3	11	25	A	4.6	6	17
	Westbound Thru/Right		A	4.4	11	25	A	4.7	6	17
	Northbound Approach		***A***	***8.6***			***A***	***9.2***		
	Northbound Left/Thru/Right		A	8.6		1	A	9.2	0	0
	Southbound Approach		***A***	***9.3***			***B***	***11.2***		
	Southbound Left	135	A	9.2	9	32	B	11.3	44	110
	Southbound Thru/Right		A	9.3	0	13	A	9.3	0	0
14	**Falls Church Dr. (E/W) at Nova Drwy. / New Street 2 (N/S)**									
	Overall Intersection (Signalized)									
	(MIT: Install Signal)		**A**	**4.2**			**A**	**7.5**		
	Eastbound Approach		***A***	***4.2***			***A***	***7.5***		
	Eastbound Left/Thru		A	4.2	0	59	A	7.3	43	70
	Eastbound Thru/Right		A	4.1	0	59	A	7.8	43	70
	Westbound Approach		***A***	***3.8***			***A***	***6.5***		
	Westbound Left		A	4.7	0	8	A	9.2	2	8
	Westbound Thru/Right		A	3.8	2	37	A	5.6	3	12
	Northbound Approach			***0.0***			***A***	***7.7***		
	Northbound Left/Thru/Right			0.0			A	7.7	0	6
	Southbound Approach		***A***	***9.1***			***A***	***7.8***		
	Southbound Left/Thru/Right		A	9.1	0	9	A	7.8	1	13
15	**Leesburg Pike (E/W) at Alley 1 (N/S)**									
	Overall Intersection (Unsignalized)									
	Southbound Approach		***D***	***29.9***			***C***	***19.7***		
	Southbound Right		D	29.9		18	C	19.7		15
16	**Leesburg Pike (E/W) at Alley 3 (N/S)**									
	Overall Intersection (Unsignalized)									
	Southbound Approach		***B***	***10.7***			***B***	***10.6***		
	Southbound Right		B	10.7		2	B	10.6		7
17	**Haycock Road (N/S) at Street C (E/W)**									
	Overall Intersection (Signalized)									
	(MIT: Optimize Corridor Timings)		**A**	**7.8**			**B**	**13.4**		
	Eastbound Approach		***D***	***51.9***			***D***	***51.2***		
	Eastbound Left/Right		D	51.9	41	98	D	51.2	101	176
	Northbound Approach		***A***	***5.0***			***B***	***13.5***		
	Northbound Left	100	A	4.7	11	m12	B	16.8	42	m62
	Northbound Thru		A	5.0	102	m103	B	12.9	152	m172
	Southbound Approach		***A***	***5.5***			***A***	***6.8***		
	Southbound Thru/Right		A	5.5	53	65	A	6.8	68	80

NOTES:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.

[2] $: Delays (reported from Synchro) exceed 300 seconds in TWSC.

[3] #: 95th percentile queues (reported from Synchro) exceed capacity; actual queues may be longer. Queues shown are based on the maximum after two cycles.

[4] m: 95th percentile volume and queues (reported from Synchro) are metered by upstream signal.

[6] 50th Percentile Queues are not reported for TWSC intersections under HCM 2010 Methodology.

Per the scoping meeting between the VDOT, County, and City staff, it is desirable to strive for an overall intersection LOS of D or better for traffic operations using the HCM methodology. The capacity analysis for 2030 Future with Development Conditions – Alternative No VT Scenario indicates that all of the signalized study intersection would operate similar to 2030 future without development conditions or better. The intersection of Haycock Road and Leesburg Pike would continue to operate at unacceptable levels of service during the AM peak hour but would begin to operate acceptably (overall) during the PM peak hour.

The results of the intersection capacity analyses for the 2030 future conditions with development and proposed mitigation strategies are illustrated in Figure 67 and in Figure 68.

As noted previously, with respect to the intersection of Falls Church Drive at New Street 2 / Nova Driveway (Study Intersection 14), a signal was assessed as a proposed roadway improvement internal to the site. Based on the analysis above, a signal would allow the side streets at the intersection to operate at acceptable levels of service during the peak hours but would consequently interrupt traffic flow along Falls Church Drive. Given these conditions, further analysis regarding the implementation of a signal at this location should be conducted prior to site plan and when the internal circulation characteristics of the site are finalized.

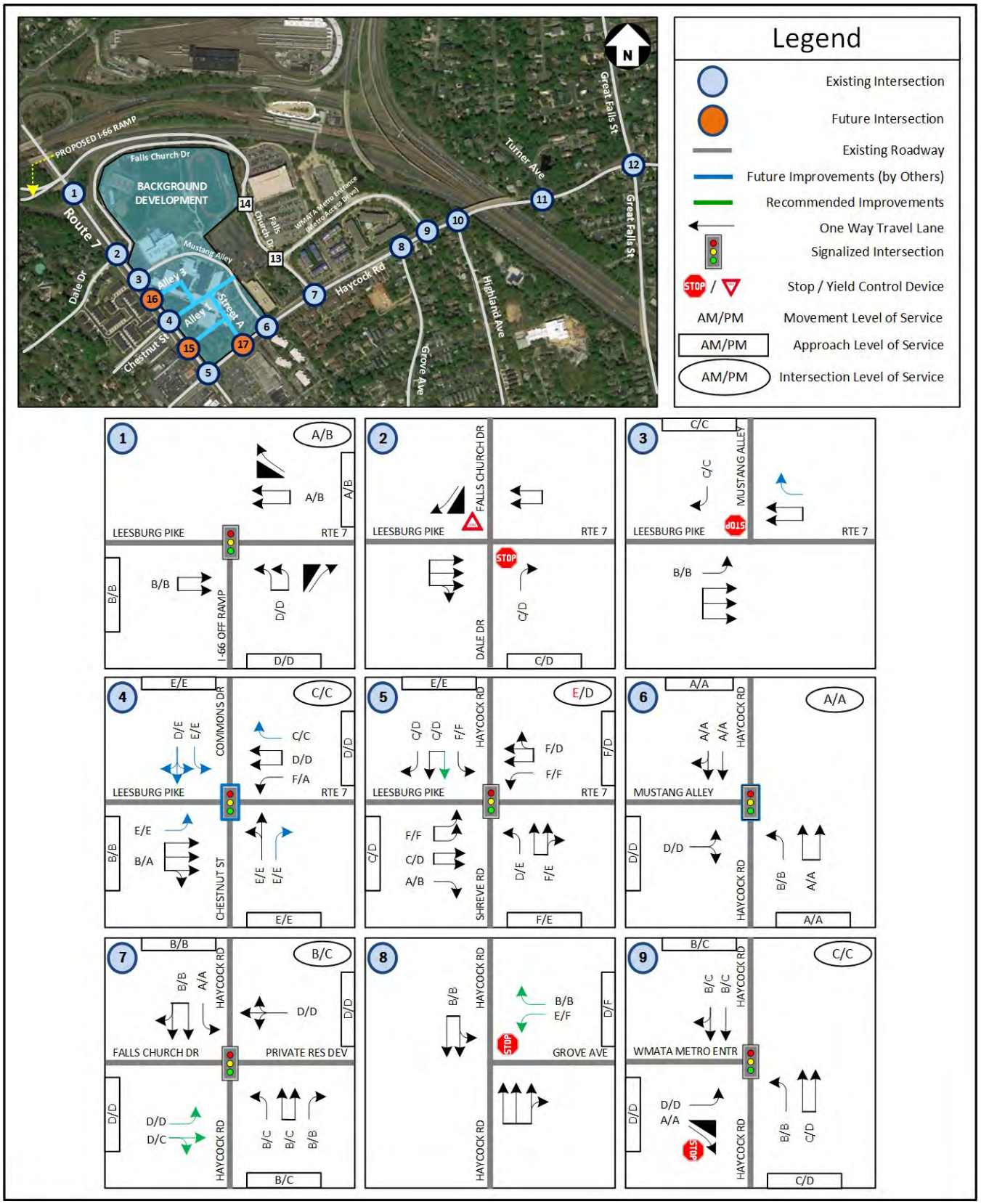


Figure 67: 2030 Future Conditions with Development – Alternative No VT Scenario – Levels of Service Results (1 of 2)

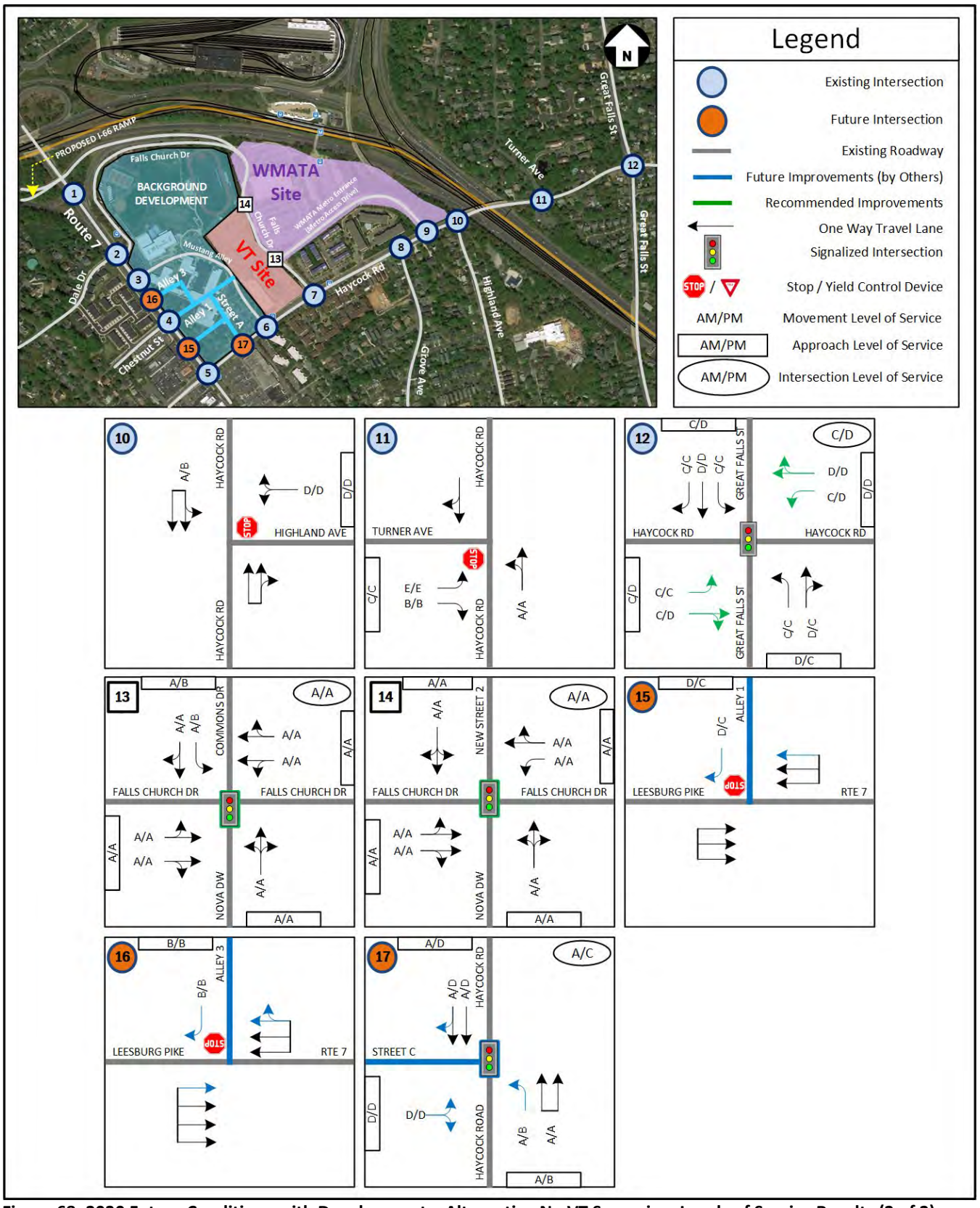


Figure 68: 2030 Future Conditions with Development – Alternative No VT Scenario – Levels of Service Results (2 of 2)

FUTURE CONDITIONS WITHOUT DEVELOPMENT (2045) – PLANNING SCENARIO

For the purposes of this study, the development is anticipated to be constructed by 2030. Based on discussions with VDOT, the County, and the City, a planning level analysis was recommended for the year 2045.

Future Conditions without Development (2045) Traffic Volumes

In order to forecast future roadway traffic volumes for the year 2045, future traffic volumes along the Route 7 and Haycock Road corridors were approximated based on Fairfax County Department of Transportation's (FCDOT) travel demand forecasting model projections. The 2045 travel demand model analyzed six major intersection along the corridors. The six major intersections were as follows:

- I-66 eastbound off-ramp and Leesburg Pike (Rte. 7)
- Leesburg Pike (Rte. 7) and Dale Drive (Rte. 1128)
- Leesburg Pike and Shreve Road / Haycock Road (Rte. 703)
- Haycock Road and Falls Church Drive
- Haycock Road and WMATA Metro Entrance (Metro Access Drive)
- Haycock Road and Great Falls Street (Rte. 694)

Of note, FCDOT models incorporated trips in association with the development of the proposed property under the existing *Comprehensive Plan*. It was assumed that the WMATA and VT sites could develop approximately 962 multi-family residential units and 240 kSF of institutional uses under the current *Comprehensive Plan*. The 2045 future without development traffic volumes are illustrated in Figure 69. The travel demand forecast models are provided in Appendix L.

Future Conditions without Development (2045) – Segment Capacity Analysis

As noted previously, the 2045 future without development scenario is to be used for planning purpose only. As such, in order to determine the potential future traffic demand along the Route 7 and Haycock Road Corridors, the projected 2045 traffic volumes were used to determine the volume-to-capacity (v/c) rate at 21 locations within the vicinity of the study area.

The evaluation locations are illustrated in Figure 70, and the results of the segment capacity analyses are shown in Table 15. It should be noted that for the purpose of this analysis, the capacity used was based on the industry standard of 1,900 vehicles per hour per lane on an interrupted-flow thoroughfare.

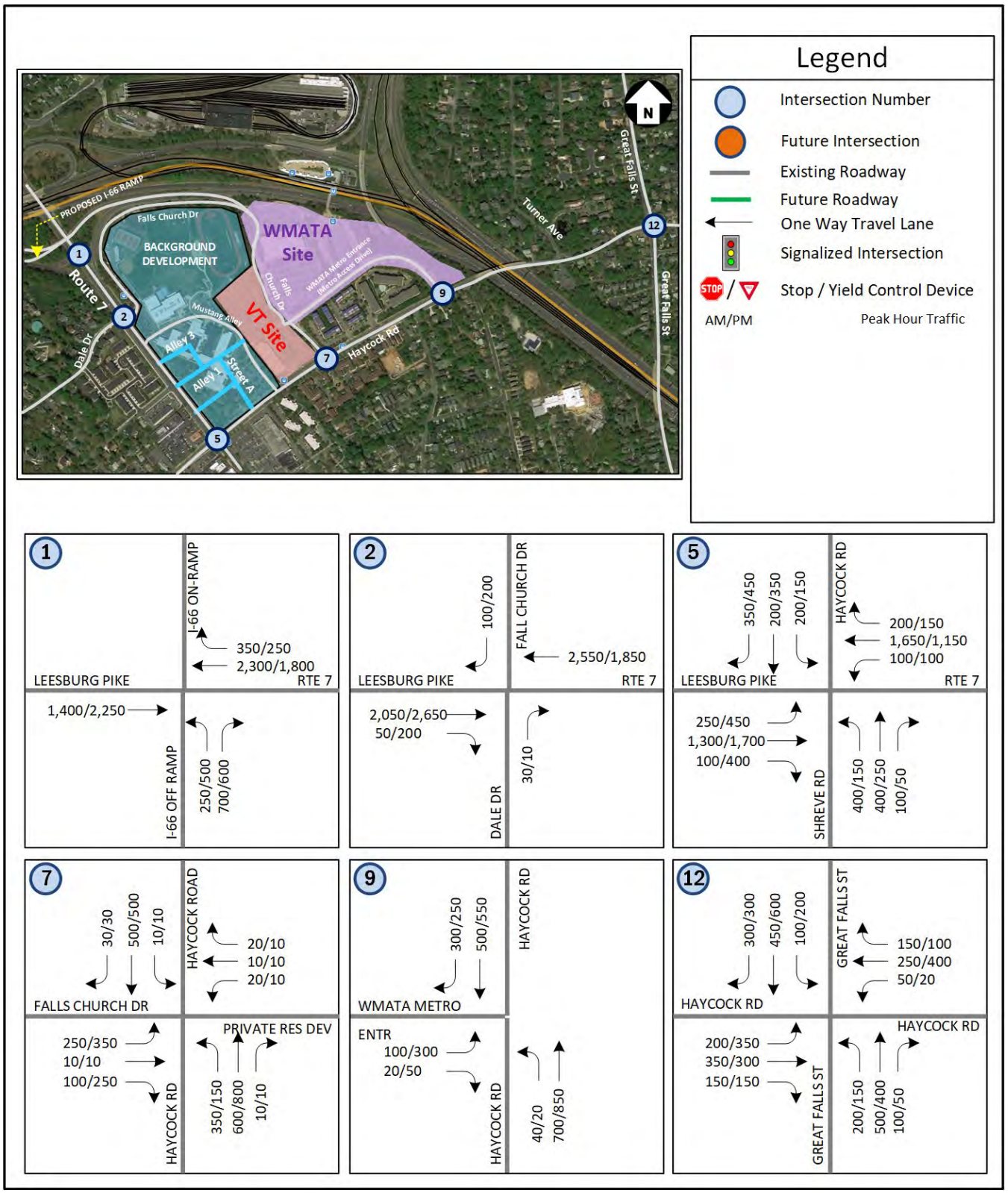


Figure 69: 2045 Future without Development – Vehicular Traffic Volumes



Figure 70: Route 7 and Haycock Road Corridor Study Segment Capacity Evaluation Locations

Table 15: 2045 Future Conditions without Development – Segment Capacity Analysis Results

INT	Segment	Lanes of Thru Lanes	AM Peak Hour			PM Peak Hour		
			Volume per Hour	Hourly Capacity	Volume-to-Capacity	Volume per Hour	Hourly Capacity	Volume-to-Capacity
			(V)	(C)	V/C	(V)	(C)	V/C
1	Route 7, West Leg of Intersection 1	4	3,950	7,600	0.52	4,550	7,600	0.60
1	I-66 On-Ramp, North Leg of Intersection 1	1	350	1,900	0.18	250	1,900	0.13
1/2	Route 7, East Leg of Intersection 1 & West Leg of Intersection 2	4	4,750	7,600	0.63	4,900	7,600	0.64
1	I-66 Off-Ramp, South Leg of Intersection 1	2	950	3,800	0.25	1,100	3,800	0.29
2	Falls Church Drive, North Leg of Intersection 2	1	100	1,900	0.05	200	1,900	0.11
2	Route 7, East Leg of Intersection 2	4	4,630	7,600	0.61	4,510	7,600	0.59
2	Dale Drive, South Leg of Intersection 2	2	80	3,800	0.02	210	3,800	0.06
5	Route 7, West Leg of Intersection 5	4	4,050	7,600	0.53	4,300	7,600	0.57
5	Haycock Road, North of Intersection 5	4	1,600	7,600	0.21	1,800	7,600	0.24
5	Route 7, East of Intersection 5	4	3,550	7,600	0.47	3,300	7,600	0.43
5	Shreve Road, South of Intersection 5	2	1,300	3,800	0.34	1,300	3,800	0.34
7	Falls Church Drive, West of Intersection 7	4	750	7,600	0.10	790	7,600	0.10
7	Haycock Road, North of Intersection 7	4	1,410	7,600	0.19	1,690	7,600	0.22
7	Haycock Road, South of Intersection 7	4	1,000	3,800	0.26	1,070	3,800	0.28
9	Metro Entrance, West of Intersection 9	4	820	7,600	0.11	620	7,600	0.08
9	Haycock Road, North of Intersection 9	4	1,600	7,600	0.21	1,950	7,600	0.26
9	Haycock Road, South of Intersection 9	4	1,260	7,600	0.17	1,470	7,600	0.19
12	Great Falls Street, West of Intersection 12	2	1,700	3,800	0.45	1,950	3,800	0.51
12	Haycock Road, North of Intersection 12	2	1,000	3,800	0.26	1,070	3,800	0.28
12	Great Falls Street, East of Intersection 12	2	1,450	3,800	0.38	1,370	3,800	0.36
12	Haycock Road, South of Intersection 12	2	1,450	3,800	0.38	1,650	3,800	0.43

As can be seen in Table 15, the 21 study locations operate at a V/C of 0.64 or less.

FUTURE CONDITIONS WITH DEVELOPMENT (2045) – PLANNING SCENARIO

For the purposes of this study, the development is anticipated to be constructed by 2030. Based on discussions with VDOT, the County, and the City, a planning level analysis was recommended for the year 2045.

Future Conditions with Development (2045) Traffic Volumes

In order to forecast future roadway traffic volumes for the year 2045, future traffic volumes along the Route 7 and Haycock Road corridors were approximated based on Fairfax County Department of Transportation's (FCDOT) travel demand forecasting model projections. The 2045 travel demand model analyzed six major intersection along the corridors. The six major intersections were as follows:

- I-66 eastbound off-ramp and Leesburg Pike (Rte. 7)
- Leesburg Pike (Rte. 7) and Dale Drive (Rte. 1128)
- Leesburg Pike and Shreve Road / Haycock Road (Rte. 703)
- Haycock Road and Falls Church Drive
- Haycock Road and WMATA Metro Entrance (Metro Access Drive)
- Haycock Road and Great Falls Street (Rte. 694)

As mentioned previously, the FCDOT models incorporated trips in association with the development of the proposed property under the existing *Comprehensive Plan*. It was assumed that the WMATA and VT sites could develop approximately 962 multi-family residential units and 240 kSF of institutional uses under the current *Comprehensive Plan*.

In order to account for any changes in the road network with the proposed comprehensive plan amendment, the current comprehensive plan development program was compared to the one proposed in this study, as illustrated in Table 9. The comparison is shown on Table 16 and is based on the Institute of Transportation Engineers' (ITE's) Trip Generation Manual (10th Edition).

Table 16: Site Trip Generation (Current Comprehensive Plan v. Proposed)

Land Use	ITE Code	Size	------ Weekday ------						
			AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	Total
FC COG Model Assumption									
Multifamily Housing (Mid-Rise)	221	962 DU	82	233	315	237	152	389	5,241
Junior / Community College	540	240 KSF	435	130	565	223	223	446	4,860
Total			**517**	**363**	**880**	**460**	**375**	**835**	**10,101**
VT + WMATA									
Multifamily Housing (Mid-Rise)	221	1,305 DU	110	314	424	318	204	522	7,111
Junior / Community College	540	160 KSF	325	97	422	149	149	298	3,240
Shopping Center	820	28 KSF	103	63	166	102	110	212	2,530
General Office Building	710	311 KSF	274	45	319	54	281	335	3,189
Total			**812**	**519**	**1,331**	**623**	**744**	**1,367**	**16,070**
VT+WMATA - FC COG Model			***295***	***156***	***451***	***163***	***369***	***532***	***5,969***
Retail Pass-by Reductions	*25%/34%/25%*	*AM/PM/Daily*	*-9*	*-5*	*-14*	*-9*	*-12*	*-21*	*-235*
Mode Split/TDM Reductions (45% of Non-Retail)	*45%*	*AM/PM/Daily*	*-116*	*-62*	*-178*	*-61*	*-141*	*-202*	*-2,263*
Total Reductions			*-125*	*-67*	*-192*	*-70*	*-153*	*-223*	*-2,498*
2045 Net New External Trips from COG and Proposed Delta			**170**	**89**	**259**	**93**	**216**	**309**	**3,471**

As illustrated in Table 16, it is anticipated that the total number of trips generated by the site during the AM and PM peak hours, as well as, during an average weekday would increase with the construction of the proposed development program under the comprehensive plan amendment. In order to forecast 2045 future traffic volumes with the proposed development, the net increase in trips were assigned to the future road network. Of note, in order to be consistent with the trip generation analysis from the 2030 scenario, pass-by trip reductions and TDM/mode split reductions were applied to the trip generation. The assignment of the increase in anticipated trips along the road network was based on the vehicular directions of approach illustrated in Figure 43 and in Figure 44. The resulting assignment of trips is illustrated in Figure 71.

In order to determine the traffic volumes on the roadways in the vicinity of the development, the increased site generated traffic volumes for the proposed development were added to the 2045 Future without Development traffic volumes. The traffic volumes for the 2030 Future with Development conditions are presented in Figure 72.

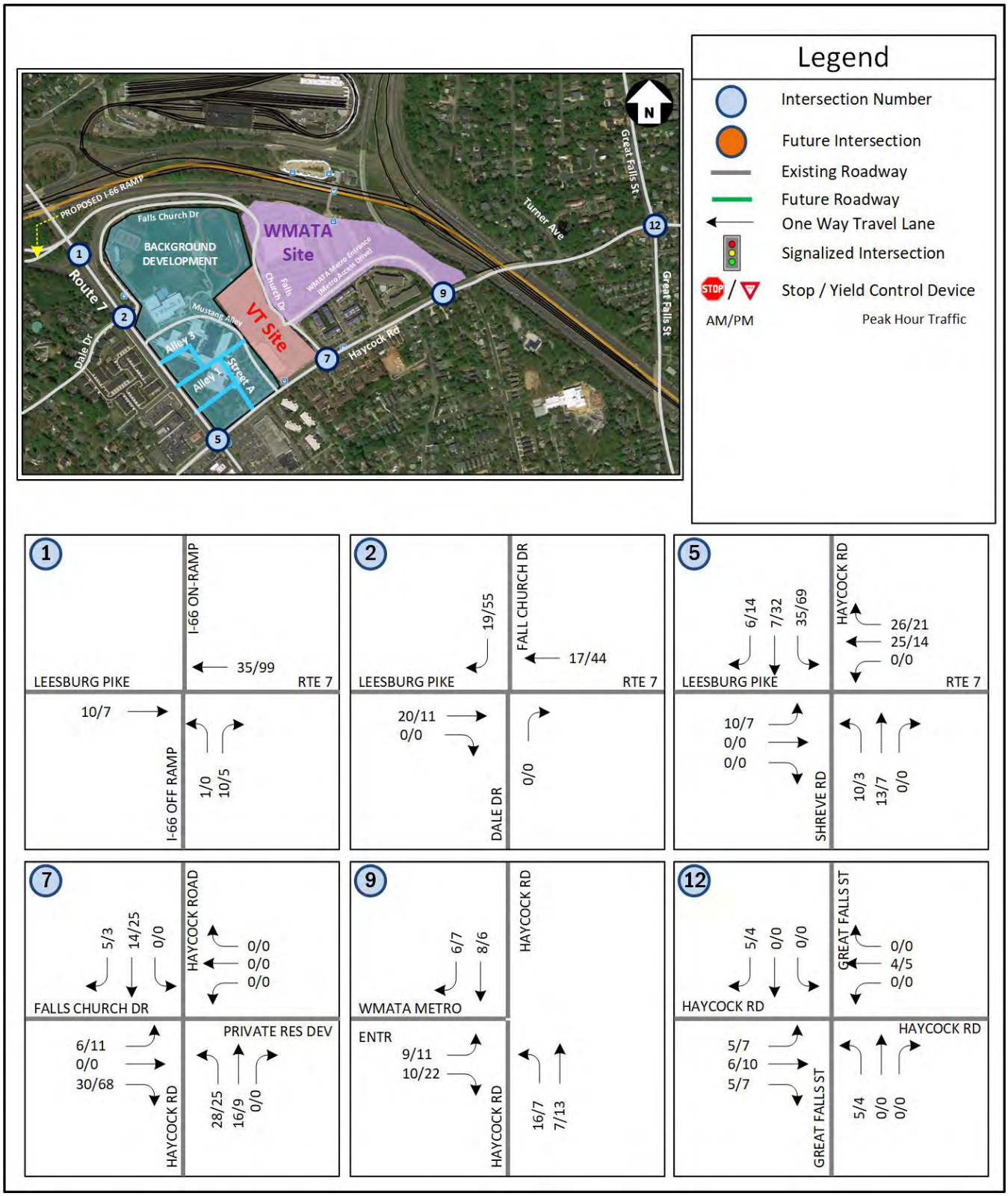


Figure 71: 2045 Future with Development – Net New Site Trip Assignment

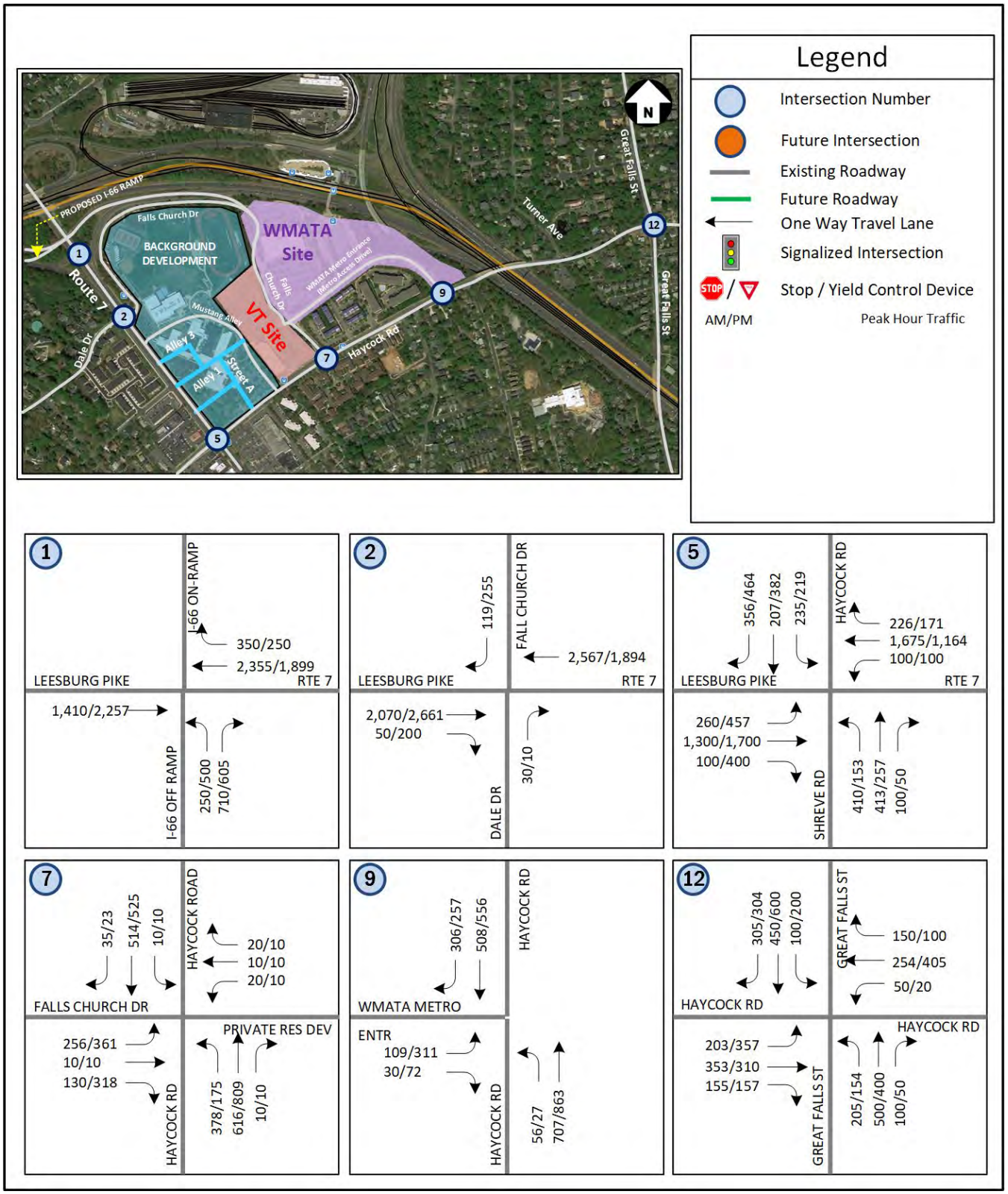


Figure 72: 2045 Future with Development – Vehicular Traffic Volumes

Future Conditions with Development (2045) – Segment Capacity Analysis

As noted previously, the 2045 future with development scenario is to be used for planning purpose only. As such, in order to determine the potential future traffic demand along the Route 7 and Haycock Corridors, the projected 2045 traffic volumes with the development in place were used to determine the volume-to-capacity (v/c) rate at 21 locations within the vicinity of the study area.

The evaluation locations are illustrated in Figure 70, and the results of the segment capacity analyses are shown in Table 17. It should be noted that for the purpose of this analysis, the capacity used was based on the industry standard of 1,900 vehicles per hour per lane on an interrupted-flow thoroughfare.

Table 17: 2045 Future Conditions with Development – Segment Capacity Analysis Results

INT	Segment	Lanes of Thru Lanes	AM Peak Hour			PM Peak Hour		
			Volume per Hour	Hourly Capacity	Volume-to-Capacity	Volume per Hour	Hourly Capacity	Volume-to-Capacity
			(V)	(C)	V/C	(V)	(C)	V/C
1	Route 7, West Leg of Intersection 1	4	3,995	7,600	0.53	4,656	7,600	0.61
1	I-66 On-Ramp, North Leg of Intersection 1	1	350	1,900	0.18	250	1,900	0.13
1/2	Route 7, East Leg of Intersection 1 & West Leg of Intersection 2	4	4,805	7,600	0.63	5,011	7,600	0.66
1	I-66 Off-Ramp, South Leg of Intersection 1	2	960	3,800	0.25	1,105	3,800	0.29
2	Falls Church Drive, North Leg of Intersection 2	1	119	1,900	0.06	255	1,900	0.13
2	Route 7, East Leg of Intersection 2	4	4,667	7,600	0.61	4,565	7,600	0.60
2	Dale Drive, South Leg of Intersection 2	2	80	3,800	0.02	220	3,800	0.06
5	Route 7, West Leg of Intersection 5	4	4,101	7,600	0.54	2,557	7,600	0.34
5	Haycock Road, North of Intersection 5	4	1,697	7,600	0.22	1,950	7,600	0.26
5	Route 7, East of Intersection 5	4	3,636	7,600	0.48	3,404	7,600	0.45
5	Shreve Road, South of Intersection 5	2	1,330	3,800	0.35	1,342	3,800	0.35
7	Falls Church Drive, West of Intersection 7	4	819	7,600	0.11	897	7,600	0.12
7	Haycock Road, North of Intersection 7	4	1,451	7,600	0.19	1,738	7,600	0.23
7	Haycock Road, South of Intersection 7	4	1,010	3,800	0.27	1,085	3,800	0.29
9	Metro Entrance, West of Intersection 9	4	501	7,600	0.07	667	7,600	0.09
9	Haycock Road, North of Intersection 9	4	1,630	7,600	0.21	1,987	7,600	0.26
9	Haycock Road, South of Intersection 9	4	1,301	7,600	0.17	1,518	7,600	0.20
12	Great Falls Street, West of Intersection 12	2	1,710	3,800	0.45	1,961	3,800	0.52
12	Haycock Road, North of Intersection 12	2	1,010	3,800	0.27	1,085	3,800	0.29
12	Great Falls Street, East of Intersection 12	2	1,460	3,800	0.38	1,381	3,800	0.36
12	Haycock Road, South of Intersection 12	2	1,480	3,800	0.39	1,687	3,800	0.44

As can be seen in Table 17, the 21 study locations operate at a V/C of 0.66 or less. Therefore, none of the segments of Route 7 or along Haycock Road are expected to exceed the capacity of the facility as a result of the proposed development.

CONCLUSION

This report presents the findings of a Traffic Impact Study (TIS) conducted for the proposed redevelopment of the existing Washington Metropolitan Area Transit Authority (WMATA) West Falls Church metro and the Virginia Polytechnic Institute and State University (Virginia Tech /VT) sites, located in the Dranesville Magisterial District of Fairfax County, Virginia. This study was conducted in conjunction with a proposal to amend Fairfax County's *Comprehensive Plan* for the West Falls Church Transit Station Area (TSA) in order to provide compatible, non-automobile dependent development.

This traffic impact analysis supports the following major conclusions:

Existing Conditions (2019) Scenario

- Traffic counts were collected at existing intersections in May of 2018 and in May of 2019. These traffic counts were balanced in order to develop a baseline for the analysis.
- Analysis of the traffic data found the following system peak hours:
    - Weekday Morning (AM) Peak Hour: 7:45 AM to 8:45 AM
    - Weekday Afternoon (PM) Peak Hour: 5:00 PM to 6:00 PM
- Based on the capacity analysis, all signalized intersections operate at an overall acceptable Level of Service (LOS) with the exception of the Leesburg Pike and Haycock Road intersection. The intersection operates overall at a LOS E during both peak hours.

Future Conditions without Development (2030)

- To account for future conditions, an inherent growth rate of 1.0% per year, between 2019 and 2030, was applied to all movements at the intersection of Route 7 and Haycock Road. Additionally, traffic associated with the proposed High School & West Falls Church Economic Development, a development abutting the site, was taken into consideration in order to determine future traffic volumes.
- A couple of roadway improvements are anticipated to be developed and in operation by 2030. VDOT is currently in the process of constructing a connector ramp on the eastbound I-66 off-ramp towards Route 7; the connector ramp would act as a by-pass for vehicles heading towards the site and the West Falls Church Metro station. Additionally, the intersection of Chestnut Street at Route 7 is anticipated to be converted to a signalized, full-movement intersection with the proposed High School & West Falls Church Economic Development
- Based on the capacity analysis, all intersections operate at an overall acceptable LOS under 2030 future conditions without development with the exception of the Leesburg Pike and Haycock Road intersection (similar to 2019 existing conditions) and the Haycock Road and Great Falls Street intersection.

Future Background with Current Comprehensive Plan Development Conditions (2030)

- The WMATA and VT developments are anticipated to be fully constructed and in operation by 2030. Under the current *Comprehensive Plan* for Fairfax County, the WMATA and VT sites could develop approximately 962 multi-family residential units and 240 kSF of institutional uses, which is anticipated to generate approximately 484 additional trips in the AM peak hour, 459 additional trips in the PM peak hour, and 5,556 daily trips after transit and transportation demand management (TDM) reductions.

- Based on the capacity analysis, all intersections operate at an overall acceptable LOS under 2030 future background current comprehensive plan conditions with the exception of the Leesburg Pike and Haycock Road intersection and the Haycock Road and Great Falls Street intersection (similar to 2030 Future Conditions without Development).

Future Conditions with Development (2030) Scenario

- The WMATA and VT developments are anticipated to be fully constructed and in operation by 2030. The proposed developments are anticipated to generate approximately 709 additional trips in the AM peak hour, 695 additional trips in the PM peak hour, and 8,182 daily trips after transit, transportation demand management (TDM), internal, and commercial pass-by reductions.
- Due to increased traffic demand from the developments, road improvements will be necessary in order to achieve acceptable levels of service / maintain similar traffic operation conditions as compared to future without development conditions during the weekday morning (AM) and weekday afternoon (PM) peak hours. The following mitigations are proposed to improve operations at the study intersections:
  - Route 7 at Haycock Road
    - Add southbound thru lane on Haycock Road; and
    - Adjust signal timings to accommodate new configuration.
  - Haycock Road and Falls Church Drive
    - Restripe the eastbound approach on Falls Church Drive to a shared thru/right and an exclusive left turn lane which will operate under permitted + protected phasing.
    - Modify signal timings to accommodate new configuration.
  - Haycock Road at Great Falls Street
    - Change eastbound and westbound Haycock Road lane configuration from left/thru, right to left, thru/right; and
    - Modify signal timings to account for the change in roadway geometry.
  - Haycock Road at Grove Avenue
    - Add a northbound right turn lane to provide an exclusive left lane and an exclusive right lane.
  - Route 7 Corridor
    - Optimize traffic signal timings along Route 7 to promote progression and to account for the modifications to the Route 7 and Haycock Road intersection.
  - Haycock Road Corridor
    - Optimize traffic signal timings along Haycock to promote progression and to account for the modifications to the Route 7 and Haycock Road intersection.
- Based on the capacity analyses, the roadway improvement strategy would mitigate potential impacts of the development, resulting in similar to or better overall levels of service/reduced delays as compared with future conditions without development conditions or without the proposed comprehensive plan amendment.

Future Conditions with Development (2030) – Alternative Conditions without Virginia Tech Redevelopment

- This scenario is presented to provide analysis without the VT redevelopment. Under this scenario, only the WMATA development is anticipated to be redeveloped per the proposed Comprehensive Plan Amendment (CPA) and in operation by 2030. This scenario does not assume a new direct connection between Leesburg Pike (Rte. 7) and the WMATA site via Commons Drive. Such conditions are unlikely to be realized, but are included for completeness.

- The WMATA development is anticipated to generate approximately 236 additional trips in the AM peak hour, 285 additional trips in the PM peak hour, and 3,454 daily trips after transit, transportation demand management (TDM), internal, and commercial pass-by reductions.
- Due to increased traffic demand from the developments, road improvements will be necessary in order to achieve acceptable levels of service / maintain similar traffic operation conditions as compared to future without development conditions during the weekday morning (AM) and weekday afternoon (PM) peak hours. The mitigation strategy presented in the Future Conditions with Development (2030) is also proposed for the Alternative "without VT" scenario.
- Based on the capacity analyses, the roadway improvement strategy would mitigate potential impacts of the development, resulting in similar overall levels of service/reduced delays as compared with future conditions without development conditions or without the proposed comprehensive plan amendment.

Future Conditions without Development (2045) – Planning Scenario

The site is anticipated to be constructed and in operation by 2030. Due to the development requiring with a comprehensive plan amendment (CPA), it was recommended that the road network near the site be analyzed 15 years after the anticipated build-out. This scenario, which analyzes the future conditions for the year 2045 with respect to the current *Comprehensive Plan*, and, as agreed to in the scoping document, is to be used as a planning-only scenario.

- To account for future conditions, future traffic volumes without the CPA along the Route 7 and Haycock Road corridors were approximated based on Fairfax County Department of Transportation's (FCDOT) travel demand forecasting model projections. The FCDOT model incorporated trips in association with the development of the proposed property under the existing *Comprehensive Plan*. It was assumed that the WMATA and VT sites could develop approximately 962 multi-family residential units and 240 kSF of institutional uses under the current *Comprehensive Plan*.
- Based on the segment capacity analysis, the Route 7 and Haycock Road Corridors are anticipated to operate at a volume-to-capacity (v/c) ratio of 0.64 or less.

Future Conditions with Development (2045) – Planning Scenario

The site is anticipated to be constructed and in operation by 2030. Due to the development requiring a CPA, it was recommended that the road network near the site be analyzed 15 years after the anticipated build-out. This scenario analyzes the future conditions for the year 2045 with respect to the CPA, and, as agreed to in the scoping document, is to be used as a planning only scenario.

- To account for future conditions, future traffic volumes along the Route 7 and Haycock Road corridors were approximated based on FCDOT's travel demand forecasting model projections. The FCDOT model incorporated trips in association with the development of the proposed property under the existing *Comprehensive Plan*. In order to account for any changes in the road network with the proposed comprehensive plan amendment, the current comprehensive plan development program was compared to the one proposed in this study by assigning the site generated differential to the road network.
- Based on the segment capacity analysis, the Route 7 and Haycock Road Corridors operate at a volume-to-capacity (v/c) ratio of 0.66 or less.

Thus, none of the segments of along the Route 7 and Haycock Road Corridors are expected to exceed the capacity of the existing roadway facilities as a result of the proposed development under 2045 conditions.

Overall Conclusion

The roadway improvement strategies recommended would mitigate the traffic impacts of the WMATA and VT sites through 2030. The combination of new street connections and turn lane improvements would result in in acceptable overall levels of service/reduced delays as compared with future conditions without the proposed comprehensive plan amendment (CPA).

As indicated in the 2045 planning scenario, the Route 7 and Haycock Road Corridors would have adequate through capacity to accommodate the anticipated development of the WMATA and VT sites.

TECHNICAL APPENDIX

TECHNICAL APPENDIX TABLE OF CONTENTS

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Appendix B: VDOT Reported Crash Data

Appendix C: 2018 and 2019 Vehicular Turning Movement Count Sheets

Appendix D: Level of Service Definitions

Appendix E: Intersection Capacity Analysis - Existing Conditions (2019)

Appendix F: Intersection Capacity Analysis - Future without Development Condition (2030)

Appendix G: Intersection Capacity Analysis – Future Background with Current Comprehensive Plan Development Conditions (2030)

Appendix H: Intersection Capacity Analysis - Future with Development Condition (2030) – Baseline

Appendix I: Intersection Capacity Analysis - Future with Development Condition (2030) – Proposed Mitigations

Appendix J: Intersection Capacity Analysis - Future with Development Condition (2030) – Alternative No VT Scenario

Appendix K: Intersection Capacity Analysis - Future with Development Condition (2030) – Alternative No VT Scenario – Proposed Mitigations

Appendix L: FCDOT Travel Demand Forecasts

Appendix A:

Scoping Document

7/1/2019
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& 3:08 PM

THIS IS A CHAPTER 870 STUDY

VDOT Virginia Department of Transportation	PRE-SCOPE OF WORK MEETING FORM Information on the Project Traffic Impact Analysis Base Assumptions

The applicant is responsible for entering the relevant information and submitting the form to VDOT and the locality no less than three (3) business days prior to the meeting. If a form is not received by this deadline, the scope of work meeting may be postponed.

Contact Information			
Consultant Name: Tele: E-mail:	Chad Baird, Gorove/Slade Associates, Inc. 571-248-0992 chad.baird@goroveslade.com		
Developer/Owner Name: Tele: E-mail:	Washington Metropolitan Area Transit Authority (WMATA) 202-962-5062 scsgerlin@wmata.com		
Project Information			
Project Name:	West Falls Church Metrorail Station and Virginia Tech properties development	Locality/County:	Fairfax County
Project Location: (Attach regional and site specific location map)	South of I-66, north of Haycock Road, east Leesburg Pike (Route 7), and West of Highland Avenue (Please see Figure 1).		
Submission Type	Comp Plan ☒	SUP ☐	Site Plan ☐ / Subd Plat ☐
Project Description: (Including details on the land use, acreage, phasing, access location, etc. Attach additional sheet if necessary)	The Washington Metropolitan Area Transit Authority (WMATA) and Virginia Polytechnic Institute and State University (Virginia Tech) are proposing Comprehensive Plan amendments with Fairfax County for the West Falls Church Transit Station Area in order to provide compatible, non-automobile dependent developments. WMATA's site area is 23.99 acres with primary site access provided via the access road to the West Falls Church Metrorail Station. A shared driveway with George Mason High School may be used to provide secondary access for delivery and service uses. Virginia Tech site is 7.53 acres with primary access provided via Falls Church Drive.		
Proposed Use(s): (Check all that apply; attach additional pages as necessary)	Residential ☐ / Commercial ☐ / Mixed Use ☒ / Other ☐		
	Residential Uses(s) ITE LU Code(s): 221 (multifamily (mid-rise)) Number of Units: Comp Plan: 1,110 DU Proposed: 1,571DU Change: 461 DU	**Commercial Use(s)** ITE LU Code(s): 710 (General Office Building) Square Ft or Other Variable: Comp Plan: 43.80 KSF Proposed: 301 KSF Change: 257.2 KSF	

	Retail Use(s) ITE LU Code(s): 820 (Shopping Center) Square Ft or Other Variable: Comp Plan: 0 Proposed: 112 KSF Change: 112 KSF		**Academic Use(s)** ITE LU Code(s): 540 (Jr./Comm. College) Square Ft or Other Variable: Zone Allowable: 0 Proposed: 160 KSF Change: 160 KSF	
Total Peak Hour Trip Projection:	Less than 100 ☐	100 – 499 ☐	500 – 999 ☐	1,000 or more ☒
Traffic Impact Analysis Assumptions				
Study Period	Existing Year: 2019	Estimated Build-out Year: 2030		Horizon Year: 2045
Study Area Boundaries (Attach map)	North: Interstate 66		South: Haycock Road	
	East: Great Falls Street		West: Leesburg Pike (Route 7)	
External Factors That Could Affect Project (Planned road improvements, other nearby developments)	1. VDOT I-66 Connector Ramp 2. High School and West Falls Church Economic Development projects and the proposed mitigation 3. Proposed new signal at Chestnut/Route 7 4. Rte. 7 Bus RAPID Transit (BRT)			
Consistency With Comprehensive Plan (Land use, transportation plan)	Study aims to serve as a support document to amend Comprehensive Plan for WMATA and Virginia Tech sites.			
Available Traffic Data (Historical, forecasts)	1. High School and West Falls Church Economic Development Projects Traffic Counts 2. VDOT historic traffic counts 3. New traffic counts planned for weekday			
Trip Distribution Residential / Non-residential	Distribution to be determined from FCDOT Traffic Forecasting Model (for 2045 analysis). Anticipated to be similar to current model represented in Figures 1 and 2. Distribution shown in Figures 1 and 2 to be used for 2030 analysis.			
Annual Vehicle Trip Growth Rate:	1.0% (2019-2030) Growth Based on FCDOT Model Projections (2030-2045)	Peak Period for Study (check all that apply)	☒ AM ☒ PM ☐ SAT	
		Peak Hour of the Adjacent Street	777AM; 933 PM; 11,001 Daily (2030) FCDOT Model (2045)	
Study Intersections and/or Road Segments (Attach additional sheets as necessary) Please refer to attached Figure 1	1. I-66 eastbound off-ramp/Route 7		10. Highland Ave/Haycock Rd	
	2. Dale Dr/Route 7		11. Turner Ave/Haycock Rd	
	3. George Mason High School driveway/Route 7		12. Great Falls St./Haycock Rd	

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	4. Chestnut St/Route 7	13. Falls Church Drive/WMATA's Park Ride (internal intersection)
	5. Haycock Rd/Route 7	14. Falls Church Drive/WMATA/University Parking Entrance/Exits (internal intersection)
	6. George Mason High School driveway/Haycock Rd	15. Route 7/Planned Alley 1 (Right-out only)
	7. Falls Church Dr/Haycock Rd	16. Route 7/Planned Alley 3 (Right-in/Right-out)
	8. Grove Ave/Haycock Rd	17. Haycock Road/ Street A
	9. WMATA's Park Ride/Haycock Rd	
Trip Adjustment Factors	Internal allowance Reduction: ☒ Yes ☐ No See Table 2 (2030 only)	Pass-by allowance Reduction: ☒ Yes ☐ No See Table 2 (2030 only)
Software Methodology	☒ Synchro ☐ HCS (v.2000/+) ☐ SIDRA ☐ CORSIM ☐ Other _____	
Traffic Signal Proposed or Affected (Analysis software to be used, progression speed, cycle length)	Existing traffic signals that could be affected: 1. I-66 eastbound off-ramp/Route 7 2. Haycock Rd/Route 7 3. Falls Church Dr/Haycock Rd 4. WMATA's Park Ride/Haycock Rd 5. Great Falls St./Haycock Rd Planned Signal a. Traffic Signal at Chestnut Street/Route 7 intersection b. Traffic Signal Haycock Road at Street A (site access for EYA and High School Development) c. HAWK signal at Haycock Road at Mustang Alley d. Study intersections will be evaluated for signalization, re-timing, optimization, etc. based on the future year operational analysis. Analysis Software: Synchro version 10 Results: HCM Methodology	
Improvement(s) Assumed or to be Considered	1. City of Falls Church Traffic Impact Study mitigations 2. City of Falls Church improvements - a. Traffic Signal at Chestnut Street/Route 7 intersection, b. Traffic Signal Haycock Road at Street A (site access for EYA and High School Development) c. HAWK signal at Haycock Road at Mustang Alley	

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Background Traffic Studies Considered	1. High School and West Falls Church Economic Development Projects Traffic Impact Analysis
Plan Submission	☐ Master Development Plan (MDP) ☐ Generalized Development Plan (GDP) ☐ Preliminary/Sketch Plan ☒ Other Plan type (Comp. Plan)
Additional Issues to be Addressed	☒ Queuing analysis ☐ Actuation/Coordination ☐ Weaving analysis ☐ Merge analysis ☒ Bike/Ped Accommodations ☒ Intersection(s) ☒ TDM Measures ☐ Other

NOTES on ASSUMPTIONS:

General Assumptions

1. Synchro files/signal timings will be obtained from VDOT.
2. The scenarios to be included in the study are Existing (2019), Future without Development (2030), Future with Development (2030), and Future without Development (2045), Future with Development (2045).
3. Will analyze conditions with and without planned improvements at the intersection of Route 7 with Chestnut Street.
4. The intersections of Haycock Road at Village Crossing Road and Falls Reach Drive will not be analyzed as study intersections, but will be coded in the Synchro network.

Assumptions for Estimated Build Year (2030) -

5. A growth rate of 1.0 % will be applied to all turning movement volumes at the intersection of Route 7 and Haycock Road for the period between 2019 and 2030 and will be carried as through volumes at other study intersections.
6. Existing peak hour factors in the range of 0.85 to 1.00 will be used for existing scenarios (by intersection). The default peak hour factor of 0.92 (by intersection) will be used for future scenarios unless the existing peak hour factor is found to be higher.
7. Heavy vehicle percentages from the traffic counts will be utilized for major movements.
8. Will strive to achieve an overall LOS of D for future conditions. Will show intersection, approach, and movement LOS.
9. HCM 2010 methodology will be utilized where applicable. HCM 2000 methodology would be used elsewhere.
10. Crash data obtained from VDOT's Crash Analysis Tool will be analyzed at existing study intersections.

Assumptions for Horizon Year (2045) -

11. FCDOT travel demand forecasting model projections will be provided by the county and utilized for the 2045 Scenarios. Daily volumes and link analysis and v/c ratios will be provided for 2045 only.
12. Will analyze conditions with and without planned improvements at the intersection of Route 7 with Chestnut Street.

SIGNED: _____ DATE: 7/1/2019
Applicant or Consultant

PRINT NAME: Chad Baird
Applicant or Consultant

SIGNED: _____ DATE: 07/02/2019
VDOT Representative

PRINT NAME: Alex Faghri
VDOT Representative

SIGNED: _____ DATE: 7/1/2019
Local Government Representative

PRINT NAME: ROBERT PIKORA
Local Government Representative

It is important for the applicant to provide sufficient information to county and VDOT staff so that questions regarding geographic scope, alternate methodology, or other issues can be answered at the scoping meeting.

Table 1: Trip Generation – Peak Hour of the Adjacent Street (ITE 10th Edition; To be Used in Study)

		ITE Land Use Code	Quantity	Weekday						
				AM Peak Hour			PM Peak Hour			Daily
		Trip Generation, 10th Ed.		*In*	*Out*	*Total*	*In*	*Out*	*Total*	*Total*
Office	710	General Office Building	301 kSF of GFA	266	43	309	52	272	324	3,090
(WMATA - 120KSF + VT - 181 KSF)		*Internal Capture Office - Residential*		-13	-2	-15	-3	-14	-17	-155
		Internal Capture Office - Retail		-4	-2	-6	-3	-14	-17	-155
Office with Internal Reductions				*249*	*39*	*288*	*46*	*244*	*290*	*2,780*
Mode Split/TDM Reduction	*45%*			*-112*	*-18*	*-130*	*-21*	*-110*	*-131*	*-1,251*
Office Subtotal				*137*	*21*	*158*	*25*	*134*	*160*	*1,529*
Retail	820	Shopping Center	112 kSF of GFA	129	79	208	284	307	591	6,494
(WMATA - 94KSF + VT - 18 KSF)		*Internal Capture - Retail - Residential*		*-6*	*-4*	-10	*-24*	*-31*	-55	*-974*
		Internal Capture - Retail - Office		*-2*	*-4*	-6	*-14*	*-3*	-17	*-155*
		Internal Capture - Retail - Academic		-10	-8	-18	-15	-15	-30	-324
Retail with Internal Reductions				*111*	*63*	*174*	*231*	*258*	*489*	*5,041*
Pass-By Reduction[A]	*25%/34%/25%*			*-28*	*-16*	*-44*	*-79*	*-88*	*-166*	*-1,260*
Retail Subtotal				*83*	*47*	*131*	*152*	*170*	*323*	*3,781*
Residential	221	Multifamily (Mid-Rise) (Urban/Sub	1,571 DU	132	377	509	380	243	623	8,560
(WMATA - 1055 DU + 76 Towns + VT - 440 DU)		Internal Capture - Residential - Office		-2	-13	-15	-14	-3	-17	-155
		Internal Capture - Residentail - Retail		-4	-6	-10	-31	-24	-55	-974
Residential with Internal Reductions				*126*	*358*	*484*	*335*	*216*	*551*	*7,431*
Mode Split/TDM Reduction	*45%*			*-57*	*-161*	*-218*	*-151*	*-97*	*-248*	*-3,344*
Residntial Subtotal				*69*	*197*	*266*	*184*	*119*	*303*	*4,087*
Academic	540	Junior /Community College	160 kSF of GFA	325	97	422	149	149	298	3,240
(VT - 160KSF)		*Internal Capture - Academic - Retail*		-8	-10	-18	-15	-15	-30	-324
Academic with Internal Reductions				*317*	*87*	*404*	*134*	*134*	*268*	*2,916*
Mode Split/TDM Reduction	*45%*			*-143*	*-39*	*-182*	*-60*	*-60*	*-121*	*-1,312*
Academic Subtotal				*174*	*48*	*222*	*74*	*74*	*147*	*1,604*
		Proposed Development Site Trips with reductions		**464**	**313**	**777**	**436**	**497**	**933**	**11,001**

A) The pass by reduction for the shopping center is based on the ITE Trip Generation methodology, as provided in the 10th Edition Handbook. The average rate for shopping centers is 34% for the PM Peak. For all other time periods, the default pass by rate is 25%.

(1) residential / office - smaller of 5% of residential trips or 5% of office trips

(2) residential / retail - smaller of X% of residential trips or X% of retail trips; AM: X = 5%, PM: X = 10%, Sat: X= 10%, Daily: X = 15%

(3) office/ retail - smaller of 5% of office trips or 5% of retail trips

(4) academic/retail - use the smaller of 10% of academic traffic or 10% of retail traffic

Table 2: Comparison Between Comp. Plan Allowable and Proposed Development Trips

Land Use	ITE Code	Size	Weekday						
			AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	Total
Allowable Option 1									
Multifamily Housing (Mid-Rise)	221	1,110.00 DU	94	268	362	273	174	447	6,048
General Office Building	710	43.80 kSF of GFA	58	10	68	8	44	52	476
Total			**152**	**278**	**430**	**281**	**218**	**499**	**6,524**
Allowable Option 2									
Multifamily Housing (Mid-Rise)	221	980.00 DU	83	237	320	242	154	396	5,339
Junior / Community College	540	240.00 kSF of GFA	435	130	565	223	223	446	4,860
Total			**518**	**367**	**885**	**465**	**377**	**842**	**10,199**
Proposed Development Site Trips with reductions			***464***	***313***	***777***	***436***	***497***	***933***	***11,001***
Proposed Development Program vs. Zone Allowable Option 1 Development									
Difference Between Proposed External Trips and Zone Allowable Option 1			***312***	***35***	***347***	***155***	***279***	***434***	***4,477***
Proposed Development Program vs. Zone Allowable Option 2 Development									
Difference Between Proposed External Trips and Zone Allowable Option 2			***-54***	***-54***	***-108***	***-29***	***120***	***91***	***802***

Note:
The County's comprehensive plan recognizes the VT and WMATA parcels as part of Land Unit A. This allows for a combined of 1,110 DU and 43,800 square feet office/retail uses on these two parcels. This is used as Allowable Option 1 in the table above. As an alternative to the base zone allowable development, the comprehensive plan provides an option to develop approximately 240,000 square feet of institutional use replacing 130 DU and 43,800 square feet of office/retail space from the base allowable option. This is represented as Allowable Option 2 in the table above.



Figure 1: Study Intersections

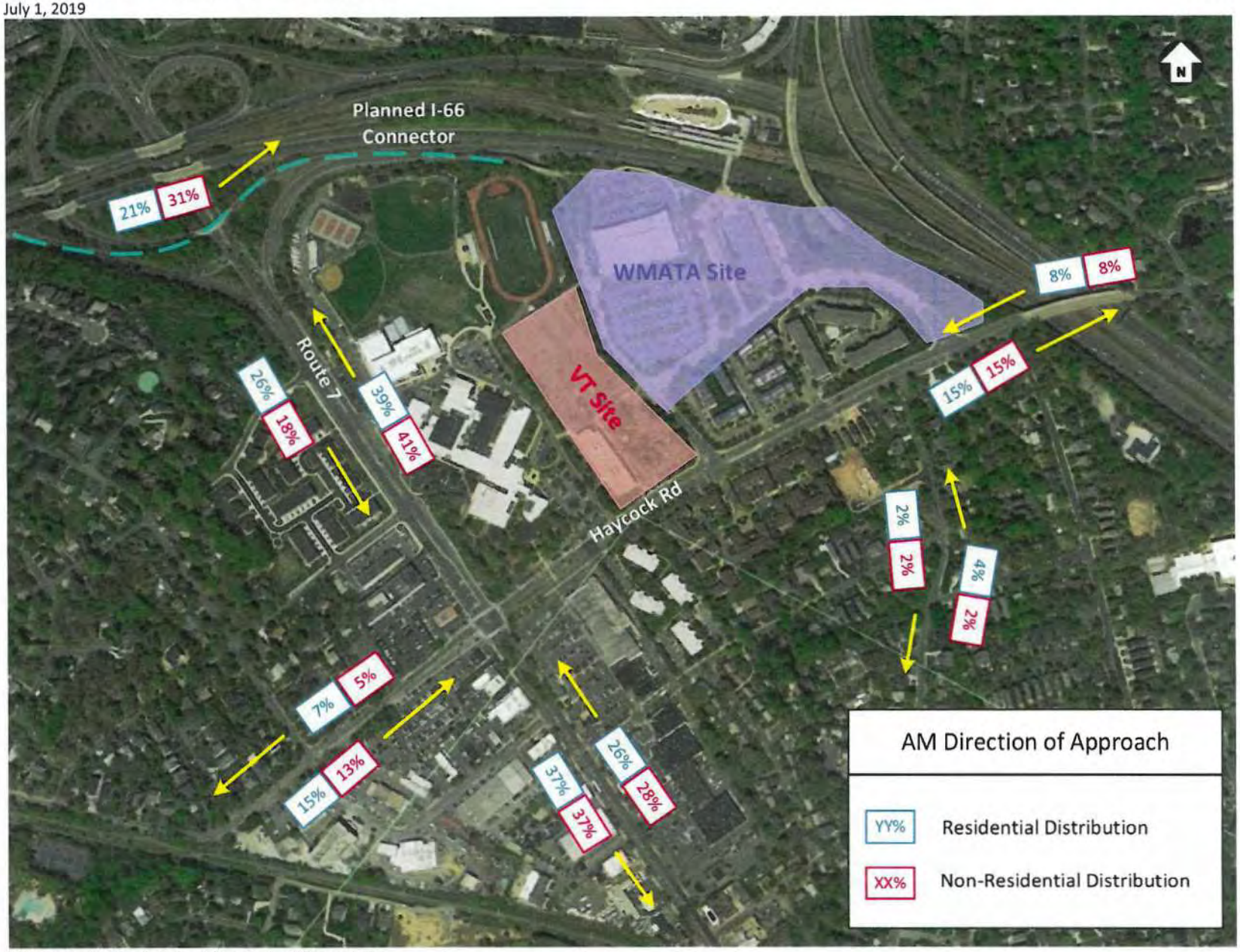


Figure 2: AM Peak Hour Direction of Approach

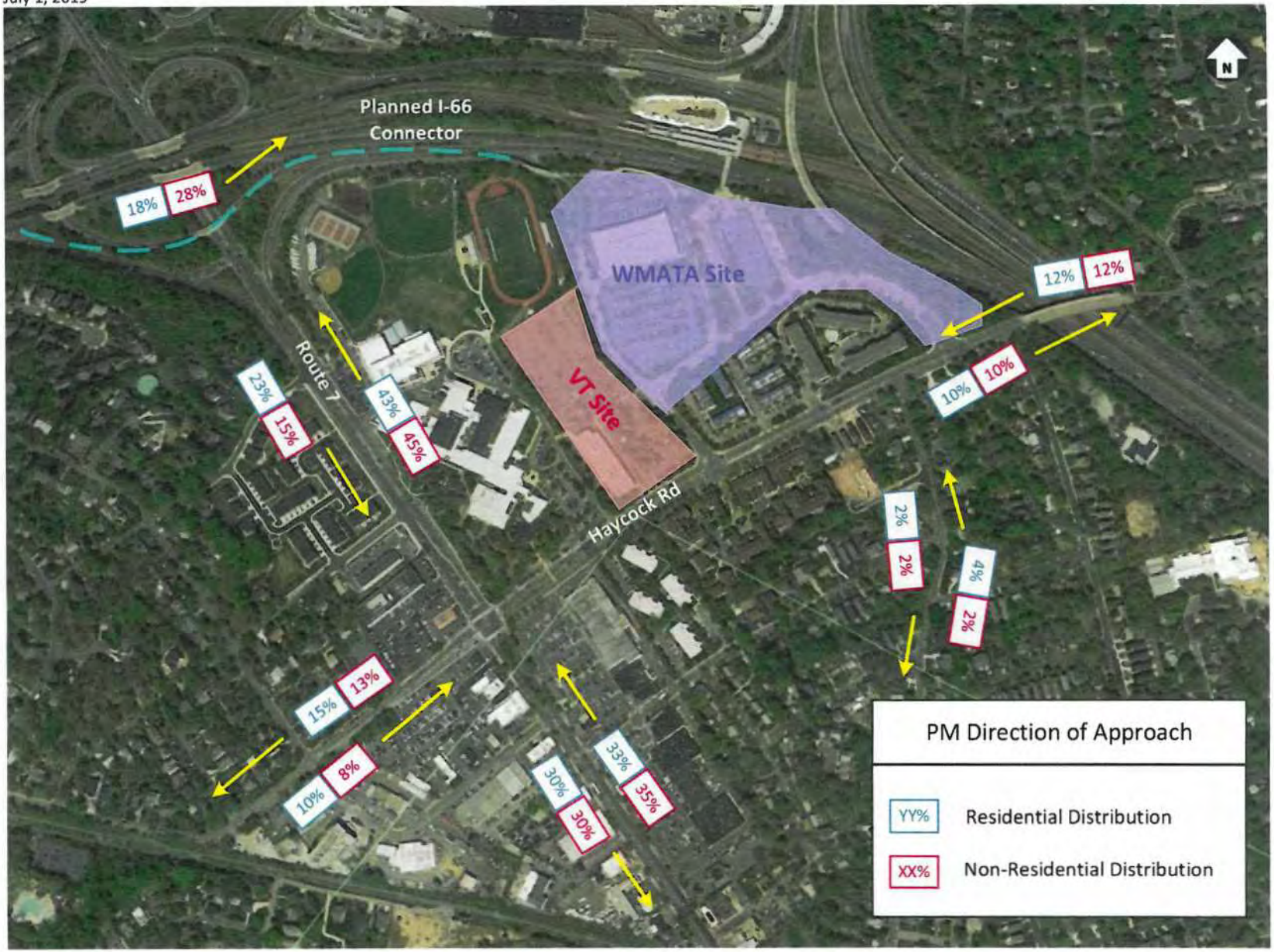


Figure 3: PM Peak Hour Direction of Approach

Appendix B: VDOT Reported Crash Data

Document Number	Crash Date	Crash Time	Collision Type	Crash Description	KABCO Severity Code	Latitude	Longitude	Pedestrian Fatality Count	Non Pedestrian Fatality Count	Pedestrian Injury Cnt	Non Pedestrian Injury Count	Work Zone Related
160680019	1/19/2016	14:39	2. Angle	VEHICLE 1 WAS TRAVELING EAST ON RT 7/LEESBURG PIKE UNDER I66. DRIVER 2 WAS EXITING OFF I66 EASTBOUND AND ATTEMPTING TO MAKE A LEFT TURN ONTO WESTBOUND LEESBURG PIKE ON A GREEN LIGHT. DRIVER 1 STATED THAT HE WAS UNFAMILIAR WITH AREA AND WHEN HE APPROACHED TRAFFIC LIGHT HE WAS LATE IN SEEING THE RED LIGHT. DRIVER 1 STATED THAT HE ATTEMPTED TO STOP. AS A RESULT VEHICLE 1 STRUCK THE LEFT SIDE OF VEHICLE 2. DRIVER 2 STATED THAT HIS LEFT ARM HURT, HOWEVER REFUSED RESCUE ON SCENE. DRIVER 1 AT FAULT, CHARGED WITH FAILING TO MAINTAIN PROPER CONTROL.	Possible Injury (C)	38.89796	-77.19563	0	0	0	1	2. No
160620336	1/20/2016	19:20	1. Rear End	V3 WAS IN THE RIGHT LANE ATTEMPTING TO PULL OVER ROADWAY DUE TO INVOLVEMENT IN A SEPERATE CRASH AT 7045 LEESBURG PIKE. V2 WAS BEYOND 7045 LEESBURG STOPPED IN LANE DUE TO SNOWY CONDITIONS AND STOPPED VEHICLES. V1 WAS TRAVELING EAST IN THE SAME LANE AND REAR-ENDED V2. V1 THEN RICOCHETED INTO V3, SIDESWIPING HIS LEFT SIDE. DRIVER OF V1 HELD AT FAULT.	No Injury (O)	38.89433	-77.19002	0	0	0	0	2. No
160780102	2/25/2016	17:40	2. Angle	VEHICLE 1 WAS TRAVELING NORTH ON HAYCOCK RD AND ATTEMPTED TO TURN LEFT INTO A PARKING LOT. THERE WAS HEAVY TRAFFIC ON SOUTHBOUND HAYCOCK AND DRIVER 1 THOUGHT SHE HAD ROOM TO MAKE TURN. WHILE VEHICLE 1 WAS IN THE INTERSECTION, IT WAS STRUCK BY VEHICLE 2 AND PUSHED INTO VEHICLE 3. NO INJURIES WERE REPORTED.	No Injury (O)	38.89609	-77.18912	0	0	0	0	2. No
160750081	3/1/2016	18:50	1. Rear End	VEH 2 DECELERATED FOR TRAFFIC AND STOPPED JUST PAST THE STOP LINE ON EB LEESBURG PK AT SHREVE RD. VEH 1 DECELERATED, BUT COULD NOT STOP AND COLLIDED WITH VEH 2.	Possible Injury (C)	38.89479	-77.19076	0	0	0	1	2. No
160780136	3/5/2016	9:44	1. Rear End	VEH 1 AND VEH 2 WERE BOTH TRAVELING EB ON RT 7/LEESBURG PIKE WHEN TRAFFIC SLOWED IN FRONT OF THEN FOR THE TRAFFIC SIGNAL LOCATED AT RT 7 AND SHREVE RD. APPROX 150FT PRIOR TO THE INTERSECTION WITH SHREVE RD, VEH 2 SLOWED TO A STOP NEAR CHESTNUT ST. DRIVER 1 DID NOT REALZE VEH 2 HAD STOPPED UNTIL IT WAS TOO LATE AND REAR-ENDED VEH 2.	No Injury (O)	38.89569	-77.19212	0	0	0	0	2. No
160960016	3/8/2016	18:55	2. Angle	VEH 1 ENTERED INTO EB LEESBURG PIKE FROM THE WB LANES OF LEESBURG PIKE TO CHESTNUT ST. TWO LANES OF EB LEESBURG PIKE HAD STOPPED TO ALLOW VEH 1 TO ENTER. VEH 1 PROCEEDED THROUGH TO THE 3RD LANE WHERE HE WAS STRUCK BY VEH 2. THERE WERE NO INJUREIS REPORTED. THERE WAS MEDIUM DAMAGE TO BOTH VEHICLES. BOTH VEHICLES WERE TOWED AT THE REQUEST OF THE OWNERS. INSURANCE INFORMATION WAS EXHANGED BETWEEN BOTH PARTIES. DRIVER OF VEH 1 IS AT FAULT.	No Injury (O)	38.89559	-77.19202	0	0	0	0	2. No
161040044	4/4/2016	19:01	2. Angle	D1 WAS TURNING LEFT ONTO CHESTNUT ST FROM RT7WB. VEHICLES ON FIRST TWO EB LANES OF RT7 WERE STOPPED AND D1 BEGAN TO CROSS THE 3RD LANE WHEN STRUCK BY D2. D2 WAS TRAVELING ON THE FAR RIGHT EB LANE OF RT7. D2 NOTICED THAT THE TRAFFIC ON THE TWO LEFT EB LANES WERE SLOWING DOWN BUT HER LANE WAS MOVING. UPON COMING TO THE INTERSECTION WITH CHESTNUT ST, SAW D1 COME ACROSS ONTO HER LANE AT WHICH TIME SHE STRUCK THE VEHICLE.	No Injury (O)	38.89556	-77.19199	0	0	0	0	2. No
161470278	5/6/2016	15:19	2. Angle	V1 WAS EXECUTING A LEFT TURN FROM WESTBOUND LEESBURG PIKE TO SOUTHBOUND CHESTNUT ST. V2 WAS TRAVELING EASTBOUND ON LEESBURG PIKE. V1 MADE THE LEFT TURN AND WAS STRUCK ON THE PASSENGER SIDE BY V2 WITHIN THE INTERSECTION. NO INJURIES WERE REPORTED. V1 WAS CITED FOR FAILING TO YIELD RIGHT OF WAY ON A LEFT TURN.	No Injury (O)	38.89561	-77.19199	0	0	0	0	2. No
162030023	6/23/2016	17:44	2. Angle	Veh 1 was attempting to make a left turn onto Chestnut St from WB Leesburg Pike when it was struck by vehicle 2. Vehicle 2 was traveling in the far right lane of EB Leesburg Pike when vehicle 1 failed to yield the right of way and crossed into the path of vehicle 2 causing it to strike vehicle 1 in the passenger side. Veh 3 was stopped at the intersection waiting to make a right hand turn onto EB Leesburg Pike when it was struck by veh 1. After veh 2 struck Veh 1 in the side, veh 1 was pushed into veh 3.	Possible Injury (C)	38.89561628	-77.19197887	0	0	0	2	2. No
162040036	6/29/2016	17:16	2. Angle	V1 WAS TRAVELING WB ON RT7. V2 WAS TRAVELING EB ON RT7. TRAFFIC WAS STOPPED IN THE TWO STRAIGHT LANES OF EB RT7 AND THE RIGHT TURN LANE WAS STILL OPEN. V1 WAS ATTEMPTING TO MAKE A LEFT TURN ONTO CHESTNUT ST, MADE IT THROUGH THE FIRST TWO STRAIGHT LANES OF TRAVEL. AS V1 PROCEEDED TO ENTER THE RIGHT TURN LANE, V2 STRUCK V1.	Non-Incapacitating Injury (B)	38.89559	-77.19203	0	0	0	1	2. No
162520038	7/23/2016	5:01	2. Angle	Veh #1 was E/B Rt7/Leesburg Pike and drifted on to the median. Veh #1 struck a Keep Right sign and continued over the curb on to Shreve Rd.	No Injury (O)	38.89468	-77.19071	0	0	0	0	2. No
162350024	7/29/2016	8:36	2. Angle	D2 WAS TRAVELING STRAIGHT AND STRUCK D1 AS D1 WAS TURNING LEFT INTO THE INTERSECTION.	No Injury (O)	38.8956	-77.19204	0	0	0	0	2. No
162210121	7/30/2016	15:10	4. Sideswipe - Same Direction	Veh2 was traveling on Rt 7 WB just after Shreve Rd in the right lane. Veh1 was traveling in the same direction in the left lane. For an unknown reason Vehl pulled into Veh2`s lane sideswiping Veh2 and forcing the vehicle off the road. Once off the road Veh2 struck a guide wire for a pole causing the wire to snap. No other damage done to the pole or wire. Veh1 fled the scene without stopping to provide information. Veh1 found at fault for the accident.	Possible Injury (C)	38.89547	-77.19148	0	0	0	1	2. No
162185020	8/3/2016	21:36	12. Ped	VEH#1 was traveling West on West Broad Street. The vehicle made a right turn onto Haycock Road while there was a pedestrian traveling west bound in the crosswalk. VEH#1 began a 360 maneuver striking the pedestrian in the left arm. VEH#1 continued north on Haycock Road. The pedestrian crossing sign showed him he had the right of way. No visible injury for the pedestrian.	Possible Injury (C)	38.89475	-77.19027	0	0	1	0	2. No

162520044	8/5/2016	17:29	2. Angle	Veh #1 was attempting to make left turn from Highland Ave onto s/b Haycock Rd. Vehicle #2 was traveling north on Haycock Rd in left lane of travel. Driver #1 was making left turn and did not account for second travel lane and pulled into the path of vehicle #2. As a result vehicle #1 struck front right corner of vehicle #2. Driver #1 at fault for failing to pay full time and attention.	No Injury (O)	38.89939	-77.18443	0	0	0	0	2. No
162580063	8/22/2016	15:31	2. Angle	VEH 1 WAS ENTERING INTO EB LEESBURG PIKE FROM THE WB LANES OF LESSBURG PIKE TO CHESTNUT ST. TWO LANES OF EB LEESBURG PIKE HAD STOPPED TO ALLOW VEH 1 TO ENTER. VEH 1 PROCEEDED THROUGH TO THE 3RD LANE WHERE SHE WAS STRUCK BY VEH 2. DRIVER OF VEH 1 STATED THAT SHE 'GUNNED IT' THROUGH. RESCUE RESPONDED TO CHECK ON DRIVER OF VEH 2 DUE TO PREGNANCY. SHE WAS TRANPORTED TO FFX HOSPITAL FOR OBSERVATION. DRIVER OF VEH 1 REPORTED NO INJURIES. THERE WAS MEDIUM DAMAGE TO BOTH VEHICLES. AIRBAGS DEPLOYED ON VEH 1. BOTH VEHS WERE DRIVEABLE. VEH 2 WAS TURNED OVER TO DRIVER 1'S BOYFRIEND, LUIS RAMOS. INSURANCE INFORMATION WAS EXCHANGED BETWEEN BOTH PARTIES. DRIVER OF VEH 1 IS AT FAULT.	Possible Injury (C)	38.8956	-77.19206	0	0	0	1	2. No
162910003	8/23/2016	18:05	2. Angle	Veh 1 was entering into EB Leesburg Pike from the WB lanes of Leesburg Pike to Chestnut St. Two lanes of EB Leesburg Pike had stopped to allow veh 1 to enter. Veh 1 proceeded through to the 3rd lane, where she was struck by Veh 2. Injuries were sustained by all 3 occupants in Veh 2. Driver of Veh 1 also sustained an injury to her right arm. Rescue responded and attended to all involved parties. There was major damage to both vehs. Airbags (side and front) deployed of vehs 1 and 2. Both vehs were towed at the request of the owners. Insurance information was exchanged between both parties. Driver of Veh 1 is at fault.	Non-Incapacitating Injury (B)	38.89561	-77.19205	0	0	0	4	2. No
162520112	8/25/2016	11:46	1. Rear End	Dl was travelling east bound on Leesburg Pike by Chestnut St when he rear ended D2. Dl admitted to following to closely and not being able to stop in time. Dl cited.	Possible Injury (C)	38.89582	-77.1924	0	0	0	1	2. No
162990014	8/29/2016	16:34	2. Angle	VEH #1 TRAVELING EAST ON RT 7 IN LEFT LANE OF TRAVEL. VEH # 2 WAS AT RED LIGHT FOR WEST RT 7 FROM I66 EAST EXIT. DRIVER# 2 STATED THAT LIGHT TURNED GREEN AND HE ENTERED INTERSECTION WHEN STRUCK BY VEHICLE # 1. VEH # 1. VEH # 1 DISREGARD RED LIGHT AND STRUCK FRONT END OF VEH# 2. DRIVER # 1 AT FAULT	Incapacitating Injury (A)	38.89794	-77.19554	0	0	0	3	2. No
162580094	9/1/2016	17:49	1. Rear End	Veh 1 struck Veh 2 while on EB Leesburg Pike underneath I-66. Veh 1 was stopped behind Veh 2 in the left lane. Driver of Veh 1 stated that the light turned green and he proceeded. Driver of Veh 2 stated that the light was red and did not move. Veh 1 struck Veh 2. Driver of Veh 2 stated that she hit her nose upon impact. Passenger in Veh 2 also complained of back pain. No injuries were reported from Veh 1. There was minor damage to Veh 1 and little to no damage on Veh 2. Both cars were driveable. Info was exchanged between both parties. Driver of veh 1 is at fault.	Incapacitating Injury (A)	38.8981	-77.19579	0	0	0	2	2. No
163090034	9/22/2016	14:43	1. Rear End	VEH 2 AND 3 WERE STOPPED IN RIGHT LANE OF E/B LEESBURG PIKE AT STOP LIGHT FOR I66. DRIVER 1 STATED THAT HE WAS ATTEMPTING TO BEGAN A LANE CHANGE FROM RIGHT LANE TO LEFT LANE. THEN REALIZING THAT A VEHICLE IN LEFT LANE WAS NEXT TO HIM, HE WAS UNABLE TO STOP IN TIME AND STRUCK THE REAR OF VEH 2 AND PUCHING 2 INTO THE REAR OF VEH 3. BOTH DRIVER 2 AND 3 WERE SEEN BY RESCUE FOR MINOR INJURY. DRIVER # 1 AT FAULT.	Possible Injury (C)	38.89806	-77.19578	0	0	0	2	2. No
162695187	9/23/2016	15:07	2. Angle	Veh2 was traveling southbound in the left lane of Haycock Rd. Veh1 was stopped at the entrance to 7124 Leesburg Pike on Haycock Rd intending to make a left turn. Veh1 began to move and attempted to make the left turn. Veh2 struck Veh1. The time of the crash was approximately 1507 hrs. There is a sign attached to the stop sign at the Haycock Rd entrance that states: "Right Turn Only 7AM TO 8AM 2:30PM TO 3:30PM." Driver1 stated that she saw the sign but indicated that people turn left during that time all the time. Veh1 sustained damage to its rear taillight, bumper, quarterpanel. Veh2 sustained damage to its front end. Driver1: Katerine Roberson 703-431-1619 Allstate 977115890 Owner1: Andrea Roberson 703-403-2487 Driver2: Jennifer Hathaway 571-269-3078 Geico 4204513271 Driver1 was cited for 46.2-826 (Fail to Yield Entering Hwy). Her court date was set for November 2nd 2016 at 0900 hrs in Falls Church GDC.	Possible Injury (C)	38.89576	-77.19194	0	0	0	2	2. No
162990027	10/4/2016	17:03	2. Angle	V1 was WB Leesburg Pike making a left turn onto Chestnut St. The traffic on the left lane and middle lane facing WB stopped to let her through so she can make the left turn. Dl did not see V2 on the far right lane going straight causing a T-bone collision. Dl is at fault for fail to pay full time and attention.	Possible Injury (C)	38.89562	-77.192	0	0	0	1	2. No
162965054	10/21/2016	18:28	2. Angle	On October 21, 2016 at 1828 hours, I responded to the 100-BLK of Haycock Rd, for a three car accident. When I arrived on scene there were not any reported injuries. Mr. Zimmermann was pulling out of the Giant parking lot, as he crossed north-bound of Haycock Rd he went in between a gap of two stand-still cars on the inner lane of south-bound Haycock Rd. When he inched out to go to the outer lane, Mr. Wasilewski had the right of way headed down the outer lane as they collided. Mr. Wasilewski said he was going straight on the outer lane of Haycock Rd, as Mr. Zimmermann pulled out into his lane, causing them to collide. Mr. Li was at a stand still in traffic, he did not notice Mr. Zimmermann pull behind him to get to the outer lane. The accident between Mr. Zimmermann and Mr. Wasilewski caused them to push into the passenger side rear bumper of Mr. Li. Accident exchange forms were given to all parties. Henry`s towing arrived and removed Mr. Wasilewski`s car. Mr. Zimmermann`s insurance: State Farm # 1323227D2332B Contact # (631-576-6263) Mr. Wasilewski`s insurance: Liberty Mutual # A0S2381482187054 Contact # (703-846-9205) Mr. Li`s insurance: Erie # Q072513206 Contact # (202-525-6266)	No Injury (O)	38.89566	-77.1895	0	0	0	0	2. No

163540040	11/18/2016	13:28	8. Non-Collision	BOTH VEHICLES WERE TRAVELING EAST ON RT7LEESBURG PIKE APPROACHING THE INTERSECTION WITH RT1128DALE DR, WITH VEH 1 IN THE CENTER LANE WITH VEH 2 IN THE RIGHT LANE. VEH1 ATTEMPTED TO CHANGE LANES INTO THE RIGHT LANE AND DID NOT SEE VEH 2, CAUSING VEH 2 TO AVOID A COLLISION BUT SWERVED INTO THE CURB WHICH CAUSED DAMAGE TO THE VEHICLE. THERE WAS NO COLLISION BETWEEN VEH 1 AND VEH 2.	No Injury (O)	38.8967	-77.19379	0	0	0	0	2. No
170050008	11/22/2016	9:18	2. Angle	Vehicle #2 was sitting SB on Great Falls, in the right turn lane, at a red light. Bicycle #1 was sitting NB on Great Falls, in the straight thru lane, at a red light. The light for the left turn lane changed to green and Veh #2 proceded to turn left onto Haycock. Bicycle #1 proceded against the red light through the intersection. Veh #2 struck Bicycle #1.	Possible Injury (C)	38.9017	-77.17949	0	0	0	1	2. No
170200025	12/27/2016	8:13	1. Rear End	DRIVER 2 WAS HEADING EAST ON LEESBURG PIKE PREPARING TO STOP AT A RED LIGHT AT THE I66 EXIT RAMP WHEN HER VEHICLE WAS STRUCK FROM BEHIND BY VEHICLE 1 WHICH NEVER SLOWED DOWN. BOTH PARTIES WERE TRANSPORTED, NON-LIFE THREATENING TO FAIRFAX HOSPITAL.	Incapacitating Injury (A)	38.89808	-77.19576	0	0	0	2	2. No
170260015	1/11/2017	12:17	4. Sideswipe - Same Direction	Vehs 1 and 2 were both traveling EB on Rte 7/Leesburg Pike. Veh 1 was in the center lane of three lanes traveling East Bound. Veh 2 was in the far right lane traveling EB. Veh 1 attempted to change lanes and make a right turn onto Dale Dr from Rte 7 and side swiped veh 2 in the process. Veh 1 struck the front left side of veh 2 with its front right side.	No Injury (O)	38.89688	-77.19401	0	0	0	0	2. No
171140002	1/17/2017	15:21	2. Angle	Veh #2 was n/b on Haycock Rd and entered the intersection of Great Falls St on a solid green light. Vehicle #1 was east bound on Great Falls St. Due to inattention, Driver #1 did not see the red light and was unable to stop before entering the intersection. Vehicle #1 collided with Vehicle #2 within the intersection.	Possible Injury (C)	38.90171	-77.17952	0	0	0	1	2. No
172795305	1/24/2017	7:40	2. Angle	V1 (703-241-5837) was making a left hand turn into the private parking lot of 1200 block of W. Broad Street. V2 (703-638-3908) was traveling straight ahead in the right hand lane. V1 failed to yield to oncoming traffic and struck V2 at an angle. The entire right side quarter panels of V1 were scratched and dented. V2 sustained significant damage to the front bumper area of the vehicle. V1 (Erie#Q062206069) exchanged accident information with V2 (Geico#0330480408).	Possible Injury (C)	38.89564	-77.18939	0	0	0	2	2. No
170575110	2/20/2017	9:11	2. Angle	DRIVER #1 ENTERED CHESTNUT STREET FROM EB LEESBURG PIKE BY MISTAKE. SHE MADE A WIDE U-TURN WITHIN THE INTERSECTION THUS STRIKING VEHICLE #2 HEADED EB ON LEESBURG PIKE. NO INJURIES REPORTED. BOTH VEHICLES WERE TOWED BY HENRY'S AT OWNERS REQUEST.	No Injury (O)	38.89558	-77.19201	0	0	0	0	2. No
170565142	2/25/2017	15:15	2. Angle	V1 EXITED A PRIVATE PARKING LOT AND WAS ATTEMPTING TO CROSS ALL LANES OF TRAFFIC TO GET INTO THE LEFT TURN LANE. V2 WAS PROCEEDING IN THE LEFT TURN LANE. AS V1 CONTINUED FORWARD, THE FRONT LEFT CORNER WAS STRUCK BY THE FRONT RIGHT CORNER OF V2. NO INJURIES WERE REPORTED. V1 STATED ANOTHER DRIVER WAVED HER FORWARD TO PROCEED PRIOR TO THE CRASH.	No Injury (O)	38.89498	-77.19091	0	0	0	0	2. No
170845067	3/24/2017	7:57	2. Angle	V2 TRAVELING EAST ON LEESBURG PIKE. V1 MADE A LEFT FROM WEST LEESBURG PIKE TO GO SOUTH ON CHESTNUT ST. D1 DID NOT SEE V2 THAT WAS IN THE FAR RIGHT LANE, IMPACTING IT. D1 WAS CHARGED WITH FAIL TO PAY FULL TIME AND ATTENTION. 82-4-24	No Injury (O)	38.89562	-77.19206	0	0	0	0	2. No
170985239	4/7/2017	18:00	2. Angle	V1 WAS MAKING A LEFT TURN ONTO CHESTNUT ST AND DID NOT SEE V2 ON THE FAR RIGHT LANE OF THE EB LANES OF LEESBURG PIKE, DUE TO STOPPED VEHICLES OBSTRUCTING HIS VIEW. V1 PROCEEDED TO GO THROUGH THE INTERSECTION AND CAUSED AND COLLISION WITH V2.	Non-Incapacitating Injury (B)	38.8956	-77.19202	0	0	0	3	2. No
171125122	4/21/2017	13:15	1. Rear End	VEHICLE #2 WAS PARKED ON THE SHOULDER JUST BEFORE THE LEESBURG PIKE/ DALE DR INTERSECTION WHEN VEHICLE #1 STRUCK IT FROM BEHIND. THE DRIVER OF VEH #1 WAS OUTSIDE THE VEHICLE WHEN CONTACT WAS MADE. NO INJURIES. VEH #1 TOWED DUE TO DAMAGE.	No Injury (O)	38.89715	-77.19444	0	0	0	0	2. No
171335303	5/9/2017	17:41	2. Angle	V1 ATTEMPTED TO MAKE LEFT TURN AND WAS WAIVED ACROSS BY STOPPED CAR. ONCE V1 ENTERED THE SECOND LANE, COLLISION OCCURRED WITH V2 TRAVELING STRAIGHT WITH RIGHT OF WAY	No Injury (O)	38.89612	-77.18911	0	0	0	0	2. No
171375062	5/16/2017	19:33	1. Rear End	On May 16, 2017 at 1933 hours, I responded to a two vehicle accident at the 100 Block of Haycock Road. Mr. Anokye-Tieku was stationary in the center lane of traffic waiting for the traffic light to turn green in his Toyota Prius (VA/VHJ-6041), VH2. Mr. Ahmad was behind Mr. Anokye-Tieku`s vehicle in the center lane driving a Toyota Sienna (VA/VKY-2383), VH1. Mr. Ahmad said that he took his eyes off of the road and rear-ended Mr. Anokye-Tieku`s vehicle. VH1 had minor damage to the front bumper. VH2 had minor damage to the rear bumper. Mr. Ahmad had three passengers and none of them reported any injuries. Mr. Anokye-Tieku had one passenger and they both said they had minor whiplash. Medic 106 arrived on scene and cleared Mr. Anokye-Tieku, and Mr. Penn, his passenger. Mr. Anokye-Tieku was driving a TNC vehicle through the company Lyft. Mr. Penn was his customer, and Mr. Penn was not using any safety restraints at the time of the incident. Mr. Anokye-Tieku was not able to provide me the TNC vehicle number. Mr. Ahmad was cited with following too closely (VUS-16-3053). His court date is set to be on June 28, 2017 at 0900 hours. Mr. Ahmad`s (VH1) phone # 703-935-9792 Mr. Anokye-Tieku`s (VH2) phone # 571-332-3095	Possible Injury (C)	38.89484	-77.19071	0	0	0	5	2. No
171375311	5/17/2017	11:05	2. Angle	V1 was making a left turn out of a parking lot onto south bound Haycock Road. V2 was traveling north bound on Haycock Road in the right lane. V2 struck V1 as it was leaving the parking. D1 and the P1 of V2 were injured during the accident and transported to Arlington Hospital. V1 - USAA Ins (4474267), Damage to entire front of vehicle and driver side doors ($2,000) V2 - Progressive Ins (082963515), Damage to Passenger side front of vehicle ($1000) D1 - Chest and Neck injuries, Phone #703-241-0821 D2 - No Injuries, Phone #703-795-0238 P1 - Neck injury, Phone #540-845-0302 Owner of V2 - Phone #571-288-8396	Incapacitating Injury (A)	38.89559	-77.18939	0	0	0	2	2. No

171685277	6/17/2017	15:00	1. Rear End	VEH. #1 AND VEH #2 WERE EB ON LEESBURG PIKE APPROACHING DALE DR. VEH. #2 STOPPED FOR THE TRAFFIC, VEH. #1 REAR ENDED VEH. #2.	No Injury (O)	38.89713	-77.19441	0	0	0	0	2. No
171835145	6/30/2017	16:40	1. Rear End	VEH #2 WAS STOPPED ON HAYCOCK RD WAITING TO TURN LEFT ONTO GROVE AVE. VEH #1 WAS APPROACHING FROM BEHIND. D1 STATES SHE LOOKED UP AND V2 WAS RIGHT THERE. V1 REAR ENDED V2.	No Injury (O)	38.89866	-77.1857	0	0	0	0	2. No
172085332	7/17/2017	18:00	2. Angle	VEHICLE #1 FAILED TO YIELD RIGHT OF WAY DURING A LEFT TURN AND COLLIDED INTO VEHICLE #2.	No Injury (O)	38.8956	-77.19204	0	0	0	0	2. No
172085331	7/17/2017	17:45	2. Angle	VEHICLE #1 FAILED TO YIELD RIGHT OF WAY DURING A LEFT TURN AND COLLIDED WITH VEHICLE #2.	Non-Incapacitating Injury (B)	38.89559	-77.19202	0	0	0	1	2. No
172535176	9/10/2017	15:05	2. Angle	V1 WAS TRAVELLING E/B ON RT 7. WHEN V2 HAD RECIEVED THE GREEN LIGHT TO MAKE A LEFT TURN FROM THE I66 OFF RAMP ONTO RT 7 W/B. V1 LOST CONTROL WHEN HE NOTICED RED LIGHT AND TRIED TO AVOID V2. V1 STRUCK THE REAR DRIVERSIDE CORNER OF V2. THE DRIVER OF V1 WAS TRANSPORTED TO FAIRFAX ER WITH POSSIBLE BROKEN ARM AND LEG.	Non-Incapacitating Injury (B)	38.89794	-77.19555	0	0	0	1	2. No
172545396	9/11/2017	16:05	9. Fixed Object - Off Road	VEHICLE #1 RAN OFF THE ROAD AND COLLIDED WITH A LIGHT POLE.	Non-Incapacitating Injury (B)	38.89711	-77.19449	0	0	0	2	2. No
172645337	9/21/2017	14:59	6. Fixed Object in Road	VEHICLE 1 WAS TRAVELING SOUTHEAST ON LEESBURG PK, AFTER I66, WHEN AN UNKNOWN VEHICLE BEGAN ENTERING HER LANE. SHE MOVED HER VEHICLE TO THE LEFT TO AVOID A COLLISION AND STRUCK THE GUARDRAIL CAUSING DAMAGE TO A PORTION ABOUT 20FT LONG. VEHICLE 1 HAD DAMAGE TO THE FRONT LEFT CORNER, BUMPER, AND TIRE. DRIVER 1 COULD PROVIDE NO INFORMATION ON THE PHANTOM VEHICLE.	Non-Incapacitating Injury (B)	38.89629	-77.19293	0	0	0	1	2. No
173195499	9/29/2017	23:58	2. Angle	VEHICLE 1 ATTEMPTED TO MAKE A LANE CHANGE AND STRUCK VEHICLE 2 IN THE REAR. VEHICLE 2 LOST CONTROL OF THE VEHICLE AND ENDED UP FACING THE OPPOSITE DIRECTION OF TRAFFIC.	No Injury (O)	38.89644	-77.19286	0	0	0	0	2. No
172775183	10/4/2017	6:55	5. Sideswipe - Opposite Direction	V1 RAN THROUGH RED LIGHT AND STRUCK V2.	No Injury (O)	38.89472	-77.19026	0	0	0	0	2. No
172835433	10/5/2017	18:03	2. Angle	VI WAS MAKING A LEFT TURN FROM LEESBURG PIKE TO CHESTNUT ST. V2 WAS TRAVELING EAST ON LEESBURG PIKE. V1 MADE THE LEFT TURN AND STRUCK V2. V1 DID NOT HAVE THE RIGHT OF WAY.	No Injury (O)	38.8956	-77.19204	0	0	0	0	2. No
172835423	10/10/2017	17:50	2. Angle	V1 TURNED LEFT, V2 WAS GOING STRAIGHT IN THE THRID TRAVEL LANE. DUE TO BACKED UP TRAFFIC, V1 COULD NOT SEE CLEARLLY IF THERE WAS TRAFFIC APPROCHING. V1 HIT V2, V2 then STRUCK V3.	Non-Incapacitating Injury (B)	38.89552	-77.1919	0	0	0	1	2. No
172965538	10/19/2017	18:18	2. Angle	VEHICLE #1 FAILED TO YIELD RIGHT OF WAY ON A LEFT TURN AND COLLIDED WITH VEHICLE #2.	No Injury (O)	38.89561	-77.19204	0	0	0	0	2. No
173155310	11/11/2017	18:03	1. Rear End	V1 AND V2 WERE BOTH TRAVELING EAST BOUND ON LEESBURG PIKE PRIOR TO DALE DR. V1 STATED THAT SHE WAS LOOKING AT HER HEATER/RADIO AREA AND NOT THE ROADWAY THEREFORE STRUCK V2 FROM THE REAR.	No Injury (O)	38.89635	-77.19322	0	0	0	0	2. No
173285260	11/17/2017	15:50	1. Rear End	V2 WAS STOPPED FOR TRAFFIC ON NORTH HAYCOCK ROAD JUST SOUTH OF GREAT FALLS STREET AND WAS STRUCK IN THE REAR BY V1. V1 AT FAULT.	No Injury (O)	38.90137	-77.18024	0	0	0	0	2. No
173485151	12/14/2017	10:55	1. Rear End	V3 WAS STOPPED AT THE TRAFFIC LIGHT AT RT7/LEESBURG PIKE AT SHREVE RD. V2 WAS COMING TO A STOP BEHIND V3. V1 WAS TRAVELLING EASTBOUND ON RT7/LEESBURG PIKE BEHIND THE OTHER TWO VEHICLES. THE DRIVER OF V1 THEN FELL ASLEEP AT THE WHEEL AND BEGAN TO ACCELERATE. V1 THEN COLLIDED WITH V2, PUSHING V2 INTO V3.	Non-Incapacitating Injury (B)	38.89507	-77.1911	0	0	0	2	2. No
180105059	1/4/2018	23:02	9. Fixed Object - Off Road	V1 SWERVED OFF ROAD AND CRASHED INTO TELEPHONE POLE AFTER SLIDING ON A PATCH OF ICE IN THE INTERSECTION OF GREAT FALLS ST AND HAYCOCK RD.	No Injury (O)	38.90175	-77.17983	0	0	0	0	2. No
181235785	1/4/2018	18:20	9. Fixed Object - Off Road	An ambulance (Arlington Medic 106) was exiting eastbound I-66 ramp onto eastbound lanes of RT 7 (7124 Leesburg Pike) when a low hanging tree branch was dangling on the right lane curb side. The ambulance continued forward striking the low hanging branches on the right side of the truck. The damage to the truck was the following: a mirror knocked off its hinges, 3 inch scrape to the front passenger door, and damage to the metal bar located above right front passenger door frame. Damage to the tree branches is unknown. Karl Roland Oelberg 804-448-0108	No Injury (O)	38.89741	-77.19501	0	0	0	0	2. No
180135222	1/9/2018	17:40	1. Rear End	V1 DID NOT REALIZE V2 WAS STOPPED DUE TO TRAFFIC. V1 REAR ENDED V2.	No Injury (O)	38.89545	-77.19177	0	0	0	0	2. No
180465001	2/13/2018	18:20	2. Angle	V1 WAS EXITING THE GIANT PARKING LOT AND ATTEMPTING TO TURN ONTO SOUTHBOUND HAYCOCK ROAD WHILE V2 WAS TRAVELING SOUTHBOUND ON HAYCOCK ROAD. V1 TRAVELED ACROSS THREE LANES OF HAYCOCK ROAD AND COLLIDED WITH THE MIDDLE OF V2 (TRANSIT BUS) AS V2 WAS LAWFULLY TRAVELING DOWN HAYCOCK ROAD. V1 THEN FLED THE SCENE AS THE DRIVER OF V2 WAS GOING TO CHECK ON INJURIES. THERE WILL BE ANOTHER REPORT DOCUMENTED UNDER THE SAME CASE NUMBER IN FAIRFAX COUNTY RECORDS TO DOCUMENT THE FELONY HIT AND RUN INVESTIGATION.	Non-Incapacitating Injury (B)	38.8957	-77.18944	0	0	0	1	2. No
181145279	4/7/2018	13:57	2. Angle	On April 7, 2018 at approximately 1428 hours, V1 was heading westbound out of 1230 W. Broad Street parking lot. V1 stopped at the stop sign and made a right turn onto Haycock Road. V2 was traveling on the left lanes heading northbound on Haycock road. D1 or D2 did not see each others vehicle. V1 crashed into V2`s front right wheel well and tire. V1 entire bumper was removed and front left tire was popped. V1 and V2 were disabled. V1 and V2 vehicles were towed by Petes Towing. I found D1 at fault for incident for fail to yield the right of away. No Virginia Summons was issued. No visible injuries to D1 or D2. D1-571-376-8710 D2-610-597-7970	Possible Injury (C)	38.89523	-77.18972	0	0	0	2	2. No
181345181	4/26/2018	7:21	12. Ped	DRIVER #1 WAS MAKING A LEFT TURN ON WEST FALLS CHURCH METRO PROPERTY WHEN SHE STRUCK A PEDESTRIAN IN THE CROSSWALK. THE PEDESTRIAN WAS TRANSPORTED TO FAIRFAX HOSPITAL IN NON- LIFE THEATENING CONDITION.	Incapacitating Injury (A)	38.89915	-77.18513	0	0	1	0	2. No

181795047	5/22/2018	17:04	2. Angle	D1 stated that she was traveling on Haycock Rd, attempting to make a left turn onto W. Broad St. and that her traffic signal was showing a steady yellow light. As she completed her turn, she was struck by V2. D1 denied needing medical attention. D2 stated that he was traveling straight on Shreve Rd, and as he went through the intersection, V2 cut in front of him, thus causing the accident. D2 stated that his traffic signal was showing a steady yellow light. D2 denied needing medical attention. Insurance information was exchanged between both involved parties. D1 was cited for failing to yield when making a left turn. Both vehicles were driven from the roadway. D1 Insurance - USAA Policy # 007473932C Phone # (703) 270-8358 D2 Insurance - Erie Insurance Company Policy # CGSG084473 Phone # (703) 477-0404	Non-Incapacitating Injury (B)	38.89475	-77.19048	0	0	0	2	2. No
181535157	5/23/2018	18:32	2. Angle	VEHICLE 1 WAS TRAVELING WEST BOUND ON RT 7 AND ATTEMPTED TO TURN LEFT ON TO CHESTNUT ST. V2 WAS TRAVELING EASTBOUND AND STRUCK V1 AS IT TURNED. V1 ADVISED SHE DID NOT SEE V2 TRAVELING IN THE LANE, AS HER VIEW WAS BLOCKED BY STOPPED VEHICLES IN EASTBOUND LANES.	Non-Incapacitating Injury (B)	38.8956	-77.19207	0	0	0	1	2. No
181485026	5/28/2018	0:08	9. Fixed Object - Off Road	VEHICLE DRIFTED LEFT AND COLLIDED WITH A GUARD RAIL. VEHICLE CONTINUED FORWARD UNTIL STOPPED.	Possible Injury (C)	38.89611	-77.19261	0	0	0	1	2. No
181705284	6/19/2018	11:59	16. Other	V1 WAS TRAVELING EAST BOUND ON RT7. AT THE INTERSECTION OF LEESBURG PIKE/I66 EB RAMP TO RT7, V2 WAS ENTER FROM THE RAMP MAKING A LEFT TURN ONTO RT7 WESTBOUND. WHILE V2 ENTERED THE INTERSECTION WITH A GREEN LIGHT, V1 DISREGARDED HER RED LIGHT AND ENTERED INTO THE INTERSECTION WHICH IS WHEN SHE STRUCK V2.	No Injury (O)	38.89796	-77.1956	0	0	0	0	2. No
182635412	7/31/2018	18:14	2. Angle	V1 ATTEMPTED TO MAKE A LEFT TURN ON TO CHESTNUT AVE, STRIKING V2 AS IT TRAVELED EB RT7/LEESBURG PIKE.	No Injury (O)	38.8956	-77.19207	0	0	0	0	2. No
182685366	8/18/2018	15:29	1. Rear End	V2 was stopped in traffic at a red light heading southbound in the 100-BLK of Haycock Rd when V2 struck V1 in the rear. V1 was stopped behind V2 and accelerated into the rear of V2 because D1 thought the light changed to green. V1 - Damage to front bumper, USAA Ins (001714304U71111) V2 - Damage to rear bumper, Geico Ins (0179268602) D1 - Injury to left forearm and wrist, declined to be transported by medics, Phone #7037870657 D2 - No Injuries, Phone #7035326780	Incapacitating Injury (A)	38.895	-77.19018	0	0	0	1	2. No
190155002	9/14/2018	14:50	2. Angle	VEHICLE 1 STRUCK VEHICLE 2 MERGING LANES	No Injury (O)	38.89458	-77.1903	0	0	0	0	2. No
182675239	9/24/2018	8:00	2. Angle	V1 WAS AT THE STOP SIGN AT RT7LEESBURG PIKE AND CHESTNUT ST. V2 WAS TRAVELLING EASTBOUND ON RT7/LEESBURG PIKE. V1 BELIEVED SHE HAD ENOUGH ROOM TO MOVE INTO TRAFFIC AND DID NOT SEE V2 COMING. V2 THEN STRUCK V1 AS V1 ENTERED RT7/LEESBURG PIKE.	No Injury (O)	38.89556	-77.19197	0	0	0	0	2. No
182825427	10/9/2018	16:51	2. Angle	VEH 2 WAS TRAVELING EB ON RT-7/ LEESBURG PIKE IN THE RIGHT LANE CROSSING THE INTERSECTION OF CHESTNUT ST. VEH 1 WAS TRAVELING WB ON LEESBURG PIKE IN THE LEFT TURN LANE. TRAFFIC STOPPED IN THE LEFT TWO LANES OF EB TRAFFIC AND VEH 1 MADE THE LEFT TURN TOWARD CHESTNUT ST, IN FRONT OF VEH 2, CAUSING THE ACCIDENT. BOTH VEHICLES WERE DISABLE AND TOWED FROM THE SCENE BY HENRY'S WRECKER. BOTH DRIVERS WERE TRANSPORTED TO FAIRFAX HOSPITAL FOR MINOR INJURIES. DRIVER #1 WAS ISSUED A SUMMONS FOR DRIVING WITH A SUSPENDED LICENSE.	Non-Incapacitating Injury (B)	38.89561	-77.19206	0	0	0	2	2. No
183365087	10/19/2018	14:02	4. Sideswipe - Same Direction	DRIVER #2 WAS HEADED EAST ON HAYCOCK ROAD INTO BRIGHT SUNLIGHT WHEN HER VEHICLE STRUCK VEHICLE #1 WHICH WAS PARKED ON THE SIDE OF THE ROAD BUT BLOCKING HALF THE TRAVEL LANE. NO INJURIES REPRTED.	No Injury (O)	38.9015	-77.18013	0	0	0	0	2. No
182995515	10/26/2018	15:22	1. Rear End	V2 AND V3 WERE STOPPED IN THE TRAVEL LANE FOR TRAFFIC, HEADED WESTBOUND ON RT 7. DRIVER OF V1 STATED THAT HE HAD OBSERVED THE TRAFFIC IN FRONT OF HIM AND STARTED TO SLOW, THEN LOOKED IN HIS REAR VIEW MIRROR TO CHECK THE TRAFFIC BEHIND HIM. WHEN THE DRIVER OF V1 LOOKED BACK AT THE VEHICLES IN FRONT OF HIM, A COLLISION OCCURED. V1 STRUCK V2 IN THE REAR, WHICH WAS THEN PUSHED INTO V3.	No Injury (O)	38.89678	-77.19351	0	0	0	0	2. No
183005348	10/27/2018	15:39	2. Angle	V1 HIT V2 INSIDE THE INTERSECTION. BOTH DRIVERS STATED THEY HAD THE GREEN LIGHT. INSUFFICIENT EVIDENCE TO DETERMINE.	No Injury (O)	38.89794	-77.19555	0	0	0	0	2. No
183145201	11/1/2018	8:23	2. Angle	VEHICLE 2 WAS TRAVELING SOUTH ON HAYCOCK RD WHEN IT STRUCK VEHICLE 1, WHICH HAD TURNED INTO THE PATH OF VEHICLE 2. VEHICLE 1 WAS TURNING SOUTH FROM A PRIVATE DRIVEWAY ON THE WEST SIDE OF HAYCOCK RD AFTER FAILING TO OBEY A STOP SIGN POSTED AT THE END OF THE DRIVEWAY. THE VIEW OF EACH DRIVER MAY HAVE BEEN PARTIALLY OBSTRUCTED BY A VEHICLE THAT HAD TURNED INTO THE DRIVEWAY FROM THE NORTH-BOUND LANE OF HAYCOCK RD IMMEDIATELY PRIOR TO THE CRASH.	Non-Incapacitating Injury (B)	38.89525	-77.1897	0	0	0	1	2. No
183205558	11/15/2018	17:19	4. Sideswipe - Same Direction	VEHICLE 1 WAS IN A LEFT TURN LANE TO HAYCOCK ROAD. VEHICLE 1 THEN CHANGED LANES TO THE WEST BOUND LANES OF ROUTE 7 BUT STRUCK VEHICLE 2 IN THE DRIVER SIDE UPON EXECUTING LANE CHANGE.	No Injury (O)	38.89461	-77.19022	0	0	0	0	2. No
190075002	11/19/2018	16:47	2. Angle	VEHICLE #1 FAILED TO YIELD RIGHT OF WAY ON A LEFT TURN. VEHICLE #2 COLLIDED WITH VEHICLE #1.	No Injury (O)	38.89459	-77.19041	0	0	0	0	2. No
190175535	1/17/2019	14:40	2. Angle	V1 MADE LEFT TURN IN FRONT OF V2. V2 STRUCK V1.	No Injury (O)	38.89561	-77.19207	0	0	0	0	2. No
190325198	1/31/2019	9:45	1. Rear End	VEHICLE #2 STOPPED AT RED TRAFFIC SIGNAL. VEHICLE #1 FAILED TO STOP AND REAR-ENDED VEHICLE #2.	No Injury (O)	38.89794	-77.19534	0	0	0	0	2. No
190485251	2/7/2019	16:50	2. Angle	VEHICLE #2 WAS EAST BOUND ON LEESBURG PIKE. VEHICLE #1 WAS MAKING A LEFT TURN ON TO CHESTNUT ST. VEHICLE #1 FAILED TO YIELD RIGHT OF WAY AND COLLIDED WITH VEHICLE #2.	No Injury (O)	38.89562	-77.19205	0	0	0	0	2. No
190485245	2/15/2019	18:37	2. Angle	VEHICLE #2 WAS WEST BOUND ON LEESBURG PIKE. VEHICLE #1 WAS NORTH BOUND ON SHREVE RD. VEHICLE #1 FAILED TO YIELD RIGHT OF WAY AND COLLIDED WITH VEHICLE #2.	No Injury (O)	38.8947	-77.19035	0	0	0	0	2. No

190575283	2/22/2019	17:01	2. Angle	See Incident Report 19-00308 [02/26/2019 16:31, PUELMEN, 24, FLCH] Vehicle #1 stated that he was exiting the parking lot of 7124 Leesburg Pike to make a left turn to northbound Haycock Rd. Vehicle #2 stated that she was traveling in the right southbound lane in the 100 block of Haycock Rd. As a result the front of Vehicle #1 crashed into the right side of Vehicle #2. Driver #1 admitted that he did not see Vehicle #2 as he was exiting the parking lot as he believed he yielded to all vehicles. Damage to Vehicle #1 was sustained in the front hood and the front bumper. Vehicle #2 sustained damage to the right tire rims, and the front and rear passenger side doors. No injuries were reported and both vehicles were able to leave the scene without assistance. Driver #1 Devon Boldt 571-249-0392 Driver #2 Gail Holland 571-426-0007	No Injury (O)	38.89467	-77.19056	0	0	0	0	2. No
190585315	2/24/2019	21:15	4. Sideswipe - Same Direction	VEHICLE 2 ATTEMPTED TO MAKE AN UNSAFE LANE CHANGE TO THE RIGHT AND STRUCK VEHICLE 1 ON THE SIDE. VEHICLE 2 THEN FLED THE SCENE. THE VEHICLE MAKE/MODEL AND OPERATOR/OWNER ARE UNKNOWN.	No Injury (O)	38.89661	-77.19361	0	0	0	0	2. No
190665177	3/6/2019	18:39	2. Angle	VEHICLE #2 WAS NORTH BOUND ON SHREVE RD. VEHICLE #1 FAILED TO YIELD RIGHT OF WAY WHILE MAKING A LEFT TURN ON TO LEESBURG PIKE. VEHICLE #1 COLLIDED WITH VEHICLE #2.	No Injury (O)	38.89461	-77.19042	0	0	0	0	2. No


1/4/2018
1/17/2017
11/22/2016
10/19/2018
11/17/2017
11/17/2017
8/5/2016
4/26/2018
6/30/2017
12/27/2016
9/1/2016
9/10/2017
6/19/2018
1/31/2019
8/29/2016
1/4/2018
6/17/2017
9/11/2017
4/21/2017
10/26/2018
1/11/2017
2/24/2019
11/18/2016
9/29/2017
9/21/2017
11/11/2017
5/28/2018
5/9/2017
2/25/2016
5/9/2017
8/25/2016
9/23/2016
2/13/2018
2/13/2018
5/6/2016
2/7/2019
5/17/2017
1/9/2018
1/24/2017
5/17/2017
4/7/2017
7/30/2016
4/7/2018
4/7/2018
11/1/2018
12/14/2017
2/25/2017
8/18/2018
3/1/2016
3/1/2016
8/3/2016
5/16/2017
3/6/2019
2/22/2019
3/6/2019
1/20/2016
1/20/2016

Appendix C: 2018 and 2019 Vehicular Turning Movement Count Sheets

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WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY -
WEST FALLS CHURCH METRORAIL STATION STUDY & VIRGINIA TECH PROPERTIES DEVELOPMENT
VIRGINIA DEPARTMENT OF TRANSPORTATION CHAPTER 879 TRAFFIC IMPACT ANALYSIS

Sub-Consultant

INTERSECTION TURNING MOVEMENT COUNT DATA SHEET

Location: I-66 EB Off-Ramp @ Leesburg Pike (Location #1)
Date Surveyed: May 9, 2019 (Thursday)

Weather: Warm, Sunny, Dry
ORGA Techs: M. Diane (via Video)

15-Minute Interval (Ending)	Total Vehicles																				Interval Total
	I-66 EB Off-Ramp					Leesburg Pike					Leesburg Pike										
	From North					From South					From East					From West					
	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	
6:15	0	0	0	0	0	14	0	0	0	14	0	81	0	0	81	0	114	0	0	114	**209**
6:30	0	0	0	0	0	13	0	0	0	13	0	119	0	0	119	0	199	0	0	199	**331**
6:45	0	0	0	0	0	15	0	0	0	15	0	120	0	0	120	0	144	0	0	144	**279**
7:00	0	0	0	0	0	19	0	0	0	19	0	188	0	0	188	0	279	0	0	279	**486**
7:15	0	0	0	0	0	19	0	0	0	19	0	198	0	0	198	0	298	0	0	298	**515**
7:30	0	0	0	0	0	22	0	0	0	22	0	273	0	0	273	0	290	0	0	290	**585**
7:45	0	0	0	0	0	32	0	0	0	32	0	273	0	0	273	0	287	0	0	287	**592**
8:00	0	0	0	0	0	33	0	0	0	33	0	245	0	0	245	0	310	0	0	310	**588**
8:15	**0**	**0**	**0**	**0**	**0**	**30**	**0**	**0**	**0**	**30**	**0**	**308**	**0**	**0**	**308**	**0**	**340**	**0**	**0**	**340**	**678**
8:30	**0**	**0**	**0**	**0**	**0**	**28**	**0**	**0**	**0**	**28**	**0**	**324**	**0**	**0**	**324**	**0**	**248**	**0**	**0**	**248**	**600**
8:45	**0**	**0**	**0**	**0**	**0**	**30**	**0**	**0**	**0**	**30**	**0**	**310**	**0**	**0**	**310**	**0**	**286**	**0**	**0**	**286**	**626**
9:00	**0**	**0**	**0**	**0**	**0**	**23**	**0**	**0**	**0**	**23**	**0**	**306**	**0**	**0**	**306**	**0**	**303**	**0**	**0**	**303**	**632**
9:15	0	0	0	0	0	34	0	0	0	34	0	335	0	0	335	0	257	0	0	257	**626**
9:30	0	0	0	0	0	35	0	0	0	35	0	298	0	0	298	0	232	0	0	232	**565**
9:45	0	0	0	0	0	60	0	0	0	60	0	233	0	0	233	0	229	0	0	229	**522**
10:00	0	0	0	0	0	73	0	0	0	73	0	221	0	0	221	0	225	0	0	225	**519**
Peak Hour Total	**0**	**0**	**0**	**0**	**0**	**111**	**0**	**0**	**0**	**111**	**0**	**1248**	**0**	**0**	**1248**	**0**	**1177**	**0**	**0**	**1177**	**2536**
AM Peak PHF	**0**	**0**	**0**	**0**	**0**	**0.93**	**0**	**0**	**0**	**0.93**	**0**	**0.96**	**0**	**0**	**0.96**	**0**	**0.87**	**0**	**0**	**0.87**	**0.94**
15:15	0	0	0	0	0	63	0	0	0	63	0	279	0	0	279	0	231	0	0	231	**573**
15:30	0	0	0	0	0	70	0	0	0	70	0	303	0	0	303	0	310	0	0	310	**683**
15:45	0	0	0	0	0	67	0	1	0	68	0	319	0	0	319	0	252	0	0	252	**639**
16:00	0	0	0	0	0	85	0	0	0	85	0	275	0	0	275	0	277	0	0	277	**637**
16:15	0	0	0	0	0	75	0	0	0	75	0	316	0	0	316	0	332	0	0	332	**723**
16:30	0	0	0	0	0	93	0	0	0	93	0	321	0	0	321	0	346	0	0	346	**760**
16:45	0	0	0	0	0	112	0	0	0	112	0	325	0	0	325	0	365	0	0	365	**802**
17:00	0	0	0	0	0	134	0	0	0	134	0	317	0	0	317	0	339	0	0	339	**790**
17:15	0	0	0	0	0	103	0	0	0	103	0	315	0	0	315	0	366	0	0	366	**784**
17:30	**0**	**0**	**0**	**0**	**0**	**119**	**0**	**0**	**0**	**119**	**0**	**331**	**0**	**0**	**331**	**0**	**383**	**0**	**0**	**383**	**833**
17:45	**0**	**0**	**0**	**0**	**0**	**106**	**0**	**0**	**0**	**106**	**0**	**363**	**0**	**0**	**363**	**0**	**373**	**0**	**0**	**373**	**842**
18:00	**0**	**0**	**0**	**0**	**0**	**100**	**0**	**0**	**0**	**100**	**0**	**332**	**0**	**0**	**332**	**0**	**397**	**0**	**0**	**397**	**829**
18:15	**0**	**0**	**0**	**0**	**0**	**119**	**0**	**0**	**0**	**119**	**0**	**298**	**0**	**0**	**298**	**0**	**371**	**0**	**0**	**371**	**788**
18:30	0	0	0	0	0	83	0	0	0	83	0	368	0	0	368	0	353	0	0	353	**804**
18:45	0	0	0	0	0	75	0	0	0	75	0	332	0	0	332	0	365	0	0	365	**772**
19:00	0	0	0	0	0	68	0	0	0	68	0	279	0	0	279	0	353	0	0	353	**700**
Peak Hour Total	**0**	**0**	**0**	**0**	**0**	**444**	**0**	**0**	**0**	**444**	**0**	**1324**	**0**	**0**	**1324**	**0**	**1524**	**0**	**0**	**1524**	**3292**
PM Peak PHF	**0**	**0**	**0**	**0**	**0**	**0.93**	**0**	**0**	**0**	**0.93**	**0**	**0.91**	**0**	**0**	**0.91**	**0**	**0.96**	**0**	**0**	**0.96**	**0.98**

Computed Peak Hour

AECOM
Prime Consultant

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY -
WEST FALLS CHURCH METRORAIL STATION STUDY & VIRGINIA TECH PROPERTIES DEVELOPMENT
VIRGINIA DEPARTMENT OF TRANSPORTATION CHAPTER 879 TRAFFIC IMPACT ANALYSIS

P.B. GEORGE & ASSOCIATES, INC.
Sub-Consultant

INTERSECTION TURNING MOVEMENT COUNT DATA SHEET

Location: I-66 EB Off-Ramp @ Leesburg Pike (Location #1)
Date Surveyed: May 9, 2019 (Thursday)

Weather: Warm, Sunny, Dry
ORGA Techs: M. Diane (via Video)

15-Minute Interval (Ending)	Buses & Single-Unit Trucks																				Interval Total
						I-66 EB Off-Ramp					Leesburg Pike					Leesburg Pike					
	From North					From South					From East					From West					
	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	
6:15	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	13	0	0	13	**17**
6:30	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	0	8	0	0	8	**13**
6:45	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	0	10	0	0	10	**15**
7:00	0	0	0	0	0	2	0	0	0	2	0	4	0	0	4	0	10	0	0	10	**16**
7:15	0	0	0	0	0	1	0	0	0	1	0	11	0	0	11	0	16	0	0	16	**28**
7:30	0	0	0	0	0	0	0	0	0	0	0	13	0	0	13	0	13	0	0	13	**26**
7:45	0	0	0	0	0	3	0	0	0	3	0	16	0	0	16	0	9	0	0	9	**28**
8:00	0	0	0	0	0	0	0	0	0	0	0	11	0	0	11	0	9	0	0	9	**20**
8:15	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**12**	**0**	**0**	**12**	**0**	**8**	**0**	**0**	**8**	**21**
8:30	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**11**	**0**	**0**	**11**	**0**	**7**	**0**	**0**	**7**	**18**
8:45	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**2**	**0**	**10**	**0**	**0**	**10**	**0**	**6**	**0**	**0**	**6**	**18**
9:00	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**14**	**0**	**0**	**14**	**0**	**11**	**0**	**0**	**11**	**25**
9:15	0	0	0	0	0	0	0	0	0	0	0	12	0	0	12	0	15	0	0	15	**27**
9:30	0	0	0	0	0	3	0	0	0	3	0	13	0	0	13	0	5	0	0	5	**21**
9:45	0	0	0	0	0	4	0	0	0	4	0	13	0	0	13	0	12	0	0	12	**29**
10:00	0	0	0	0	0	2	0	0	0	2	0	12	0	0	12	0	13	0	0	13	**27**
Peak Hour Total	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**3**	**0**	**47**	**0**	**0**	**47**	**0**	**32**	**0**	**0**	**32**	**82**
AM Peak PHF	**0**	**0**	**0**	**0**	**0**	**0.38**	**0**	**0**	**0**	**0.38**	**0**	**0.84**	**0**	**0**	**0.84**	**0**	**0.73**	**0**	**0**	**0.73**	**0.82**
15:15	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	0	10	0	0	10	**15**
15:30	0	0	0	0	0	1	0	0	0	1	0	9	0	0	9	0	6	0	0	6	**16**
15:45	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	0	7	0	0	7	**13**
16:00	0	0	0	0	0	0	0	0	0	0	0	13	0	0	13	0	4	0	0	4	**17**
16:15	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	0	5	0	0	5	**11**
16:30	0	0	0	0	0	1	0	0	0	1	0	3	0	0	3	0	8	0	0	8	**12**
16:45	0	0	0	0	0	2	0	0	0	2	0	7	0	0	7	0	3	0	0	3	**12**
17:00	0	0	0	0	0	2	0	0	0	2	0	4	0	0	4	0	3	0	0	3	**9**
17:15	0	0	0	0	0	0	0	0	0	0	0	7	0	0	7	0	1	0	0	1	**8**
17:30	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**2**	**0**	**4**	**0**	**0**	**4**	**0**	**1**	**0**	**0**	**1**	**7**
17:45	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**6**	**0**	**4**	**0**	**0**	**4**	**10**
18:00	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**4**	**0**	**0**	**4**	**0**	**2**	**0**	**0**	**2**	**7**
18:15	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8**	**0**	**0**	**8**	**0**	**4**	**0**	**0**	**4**	**12**
18:30	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	**4**
18:45	0	0	0	0	0	0	0	0	0	0	0	8	0	0	8	0	2	0	0	2	**10**
19:00	0	0	0	0	0	1	0	0	0	1	0	4	0	0	4	0	4	0	0	4	**9**
Peak Hour Total	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**3**	**0**	**22**	**0**	**0**	**22**	**0**	**11**	**0**	**0**	**11**	**36**
PM Peak PHF	**0**	**0**	**0**	**0**	**0**	**0.38**	**0**	**0**	**0**	**0.38**	**0**	**0.69**	**0**	**0**	**0.69**	**0**	**0.69**	**0**	**0**	**0.69**	**0.75**

Computed Peak Hour

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WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY -
WEST FALLS CHURCH METRORAIL STATION STUDY & VIRGINIA TECH PROPERTIES DEVELOPMENT
VIRGINIA DEPARTMENT OF TRANSPORTATION CHAPTER 879 TRAFFIC IMPACT ANALYSIS

Sub-Consultant

INTERSECTION TURNING MOVEMENT COUNT DATA SHEET

Location: Leesburg Pike @ Haycock Rd & Shreve Rd (Location #5)
Date Surveyed: May 9, 2019 (Thursday)

Weather: Warm, Sunny, Dry
ORGA Techs: M. Diane (via Video)

15-Minute Interval (Ending)	Total Vehicles																				Interval Total
	Haycock Rd					Shreve Rd					Leesburg Pike					Leesburg Pike					
	From North					From South					From East					From West					
	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	
6:15	2	2	11	0	15	5	10	3	0	18	1	58	5	0	64	5	98	4	0	107	**204**
6:30	4	4	15	0	23	11	19	3	0	33	1	88	6	0	95	24	192	7	0	223	**374**
6:45	9	5	21	0	35	16	31	6	0	53	2	85	9	0	96	19	157	11	0	187	**371**
7:00	13	8	20	0	41	12	22	1	0	35	0	152	26	0	178	40	250	16	0	306	**560**
7:15	0	1	59	0	60	0	3	57	0	60	0	168	34	0	202	38	248	13	0	299	**621**
7:30	0	0	54	0	54	0	0	88	0	88	0	235	38	0	273	34	256	19	0	309	**724**
7:45	0	1	66	0	67	0	0	96	0	96	0	216	57	0	273	59	230	15	0	304	**740**
8:00	**0**	**0**	**103**	**0**	**103**	**0**	**89**	**48**	**0**	**137**	**0**	**184**	**39**	**0**	**223**	**61**	**264**	**26**	**0**	**351**	**814**
8:15	**0**	**0**	**117**	**0**	**117**	**0**	**143**	**9**	**0**	**152**	**11**	**221**	**23**	**0**	**255**	**71**	**276**	**26**	**0**	**373**	**897**
8:30	**7**	**31**	**78**	**0**	**116**	**25**	**95**	**7**	**1**	**128**	**9**	**271**	**20**	**1**	**301**	**57**	**268**	**26**	**0**	**351**	**896**
8:45	**10**	**33**	**77**	**0**	**120**	**29**	**75**	**7**	**0**	**111**	**4**	**250**	**23**	**0**	**277**	**56**	**292**	**11**	**0**	**359**	**867**
9:00	14	35	59	0	108	37	76	12	0	125	6	243	16	0	265	53	248	10	0	311	**809**
9:15	15	18	63	0	96	26	57	12	0	95	14	256	25	0	295	44	237	14	0	295	**781**
9:30	20	38	50	0	108	29	42	8	0	79	10	214	17	0	241	29	265	16	0	310	**738**
9:45	17	21	49	0	87	31	37	14	2	84	7	158	20	0	185	35	212	18	0	265	**621**
10:00	18	29	26	0	73	30	46	14	0	90	12	167	14	0	193	44	260	12	0	316	**672**
Peak Hour Total	**17**	**64**	**375**	**0**	**456**	**54**	**402**	**71**	**1**	**528**	**24**	**926**	**105**	**1**	**1056**	**245**	**1100**	**89**	**0**	**1434**	**3474**
AM Peak PHF	**0.43**	**0.48**	**0.80**	**0**	**0.95**	**0.47**	**0.70**	**0.37**	**0.25**	**0.87**	**0.55**	**0.85**	**0.67**	**0.25**	**0.88**	**0.86**	**0.94**	**0.86**	**0**	**0.96**	**0.97**
15:15	37	55	45	0	137	18	32	10	0	60	19	197	21	0	237	31	201	37	0	269	**703**
15:30	23	58	41	0	122	24	61	13	0	98	23	226	11	1	261	56	252	45	0	353	**834**
15:45	19	64	40	0	123	25	37	16	0	78	8	248	13	3	272	51	267	39	0	357	**830**
16:00	24	56	39	0	119	24	36	11	0	71	18	205	14	0	237	63	289	25	0	377	**804**
16:15	21	84	38	0	143	28	32	11	0	71	25	243	9	1	278	64	265	45	0	374	**866**
16:30	22	59	45	0	126	20	55	18	1	94	27	264	15	1	307	82	339	43	1	465	**992**
16:45	15	67	40	0	122	22	59	4	0	85	21	261	24	3	309	85	334	63	0	482	**998**
17:00	**18**	**83**	**62**	**0**	**163**	**31**	**55**	**10**	**0**	**96**	**19**	**208**	**9**	**0**	**236**	**98**	**310**	**75**	**0**	**483**	**978**
17:15	**9**	**92**	**42**	**0**	**143**	**29**	**70**	**11**	**0**	**110**	**28**	**198**	**19**	**0**	**245**	**125**	**290**	**71**	**0**	**486**	**984**
17:30	**17**	**84**	**51**	**0**	**152**	**22**	**44**	**18**	**0**	**84**	**25**	**258**	**21**	**0**	**304**	**107**	**342**	**82**	**0**	**531**	**1071**
17:45	**22**	**74**	**51**	**0**	**147**	**28**	**54**	**10**	**0**	**92**	**27**	**243**	**23**	**1**	**294**	**103**	**325**	**78**	**0**	**506**	**1039**
18:00	11	97	46	0	154	23	63	13	0	99	23	208	15	0	246	98	294	72	0	464	**963**
18:15	15	72	44	0	131	32	37	19	0	88	37	222	17	1	277	96	276	65	0	437	**933**
18:30	10	79	73	0	162	34	27	17	0	78	32	216	11	0	259	88	319	78	0	485	**984**
18:45	21	82	39	0	142	22	24	16	0	62	21	244	12	0	277	78	279	62	0	419	**900**
19:00	15	76	33	0	124	29	50	11	0	90	19	211	16	1	247	68	244	39	0	351	**812**
Peak Hour Total	**66**	**333**	**206**	**0**	**605**	**110**	**223**	**49**	**0**	**382**	**99**	**907**	**72**	**1**	**1079**	**433**	**1267**	**306**	**0**	**2006**	**4072**
PM Peak PHF	**0.75**	**0.90**	**0.83**	**0**	**0.93**	**0.89**	**0.80**	**0.68**	**0**	**0.87**	**0.88**	**0.88**	**0.78**	**0.25**	**0.89**	**0.87**	**0.93**	**0.93**	**0**	**0.94**	**0.95**

Computed Peak Hour

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WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY -
WEST FALLS CHURCH METRORAIL STATION STUDY & VIRGINIA TECH PROPERTIES DEVELOPMENT
VIRGINIA DEPARTMENT OF TRANSPORTATION CHAPTER 879 TRAFFIC IMPACT ANALYSIS

Sub-Consultant

INTERSECTION TURNING MOVEMENT COUNT DATA SHEET

Location: Leesburg Pike @ Haycock Rd & Shreve Rd (Location #5)
Date Surveyed: May 9, 2019 (Thursday)

Weather: Warm, Sunny, Dry
ORGA Techs: M. Diane (via Video)

15-Minute Interval (Ending)	Buses & Single-Unit Trucks																					Interval Total
	Haycock Rd					Shreve Rd					Leesburg Pike					Leesburg Pike					
	From North					From South					From East					From West					
	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	
6:15	2	0	0	0	2	0	0	1	0	1	0	4	1	0	5	0	13	1	0	14	**22**
6:30	1	0	0	0	1	0	2	1	0	3	0	4	1	0	5	0	11	0	0	11	**20**
6:45	2	0	1	0	3	0	1	0	0	1	0	1	0	0	1	2	6	1	0	9	**14**
7:00	5	0	0	0	5	0	0	0	0	0	0	2	1	0	3	2	9	3	0	14	**22**
7:15	0	1	2	0	3	0	0	5	0	5	0	7	3	0	10	3	12	2	0	17	**35**
7:30	0	0	5	0	5	0	0	3	0	3	0	12	2	0	14	1	13	3	0	17	**39**
7:45	0	0	2	0	2	0	0	5	0	5	0	14	8	0	22	2	6	1	0	9	**38**
8:00	**0**	**0**	**4**	**0**	**4**	**0**	**3**	**1**	**0**	**4**	**0**	**8**	**3**	**0**	**11**	**0**	**5**	**2**	**0**	**7**	**26**
8:15	**0**	**0**	**1**	**0**	**1**	**0**	**1**	**0**	**0**	**1**	**1**	**10**	**2**	**0**	**13**	**1**	**11**	**0**	**0**	**12**	**27**
8:30	**1**	**0**	**1**	**0**	**2**	**0**	**2**	**1**	**0**	**3**	**0**	**9**	**1**	**0**	**10**	**0**	**8**	**0**	**0**	**8**	**23**
8:45	**2**	**0**	**0**	**0**	**2**	**0**	**2**	**0**	**0**	**2**	**0**	**2**	**2**	**0**	**4**	**2**	**4**	**0**	**0**	**6**	**14**
9:00	2	3	1	0	6	1	1	0	0	2	0	7	0	0	7	1	11	1	0	13	**28**
9:15	1	1	1	0	3	4	1	1	0	6	0	7	2	0	9	1	10	6	0	17	**35**
9:30	1	2	3	0	6	2	2	0	0	4	1	7	0	0	8	1	7	0	0	8	**26**
9:45	1	1	2	0	4	1	0	0	0	1	0	7	1	0	8	3	11	1	0	15	**28**
10:00	1	1	2	0	4	1	1	1	0	3	1	7	2	0	10	2	19	1	0	22	**39**
Peak Hour Total	**3**	**0**	**6**	**0**	**9**	**0**	**8**	**2**	**0**	**10**	**1**	**29**	**8**	**0**	**38**	**3**	**28**	**2**	**0**	**33**	**90**
AM Peak PHF	**0.38**	**0**	**0.38**	**0**	**0.56**	**0**	**0.67**	**0.50**	**0**	**0.63**	**0.25**	**0.73**	**0.67**	**0**	**0.73**	**0.38**	**0.64**	**0.25**	**0**	**0.69**	**0.83**
15:15	1	1	1	0	3	0	1	0	0	1	1	4	0	0	5	0	10	2	0	12	**21**
15:30	1	0	2	0	3	2	3	0	0	5	1	8	0	0	9	1	5	3	0	9	**26**
15:45	0	3	0	0	3	2	0	1	0	3	0	4	0	0	4	0	3	2	0	5	**15**
16:00	1	0	1	0	2	1	0	0	0	1	0	8	1	0	9	0	9	0	0	9	**21**
16:15	2	0	0	0	2	1	0	0	0	1	1	6	2	0	9	0	4	0	0	4	**16**
16:30	2	0	1	0	3	1	1	2	0	4	0	5	2	0	7	0	1	2	0	3	**17**
16:45	0	2	0	0	2	1	2	0	0	3	1	4	2	0	7	2	1	3	0	6	**18**
17:00	**2**	**4**	**2**	**0**	**8**	**1**	**1**	**0**	**0**	**2**	**0**	**6**	**0**	**0**	**6**	**0**	**1**	**2**	**0**	**3**	**19**
17:15	**1**	**7**	**0**	**0**	**8**	**2**	**2**	**1**	**0**	**5**	**1**	**4**	**1**	**0**	**6**	**0**	**1**	**1**	**0**	**2**	**21**
17:30	**3**	**2**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**0**	**3**	**1**	**0**	**1**	**0**	**2**	**10**
17:45	**0**	**3**	**0**	**0**	**3**	**0**	**4**	**0**	**0**	**4**	**1**	**2**	**2**	**0**	**5**	**0**	**4**	**0**	**0**	**4**	**16**
18:00	2	5	3	0	10	0	1	0	0	1	0	1	1	0	2	0	0	2	0	2	**15**
18:15	1	1	3	0	5	0	1	0	0	1	0	5	0	0	5	1	1	2	0	4	**15**
18:30	2	1	0	0	3	2	1	0	0	3	0	1	1	0	2	0	1	0	0	1	**9**
18:45	1	1	3	0	5	0	0	0	0	0	0	3	0	0	3	0	1	0	0	1	**9**
19:00	2	1	0	0	3	0	1	0	0	1	2	4	0	0	6	0	2	1	0	3	**13**
Peak Hour Total	**6**	**16**	**2**	**0**	**24**	**3**	**7**	**1**	**0**	**11**	**2**	**14**	**4**	**0**	**20**	**1**	**6**	**4**	**0**	**11**	**66**
PM Peak PHF	**0.50**	**0.57**	**0.25**	**0**	**0.75**	**0.38**	**0.44**	**0.25**	**0**	**0.55**	**0.50**	**0.58**	**0.50**	**0**	**0.83**	**0.25**	**0.38**	**0.50**	**0**	**0.69**	**0.79**

Computed Peak Hour

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WEST FALLS CHURCH METRORAIL STATION STUDY & VIRGINIA TECH PROPERTIES DEVELOPMENT
VIRGINIA DEPARTMENT OF TRANSPORTATION CHAPTER 879 TRAFFIC IMPACT ANALYSIS

Sub-Consultant

INTERSECTION TURNING MOVEMENT COUNT DATA SHEET

Location: Haycock Rd @ Park Ride (Loc #10)
Date Surveyed: May 9, 2019 (Thursday)

Weather: Warm, Sunny, Dry
ORGA Techs: M. Diane (via Video)

15-Minute Interval (Ending)	Total Vehicles																				Interval Total
	Haycock Rd					Haycock Rd					Private Driveway					Park Ride					
	From North					From South					From East					From West					
	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	
6:15	0	17	3	0	20	2	18	0	0	20	0	0	0	0	0	1	0	3	0	4	**44**
6:30	0	14	7	0	21	2	45	0	0	47	0	0	0	0	0	0	0	1	0	1	**69**
6:45	0	30	10	0	40	1	36	0	0	37	0	0	0	0	0	2	0	1	0	3	**80**
7:00	0	39	17	0	56	4	74	0	0	78	0	0	0	0	0	7	0	1	0	8	**142**
7:15	0	57	26	0	83	3	104	0	0	107	0	0	0	0	0	5	0	4	0	9	**199**
7:30	0	68	39	0	107	7	104	0	0	111	0	0	0	0	0	14	0	2	0	16	**234**
7:45	0	81	41	0	122	7	121	0	0	128	0	0	0	0	0	11	0	7	0	18	**268**
8:00	**0**	**144**	**50**	**0**	**194**	**10**	**161**	**0**	**0**	**171**	**0**	**0**	**0**	**0**	**0**	**8**	**0**	**2**	**0**	**10**	**375**
8:15	**0**	**108**	**68**	**0**	**176**	**7**	**186**	**0**	**0**	**193**	**0**	**0**	**0**	**0**	**0**	**13**	**0**	**6**	**0**	**19**	**388**
8:30	**0**	**106**	**63**	**0**	**169**	**13**	**145**	**0**	**0**	**158**	**0**	**0**	**1**	**0**	**1**	**19**	**0**	**4**	**0**	**23**	**351**
8:45	**0**	**111**	**59**	**0**	**170**	**3**	**147**	**0**	**0**	**150**	**0**	**0**	**1**	**0**	**1**	**20**	**0**	**6**	**0**	**26**	**347**
9:00	0	94	41	0	135	7	109	0	0	116	0	0	0	0	0	15	0	6	0	21	**272**
9:15	0	101	34	0	135	2	99	0	0	101	0	0	0	0	0	8	0	0	0	8	**244**
9:30	0	87	16	0	103	4	85	0	0	89	0	0	0	0	0	11	0	2	0	13	**205**
9:45	0	72	16	0	88	4	74	0	1	79	0	0	0	0	0	5	0	1	0	6	**173**
10:00	0	53	12	0	65	1	85	0	0	86	0	0	0	0	0	7	0	2	0	9	**160**
AM Peak Hour Total	**0**	**469**	**240**	**0**	**709**	**33**	**639**	**0**	**0**	**672**	**0**	**0**	**2**	**0**	**2**	**60**	**0**	**18**	**0**	**78**	**1461**
AM Peak PHF	**0**	**0.81**	**0.88**	**0**	**0.91**	**0.63**	**0.86**	**0**	**0**	**0.87**	**0**	**0**	**0.50**	**0**	**0.50**	**0.75**	**0**	**0.75**	**0**	**0.75**	**0.94**
15:15	0	99	3	0	102	4	119	1	0	124	1	0	0	0	1	6	0	2	0	8	**235**
15:30	0	117	2	0	119	1	112	0	0	113	0	0	0	0	0	5	0	1	0	6	**238**
15:45	0	113	1	0	114	2	119	0	0	121	0	0	0	0	0	8	0	4	0	12	**247**
16:00	0	106	10	0	116	0	131	0	0	131	0	0	0	0	0	9	0	4	0	13	**260**
16:15	0	118	5	0	123	0	122	0	0	122	0	0	0	0	0	16	0	4	0	20	**265**
16:30	0	130	6	0	136	1	129	0	0	130	0	0	0	0	0	10	0	2	0	12	**278**
16:45	0	123	3	0	126	1	219	0	0	220	0	0	0	0	0	14	0	3	0	17	**363**
17:00	0	159	13	0	172	2	169	0	0	171	0	0	0	0	0	25	0	6	0	31	**374**
17:15	**0**	**125**	**6**	**0**	**131**	**4**	**215**	**0**	**0**	**219**	**0**	**0**	**0**	**0**	**0**	**29**	**0**	**6**	**0**	**35**	**385**
17:30	**0**	**121**	**6**	**0**	**127**	**5**	**180**	**0**	**0**	**185**	**0**	**0**	**0**	**0**	**0**	**37**	**0**	**9**	**0**	**46**	**358**
17:45	**0**	**137**	**18**	**0**	**155**	**5**	**202**	**0**	**0**	**207**	**0**	**0**	**0**	**0**	**0**	**61**	**0**	**15**	**0**	**76**	**438**
18:00	**0**	**131**	**16**	**0**	**147**	**2**	**179**	**0**	**0**	**181**	**0**	**0**	**0**	**0**	**0**	**47**	**0**	**17**	**0**	**64**	**392**
18:15	1	142	12	0	155	2	153	0	0	155	0	0	0	0	0	47	0	8	0	55	**365**
18:30	0	132	7	0	139	9	168	0	0	177	0	0	0	0	0	33	0	9	0	42	**358**
18:45	0	112	10	0	122	5	116	0	0	121	0	0	0	0	0	40	0	8	0	48	**291**
19:00	0	103	7	0	110	3	92	0	0	95	0	0	0	0	0	31	0	9	0	40	**245**
PM Peak Hour Total	**0**	**514**	**46**	**0**	**560**	**16**	**776**	**0**	**0**	**792**	**0**	**0**	**0**	**0**	**0**	**174**	**0**	**47**	**0**	**221**	**1573**
PM Peak PHF	**0**	**0.94**	**0.64**	**0**	**0.90**	**0.80**	**0.90**	**0**	**0**	**0.90**	**0**	**0**	**0**	**0**	**0**	**0.71**	**0**	**0.69**	**0**	**0.73**	**0.90**

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VIRGINIA DEPARTMENT OF TRANSPORTATION CHAPTER 879 TRAFFIC IMPACT ANALYSIS

Sub-Consultant

INTERSECTION TURNING MOVEMENT COUNT DATA SHEET

Location: Haycock Rd @ Park Ride (Loc #10)
Date Surveyed: May 9, 2019 (Thursday)

Weather: Warm, Sunny, Dry
ORGA Techs: M. Diane (via Video)

15-Minute Interval (Ending)	Buses & Single-Unit Trucks																				Interval Total
	Haycock Rd					Haycock Rd					Private Driveway					Park Ride					
	From North					From South					From East					From West					
	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	
6:15	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	2	0	2	3
6:30	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	2
6:45	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	3
7:00	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	1	0	1	0	2	4
7:15	0	1	0	0	1	1	10	0	0	11	0	0	0	0	0	0	0	1	0	1	13
7:30	0	7	0	0	7	0	3	0	0	3	0	0	0	0	0	1	0	1	0	2	12
7:45	0	3	0	0	3	0	6	0	0	6	0	0	0	0	0	0	0	2	0	2	11
8:00	**0**	**1**	**0**	**0**	**1**	**0**	**4**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**2**	**7**
8:15	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**2**
8:30	**0**	**2**	**0**	**0**	**2**	**0**	**3**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**2**	**7**
8:45	**0**	**3**	**0**	**0**	**3**	**1**	**4**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**2**	**10**
9:00	0	7	0	0	7	1	2	0	0	3	0	0	0	0	0	1	0	2	0	3	13
9:15	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
9:30	0	2	1	0	3	0	4	0	0	4	0	0	0	0	0	0	0	1	0	1	8
9:45	0	4	0	0	4	1	2	0	0	3	0	0	0	0	0	0	0	1	0	1	8
10:00	0	2	0	0	2	1	2	0	0	3	0	0	0	0	0	0	0	1	0	1	6
AM Peak Hour Total	**0**	**6**	**0**	**0**	**6**	**1**	**12**	**0**	**0**	**13**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**5**	**0**	**7**	**26**
AM Peak PHF	**0**	**0.50**	**0**	**0**	**0.50**	**0.25**	**0.75**	**0**	**0**	**0.65**	**0**	**0**	**0**	**0**	**0**	**0.50**	**0**	**0.63**	**0**	**0.88**	**0.65**
15:15	0	7	0	0	7	1	5	0	0	6	0	0	0	0	0	1	0	1	0	2	15
15:30	0	3	0	0	3	0	3	0	0	3	0	0	0	0	0	0	0	1	0	1	7
15:45	0	2	0	0	2	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	4
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	3
16:30	0	2	0	0	2	1	1	0	0	2	0	0	0	0	0	1	0	2	0	3	7
16:45	0	6	0	0	6	0	5	0	0	5	0	0	0	0	0	0	0	1	0	1	12
17:00	0	2	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	4
17:15	**0**	**7**	**0**	**0**	**7**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**2**	**10**
17:30	**0**	**2**	**0**	**0**	**2**	**1**	**2**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**2**	**7**
17:45	**0**	**7**	**0**	**0**	**7**	**0**	**3**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**2**	**12**
18:00	**0**	**2**	**0**	**0**	**2**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**
18:15	0	5	0	0	5	0	2	0	0	2	0	0	0	0	0	0	0	2	0	2	9
18:30	0	1	0	0	1	1	1	0	0	2	0	0	0	0	0	0	0	2	0	2	5
18:45	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	5
19:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
PM Peak Hour Total	**0**	**18**	**0**	**0**	**18**	**1**	**7**	**0**	**0**	**8**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**5**	**0**	**6**	**32**
PM Peak PHF	**0**	**0.64**	**0**	**0**	**0.64**	**0.25**	**0.58**	**0**	**0**	**0.67**	**0**	**0**	**0**	**0**	**0**	**0.25**	**0**	**0.63**	**0**	**0.75**	**0.67**

Computed Peak Hour

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WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY -
WEST FALLS CHURCH METRORAIL STATION STUDY & VIRGINIA TECH PROPERTIES DEVELOPMENT
VIRGINIA DEPARTMENT OF TRANSPORTATION CHAPTER 879 TRAFFIC IMPACT ANALYSIS

Sub-Consultant

INTERSECTION TURNING MOVEMENT COUNT DATA SHEET

Location: Haycock Rd @ Highland Ave (Loc #11)
Date Surveyed: May 9, 2019 (Thursday)

Weather: Warm, Sunny, Dry
ORGA Techs: M. Diane (via Video)

15-Minute Interval (Ending)	Total Vehicles																				Interval Total
	Haycock Rd					Haycock Rd					Highland Ave										
	From North					From South					From East					From West					
	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	
6:15	1	21	0	0	22	0	17	0	0	17	1	0	1	0	2	0	0	0	0	0	41
6:30	0	26	0	0	26	0	46	0	0	46	0	0	0	0	0	0	0	0	0	0	72
6:45	3	43	0	0	46	0	41	0	0	41	1	0	0	0	1	0	0	0	0	0	88
7:00	0	55	0	0	55	0	74	6	0	80	4	0	2	0	6	0	0	0	0	0	141
7:15	1	76	0	0	77	0	111	5	0	116	5	0	1	0	6	0	0	0	0	0	199
7:30	4	99	0	0	103	0	112	4	0	116	10	0	6	0	16	0	0	0	0	0	235
7:45	6	116	0	0	122	0	137	11	0	148	12	0	4	0	16	0	0	0	0	0	286
8:00	**1**	**179**	**0**	**0**	**180**	**0**	**148**	**15**	**0**	**163**	**25**	**0**	**9**	**0**	**34**	**0**	**0**	**0**	**0**	**0**	**377**
8:15	**3**	**153**	**0**	**0**	**156**	**0**	**168**	**36**	**0**	**204**	**21**	**0**	**1**	**0**	**22**	**0**	**0**	**0**	**0**	**0**	**382**
8:30	**1**	**157**	**0**	**0**	**158**	**0**	**134**	**28**	**0**	**162**	**9**	**0**	**1**	**0**	**10**	**0**	**0**	**0**	**0**	**0**	**330**
8:45	**1**	**166**	**0**	**0**	**167**	**0**	**142**	**13**	**1**	**156**	**10**	**0**	**2**	**0**	**12**	**0**	**0**	**0**	**0**	**0**	**335**
9:00	2	115	0	0	117	0	121	9	0	130	12	0	9	0	21	0	0	0	0	0	268
9:15	3	131	0	0	134	0	106	7	0	113	7	0	7	1	15	0	0	0	0	0	262
9:30	2	96	0	0	98	0	86	2	0	88	4	0	4	0	8	0	0	0	0	0	194
9:45	1	89	0	0	90	0	78	2	0	80	7	0	2	0	9	0	0	0	0	0	179
10:00	0	55	0	0	55	0	86	3	0	89	4	0	2	0	6	0	0	0	0	0	150
Peak Hour Total	**6**	**655**	**0**	**0**	**661**	**0**	**592**	**92**	**1**	**685**	**65**	**0**	**13**	**0**	**78**	**0**	**0**	**0**	**0**	**0**	**1424**
AM Peak PHF	**0.50**	**0.91**	**0**	**0**	**0.92**	**0**	**0.88**	**0.64**	**0.25**	**0.84**	**0.65**	**0**	**0.36**	**0**	**0.57**	**0**	**0**	**0**	**0**	**0**	**0.93**
15:15	1	105	0	0	106	0	110	15	0	125	3	0	3	0	6	0	0	0	0	0	237
15:30	1	112	0	0	113	0	113	10	0	123	3	0	2	1	6	0	0	0	0	0	242
15:45	0	112	0	0	112	0	115	7	0	122	4	0	4	0	8	0	0	0	0	0	242
16:00	6	111	0	0	117	0	128	13	0	141	3	0	1	0	4	0	0	0	0	0	262
16:15	6	123	0	0	129	0	109	27	0	136	3	0	6	0	9	0	0	0	0	0	274
16:30	5	136	0	0	141	0	142	23	0	165	7	0	3	0	10	0	0	0	0	0	316
16:45	14	123	0	0	137	0	142	71	0	213	4	0	2	0	6	0	0	0	0	0	356
17:00	5	155	0	0	160	0	125	70	0	195	6	0	4	0	10	0	0	0	0	0	365
17:15	**3**	**137**	**0**	**0**	**140**	**0**	**178**	**71**	**0**	**249**	**2**	**0**	**2**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**393**
17:30	**7**	**135**	**0**	**0**	**142**	**0**	**164**	**56**	**0**	**220**	**4**	**0**	**5**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**371**
17:45	**2**	**147**	**0**	**0**	**149**	**0**	**159**	**100**	**2**	**261**	**5**	**0**	**2**	**0**	**7**	**0**	**0**	**0**	**0**	**0**	**417**
18:00	**4**	**149**	**0**	**0**	**153**	**0**	**153**	**81**	**0**	**234**	**3**	**0**	**3**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**393**
18:15	5	152	0	0	157	0	125	67	0	192	6	0	3	0	9	0	0	0	0	0	358
18:30	4	138	0	0	142	0	136	60	0	196	1	0	2	0	3	0	0	0	0	0	341
18:45	4	109	0	0	113	0	103	41	0	144	4	0	0	0	4	0	0	0	0	0	261
19:00	8	102	0	0	110	0	106	20	0	126	6	0	1	0	7	0	0	0	0	0	243
Peak Hour Total	**16**	**568**	**0**	**0**	**584**	**0**	**654**	**308**	**2**	**964**	**14**	**0**	**12**	**0**	**26**	**0**	**0**	**0**	**0**	**0**	**1574**
PM Peak PHF	**0.57**	**0.95**	**0**	**0**	**0.95**	**0**	**0.92**	**0.77**	**0.25**	**0.92**	**0.70**	**0**	**0.60**	**0**	**0.72**	**0**	**0**	**0**	**0**	**0**	**0.94**

Computed Peak Hour

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VIRGINIA DEPARTMENT OF TRANSPORTATION CHAPTER 879 TRAFFIC IMPACT ANALYSIS

Sub-Consultant

INTERSECTION TURNING MOVEMENT COUNT DATA SHEET

Location: Haycock Rd @ Highland Ave (Loc #11)
Date Surveyed: May 9, 2019 (Thursday)

Weather: Warm, Sunny, Dry
ORGA Techs: M. Diane (via Video)

15-Minute Interval (Ending)	Buses & Single-Unit Trucks																				Interval Total
	Haycock Rd					Haycock Rd					Highland Ave										
	From North					From South					From East					From West					
	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	
6:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
6:30	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	**3**
6:45	1	1	0	0	2	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	**3**
7:00	0	1	0	0	1	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	**3**
7:15	0	2	0	0	2	0	9	1	0	10	0	0	0	0	0	0	0	0	0	0	**12**
7:30	0	6	0	0	6	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	**9**
7:45	0	3	0	0	3	0	7	1	0	8	1	0	1	0	2	0	0	0	0	0	**13**
8:00	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**1**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**
8:15	**0**	**1**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**3**
8:30	**0**	**3**	**0**	**0**	**3**	**0**	**4**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**
8:45	**0**	**3**	**0**	**0**	**3**	**0**	**3**	**1**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**
9:00	1	4	0	0	5	0	1	1	0	2	3	0	1	0	4	0	0	0	0	0	**11**
9:15	0	6	0	0	6	0	1	1	0	2	0	0	1	0	1	0	0	0	0	0	**9**
9:30	0	3	0	0	3	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	**5**
9:45	0	4	0	0	4	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	**6**
10:00	0	1	0	0	1	0	2	0	0	2	1	0	0	0	1	0	0	0	0	0	**4**
Peak Hour Total	**0**	**7**	**0**	**0**	**7**	**0**	**12**	**2**	**0**	**14**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**22**
AM Peak PHF	**0**	**0.58**	**0**	**0**	**0.58**	**0**	**0.75**	**0.50**	**0**	**0.70**	**0**	**0**	**0.25**	**0**	**0.25**	**0**	**0**	**0**	**0**	**0**	**0.79**
15:15	0	6	0	0	6	0	3	1	0	4	1	0	0	0	1	0	0	0	0	0	**11**
15:30	0	3	0	0	3	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	**6**
15:45	0	2	0	0	2	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	**3**
16:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
16:15	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
16:30	1	1	0	0	2	0	2	0	0	2	1	0	0	0	1	0	0	0	0	0	**5**
16:45	0	3	0	0	3	0	4	1	0	5	1	0	0	0	1	0	0	0	0	0	**9**
17:00	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**4**
17:15	**0**	**7**	**0**	**0**	**7**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8**
17:30	**0**	**2**	**0**	**0**	**2**	**0**	**2**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**
17:45	**0**	**4**	**0**	**0**	**4**	**0**	**2**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**
18:00	**0**	**2**	**0**	**0**	**2**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**
18:15	0	3	0	0	3	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	**4**
18:30	0	2	0	0	2	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	**3**
18:45	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**
19:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Peak Hour Total	**0**	**15**	**0**	**0**	**15**	**0**	**6**	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**21**
PM Peak PHF	**0**	**0.54**	**0**	**0**	**0.54**	**0**	**0.75**	**0**	**0**	**0.75**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0.66**

Computed Peak Hour

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VIRGINIA DEPARTMENT OF TRANSPORTATION CHAPTER 879 TRAFFIC IMPACT ANALYSIS

Sub-Consultant

INTERSECTION TURNING MOVEMENT COUNT DATA SHEET

Location: Haycock Rd @ Turner Ave (Loc #12)
Date Surveyed: May 9, 2019 (Thursday)

Weather: Warm, Sunny, Dry
ORGA Techs: M. Diane (via Video)

15-Minute Interval (Ending)	Total Vehicles																				Interval Total
	Haycock Rd					Haycock Rd					Driveway to the Washington Elim Church					Turner Ave					
	From North					From South					From East					From West					
	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	
6:15	0	18	1	0	19	0	18	0	0	18	0	0	0	0	0	1	0	5	0	6	**43**
6:30	0	25	1	0	26	0	46	0	0	46	0	0	0	0	0	1	0	0	0	1	**73**
6:45	0	43	0	0	43	1	40	0	0	41	0	0	0	0	0	1	0	2	0	3	**87**
7:00	0	51	0	0	51	4	72	0	0	76	0	0	0	0	0	0	0	3	0	3	**130**
7:15	0	70	1	0	71	3	109	0	0	112	0	0	0	0	0	0	0	4	0	4	**187**
7:30	0	95	2	0	97	6	112	0	0	118	0	0	0	0	0	4	0	9	0	13	**228**
7:45	0	112	1	0	113	5	130	0	0	135	0	0	0	0	0	3	0	12	0	15	**263**
8:00	**0**	**161**	**0**	**0**	**161**	**8**	**165**	**0**	**0**	**173**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**10**	**0**	**13**	**347**
8:15	**0**	**140**	**1**	**0**	**141**	**4**	**161**	**0**	**1**	**166**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**9**	**0**	**10**	**317**
8:30	**0**	**151**	**1**	**0**	**152**	**5**	**131**	**0**	**0**	**136**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**9**	**0**	**15**	**303**
8:45	**0**	**165**	**2**	**0**	**167**	**5**	**134**	**0**	**0**	**139**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**6**	**0**	**8**	**314**
9:00	0	110	2	0	112	3	131	0	0	134	0	0	0	0	0	3	0	8	0	11	**257**
9:15	0	124	3	0	127	1	116	0	0	117	0	0	0	0	0	3	0	5	0	8	**252**
9:30	0	97	5	0	102	2	87	0	0	89	0	0	0	0	0	8	0	2	0	10	**201**
9:45	0	85	0	0	85	3	76	0	0	79	0	0	0	0	0	1	0	0	0	1	**165**
10:00	0	54	0	0	54	6	82	0	0	88	0	0	0	0	0	1	0	2	0	3	**145**
Peak Hour Total	**0**	**617**	**4**	**0**	**621**	**22**	**591**	**0**	**1**	**614**	**0**	**0**	**0**	**0**	**0**	**12**	**0**	**34**	**0**	**46**	**1281**
AM Peak PHF	**0**	**0.93**	**0.50**	**0**	**0.93**	**0.69**	**0.90**	**0**	**0**	**0.89**	**0**	**0**	**0**	**0**	**0**	**0.50**	**0**	**0.85**	**0**	**0.77**	**0.92**
15:15	0	104	2	0	106	4	109	0	0	113	0	0	0	0	0	1	0	6	0	7	**226**
15:30	0	103	4	0	107	10	104	0	0	114	0	0	0	0	0	2	0	8	0	10	**231**
15:45	0	108	4	0	112	8	110	0	0	118	0	0	0	0	0	3	0	6	0	9	**239**
16:00	0	114	3	0	117	3	123	0	0	126	0	0	0	0	0	3	0	0	0	3	**246**
16:15	0	120	4	0	124	6	106	0	0	112	0	0	0	0	0	2	0	4	0	6	**242**
16:30	0	134	6	0	140	9	131	0	0	140	0	0	0	0	0	2	0	8	0	10	**290**
16:45	0	132	5	0	137	5	146	0	1	152	0	0	0	0	0	4	0	4	0	8	**297**
17:00	0	156	2	0	158	11	120	0	0	131	0	0	0	0	0	1	0	8	0	9	**298**
17:15	0	132	3	0	135	10	159	0	0	169	0	0	0	0	0	1	0	7	0	8	**312**
17:30	**0**	**128**	**6**	**0**	**134**	**7**	**165**	**0**	**0**	**172**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**6**	**0**	**7**	**313**
17:45	**0**	**141**	**6**	**0**	**147**	**16**	**126**	**0**	**0**	**142**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**7**	**0**	**9**	**298**
18:00	**0**	**143**	**0**	**0**	**143**	**10**	**147**	**0**	**0**	**157**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**11**	**0**	**13**	**313**
18:15	**0**	**150**	**5**	**0**	**155**	**10**	**151**	**0**	**0**	**161**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**4**	**0**	**5**	**321**
18:30	0	128	3	0	131	8	123	0	0	131	0	0	0	0	0	0	0	11	0	11	**273**
18:45	0	106	2	0	108	9	102	0	0	111	0	0	0	0	0	0	0	4	0	4	**223**
19:00	0	99	2	0	101	9	99	0	1	109	0	0	0	0	0	0	0	7	0	7	**217**
Peak Hour Total	**0**	**562**	**17**	**0**	**579**	**43**	**589**	**0**	**0**	**632**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**28**	**0**	**34**	**1245**
PM Peak PHF	**0**	**0.94**	**0.71**	**0**	**0.93**	**0.67**	**0.89**	**0**	**0**	**0.92**	**0**	**0**	**0**	**0**	**0**	**0.75**	**0**	**0.64**	**0**	**0.65**	**0.97**

Computed Peak Hour

AECOM
Prime Consultant

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY -
WEST FALLS CHURCH METRORAIL STATION STUDY & VIRGINIA TECH PROPERTIES DEVELOPMENT
VIRGINIA DEPARTMENT OF TRANSPORTATION CHAPTER 879 TRAFFIC IMPACT ANALYSIS

Sub-Consultant

INTERSECTION TURNING MOVEMENT COUNT DATA SHEET

Location: Haycock Rd @ Turner Ave (Loc #12)
Date Surveyed: May 9, 2019 (Thursday)

Weather: Warm, Sunny, Dry
ORGA Techs: M. Diane (via Video)

15-Minute Interval (Ending)	Buses & Single-Unit Trucks																				Interval Total
	Haycock Rd					Haycock Rd					Driveway to the Washington Elim Church					Turner Ave					
	From North					From South					From East					From West					
	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	
6:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	3
6:45	0	3	0	0	3	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	5
7:00	0	1	0	0	1	1	2	0	0	3	0	0	0	0	0	0	0	0	0	0	4
7:15	0	2	0	0	2	1	8	0	0	9	0	0	0	0	0	0	0	0	0	0	11
7:30	0	5	0	0	5	1	3	0	0	4	0	0	0	0	0	0	0	1	0	1	10
7:45	0	3	0	0	3	1	7	0	0	8	0	0	0	0	0	0	0	0	0	0	11
8:00	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**
8:15	**0**	**1**	**0**	**0**	**1**	**0**	**2**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**
8:30	**0**	**2**	**0**	**0**	**2**	**1**	**3**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**
8:45	**0**	**2**	**0**	**0**	**2**	**0**	**3**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**
9:00	0	5	1	0	6	0	5	0	0	5	0	0	0	0	0	0	0	1	0	1	12
9:15	0	4	0	0	4	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	8
9:30	0	3	0	0	3	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	5
9:45	0	3	0	0	3	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	5
10:00	0	1	0	0	1	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	3
Peak Hour Total	**0**	**5**	**0**	**0**	**5**	**1**	**11**	**0**	**0**	**12**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**17**
AM Peak PHF	**0**	**0.63**	**0**	**0**	**0.63**	**0.25**	**0.92**	**0**	**0**	**0.75**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0.71**
15:15	0	4	0	0	4	0	4	0	0	4	0	0	0	0	0	0	0	2	0	2	10
15:30	0	3	0	0	3	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	6
15:45	0	2	0	0	2	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	4
16:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
16:15	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
16:30	0	4	1	0	5	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	7
16:45	0	2	0	0	2	1	3	0	0	4	0	0	0	0	0	0	0	0	0	0	6
17:00	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
17:15	0	7	0	0	7	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	10
17:30	**0**	**2**	**0**	**0**	**2**	**0**	**2**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**
17:45	**0**	**3**	**0**	**0**	**3**	**0**	**3**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**
18:00	**0**	**2**	**0**	**0**	**2**	**0**	**2**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**
18:15	**0**	**3**	**0**	**0**	**3**	**0**	**2**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**
18:30	0	2	0	0	2	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	3
18:45	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
19:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Total	**0**	**10**	**0**	**0**	**10**	**0**	**9**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**19**
PM Peak PHF	**0**	**0.83**	**0**	**0**	**0.83**	**0**	**0.75**	**0**	**0**	**0.75**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0.79**

Computed Peak Hour

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WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY -
WEST FALLS CHURCH METRORAIL STATION STUDY & VIRGINIA TECH PROPERTIES DEVELOPMENT
VIRGINIA DEPARTMENT OF TRANSPORTATION CHAPTER 879 TRAFFIC IMPACT ANALYSIS

Sub-Consultant

INTERSECTION TURNING MOVEMENT COUNT DATA SHEET

Location: Haycock Rd @ Great Falls St (Loc #13)
Date Surveyed: May 9, 2019 (Thursday)

Weather: Warm, Sunny, Dry
ORGA Techs: M. Diane (via Video)

15-Minute Interval (Ending)	Total Vehicles																				Interval Total
	Haycock Rd					Haycock Rd					Great Falls St					Great Falls St					
	From North					From South					From East					From West					
	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	
6:15	2	7	2	0	11	6	11	4	0	21	5	9	1	0	15	1	14	9	0	24	**71**
6:30	0	9	3	0	12	11	24	5	0	40	8	13	2	0	23	2	9	8	0	19	**94**
6:45	1	13	4	0	18	6	26	10	0	42	10	40	1	0	51	1	36	19	0	56	**167**
7:00	1	11	5	0	17	25	30	10	0	65	13	30	4	0	47	6	39	27	0	72	**201**
7:15	3	36	7	0	46	19	63	18	0	100	12	59	3	0	74	13	54	32	0	99	**319**
7:30	6	36	19	0	61	35	66	31	0	132	20	69	6	0	95	20	76	37	0	133	**421**
7:45	2	46	20	0	68	35	74	27	0	136	24	69	6	0	99	13	75	49	0	137	**440**
8:00	**3**	**41**	**11**	**0**	**55**	**38**	**63**	**31**	**0**	**132**	**66**	**116**	**13**	**0**	**195**	**17**	**98**	**58**	**0**	**173**	**555**
8:15	**7**	**50**	**9**	**0**	**66**	**42**	**86**	**37**	**0**	**165**	**34**	**107**	**13**	**0**	**154**	**16**	**99**	**51**	**0**	**166**	**551**
8:30	**5**	**70**	**11**	**0**	**86**	**39**	**86**	**30**	**0**	**155**	**23**	**69**	**12**	**0**	**104**	**24**	**90**	**67**	**0**	**181**	**526**
8:45	**5**	**73**	**15**	**0**	**93**	**28**	**68**	**23**	**0**	**119**	**40**	**111**	**11**	**0**	**162**	**27**	**119**	**52**	**0**	**198**	**572**
9:00	3	37	13	0	53	46	66	26	0	138	31	100	16	0	147	11	95	38	0	144	**482**
9:15	5	64	15	0	84	35	68	24	0	127	22	97	13	0	132	23	82	38	0	143	**486**
9:30	4	60	29	0	93	28	43	30	0	101	23	65	5	0	93	11	65	23	0	99	**386**
9:45	5	32	6	0	43	33	26	17	0	76	15	62	2	0	79	4	67	35	0	106	**304**
10:00	2	28	5	0	35	30	40	18	0	88	13	38	6	0	57	5	64	23	0	92	**272**
Peak Hour Total	**20**	**234**	**46**	**0**	**300**	**147**	**303**	**121**	**0**	**571**	**163**	**403**	**49**	**0**	**615**	**84**	**406**	**228**	**0**	**718**	**2204**
AM Peak PHF	**0.71**	**0.80**	**0.77**	**0**	**0.81**	**0.88**	**0.88**	**0.82**	**0**	**0.87**	**0.62**	**0.87**	**0.94**	**0**	**0.79**	**0.78**	**0.85**	**0.85**	**0**	**0.91**	**0.96**
15:15	7	58	11	0	76	29	44	31	0	104	15	53	7	0	75	5	57	34	0	96	**351**
15:30	5	45	11	0	61	27	55	24	0	106	20	41	3	0	64	6	67	36	0	109	**340**
15:45	9	61	7	0	77	37	62	17	0	116	19	57	7	0	83	11	53	38	0	102	**378**
16:00	6	46	8	0	60	32	64	23	0	119	22	59	11	0	92	21	85	45	0	151	**422**
16:15	6	53	12	0	71	36	46	32	0	114	33	69	7	0	109	11	85	47	0	143	**437**
16:30	3	59	15	0	77	28	59	25	0	112	30	52	1	0	83	6	108	39	0	153	**425**
16:45	8	59	10	0	77	46	72	35	0	153	36	52	3	0	91	10	96	50	0	156	**477**
17:00	6	68	11	0	85	28	61	35	0	124	40	70	11	0	121	16	96	48	0	160	**490**
17:15	12	43	9	0	64	39	92	33	0	164	28	70	7	0	105	11	124	54	0	189	**522**
17:30	**5**	**60**	**11**	**0**	**76**	**40**	**80**	**28**	**0**	**148**	**29**	**92**	**9**	**0**	**130**	**16**	**130**	**49**	**0**	**195**	**549**
17:45	**3**	**61**	**0**	**0**	**64**	**34**	**78**	**32**	**0**	**144**	**28**	**82**	**9**	**0**	**119**	**15**	**125**	**66**	**0**	**206**	**533**
18:00	**3**	**62**	**9**	**0**	**74**	**38**	**76**	**31**	**0**	**145**	**25**	**78**	**5**	**0**	**108**	**11**	**111**	**52**	**0**	**174**	**501**
18:15	**6**	**57**	**13**	**0**	**76**	**47**	**61**	**35**	**0**	**143**	**37**	**79**	**10**	**0**	**126**	**10**	**118**	**59**	**0**	**187**	**532**
18:30	3	68	13	0	84	43	61	23	0	127	25	61	8	0	94	23	119	35	0	177	**482**
18:45	8	54	8	0	70	44	53	21	0	118	19	62	3	0	84	7	101	37	0	145	**417**
19:00	1	33	11	0	45	34	62	9	0	105	22	70	5	0	97	6	90	51	0	147	**394**
Peak Hour Total	**17**	**240**	**33**	**0**	**290**	**159**	**295**	**126**	**0**	**580**	**119**	**331**	**33**	**0**	**483**	**52**	**484**	**226**	**0**	**762**	**2115**
PM Peak PHF	**0.71**	**0.97**	**0.63**	**0**	**0.95**	**0.85**	**0.92**	**0.90**	**0**	**0.98**	**0.80**	**0.90**	**0.83**	**0**	**0.93**	**0.81**	**0.93**	**0.86**	**0**	**0.92**	**0.96**

Computed Peak Hour

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WEST FALLS CHURCH METRORAIL STATION STUDY & VIRGINIA TECH PROPERTIES DEVELOPMENT
VIRGINIA DEPARTMENT OF TRANSPORTATION CHAPTER 879 TRAFFIC IMPACT ANALYSIS

G.W. GEORGE & ASSOCIATES, INC.
Sub-Consultant

INTERSECTION TURNING MOVEMENT COUNT DATA SHEET

Location: Haycock Rd @ Great Falls St (Loc #13)
Date Surveyed: May 9, 2019 (Thursday)

Weather: Warm, Sunny, Dry
ORGA Techs: M. Diane (via Video)

15-Minute Interval (Ending)	Buses & Single-Unit Trucks																				Interval Total
	Haycock Rd					Haycock Rd					Great Falls St					Great Falls St					
	From North					From South					From East					From West					
	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	
6:15	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
6:30	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	1	0	0	0	1	**3**
6:45	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	3	1	0	5	**6**
7:00	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	6	1	0	7	**8**
7:15	1	1	1	0	3	0	6	1	0	7	1	0	0	0	1	1	0	0	0	1	**12**
7:30	0	5	1	0	6	1	2	0	0	3	0	1	0	0	1	0	0	0	0	0	**10**
7:45	0	0	0	0	0	4	1	1	0	6	2	4	0	0	6	0	2	2	0	4	**16**
8:00	**0**	**0**	**1**	**0**	**1**	**0**	**1**	**1**	**0**	**2**	**0**	**1**	**0**	**0**	**1**	**0**	**4**	**0**	**0**	**4**	**8**
8:15	**0**	**0**	**1**	**0**	**1**	**2**	**1**	**1**	**0**	**4**	**1**	**1**	**0**	**0**	**2**	**1**	**1**	**0**	**0**	**2**	**9**
8:30	**0**	**1**	**0**	**0**	**1**	**2**	**1**	**1**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**1**	**0**	**4**	**9**
8:45	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**2**	**0**	**3**	**1**	**0**	**1**	**0**	**2**	**6**
9:00	0	2	0	0	2	1	3	2	0	6	1	0	0	0	1	0	2	3	0	5	**14**
9:15	0	2	0	0	2	1	1	0	0	2	1	1	1	0	3	2	0	3	0	5	**12**
9:30	1	3	2	0	6	2	1	0	0	3	0	0	0	0	0	0	2	0	0	2	**11**
9:45	0	3	3	0	6	0	0	1	0	1	1	6	0	0	7	0	1	0	0	1	**15**
10:00	0	1	1	0	2	1	1	0	0	2	0	1	0	0	1	0	3	0	0	3	**8**
Peak Hour Total	**0**	**2**	**2**	**0**	**4**	**4**	**3**	**3**	**0**	**10**	**2**	**2**	**2**	**0**	**6**	**2**	**8**	**2**	**0**	**12**	**32**
AM Peak PHF	**0**	**0.50**	**0.50**	**0**	**1.00**	**0.50**	**0.75**	**0.75**	**0**	**0.63**	**0.50**	**0.50**	**0.25**	**0**	**0.50**	**0.50**	**0.50**	**0.50**	**0**	**0.75**	**0.89**
15:15	0	0	0	0	0	0	1	1	0	2	0	1	0	0	1	0	1	4	0	5	**8**
15:30	0	0	1	0	1	1	2	1	0	4	0	1	0	0	1	1	1	1	0	3	**9**
15:45	0	1	0	0	1	1	2	0	0	3	0	3	0	0	3	0	0	1	0	1	**8**
16:00	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	1	2	0	0	3	**5**
16:15	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	0	1	1	0	2	**6**
16:30	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	3	1	0	4	**7**
16:45	0	0	0	0	0	2	1	2	0	5	1	1	0	0	2	0	0	1	0	1	**8**
17:00	0	0	1	0	1	0	2	0	0	2	0	0	0	0	0	0	2	4	0	6	**9**
17:15	1	0	1	0	2	0	2	0	0	2	2	0	0	0	2	0	2	5	0	7	**13**
17:30	**0**	**1**	**0**	**0**	**1**	**0**	**2**	**0**	**0**	**2**	**0**	**1**	**0**	**0**	**1**	**0**	**1**	**1**	**0**	**2**	**6**
17:45	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**2**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**4**	**0**	**4**	**7**
18:00	**0**	**2**	**0**	**0**	**2**	**1**	**1**	**1**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**
18:15	**0**	**2**	**0**	**0**	**2**	**0**	**2**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**5**
18:30	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
18:45	1	3	0	0	4	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	**5**
19:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	**2**
Peak Hour Total	**0**	**5**	**0**	**0**	**5**	**2**	**6**	**1**	**0**	**9**	**0**	**2**	**0**	**0**	**2**	**0**	**2**	**5**	**0**	**7**	**23**
PM Peak PHF	**0**	**0.63**	**0**	**0**	**0.63**	**0.50**	**0.75**	**0.25**	**0**	**0.75**	**0**	**0.50**	**0**	**0**	**0.50**	**0**	**0.50**	**0.31**	**0**	**0.44**	**0.82**

Computed Peak Hour

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WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY -
WEST FALLS CHURCH METRORAIL STATION STUDY & VIRGINIA TECH PROPERTIES DEVELOPMENT
VIRGINIA DEPARTMENT OF TRANSPORTATION CHAPTER 879 TRAFFIC IMPACT ANALYSIS

Sub-Consultant

INTERSECTION TURNING MOVEMENT COUNT DATA SHEET

Location: Falls Church Dr @ Park Ride(Loc #14)
Date Surveyed: May 9, 2019 (Thursday)

Weather: Warm, Sunny, Dry
ORGA Techs: M. Diane (via Video)

15-Minute Interval (Ending)	Total Vehicles																				Interval Total
	Park Ride					Driveway to NOVA Center					Falls Church Dr					Falls Church Dr					
	From North					From South					From East					From West					
	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	
6:15	0	0	6	0	6	0	0	0	0	0	1	0	13	0	14	7	2	0	0	9	**29**
6:30	4	0	5	0	9	0	0	0	0	0	0	3	7	0	10	8	0	0	0	8	**27**
6:45	4	0	8	0	12	0	0	0	0	0	0	2	24	0	26	7	4	0	0	11	**49**
7:00	8	0	5	0	13	0	0	0	0	0	0	2	20	0	22	6	3	1	0	10	**45**
7:15	6	0	12	0	18	0	0	0	0	0	1	2	24	0	27	21	7	0	0	28	**73**
7:30	11	1	8	0	20	0	0	0	0	0	0	5	30	0	35	14	9	0	0	23	**78**
7:45	**6**	**0**	**15**	**0**	**21**	**0**	**0**	**0**	**0**	**0**	**1**	**7**	**47**	**0**	**55**	**15**	**19**	**1**	**0**	**35**	**111**
8:00	**17**	**0**	**9**	**0**	**26**	**1**	**0**	**0**	**0**	**1**	**2**	**5**	**45**	**0**	**52**	**21**	**21**	**0**	**0**	**42**	**121**
8:15	**13**	**1**	**13**	**0**	**27**	**0**	**0**	**0**	**0**	**0**	**2**	**15**	**51**	**1**	**69**	**20**	**30**	**0**	**0**	**50**	**146**
8:30	**10**	**0**	**18**	**0**	**28**	**0**	**0**	**0**	**0**	**0**	**3**	**8**	**62**	**0**	**73**	**22**	**17**	**1**	**0**	**40**	**141**
8:45	6	0	10	0	16	0	0	1	0	1	2	11	38	0	51	16	14	0	0	30	**98**
9:00	9	0	7	0	16	0	0	0	0	0	2	6	32	0	40	13	4	1	0	18	**74**
9:15	4	0	14	0	18	1	0	1	0	2	3	4	37	0	44	11	10	0	0	21	**85**
9:30	7	0	6	0	13	0	0	0	0	0	1	3	18	0	22	12	1	0	0	13	**48**
9:45	9	0	12	0	21	0	0	0	0	0	0	6	13	0	19	10	8	1	0	19	**59**
10:00	5	1	4	0	10	0	1	1	0	2	2	2	12	0	16	10	6	0	0	16	**44**
Peak Hour Total	**46**	**1**	**55**	**0**	**102**	**1**	**0**	**0**	**0**	**1**	**8**	**35**	**205**	**1**	**249**	**78**	**87**	**2**	**0**	**167**	**519**
AM Peak PHF	**0.68**	**0.25**	**0.76**	**0**	**0.91**	**0.25**	**0**	**0**	**0**	**0.25**	**0.67**	**0.58**	**0.83**	**0.25**	**0.85**	**0.89**	**0.73**	**0.50**	**0**	**0.84**	**0.89**
15:15	6	0	8	0	14	0	0	0	0	0	0	6	5	0	11	6	26	0	0	32	**57**
15:30	8	0	3	0	11	1	0	0	0	1	0	2	4	1	7	5	7	1	0	13	**32**
15:45	11	0	3	0	14	0	0	0	0	0	0	3	2	0	5	11	6	0	0	17	**36**
16:00	12	0	7	0	19	1	0	2	0	3	1	1	3	0	5	6	13	0	0	19	**46**
16:15	16	0	5	0	21	1	0	5	0	6	3	5	5	0	13	7	12	1	0	20	**60**
16:30	15	0	7	0	22	0	0	1	0	1	0	3	9	0	12	10	19	1	0	30	**65**
16:45	21	0	13	0	34	0	0	2	0	2	0	3	4	0	7	11	33	0	0	44	**87**
17:00	27	0	6	0	33	0	0	2	0	2	0	8	4	0	12	13	38	0	0	51	**98**
17:15	21	0	16	0	37	0	0	1	0	1	0	6	10	0	16	10	61	0	0	71	**125**
17:30	**38**	**0**	**6**	**0**	**44**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**8**	**0**	**15**	**22**	**49**	**0**	**0**	**71**	**130**
17:45	**42**	**0**	**22**	**0**	**64**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**16**	**0**	**19**	**19**	**42**	**0**	**1**	**62**	**145**
18:00	**40**	**0**	**18**	**0**	**58**	**0**	**0**	**1**	**0**	**1**	**3**	**7**	**13**	**2**	**25**	**21**	**39**	**1**	**0**	**61**	**145**
18:15	**36**	**0**	**18**	**0**	**54**	**0**	**0**	**1**	**0**	**1**	**0**	**5**	**14**	**0**	**19**	**20**	**53**	**0**	**0**	**73**	**147**
18:30	39	0	13	0	52	0	0	0	0	0	1	0	7	0	8	19	33	0	0	52	**112**
18:45	35	0	13	0	48	0	0	2	0	2	2	0	9	1	12	12	16	0	0	28	**90**
19:00	32	0	6	0	38	0	2	2	0	4	1	3	7	1	12	11	10	0	0	21	**75**
Peak Hour Total	**156**	**0**	**64**	**0**	**220**	**0**	**0**	**2**	**0**	**2**	**3**	**22**	**51**	**2**	**78**	**82**	**183**	**1**	**1**	**267**	**567**
PM Peak PHF	**0.93**	**0**	**0.73**	**0**	**0.86**	**0**	**0**	**0.50**	**0**	**0.50**	**0.25**	**0.79**	**0.80**	**0.25**	**0.78**	**0.93**	**0.86**	**0.25**	**0.25**	**0.91**	**0.96**

Computed Peak Hour

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VIRGINIA DEPARTMENT OF TRANSPORTATION CHAPTER 879 TRAFFIC IMPACT ANALYSIS

Sub-Consultant

INTERSECTION TURNING MOVEMENT COUNT DATA SHEET

Location: Falls Church Dr @ Park Ride(Loc #14)
Date Surveyed: May 9, 2019 (Thursday)

Weather: Warm, Sunny, Dry
ORGA Techs: M. Diane (via Video)

15-Minute Interval (Ending)	Buses & Single-Unit Trucks																				Interval Total
	Park Ride					Driveway to NOVA Center					Falls Church Dr					Falls Church Dr					
	From North					From South					From East					From West					
	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	
6:15	0	0	4	0	4	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	8
6:30	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	5
6:45	1	0	3	0	4	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	8
7:00	0	0	2	0	2	0	0	0	0	0	0	0	2	0	2	2	0	0	0	2	6
7:15	0	0	5	0	5	0	0	0	0	0	0	0	1	0	1	5	0	0	0	5	11
7:30	0	0	2	0	2	0	0	0	0	0	0	1	1	0	2	5	0	0	0	5	9
7:45	**0**	**0**	**3**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**3**	**0**	**0**	**5**	**8**
8:00	**1**	**0**	**2**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**7**	**10**
8:15	**0**	**0**	**4**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**5**	**0**	**0**	**0**	**5**	**10**
8:30	**0**	**0**	**4**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**4**	**0**	**0**	**0**	**4**	**9**
8:45	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	2	1	0	0	3	6
9:00	0	0	3	0	3	0	0	0	0	0	0	0	1	0	1	4	0	0	0	4	8
9:15	0	0	3	0	3	0	0	0	0	0	0	0	2	0	2	2	0	0	0	2	7
9:30	2	0	2	0	4	0	0	0	0	0	0	0	0	0	0	5	0	0	0	5	9
9:45	0	0	4	0	4	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	7
10:00	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	4
Peak Hour Total	**1**	**0**	**13**	**0**	**14**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**2**	**18**	**3**	**0**	**0**	**21**	**37**
AM Peak PHF	**0.25**	**0**	**0.81**	**0**	**0.88**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0.50**	**0**	**0.50**	**0.64**	**0.25**	**0**	**0**	**0.75**	**0.93**
15:15	0	0	2	0	2	0	0	0	0	0	0	0	1	0	1	1	1	0	0	2	5
15:30	0	0	1	0	1	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	3
15:45	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	5
16:00	0	0	3	0	3	0	0	0	0	0	0	0	1	0	1	3	0	0	0	3	7
16:15	0	0	2	0	2	0	0	0	0	0	0	0	1	0	1	2	0	0	0	2	5
16:30	1	0	1	0	2	0	0	0	0	0	0	0	1	0	1	3	0	0	0	3	6
16:45	0	0	5	0	5	0	0	0	0	0	0	0	1	0	1	3	1	0	0	4	10
17:00	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	6	1	0	0	7	8
17:15	0	0	5	0	5	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	7
17:30	**0**	**0**	**2**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**5**	**7**
17:45	**0**	**0**	**5**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**2**	**3**	**0**	**0**	**0**	**3**	**10**
18:00	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**2**	**0**	**0**	**0**	**2**	**4**
18:15	**0**	**0**	**3**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**3**	**6**
18:30	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	6	0	0	0	6	8
18:45	0	0	4	0	4	0	0	0	0	0	0	0	0	0	0	2	1	0	0	3	7
19:00	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	6	0	0	0	6	7
Peak Hour Total	**0**	**0**	**11**	**0**	**11**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**3**	**13**	**0**	**0**	**0**	**13**	**27**
PM Peak PHF	**0**	**0**	**0.55**	**0**	**0.55**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0.38**	**0**	**0.38**	**0.65**	**0**	**0**	**0**	**0.65**	**0.68**

Computed Peak Hour

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WEST FALLS CHURCH METRORAIL STATION STUDY & VIRGINIA TECH PROPERTIES DEVELOPMENT
VIRGINIA DEPARTMENT OF TRANSPORTATION CHAPTER 879 TRAFFIC IMPACT ANALYSIS

Sub-Consultant

INTERSECTION TURNING MOVEMENT COUNT DATA SHEET

Location: Falls Church Dr @ Entrance to Metro Station Parking Lot (Loc #15)
Date Surveyed: May 9, 2019 (Thursday)

Weather: Warm, Sunny, Dry
ORGA Techs: M. Diane (via Video)

15-Minute Interval (Ending)	Total Vehicles																				Interval Total
	Entrance to Metro Station Parking					Entrance to Virginia Tech Parking					Falls Church Dr					Falls Church Dr					
	From North					From South					From East					From West					
	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	
6:15	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	9	9	0	0	18	**23**
6:30	0	0	0	0	0	0	0	0	0	0	2	7	0	0	9	6	8	0	0	14	**23**
6:45	0	0	0	0	0	0	0	0	0	0	0	8	2	0	10	8	11	1	0	20	**30**
7:00	1	0	0	0	1	0	0	0	0	0	2	5	0	0	7	17	8	1	0	26	**34**
7:15	0	0	0	0	0	0	0	0	0	0	0	13	1	0	14	13	28	0	0	41	**55**
7:30	0	0	0	0	0	0	0	0	0	0	2	8	2	0	12	27	23	1	0	51	**63**
7:45	0	0	0	0	0	0	0	0	0	0	2	17	2	1	22	22	34	0	0	56	**78**
8:00	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**3**	**10**	**2**	**0**	**15**	**32**	**42**	**1**	**1**	**76**	**92**
8:15	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**9**	**17**	**1**	**0**	**27**	**39**	**50**	**0**	**0**	**89**	**117**
8:30	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**3**	**19**	**4**	**0**	**26**	**32**	**39**	**1**	**0**	**72**	**99**
8:45	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**6**	**12**	**3**	**0**	**21**	**27**	**30**	**0**	**0**	**57**	**79**
9:00	0	0	0	0	0	0	0	0	0	0	5	7	0	0	12	25	18	2	0	45	**57**
9:15	0	0	0	0	0	0	0	0	0	0	4	15	1	0	20	18	21	0	0	39	**59**
9:30	0	0	0	0	0	0	0	1	0	1	2	5	3	0	10	7	12	1	0	20	**31**
9:45	0	0	0	0	0	0	0	1	0	1	5	12	0	0	17	9	18	1	0	28	**46**
10:00	0	0	1	0	1	0	0	0	0	0	2	5	0	0	7	6	16	2	0	24	**32**
Peak Hour Total	**0**	**0**	**4**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**21**	**58**	**10**	**0**	**89**	**130**	**161**	**2**	**1**	**294**	**387**
AM Peak PHF	**0**	**0**	**1.00**	**0**	**1.00**	**0**	**0**	**0**	**0**	**0**	**0.58**	**0.76**	**0.63**	**0**	**0.82**	**0.83**	**0.81**	**0.50**	**0.25**	**0.83**	**0.83**
15:15	1	0	6	0	7	3	0	11	0	14	3	11	0	0	14	0	19	0	0	19	**54**
15:30	0	0	4	0	4	1	0	3	0	4	1	4	0	1	6	0	9	0	0	9	**23**
15:45	0	0	7	0	7	1	0	0	0	1	3	3	0	0	6	0	16	0	0	16	**30**
16:00	1	0	5	0	6	0	0	2	0	2	2	8	0	0	10	0	16	1	0	17	**35**
16:15	1	0	8	0	9	2	0	1	0	3	2	8	0	0	10	0	18	0	0	18	**40**
16:30	0	0	9	0	9	0	0	2	0	2	3	6	0	0	9	2	28	2	0	32	**52**
16:45	1	0	14	0	15	1	0	2	0	3	1	15	0	0	16	2	41	0	0	43	**77**
17:00	2	0	13	0	15	2	0	3	0	5	7	8	0	0	15	0	47	0	0	47	**82**
17:15	4	0	16	0	20	4	0	1	0	5	3	17	1	0	21	1	64	1	0	66	**112**
17:30	**4**	**0**	**25**	**0**	**29**	**0**	**0**	**2**	**0**	**2**	**6**	**8**	**1**	**0**	**15**	**0**	**68**	**1**	**0**	**69**	**115**
17:45	**4**	**0**	**28**	**0**	**32**	**0**	**0**	**2**	**0**	**2**	**4**	**21**	**0**	**0**	**25**	**2**	**58**	**1**	**0**	**61**	**120**
18:00	**4**	**0**	**23**	**0**	**27**	**1**	**0**	**1**	**0**	**2**	**8**	**18**	**0**	**1**	**27**	**3**	**54**	**2**	**0**	**59**	**115**
18:15	**5**	**0**	**19**	**0**	**24**	**1**	**0**	**1**	**0**	**2**	**2**	**20**	**0**	**0**	**22**	**2**	**68**	**0**	**0**	**70**	**118**
18:30	6	0	17	0	23	7	0	7	0	14	0	13	0	1	14	1	38	0	0	39	**90**
18:45	0	0	19	0	19	2	0	1	0	3	0	12	0	1	13	2	24	0	0	26	**61**
19:00	4	0	18	0	22	0	0	1	0	1	2	7	0	0	9	0	17	1	0	18	**50**
Peak Hour Total	**17**	**0**	**95**	**0**	**112**	**2**	**0**	**6**	**0**	**8**	**20**	**67**	**1**	**1**	**89**	**7**	**248**	**4**	**0**	**259**	**468**
PM Peak PHF	**0.85**	**0**	**0.85**	**0**	**0.88**	**0.50**	**0**	**0.75**	**0**	**1.00**	**0.63**	**0.80**	**0.25**	**0.25**	**0.82**	**0.58**	**0.91**	**0.50**	**0**	**0.93**	**0.98**

Computed Peak Hour

AECOM
Prime Consultant

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY -
WEST FALLS CHURCH METRORAIL STATION STUDY & VIRGINIA TECH PROPERTIES DEVELOPMENT
VIRGINIA DEPARTMENT OF TRANSPORTATION CHAPTER 879 TRAFFIC IMPACT ANALYSIS

G.W. GEORGES & ASSOCIATES, INC.
Sub-Consultant

INTERSECTION TURNING MOVEMENT COUNT DATA SHEET

Location: Falls Church Dr @ Entrance to Metro Station Parking Lot (Loc #15)
Date Surveyed: May 9, 2019 (Thursday)

Weather: Warm, Sunny, Dry
ORGA Techs: M. Diane (via Video)

15-Minute Interval (Ending)	Buses & Single-Unit Trucks																				Interval Total
	Entrance to Metro Station Parking					Entrance to Virginia Tech Parking					Falls Church Dr					Falls Church Dr					
	From North					From South					From East					From West					
	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	
6:15	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	4	0	0	4	**8**
6:30	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	4	0	0	4	**5**
6:45	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	4	0	0	4	**8**
7:00	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	2	0	0	2	**4**
7:15	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	0	5	0	0	5	**10**
7:30	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	5	0	0	5	**8**
7:45	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	5	0	0	5	**8**
8:00	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**2**	**0**	**7**	**0**	**0**	**7**	**9**
8:15	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**4**	**0**	**5**	**0**	**0**	**5**	**9**
8:30	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**3**	**0**	**4**	**0**	**0**	**4**	**7**
8:45	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**4**	**0**	**3**	**0**	**0**	**3**	**7**
9:00	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	4	0	0	4	**7**
9:15	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	2	0	0	2	**5**
9:30	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	5	0	0	5	**7**
9:45	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	3	0	0	3	**6**
10:00	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	3	0	0	3	**5**
Peak Hour Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**13**	**0**	**0**	**13**	**0**	**19**	**0**	**0**	**19**	**32**
AM Peak PHF	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0.81**	**0**	**0**	**0.81**	**0**	**0.68**	**0**	**0**	**0.68**	**0.89**
15:15	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	2	0	0	2	**4**
15:30	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	**2**
15:45	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	3	0	0	3	**5**
16:00	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	3	0	0	3	**6**
16:15	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	2	0	0	2	**4**
16:30	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	3	0	0	3	**4**
16:45	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	0	4	0	0	4	**9**
17:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	8	0	0	8	**9**
17:15	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	0	1	0	0	1	**6**
17:30	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**2**	**0**	**5**	**0**	**0**	**5**	**7**
17:45	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**5**	**0**	**3**	**0**	**0**	**3**	**8**
18:00	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**2**	**0**	**0**	**2**	**3**
18:15	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**4**	**0**	**4**	**0**	**0**	**4**	**8**
18:30	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	5	0	0	5	**7**
18:45	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	3	0	0	3	**7**
19:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	6	0	0	6	**7**
Peak Hour Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**12**	**0**	**0**	**12**	**0**	**14**	**0**	**0**	**14**	**26**
PM Peak PHF	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0.60**	**0**	**0**	**0.60**	**0**	**0.70**	**0**	**0**	**0.70**	**0.81**

Computed Peak Hour

Type of peak hour being reported: User-Defined

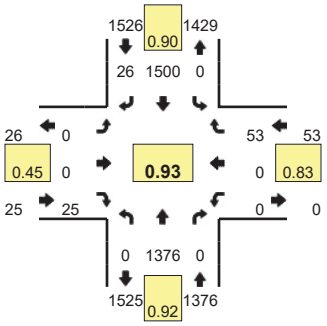
Method for determining peak hour: Total Entering Volume

LOCATION: Leesburg Pike -- Dale Dr/Falls Church Dr

QC JOB #: 14717410

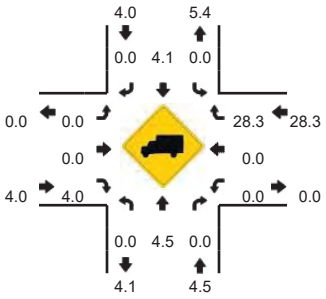
CITY/STATE: Falls Church, VA

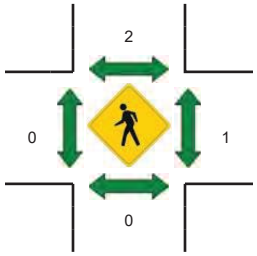
DATE: Thu, May 03 2018



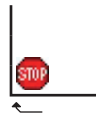
Peak-Hour: 7:30 AM -- 8:30 AM

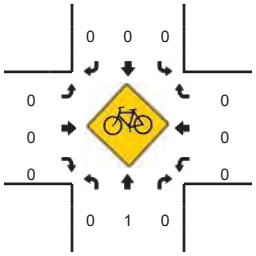
Peak 15-Min: 7:45 AM -- 8:00 AM

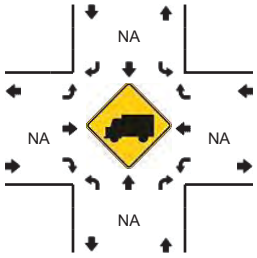




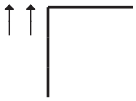


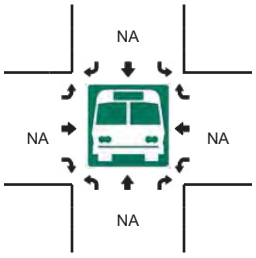












15-Min Count Period Beginning At	Leesburg Pike (Northbound)				Leesburg Pike (Southbound)				Dale Dr/Falls Church Dr (Eastbound)				Dale Dr/Falls Church Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:30 AM	0	149	0	0	0	225	3	0	0	0	2	0	0	0	11	0	390	
6:45 AM	0	179	0	0	0	340	1	0	0	0	4	0	0	0	7	0	531	
7:00 AM	0	209	0	0	0	313	2	0	0	0	3	0	0	0	7	0	534	
7:15 AM	0	295	0	0	0	331	5	0	0	0	3	0	0	0	12	0	646	2101
7:30 AM	0	303	0	0	0	363	3	0	0	0	14	0	0	0	12	0	695	2406
7:45 AM	0	361	0	0	0	417	8	0	0	0	2	0	0	0	16	0	804	2679
8:00 AM	0	373	0	0	0	357	7	0	0	0	5	0	0	0	9	0	751	2896
8:15 AM	0	339	0	0	0	363	8	0	0	0	4	0	0	0	16	0	730	2980
8:30 AM	0	308	0	0	0	338	10	0	0	0	3	0	0	0	11	0	670	2955
8:45 AM	0	289	0	0	0	285	5	0	0	0	2	0	0	0	9	0	590	2741
9:00 AM	0	277	0	0	0	271	8	0	0	0	4	0	0	0	10	0	570	2560
9:15 AM	0	264	0	0	0	288	7	0	0	0	1	0	0	0	7	0	567	2397

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	1444	0	0	0	1668	32	0	0	0	8	0	0	0	64	0	3216
Heavy Trucks	0	76	0		0	56	0		0	0	0		0	0	12		144
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/18/2018 8:40 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: User-Defined

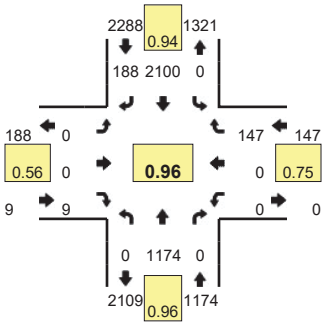
Method for determining peak hour: Total Entering Volume

LOCATION: Leesburg Pike -- Dale Dr/Falls Church Dr

QC JOB #: 14717411

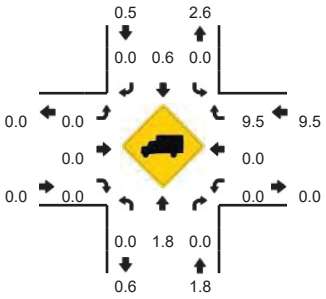
CITY/STATE: Falls Church, VA

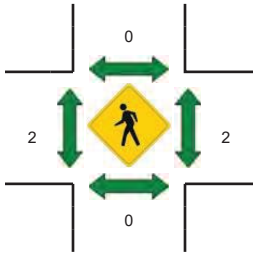
DATE: Thu, May 03 2018



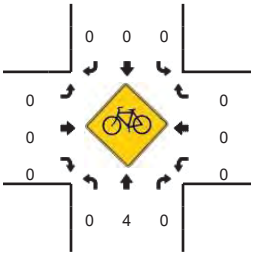
Peak-Hour: 5:15 PM -- 6:15 PM

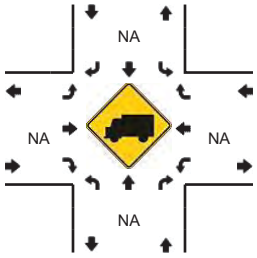
Peak 15-Min: 6:00 PM -- 6:15 PM

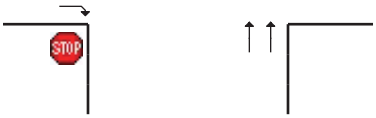


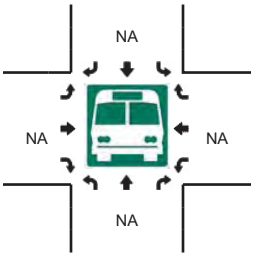












15-Min Count Period Beginning At	Leesburg Pike (Northbound)				Leesburg Pike (Southbound)				Dale Dr/Falls Church Dr (Eastbound)				Dale Dr/Falls Church Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	286	0	0	0	448	29	0	0	0	0	0	0	0	17	0	780	
4:15 PM	0	313	0	0	0	489	28	0	0	0	3	0	0	0	7	0	840	
4:30 PM	0	329	0	0	0	490	20	0	0	0	1	0	0	0	13	0	853	
4:45 PM	0	270	0	0	0	528	33	0	0	0	0	0	0	0	40	0	871	3344
5:00 PM	0	330	0	0	0	528	41	0	0	0	1	0	0	0	22	0	922	3486
5:15 PM	0	307	0	0	0	508	38	0	0	0	4	0	0	0	33	0	890	3536
5:30 PM	0	281	0	0	0	534	47	0	0	0	3	0	0	0	28	0	893	3576
5:45 PM	0	293	0	0	0	492	62	0	0	0	1	0	0	0	49	0	897	3602
6:00 PM	0	293	0	0	0	566	41	0	0	0	1	0	0	0	37	0	938	3618
6:15 PM	0	278	0	0	0	436	25	0	0	0	0	0	0	0	40	0	779	3507
6:30 PM	0	287	0	0	0	505	34	0	0	0	1	0	0	0	36	0	863	3477
6:45 PM	0	275	0	0	0	474	42	0	0	0	1	0	0	0	27	0	819	3399

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	1172	0	0	0	2264	164	0	0	0	4	0	0	0	148	0	3752
Heavy Trucks	0	20	0		0	20	0		0	0	0		0	0	20		60
Pedestrians		0				0				0				8			8
Bicycles	0	1	0		0	0	0		0	0	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/18/2018 8:42 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: User-Defined

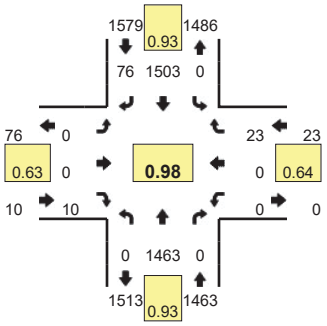
Method for determining peak hour: Total Entering Volume

LOCATION: Leesburg Pike -- Dale Dr/Falls Church Dr

QC JOB #: 14717412

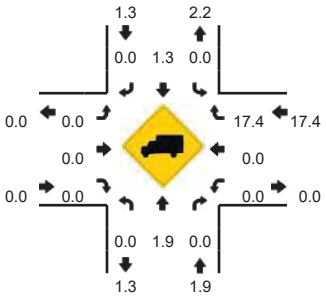
CITY/STATE: Falls Church, VA

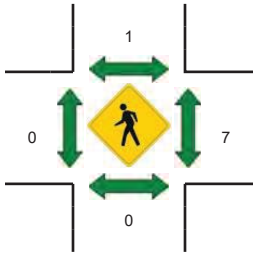
DATE: Sat, May 05 2018



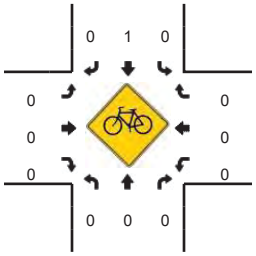
Peak-Hour: 12:00 PM -- 1:00 PM

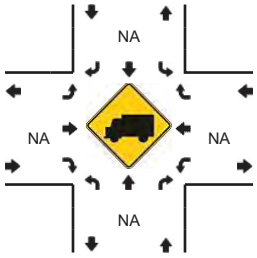
Peak 15-Min: 12:45 PM -- 1:00 PM

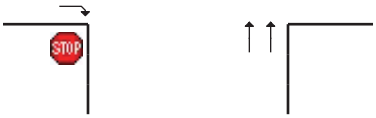


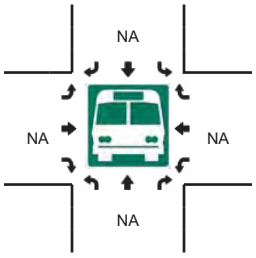












15-Min Count Period Beginning At	Leesburg Pike (Northbound)				Leesburg Pike (Southbound)				Dale Dr/Falls Church Dr (Eastbound)				Dale Dr/Falls Church Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
12:00 PM	0	394	0	0	0	358	18	0	0	0	4	0	0	0	4	0	778	
12:15 PM	0	369	0	0	0	384	13	0	0	0	2	0	0	0	3	0	771	
12:30 PM	0	350	0	0	0	363	18	0	0	0	4	0	0	0	9	0	744	
12:45 PM	0	350	0	0	0	398	27	0	0	0	0	0	0	0	7	0	782	3075
1:00 PM	0	395	0	0	0	361	17	0	0	0	0	0	0	0	6	0	779	3076
1:15 PM	0	354	0	0	0	315	18	0	0	0	2	0	0	0	10	0	699	3004
1:30 PM	0	318	0	0	0	374	18	0	0	0	3	0	0	0	5	0	718	2978
1:45 PM	0	366	0	0	0	356	17	0	0	0	0	0	0	0	7	0	746	2942
2:00 PM	0	352	0	0	0	338	18	0	0	0	4	0	0	0	8	0	720	2883
2:15 PM	0	344	0	0	0	357	9	0	0	0	2	0	0	0	4	0	716	2900
2:30 PM	0	328	0	0	0	329	19	0	0	0	2	0	0	0	9	0	687	2869
2:45 PM	0	315	0	0	0	337	7	0	0	0	0	0	0	0	6	0	665	2788

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	1400	0	0	0	1592	108	0	0	0	0	0	0	0	28	0	3128
Heavy Trucks	0	40	0		0	20	0		0	0	0		0	0	8		68
Pedestrians		0				0				0				4			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/18/2018 8:43 AM

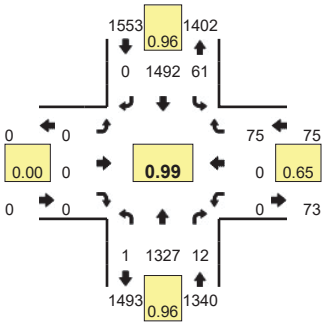
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering Volume

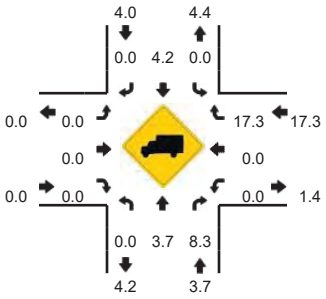
LOCATION: Leesburg Pike -- School Driveway
CITY/STATE: Falls Church, VA

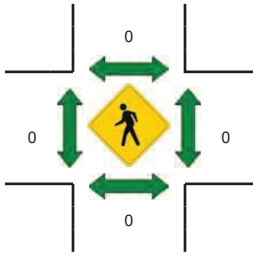
QC JOB #: 14717407
DATE: Thu, May 03 2018



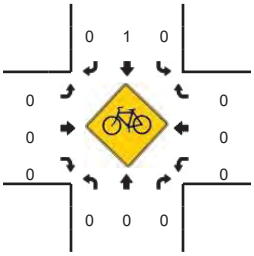
Peak-Hour: 7:30 AM -- 8:30 AM
Peak 15-Min: 8:00 AM -- 8:15 AM

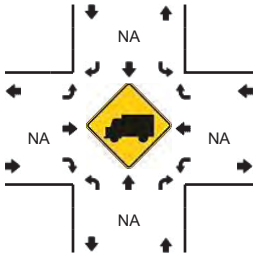




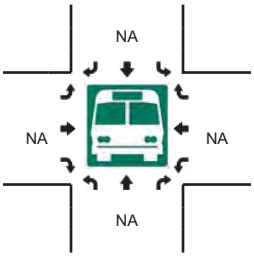












15-Min Count Period Beginning At	Leesburg Pike (Northbound)				Leesburg Pike (Southbound)				School Driveway (Eastbound)				School Driveway (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:30 AM	0	133	4	0	6	217	0	0	0	0	0	0	1	0	1	0	362	
6:45 AM	0	193	4	0	5	304	0	0	0	0	0	0	0	0	3	0	509	
7:00 AM	0	208	0	0	10	296	0	2	0	0	0	0	0	0	3	0	519	
7:15 AM	0	270	3	0	14	355	0	0	0	0	0	0	0	0	7	0	649	2039
7:30 AM	0	300	5	0	17	378	0	0	0	0	0	0	0	0	21	0	721	2398
7:45 AM	0	338	4	0	29	345	0	0	0	0	0	0	0	0	29	0	745	2634
8:00 AM	0	348	0	0	10	369	0	0	0	0	0	0	0	0	24	0	751	2866
8:15 AM	0	341	3	1	5	400	0	0	0	0	0	0	0	0	1	0	751	2968
8:30 AM	0	324	0	0	3	320	0	1	0	0	0	0	0	0	6	0	654	2901
8:45 AM	0	264	10	1	4	285	0	2	0	0	0	0	0	0	6	0	572	2728
9:00 AM	0	257	0	1	1	300	0	3	0	0	0	0	0	0	10	0	572	2549
9:15 AM	0	277	0	0	2	293	0	0	0	0	0	0	0	0	6	0	578	2376

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	1392	0	0	40	1476	0	0	0	0	0	0	0	0	96	0	3004
Heavy Trucks	0	56	0		0	72	0		0	0	0		0	0	4		132
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/18/2018 8:40 AM

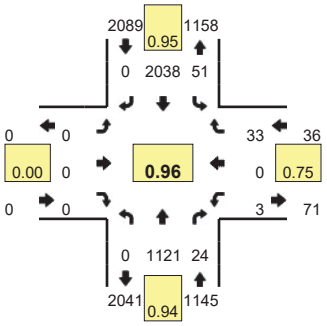
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering Volume

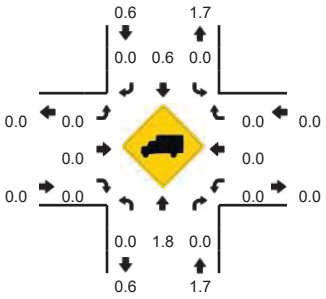
LOCATION: Leesburg Pike -- School Driveway
CITY/STATE: Falls Church, VA

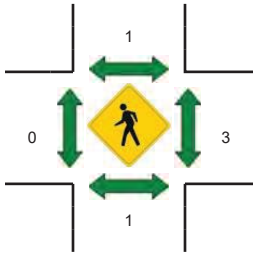
QC JOB #: 14717408
DATE: Thu, May 03 2018

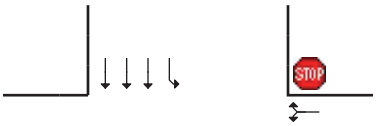


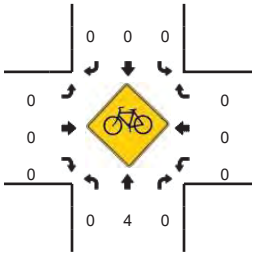
Peak-Hour: 5:15 PM -- 6:15 PM
Peak 15-Min: 5:30 PM -- 5:45 PM

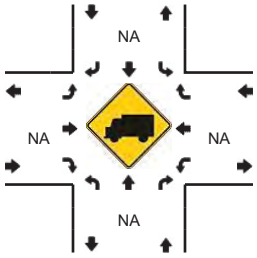




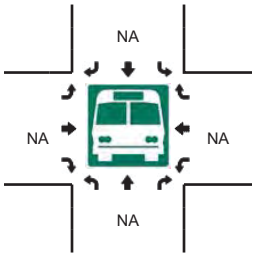












15-Min Count Period Beginning At	Leesburg Pike (Northbound)				Leesburg Pike (Southbound)				School Driveway (Eastbound)				School Driveway (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	289	8	0	1	415	0	0	0	0	0	0	0	0	9	0	722	
4:15 PM	0	279	3	0	11	473	0	1	0	0	0	0	0	0	8	0	775	
4:30 PM	0	316	5	0	12	512	0	2	0	0	0	0	2	0	14	0	863	
4:45 PM	0	285	4	0	6	503	0	0	0	0	0	0	0	0	3	0	801	3161
5:00 PM	0	309	2	0	11	507	0	1	0	0	0	0	1	0	1	0	832	3271
5:15 PM	0	270	4	0	7	500	0	0	0	0	0	0	1	0	11	0	793	3289
5:30 PM	0	295	2	0	12	537	0	2	0	0	0	0	0	0	6	0	854	3280
5:45 PM	0	295	10	0	10	472	0	1	0	0	0	0	0	0	7	0	795	3274
6:00 PM	0	261	8	0	18	529	0	1	0	0	0	0	2	0	9	0	828	3270
6:15 PM	0	265	3	0	7	465	0	0	0	0	0	0	0	0	3	0	743	3220
6:30 PM	0	299	5	0	9	455	0	1	0	0	0	0	0	0	5	0	774	3140
6:45 PM	0	257	3	0	5	478	0	2	0	0	0	0	2	0	6	0	753	3098

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	1180	8	0	48	2148	0	8	0	0	0	0	0	0	24	0	3416
Heavy Trucks	0	24	0		0	20	0		0	0	0		0	0	0		44
Pedestrians		0				0				0				0			0
Bicycles	0	2	0		0	0	0		0	0	0		0	0	0		2
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/18/2018 8:42 AM

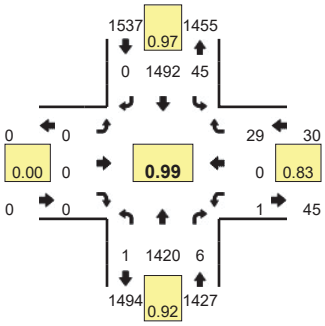
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: User-Defined

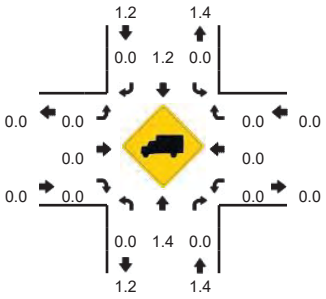
Method for determining peak hour: Total Entering Volume

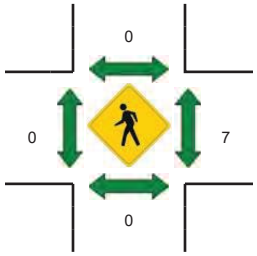
LOCATION: Leesburg Pike -- School Driveway
CITY/STATE: Falls Church, VA

QC JOB #: 14717409
DATE: Sat, May 05 2018

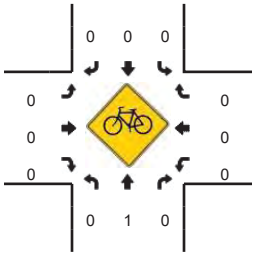


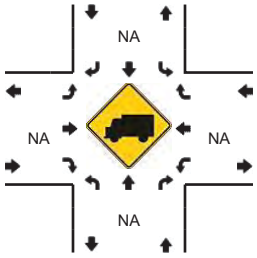
Peak-Hour: 12:00 PM -- 1:00 PM
Peak 15-Min: 12:15 PM -- 12:30 PM



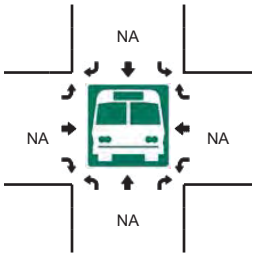












15-Min Count Period Beginning At	Leesburg Pike (Northbound)				Leesburg Pike (Southbound)				School Driveway (Eastbound)				School Driveway (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
12:00 PM	0	387	1	0	4	356	0	2	0	0	0	0	0	0	5	0	755	
12:15 PM	0	352	2	0	10	386	0	1	0	0	0	0	1	0	7	0	759	
12:30 PM	0	337	1	1	18	366	0	1	0	0	0	0	0	0	9	0	733	
12:45 PM	0	344	2	0	7	384	0	2	0	0	0	0	0	0	8	0	747	2994
1:00 PM	0	382	0	0	5	356	0	2	0	0	0	0	1	0	4	0	750	2989
1:15 PM	0	341	2	0	5	319	0	0	0	0	0	0	0	0	6	0	673	2903
1:30 PM	0	325	0	0	13	357	0	2	0	0	0	0	1	0	5	0	703	2873
1:45 PM	0	368	1	0	2	352	0	3	0	0	0	0	1	0	6	0	733	2859
2:00 PM	0	333	5	0	3	331	0	1	0	0	0	0	1	0	15	0	689	2798
2:15 PM	0	341	1	0	1	353	0	4	0	0	0	0	1	0	3	0	704	2829
2:30 PM	0	322	2	0	3	319	0	2	0	0	0	0	0	0	3	0	651	2777
2:45 PM	0	312	4	0	5	317	0	5	0	0	0	0	0	0	1	0	644	2688

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	1408	8	0	40	1544	0	4	0	0	0	0	4	0	28	0	3036
Heavy Trucks	0	20	0		0	8	0		0	0	0		0	0	0		28
Pedestrians		0				0				0				8			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/18/2018 8:43 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: User-Defined

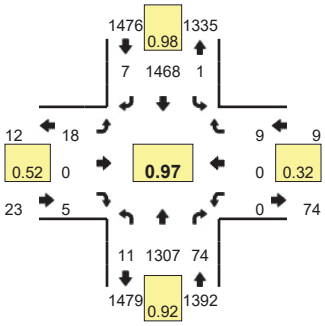
Method for determining peak hour: Total Entering Volume

LOCATION: Leesburg Pike -- Chestnut St/School Driveway

CITY/STATE: Falls Church, VA

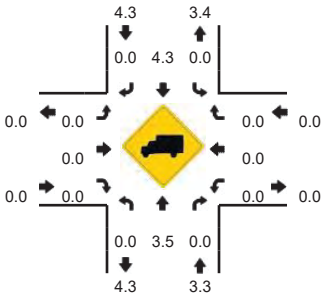
QC JOB #: 14717404

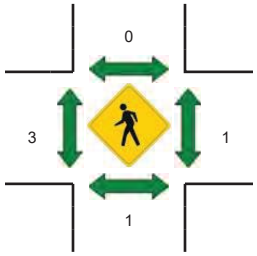
DATE: Thu, May 03 2018



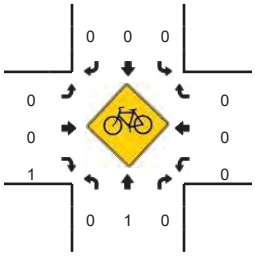
Peak-Hour: 7:30 AM -- 8:30 AM

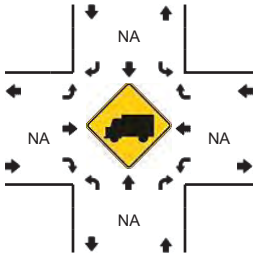
Peak 15-Min: 7:45 AM -- 8:00 AM



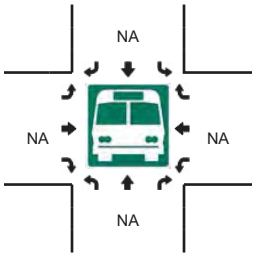












15-Min Count Period Beginning At	Leesburg Pike (Northbound)				Leesburg Pike (Southbound)				Chestnut St/School Driveway (Eastbound)				Chestnut St/School Driveway (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:30 AM	1	147	3	5	0	230	0	0	1	0	1	0	0	0	0	0	388	
6:45 AM	2	192	4	0	0	345	0	0	2	0	2	0	0	0	0	0	547	
7:00 AM	0	205	4	3	0	294	0	0	4	0	3	0	0	0	0	0	513	
7:15 AM	1	266	9	1	2	320	2	0	4	0	3	0	0	0	2	0	610	2058
7:30 AM	0	286	29	0	0	374	1	0	5	0	2	0	0	0	1	0	698	2368
7:45 AM	1	326	29	1	0	372	1	1	8	0	3	0	0	0	7	0	749	2570
8:00 AM	2	360	13	3	0	358	1	0	4	0	0	0	0	0	1	0	742	2799
8:15 AM	2	335	3	2	0	364	4	0	1	0	0	0	0	0	0	0	711	2900
8:30 AM	1	310	1	1	0	334	0	0	3	0	2	0	0	0	0	0	652	2854
8:45 AM	3	281	3	2	1	278	0	0	1	0	2	0	0	0	2	0	573	2678
9:00 AM	1	255	4	1	0	273	2	0	10	0	1	0	0	0	1	0	548	2484
9:15 AM	1	269	2	2	1	303	1	0	6	0	2	0	0	0	0	0	587	2360

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	4	1304	116	4	0	1488	4	4	32	0	12	0	0	0	28	0	2996
Heavy Trucks	0	44	0		0	56	0		0	0	0		0	0	0		100
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/18/2018 8:40 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: User-Defined

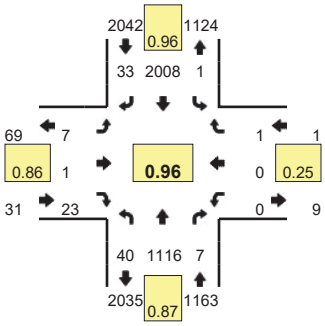
Method for determining peak hour: Total Entering Volume

LOCATION: Leesburg Pike -- Chestnut St/School Driveway

CITY/STATE: Falls Church, VA

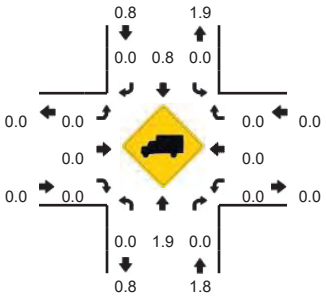
QC JOB #: 14717405

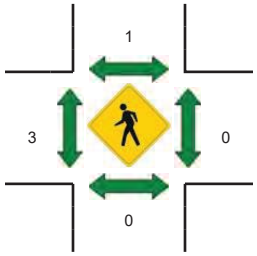
DATE: Thu, May 03 2018



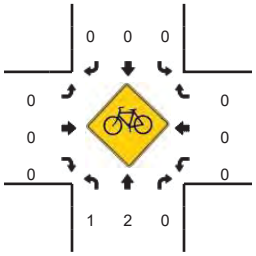
Peak-Hour: 5:15 PM -- 6:15 PM

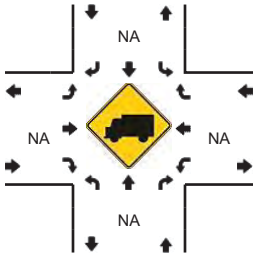
Peak 15-Min: 5:45 PM -- 6:00 PM



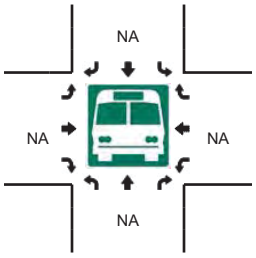












15-Min Count Period Beginning At	Leesburg Pike (Northbound)				Leesburg Pike (Southbound)				Chestnut St/School Driveway (Eastbound)				Chestnut St/School Driveway (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	4	312	2	0	0	428	6	0	3	0	4	0	0	0	1	0	760	
4:15 PM	9	292	2	2	0	477	2	0	2	0	2	0	0	0	0	0	788	
4:30 PM	6	288	2	0	0	485	5	0	4	0	3	0	0	0	2	0	795	
4:45 PM	10	275	1	0	0	491	10	0	1	0	5	0	0	0	0	0	793	3136
5:00 PM	8	332	1	1	1	512	7	0	1	0	1	0	0	0	0	0	864	3240
5:15 PM	13	271	1	2	0	483	4	0	0	1	5	0	0	0	0	0	780	3232
5:30 PM	4	267	0	2	1	513	8	0	3	0	6	0	0	0	0	0	804	3241
5:45 PM	12	317	5	0	0	491	11	0	0	0	7	0	0	0	0	0	843	3291
6:00 PM	7	261	1	0	0	521	10	0	4	0	5	0	0	0	1	0	810	3237
6:15 PM	11	267	0	6	0	431	8	0	3	0	6	0	0	0	0	0	732	3189
6:30 PM	12	303	2	2	0	489	5	0	5	1	9	0	0	0	0	0	828	3213
6:45 PM	7	264	3	3	0	432	9	0	1	0	6	0	0	0	0	0	725	3095

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	48	1268	20	0	0	1964	44	0	0	0	28	0	0	0	0	0	3372
Heavy Trucks	0	20	0		0	4	0		0	0	0		0	0	0		24
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/18/2018 8:42 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: User-Defined

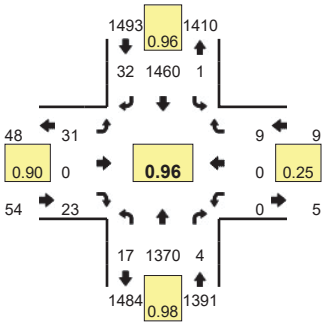
Method for determining peak hour: Total Entering Volume

LOCATION: Leesburg Pike -- Chestnut St/School Driveway

CITY/STATE: Falls Church, VA

QC JOB #: 14717406

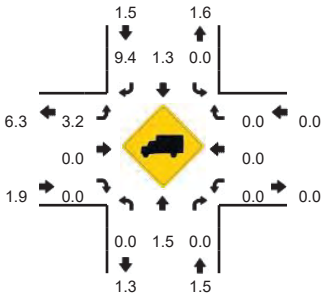
DATE: Sat, May 05 2018

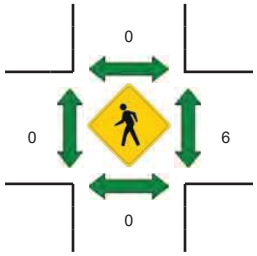


Peak-Hour: 12:00 PM -- 1:00 PM

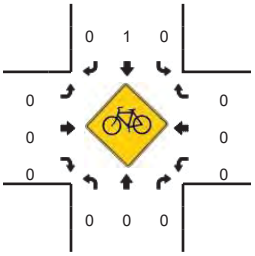
Peak 15-Min: 12:00 PM -- 12:15 PM

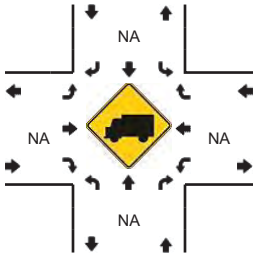




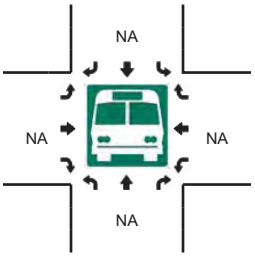












15-Min Count Period Beginning At	Leesburg Pike (Northbound)				Leesburg Pike (Southbound)				Chestnut St/School Driveway (Eastbound)				Chestnut St/School Driveway (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
12:00 PM	6	349	1	0	1	379	7	0	6	0	8	0	0	0	9	0	766	
12:15 PM	4	338	0	0	0	369	8	0	9	0	5	0	0	0	0	0	733	
12:30 PM	3	347	2	0	0	344	6	0	11	0	4	0	0	0	0	0	717	
12:45 PM	3	336	1	1	0	368	11	0	5	0	6	0	0	0	0	0	731	2947
1:00 PM	9	355	1	3	0	361	4	0	14	0	7	0	0	0	1	0	755	2936
1:15 PM	5	322	5	0	0	302	7	0	6	0	3	0	0	0	0	0	650	2853
1:30 PM	3	320	0	0	0	321	8	0	13	0	7	0	0	0	0	0	672	2808
1:45 PM	3	349	0	1	0	364	15	0	16	0	7	0	0	0	1	0	756	2833
2:00 PM	5	342	0	1	0	332	7	0	6	0	6	0	0	0	0	0	699	2777
2:15 PM	5	318	1	1	0	319	10	0	7	0	8	0	0	0	1	0	670	2797
2:30 PM	4	316	2	1	0	323	7	0	8	0	6	0	0	0	0	0	667	2792
2:45 PM	3	278	3	0	0	296	9	0	8	0	5	0	0	0	0	0	602	2638

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	24	1396	4	0	4	1516	28	0	24	0	32	0	0	0	36	0	3064
Heavy Trucks	0	8	0		0	16	4		0	0	0		0	0	0		28
Pedestrians		0				0				0				8			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/18/2018 8:43 AM

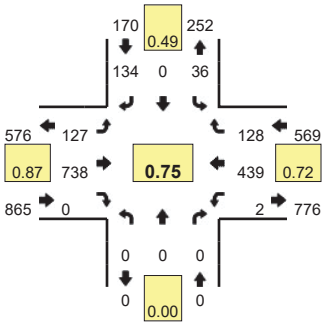
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: User-Defined

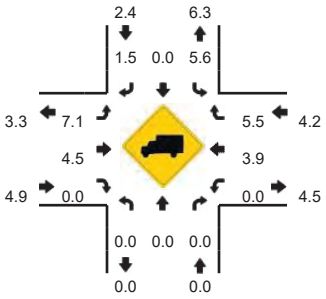
Method for determining peak hour: Total Entering Volume

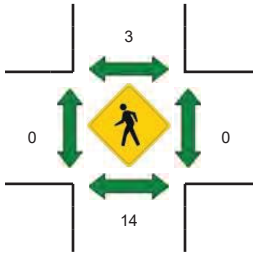
LOCATION: High School Driveway -- Haycock Rd
CITY/STATE: Falls Church, VA

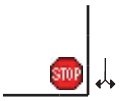
QC JOB #: 14717413
DATE: Thu, May 03 2018



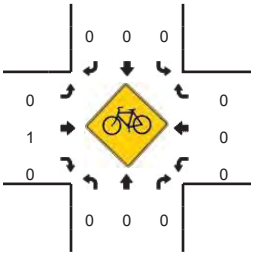
Peak-Hour: 7:30 AM -- 8:30 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

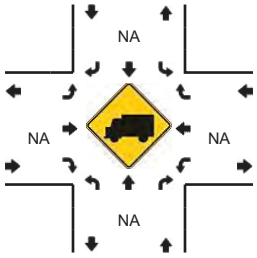


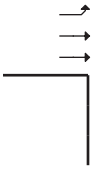




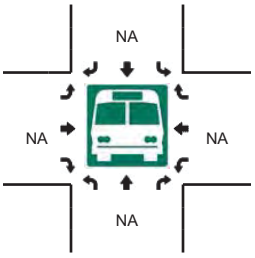












15-Min Count Period Beginning At	High School Driveway (Northbound)				High School Driveway (Southbound)				Haycock Rd (Eastbound)				Haycock Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:30 AM	0	0	0	0	0	0	2	0	2	47	0	0	0	33	2	0	86	
6:45 AM	0	0	0	0	5	0	7	0	10	96	0	0	0	58	5	1	182	
7:00 AM	0	0	0	0	1	0	5	0	8	103	0	0	0	59	2	0	178	
7:15 AM	0	0	0	0	2	0	9	0	10	144	0	2	0	75	9	0	251	697
7:30 AM	0	0	0	0	5	0	26	0	45	154	0	2	0	94	28	0	354	965
7:45 AM	0	0	0	0	18	0	69	0	53	195	0	0	0	128	67	2	532	1315
8:00 AM	0	0	0	0	11	0	34	0	24	215	0	1	0	125	28	0	438	1575
8:15 AM	0	0	0	0	2	0	5	0	2	174	0	0	0	92	5	0	280	1604
8:30 AM	0	0	0	0	2	0	4	0	6	146	0	1	0	84	4	0	247	1497
8:45 AM	0	0	0	0	5	0	3	0	4	145	0	1	0	80	4	0	242	1207
9:00 AM	0	0	0	0	4	0	2	0	6	102	0	0	0	87	6	2	209	978
9:15 AM	0	0	0	0	2	0	6	0	13	96	0	0	0	95	1	2	215	913

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	72	0	276	0	212	780	0	0	0	512	268	8	2128
Heavy Trucks	0	0	0		0	0	4		20	12	0		0	20	8		64
Pedestrians		16				0				0				0			16
Bicycles	0	0	0		0	0	0		0	1	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/18/2018 8:40 AM

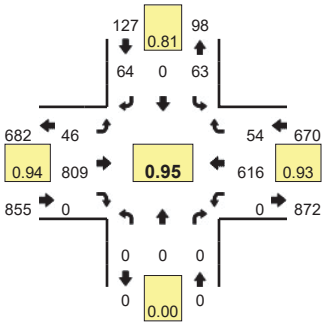
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: User-Defined

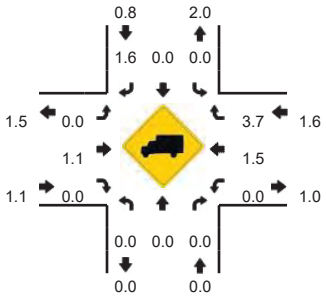
Method for determining peak hour: Total Entering Volume

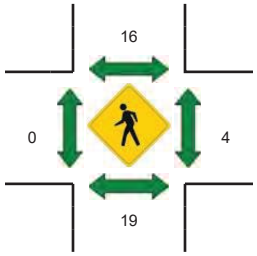
LOCATION: High School Driveway -- Haycock Rd
CITY/STATE: Falls Church, VA

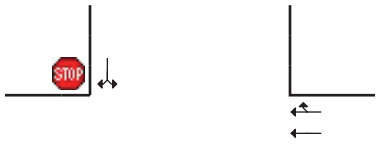
QC JOB #: 14717414
DATE: Thu, May 03 2018

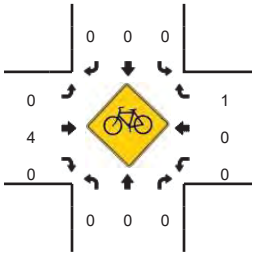


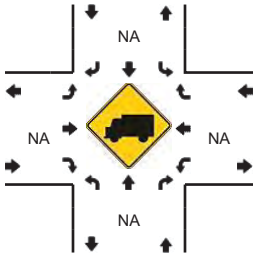
Peak-Hour: 5:15 PM -- 6:15 PM
Peak 15-Min: 5:15 PM -- 5:30 PM



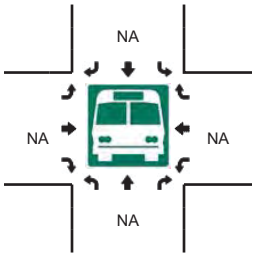












15-Min Count Period Beginning At	High School Driveway (Northbound)				High School Driveway (Southbound)				Haycock Rd (Eastbound)				Haycock Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	9	0	15	0	5	105	0	0	0	142	8	0	284	
4:15 PM	0	0	0	0	13	0	17	0	8	138	0	0	0	143	11	1	331	
4:30 PM	0	0	0	0	24	0	18	0	7	152	0	0	0	121	4	0	326	
4:45 PM	0	0	0	0	9	0	4	0	5	158	0	0	0	178	9	0	363	1304
5:00 PM	0	0	0	0	22	0	16	0	12	202	0	0	0	158	11	1	422	1442
5:15 PM	0	0	0	0	24	0	15	0	21	190	0	2	0	162	19	0	433	1544
5:30 PM	0	0	0	0	13	0	17	0	11	179	0	0	0	130	11	0	361	1579
5:45 PM	0	0	0	0	14	0	19	0	5	219	0	0	0	156	13	0	426	1642
6:00 PM	0	0	0	0	12	0	13	0	7	221	0	0	0	168	11	0	432	1652
6:15 PM	0	0	0	0	10	0	5	0	8	146	0	0	0	146	8	1	324	1543
6:30 PM	0	0	0	0	4	0	8	0	7	164	0	1	0	182	4	1	371	1553
6:45 PM	0	0	0	0	5	0	12	0	23	158	0	0	0	141	15	0	354	1481

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	96	0	60	0	84	760	0	8	0	648	76	0	1732
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	4		4
Pedestrians		28				4				0				8			40
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/18/2018 8:42 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

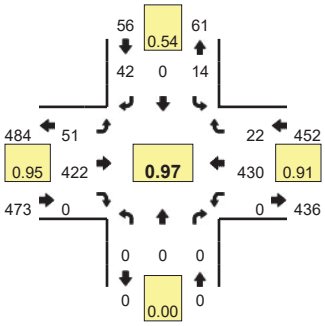
Type of peak hour being reported: User-Defined

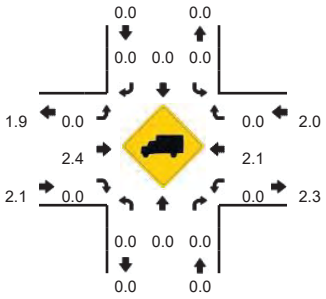
Method for determining peak hour: Total Entering Volume

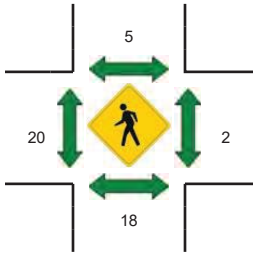
LOCATION: High School Driveway -- Haycock Rd
CITY/STATE: Falls Church, VA

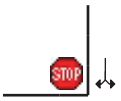
QC JOB #: 14717415
DATE: Sat, May 05 2018

Peak-Hour: 12:00 PM -- 1:00 PM
Peak 15-Min: 12:15 PM -- 12:30 PM

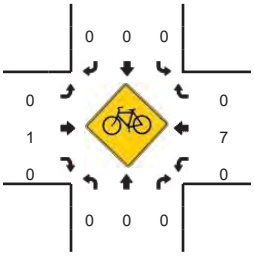


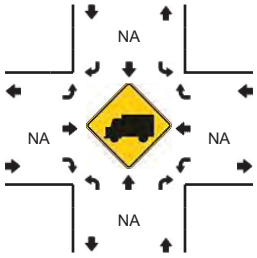


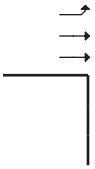




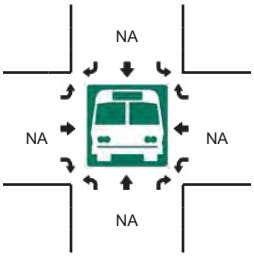












15-Min Count Period Beginning At	High School Driveway (Northbound)				High School Driveway (Southbound)				Haycock Rd (Eastbound)				Haycock Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
12:00 PM	0	0	0	0	2	0	10	0	5	103	0	2	0	107	7	0	236	
12:15 PM	0	0	0	0	7	0	19	0	12	106	0	6	0	99	3	0	252	
12:30 PM	0	0	0	0	2	0	6	0	12	101	0	1	0	118	6	0	246	
12:45 PM	0	0	0	0	3	0	7	0	10	112	0	3	0	106	6	0	247	981
1:00 PM	0	0	0	0	3	0	7	0	11	112	0	2	0	103	5	0	243	988
1:15 PM	0	0	0	0	1	0	3	0	7	100	0	0	0	109	1	0	221	957
1:30 PM	0	0	0	0	3	0	5	0	20	92	0	3	0	114	11	0	248	959
1:45 PM	0	0	0	0	2	0	7	0	10	103	0	4	0	71	7	0	204	916
2:00 PM	0	0	0	0	10	0	21	0	4	99	0	1	0	88	1	2	226	899
2:15 PM	0	0	0	0	1	0	1	0	1	89	0	5	0	106	1	0	204	882
2:30 PM	0	0	0	0	1	0	11	0	7	106	0	1	0	90	3	0	219	853
2:45 PM	0	0	0	0	0	0	3	0	3	92	0	3	0	94	0	0	195	844

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	28	0	76	0	48	424	0	24	0	396	12	0	1008
Heavy Trucks	0	0	0		0	0	0		0	12	0		0	20	0		32
Pedestrians		16				4				32				4			56
Bicycles	0	0	0		0	0	0		0	0	0		0	2	0		2
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/18/2018 8:43 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: User-Defined

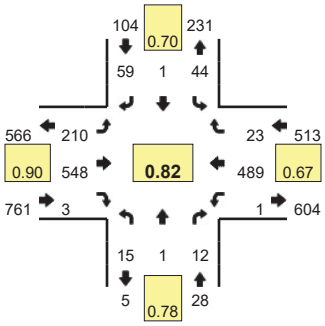
Method for determining peak hour: Total Entering Volume

LOCATION: Falls Church Dr -- Haycock Rd

CITY/STATE: Falls Church, VA

QC JOB #: 14717416

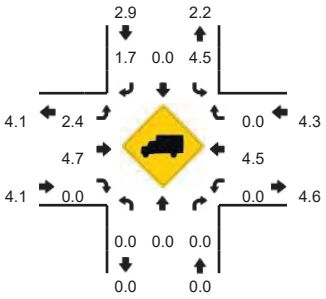
DATE: Thu, May 03 2018

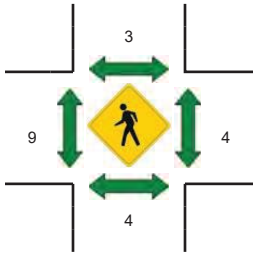


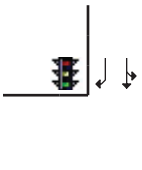
Peak-Hour: 7:30 AM -- 8:30 AM

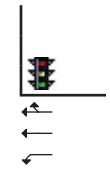
Peak 15-Min: 7:45 AM -- 8:00 AM

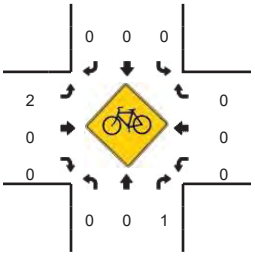


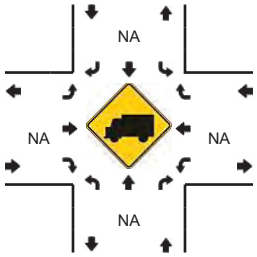


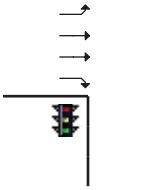


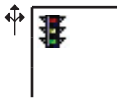


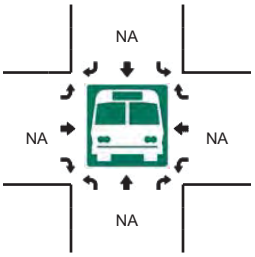












15-Min Count Period Beginning At	Falls Church Dr (Northbound)				Falls Church Dr (Southbound)				Haycock Rd (Eastbound)				Haycock Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:30 AM	0	0	7	0	3	0	5	0	13	40	0	0	0	29	0	0	97	
6:45 AM	0	0	5	0	1	0	7	0	24	56	1	0	0	44	3	0	141	
7:00 AM	3	0	3	0	3	0	4	0	26	81	2	0	0	60	3	0	185	
7:15 AM	1	0	2	0	4	0	8	0	35	127	1	0	0	72	6	0	256	679
7:30 AM	5	0	1	0	12	0	6	0	42	113	1	2	1	90	2	0	275	857
7:45 AM	6	0	3	0	9	0	20	0	55	144	0	1	0	182	10	0	430	1146
8:00 AM	4	0	3	0	16	0	21	0	47	163	1	0	0	121	4	0	380	1341
8:15 AM	0	1	5	0	7	1	12	0	63	128	1	0	0	96	7	0	321	1406
8:30 AM	1	1	2	0	5	0	8	0	32	107	1	0	1	81	4	0	243	1374
8:45 AM	4	1	3	0	6	1	3	0	42	93	2	0	0	71	4	1	231	1175
9:00 AM	1	0	4	0	2	0	7	0	27	99	2	0	5	85	4	0	236	1031
9:15 AM	1	1	2	0	2	0	10	0	25	78	1	3	0	86	1	0	210	920

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	24	0	12	0	36	0	80	0	220	576	0	4	0	728	40	0	1720
Heavy Trucks	0	0	0		4	0	4		4	12	0		0	20	0		44
Pedestrians		8				4				16				4			32
Bicycles	0	0	0		0	0	0		1	0	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/18/2018 8:40 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: User-Defined

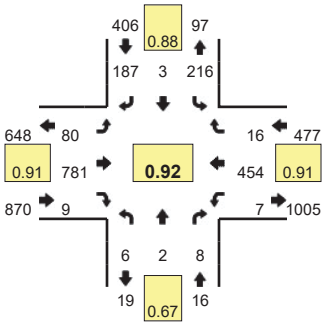
Method for determining peak hour: Total Entering Volume

LOCATION: Falls Church Dr -- Haycock Rd

CITY/STATE: Falls Church, VA

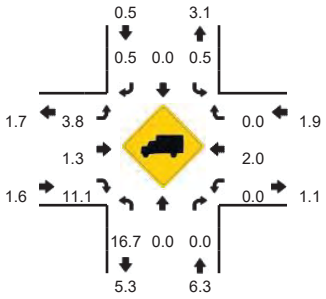
QC JOB #: 14717417

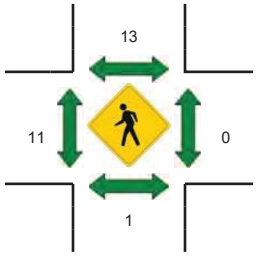
DATE: Thu, May 03 2018

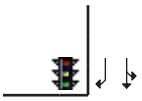


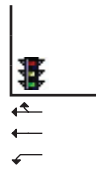
Peak-Hour: 5:15 PM -- 6:15 PM

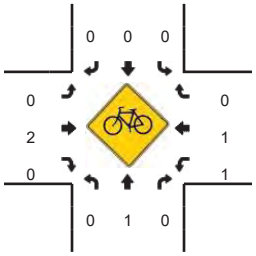
Peak 15-Min: 5:15 PM -- 5:30 PM

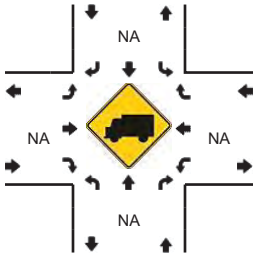


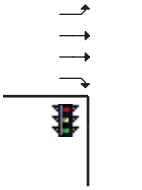


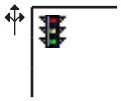


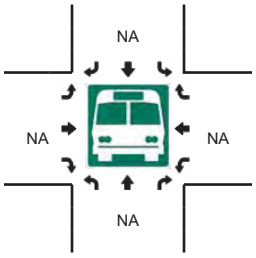












15-Min Count Period Beginning At	Falls Church Dr (Northbound)				Falls Church Dr (Southbound)				Haycock Rd (Eastbound)				Haycock Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	0	0	0	12	0	22	0	10	99	2	1	2	122	1	0	272	
4:15 PM	0	1	3	0	30	0	23	0	10	145	4	1	3	113	2	0	335	
4:30 PM	2	0	1	0	17	0	17	0	12	195	0	1	3	113	0	0	361	
4:45 PM	1	0	3	0	36	0	44	0	18	147	4	0	3	138	1	0	395	1363
5:00 PM	3	0	4	0	31	0	38	0	16	179	4	1	7	117	5	0	405	1496
5:15 PM	1	0	4	0	58	0	50	0	19	212	7	1	2	125	4	0	483	1644
5:30 PM	3	1	0	0	56	0	30	0	15	169	1	0	3	104	6	0	388	1671
5:45 PM	1	1	4	0	43	1	52	0	23	192	0	0	2	114	5	0	438	1714
6:00 PM	1	0	0	0	59	2	55	0	22	208	1	0	0	111	1	0	460	1769
6:15 PM	1	0	3	0	51	0	52	0	27	152	1	2	0	109	1	0	399	1685
6:30 PM	1	0	3	0	48	1	45	0	25	121	7	0	1	113	3	1	369	1666
6:45 PM	3	0	1	0	13	0	42	0	12	142	2	2	0	116	0	0	333	1561

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	4	0	16	0	232	0	200	0	76	848	28	4	8	500	16	0	1932
Heavy Trucks	0	0	0		4	0	0		4	4	4		0	4	0		20
Pedestrians		0				8				12				0			20
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/18/2018 8:42 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: User-Defined

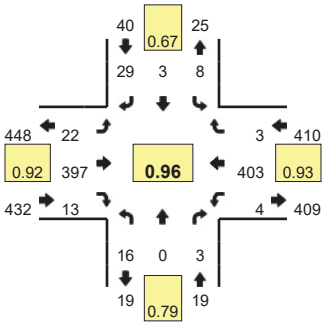
Method for determining peak hour: Total Entering Volume

LOCATION: Falls Church Dr -- Haycock Rd

CITY/STATE: Falls Church, VA

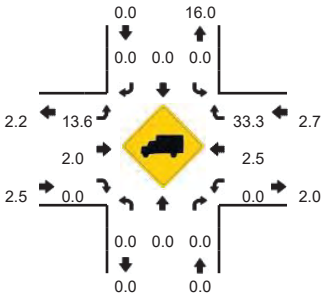
QC JOB #: 14717418

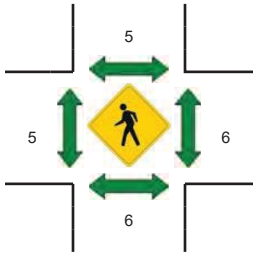
DATE: Sat, May 05 2018

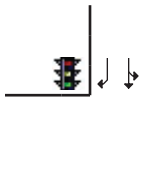


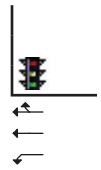
Peak-Hour: 12:00 PM -- 1:00 PM

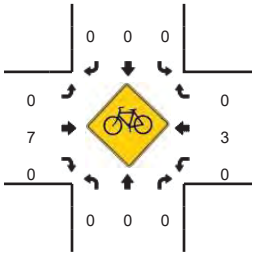
Peak 15-Min: 12:30 PM -- 12:45 PM

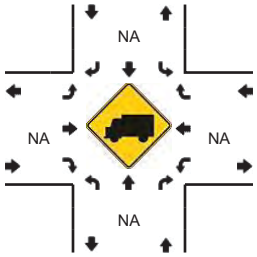


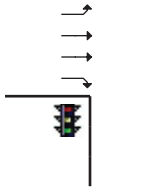


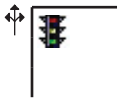


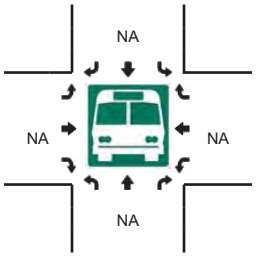












15-Min Count Period Beginning At	Falls Church Dr (Northbound)				Falls Church Dr (Southbound)				Haycock Rd (Eastbound)				Haycock Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
12:00 PM	2	0	1	0	0	0	6	0	5	104	6	0	0	101	1	0	226	
12:15 PM	5	0	0	0	3	1	4	0	4	91	0	0	0	105	1	0	214	
12:30 PM	6	0	0	0	3	0	12	0	7	93	4	0	2	106	1	1	235	
12:45 PM	3	0	2	0	2	2	7	0	6	109	3	0	1	91	0	0	226	901
1:00 PM	4	0	1	0	1	0	2	0	8	97	4	0	3	101	1	0	222	897
1:15 PM	4	0	0	0	2	0	5	0	7	78	2	0	1	104	0	0	203	886
1:30 PM	0	0	2	0	0	0	9	0	7	98	4	0	0	92	2	1	215	866
1:45 PM	2	0	3	0	0	0	2	0	3	83	6	0	3	83	2	0	187	827
2:00 PM	6	0	2	0	0	0	4	0	6	86	4	0	0	79	1	0	188	793
2:15 PM	3	0	2	0	3	0	10	0	12	88	5	4	2	100	1	0	230	820
2:30 PM	0	0	1	0	3	0	3	0	9	89	4	1	2	79	3	0	194	799
2:45 PM	4	0	0	0	3	1	4	0	7	87	3	1	2	87	0	0	199	811

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	24	0	0	0	12	0	48	0	28	372	16	0	8	424	4	4	940
Heavy Trucks	0	0	0		0	0	0		4	16	0		0	12	0		32
Pedestrians		4				4				12				0			20
Bicycles	0	0	0		0	0	0		0	1	0		0	1	0		2
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/18/2018 8:43 AM

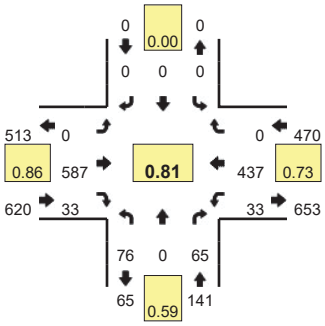
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering Volume

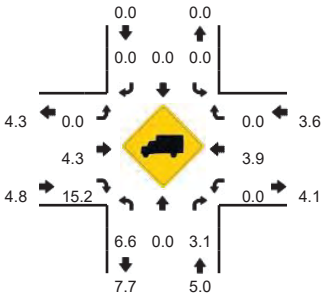
LOCATION: Grove Ave -- Haycock Rd
CITY/STATE: Falls Church, VA

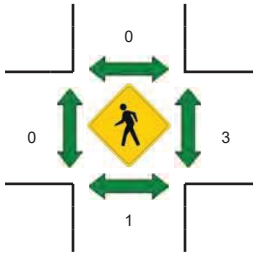
QC JOB #: 14717419
DATE: Thu, May 03 2018



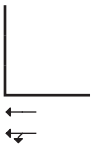
Peak-Hour: 7:30 AM -- 8:30 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

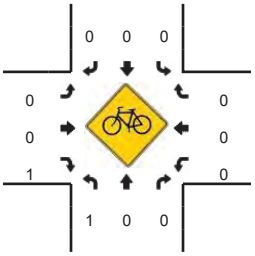


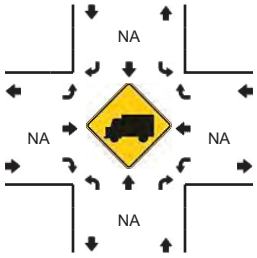


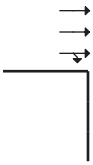


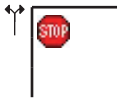


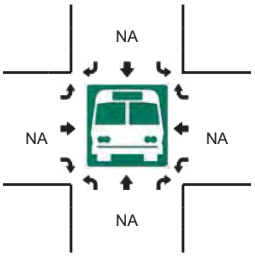












15-Min Count Period Beginning At	Grove Ave (Northbound)				Grove Ave (Southbound)				Haycock Rd (Eastbound)				Haycock Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:30 AM	2	0	8	0	0	0	0	0	0	48	1	0	2	25	0	1	87	
6:45 AM	3	0	10	0	0	0	0	0	0	59	4	0	4	37	0	2	119	
7:00 AM	4	0	7	0	0	0	0	0	0	96	3	0	4	49	0	0	163	
7:15 AM	5	0	14	0	0	0	0	0	0	136	3	0	2	69	0	0	229	598
7:30 AM	9	0	17	0	0	0	0	0	0	126	9	0	12	90	0	1	264	775
7:45 AM	38	0	22	0	0	0	0	0	0	148	9	0	6	156	0	0	379	1035
8:00 AM	22	0	16	0	0	0	0	0	0	170	11	0	9	104	0	0	332	1204
8:15 AM	7	0	10	0	0	0	0	0	0	143	4	0	5	87	0	0	256	1231
8:30 AM	1	0	15	0	0	0	0	0	0	104	6	0	3	78	0	0	207	1174
8:45 AM	2	0	15	0	0	0	0	0	0	116	1	0	8	74	0	0	216	1011
9:00 AM	6	0	15	0	0	0	0	0	0	98	2	0	12	82	0	0	215	894
9:15 AM	1	0	11	0	0	0	0	0	0	83	2	0	14	85	0	0	196	834

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	152	0	88	0	0	0	0	0	0	592	36	0	24	624	0	0	1516
Heavy Trucks	8	0	4		0	0	0		0	12	4		0	16	0		44
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/18/2018 8:40 AM

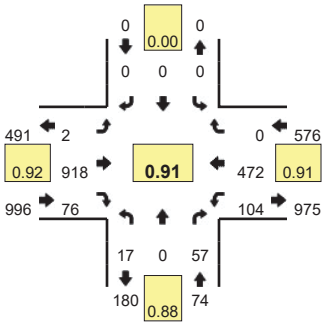
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: User-Defined

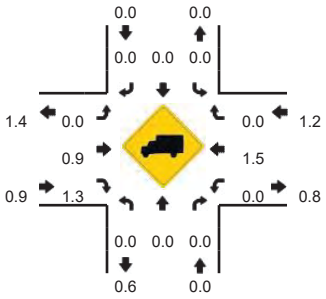
Method for determining peak hour: Total Entering Volume

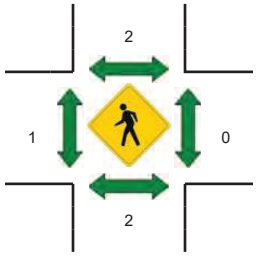
LOCATION: Grove Ave -- Haycock Rd
CITY/STATE: Falls Church, VA

QC JOB #: 14717420
DATE: Thu, May 03 2018

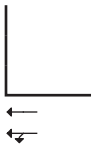


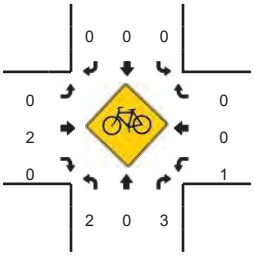
Peak-Hour: 5:15 PM -- 6:15 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

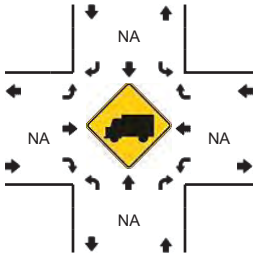


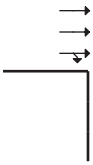


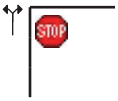


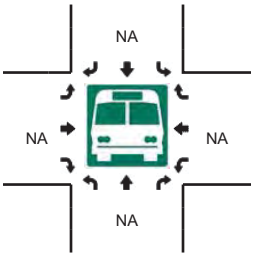












15-Min Count Period Beginning At	Grove Ave (Northbound)				Grove Ave (Southbound)				Haycock Rd (Eastbound)				Haycock Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	11	0	14	0	0	0	0	0	0	99	7	0	10	114	0	0	255	
4:15 PM	7	0	11	0	0	0	0	0	0	165	9	0	10	123	0	1	326	
4:30 PM	5	0	17	0	0	0	0	0	0	185	19	0	11	108	0	0	345	
4:45 PM	2	0	19	0	0	0	0	0	0	165	6	0	17	138	0	0	347	1273
5:00 PM	7	0	18	0	0	0	0	0	0	197	12	0	18	128	0	0	380	1398
5:15 PM	5	0	16	0	0	0	0	0	0	245	26	1	29	129	0	0	451	1523
5:30 PM	5	0	16	0	0	0	0	0	0	218	15	0	25	102	0	0	381	1559
5:45 PM	3	0	12	0	0	0	0	0	0	220	17	1	32	120	0	0	405	1617
6:00 PM	4	0	13	0	0	0	0	0	0	235	18	0	18	121	0	0	409	1646
6:15 PM	4	0	13	0	0	0	0	0	0	196	15	0	15	99	0	0	342	1537
6:30 PM	4	0	13	0	0	0	0	0	0	164	11	0	24	120	0	0	336	1492
6:45 PM	6	0	15	0	0	0	0	0	0	149	3	0	16	107	0	0	296	1383

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	20	0	64	0	0	0	0	0	0	980	104	4	116	516	0	0	1804
Heavy Trucks	0	0	0		0	0	0		0	4	0		0	4	0		8
Pedestrians		0				0				4				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/18/2018 8:42 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering Volume

LOCATION: Grove Ave -- Haycock Rd

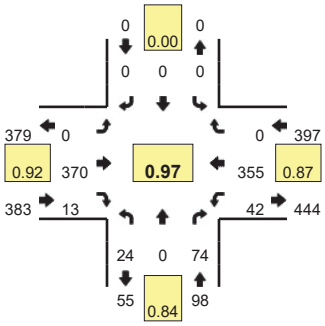
CITY/STATE: Falls Church, VA

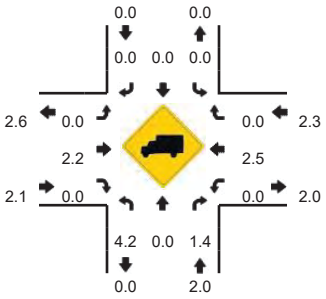
QC JOB #: 14717421

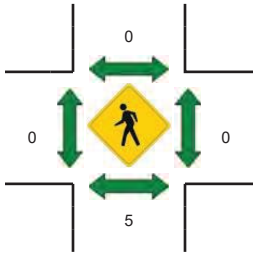
DATE: Sat, May 05 2018

Peak-Hour: 12:00 PM -- 1:00 PM

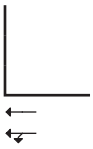
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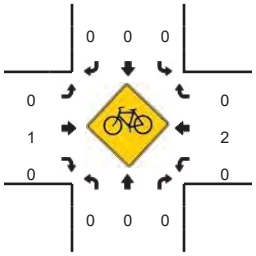


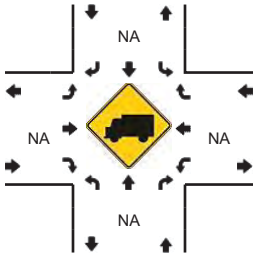


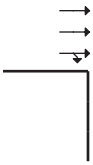


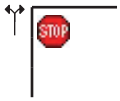


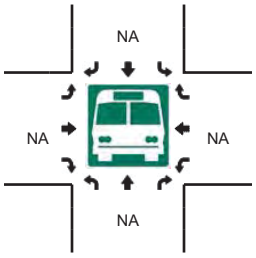












15-Min Count Period Beginning At	Grove Ave (Northbound)				Grove Ave (Southbound)				Haycock Rd (Eastbound)				Haycock Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
12:00 PM	7	0	17	0	0	0	0	0	0	102	2	0	6	92	0	0	226	
12:15 PM	7	0	15	0	0	0	0	0	0	94	3	0	11	86	0	0	216	
12:30 PM	8	0	21	0	0	0	0	0	0	75	7	0	18	96	0	0	225	
12:45 PM	2	0	21	0	0	0	0	0	0	99	1	0	7	81	0	0	211	878
1:00 PM	3	0	20	0	0	0	0	0	0	92	6	0	10	94	0	0	225	877
1:15 PM	2	0	16	0	0	0	0	0	0	72	4	0	5	99	0	0	198	859
1:30 PM	7	0	20	0	0	0	0	0	0	91	9	0	9	89	0	0	225	859
1:45 PM	11	0	17	0	0	0	0	0	0	79	3	0	9	90	0	0	209	857
2:00 PM	5	0	14	0	0	0	0	0	0	81	4	0	10	72	0	0	186	818
2:15 PM	2	0	12	0	0	0	0	0	0	76	7	0	8	103	0	0	208	828
2:30 PM	5	0	25	0	0	0	0	0	0	77	9	0	6	74	0	0	196	799
2:45 PM	3	0	20	0	0	0	0	0	0	87	3	0	5	79	0	0	197	787

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	28	0	68	0	0	0	0	0	0	408	8	0	24	368	0	0	904
Heavy Trucks	4	0	0		0	0	0		0	8	0		0	8	0		20
Pedestrians		4				0				0				0			4
Bicycles	0	0	0		0	0	0		0	1	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/18/2018 8:43 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Appendix D: Level of Service Definitions

15125 Washington Street
Suite 212
Haymarket, VA 20169
571.248.0992

LEVEL OF SERVICE DEFINITIONS

All capacity analyses are based on the procedures specified by the Transportation Research Board, Special Report 209: *Highway Capacity Manual (HCM)*, 2000. Levels of service (LOS) range from A to F. A brief description of each level of service for signalized and unsignalized intersections is provided below.

Signalized Intersections: Level of service is based upon the traffic volume present in each lane on the roadway, the capacity of each lane at the intersection and the delay associated with each directional movement. The levels of service for signalized intersections are defined below:

- Level of Service A describes operations with very low average delay per vehicle, i.e., less than 10.0 seconds. This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop. Short signal cycle lengths may also contribute to low delay.
- Level of Service B describes operations with average delay in the range of 10.1 to 20.0 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.
- Level of Service C describes operations with delay in the range of 20.1 to 35.0 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level although many still pass through the intersection without stopping. This is generally considered the lower end of the range of the acceptable level of service in rural areas.
- Level of Service D describes operations with delay in the range of 35.1 to 55.0 seconds per vehicle. At LOS D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, and/or high traffic volumes as compared to the roadway capacity. Many vehicles are required to stop and the number of vehicles that do not have to stop declines. Individual signal cycle failures, where all waiting vehicles do not clear the intersection during a single green time, are noticeable. This is generally considered the lower end of the range of the acceptable level of service in urban areas.
- Level of Service E describes operations with delay in the range of 55.1 to 80.0 seconds per vehicle. These higher delay values generally indicate poor progression, long cycle lengths, and high traffic volumes. Individual cycle failures are frequent occurrences. LOS E has been set as the limit of acceptable conditions.
- Level of Service F describes operations with average delay in excess of 80.0 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with over-saturation, i.e., when traffic arrives at a flow rate that exceeds the capacity of the intersection. It may also occur at high volumes with many individual cycle failures. Poor progression and long cycle lengths may also contribute to such delays.

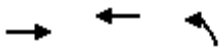
Unsignalized Intersections: At an unsignalized intersection, the major street through traffic and right-turns are assumed to operate unimpeded and therefore receive no level of service rating. The level of service for the minor street and the major street left-turn traffic is dependent on the volume and capacity of the available lanes, and, the number and frequency of acceptable gaps in the major street traffic to make a conflicting turn. The level of service

grade is provided for each conflicting movement at an unsignalized intersection and is based on the total average delay experienced by each vehicle. The delay includes the time it takes a vehicle to move from the back of a queue through the intersection.

The unsignalized intersection level of service analysis does not account for variations in driver behavior or the effects of nearby traffic signals. Therefore, the results from this analysis usually indicate worse levels of service than may be experienced in the field. The unsignalized intersection level of service descriptions are provided below:

- Level of Service A. Describes operations where there is very little to no conflicting traffic for a minor side street movement, i.e., an average total delay of less than 10.0 seconds per vehicle.
- Level of Service B. Describes operations with average total delay in the range of 10.1 to 15.0 seconds per vehicle.
- Level of Service C. Describes operations with average total delay in the range of 15.1 to 25.0 second per vehicle.
- Level of Service D. Describes operations with average total delay in the range of 25.1 to 35.0 seconds per vehicle.
- Level of Service E. Describes operations with average total delay in the range of 35.1 to 50.0 seconds per vehicle.
- Level of Service F. Describes operations with average total delay of 50 seconds per vehicle. LOS F exists when there are insufficient gaps of suitable size to allow a side street demand to cross safely through or enter a major street traffic stream. This level of service is generally evident from extremely long total delays experienced by side street traffic and by queuing on the minor approaches. It is important to note that LOS F may not always result in long queues but may result in adjustments to normal driver behavior.

Appendix E: Intersection Capacity Analysis - Existing Conditions (2019)



Lane Group	EBT	WBT	NBL
Lane Group Flow (vph)	1325	1318	132
v/c Ratio	0.48	0.48	0.47
Control Delay	4.6	4.7	51.3
Queue Delay	0.0	0.0	0.0
Total Delay	4.6	4.7	51.3
Queue Length 50th (ft)	125	270	44
Queue Length 95th (ft)	181	126	73
Internal Link Dist (ft)	735	250	372
Turn Bay Length (ft)			220
Base Capacity (vph)	2755	2757	821
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.48	0.48	0.16

Intersection Summary
Description: 7075



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1219	0	0	1213	121	0
Future Volume (vph)	1219	0	0	1213	121	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	1%			-1%	-1%	
Total Lost time (s)	6.5			6.5	7.0	
Lane Util. Factor	0.95			0.95	0.97	
Frt	1.00			1.00	1.00	
Flt Protected	1.00			1.00	0.95	
Satd. Flow (prot)	3487			3489	3450	
Flt Permitted	1.00			1.00	0.95	
Satd. Flow (perm)	3487			3489	3450	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1325	0	0	1318	132	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1325	0	0	1318	132	0
Heavy Vehicles (%)	3%	0%	0%	4%	2%	2%
Turn Type	NA			NA	Prot	
Protected Phases	2			6	4	
Permitted Phases						
Actuated Green, G (s)	83.0			83.0	8.5	
Effective Green, g (s)	83.0			83.0	8.5	
Actuated g/C Ratio	0.79			0.79	0.08	
Clearance Time (s)	6.5			6.5	7.0	
Vehicle Extension (s)	5.0			5.0	2.0	
Lane Grp Cap (vph)	2756			2757	279	
v/s Ratio Prot	c0.38			0.38	c0.04	
v/s Ratio Perm						
v/c Ratio	0.48			0.48	0.47	
Uniform Delay, d1	3.7			3.7	46.1	
Progression Factor	1.00			1.07	1.00	
Incremental Delay, d2	0.6			0.5	0.5	
Delay (s)	4.3			4.5	46.6	
Level of Service	A			A	D	
Approach Delay (s)	4.3			4.5	46.6	
Approach LOS	A			A	D	

Intersection Summary			
HCM 2000 Control Delay	6.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	49.1%	ICU Level of Service	A
Analysis Period (min)	15		

Description: 7075

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1520	33	0	1412	0	0	0	16	0	0	52
Future Vol, veh/h	0	1520	33	0	1412	0	0	0	16	0	0	52
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Yield	Yield	Yield
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Yield
Storage Length	-	-	-	-	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	-7	-	-	-1	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	4	0	0	5	0	0	0	0	0	0	29
Mvmt Flow	0	1652	36	0	1535	0	0	0	17	0	0	57

Major/Minor	Major1			Major2			Minor1					
Conflicting Flow All	-	0	0	-	-	0	-	-	844			
Stage 1	-	-	-	-	-	-	-	-	-			
Stage 2	-	-	-	-	-	-	-	-	-			
Critical Hdwy	-	-	-	-	-	-	-	-	7.1			
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-			
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-			
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.9			
Pot Cap-1 Maneuver	0	-	-	0	-	0	0	0	267			
Stage 1	0	-	-	0	-	0	0	0	-			
Stage 2	0	-	-	0	-	0	0	0	-			
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	0	267			
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	0	-			
Stage 1	-	-	-	-	-	-	-	0	-			
Stage 2	-	-	-	-	-	-	-	0	-			

Approach	EB	WB	NB
HCM Control Delay, s	0	0	19.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	267	-	-	-
HCM Lane V/C Ratio	0.065	-	-	-
HCM Control Delay (s)	19.4	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	61	1475	1352	7	0	60
Future Vol, veh/h	61	1475	1352	7	0	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	140	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	-1	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	4	5	0	0	12
Mvmt Flow	63	1521	1394	7	0	62

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1401	0	-	0	2132	701
Stage 1	-	-	-	-	1398	-
Stage 2	-	-	-	-	734	-
Critical Hdwy	4.14	-	-	-	6.25	7.14
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	6	-
Follow-up Hdwy	2.22	-	-	-	3.65	3.42
Pot Cap-1 Maneuver	484	-	-	-	59	359
Stage 1	-	-	-	-	194	-
Stage 2	-	-	-	-	411	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	484	-	-	-	51	359
Mov Cap-2 Maneuver	-	-	-	-	51	-
Stage 1	-	-	-	-	169	-
Stage 2	-	-	-	-	411	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	17.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	484	-	-	-	359
HCM Lane V/C Ratio	0.13	-	-	-	0.172
HCM Control Delay (s)	13.5	-	-	-	17.1
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.4	-	-	-	0.6

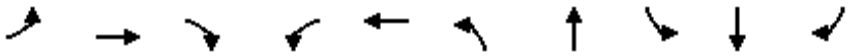
Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1469	6	13	1335	46	16	0	5	0	0	8
Future Vol, veh/h	0	1469	6	13	1335	46	16	0	5	0	0	8
Conflicting Peds, #/hr	3	0	1	3	0	1	0	0	1	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	Stop
Storage Length	-	-	-	200	-	220	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-7	-	-	-1	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	4	0	0	4	0	0	0	0	0	0	0
Mvmt Flow	0	1546	6	14	1405	48	17	0	5	0	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	1555	0	0	2283	2985	780	-	-	703
Stage 1	-	-	-	-	-	-	1552	1552	-	-	-	-
Stage 2	-	-	-	-	-	-	731	1433	-	-	-	-
Critical Hdwy	-	-	-	5.3	-	-	6.95	6.5	7.1	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	7.3	5.5	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	-	-	-	3.1	-	-	3.65	4	3.9	-	-	3.3
Pot Cap-1 Maneuver	0	-	-	214	-	0	31	14	294	0	0	385
Stage 1	0	-	-	-	-	0	84	176	-	0	0	-
Stage 2	0	-	-	-	-	0	373	201	-	0	0	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	213	-	-	29	13	293	-	-	385
Mov Cap-2 Maneuver	-	-	-	-	-	-	29	13	-	-	-	-
Stage 1	-	-	-	-	-	-	84	176	-	-	-	-
Stage 2	-	-	-	-	-	-	341	188	-	-	-	-

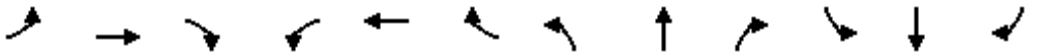
Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	197.1	14.6
HCM LOS			F	B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	37	-	-	213	-	385
HCM Lane V/C Ratio	0.597	-	-	0.064	-	0.022
HCM Control Delay (s)	197.1	-	-	23.1	-	14.6
HCM Lane LOS	F	-	-	C	-	B
HCM 95th %tile Q(veh)	2.1	-	-	0.2	-	0.1



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	260	1166	94	26	1089	59	487	18	66	397
v/c Ratio	0.74	0.49	0.08	0.42	0.57	0.22	0.79	0.18	0.25	0.72
Control Delay	112.9	20.7	1.8	117.5	31.0	64.6	91.7	59.1	75.4	24.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	112.9	20.7	1.8	117.5	31.0	64.6	91.7	59.1	75.4	24.6
Queue Length 50th (ft)	193	454	3	36	505	65	347	19	82	78
Queue Length 95th (ft)	226	603	15	76	658	108	408	35	138	265
Internal Link Dist (ft)		475			2080		412		548	
Turn Bay Length (ft)	250			225		115		295		
Base Capacity (vph)	632	2364	1144	87	1917	347	716	195	303	569
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.49	0.08	0.30	0.57	0.17	0.68	0.09	0.22	0.70

Intersection Summary
Description: 7070



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	252	1131	91	25	952	105	57	402	71	17	64	385
Future Volume (vph)	252	1131	91	25	952	105	57	402	71	17	64	385
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-7%			7%			3%			4%	
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0		7.0	6.5		7.0	6.5	6.5
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95		1.00	0.95		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99		1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.97	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3588	3628	1600	1675	3310		1733	3381		1496	1862	1455
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.61	1.00		0.24	1.00	1.00
Satd. Flow (perm)	3588	3628	1600	1675	3310		1108	3381		373	1862	1455
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	260	1166	94	26	981	108	59	414	73	18	66	397
RTOR Reduction (vph)	0	0	27	0	0	0	0	0	0	0	0	335
Lane Group Flow (vph)	260	1166	67	26	1089	0	59	487	0	18	66	62
Confl. Peds. (#/hr)	3		6	6		3	27		14	14		27
Heavy Vehicles (%)	1%	3%	2%	4%	3%	8%	0%	2%	3%	18%	0%	2%
Turn Type	Prot	NA	pm+ov	Prot	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases			2				8			4		4
Actuated Green, G (s)	20.6	132.6	142.7	6.9	118.9		48.5	38.4		37.5	32.9	32.9
Effective Green, g (s)	20.6	132.6	142.7	6.9	118.9		48.5	38.4		37.5	32.9	32.9
Actuated g/C Ratio	0.10	0.63	0.68	0.03	0.57		0.23	0.18		0.18	0.16	0.16
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	6.5		7.0	6.5	6.5
Vehicle Extension (s)	3.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	351	2290	1140	55	1874		285	618		91	291	227
v/s Ratio Prot	c0.07	0.32	0.00	0.02	c0.33		c0.01	c0.14		0.00	0.04	
v/s Ratio Perm			0.04				0.04			0.03		0.04
v/c Ratio	0.74	0.51	0.06	0.47	0.58		0.21	0.79		0.20	0.23	0.27
Uniform Delay, d1	92.1	21.0	11.2	99.8	29.4		64.4	81.9		72.4	77.4	78.0
Progression Factor	1.10	0.96	0.71	1.00	1.00		1.00	1.00		0.92	0.94	2.81
Incremental Delay, d2	7.8	0.8	0.0	2.3	1.3		0.1	6.1		0.4	0.1	0.2
Delay (s)	108.7	20.8	8.0	102.1	30.8		64.5	88.0		67.0	73.0	219.8
Level of Service	F	C	A	F	C		E	F		E	E	F
Approach Delay (s)		35.1			32.4			85.5			194.0	
Approach LOS		D			C			F			F	

Intersection Summary			
HCM 2000 Control Delay	62.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	210.0	Sum of lost time (s)	27.5
Intersection Capacity Utilization	78.0%	ICU Level of Service	D
Analysis Period (min)	15		
Description: 7070			

c Critical Lane Group

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	33	112	87	730	460	111
Future Vol, veh/h	33	112	87	730	460	111
Conflicting Peds, #/hr	0	0	3	0	0	3
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	110	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	1	4	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	3	2	6	4	4	4
Mvmt Flow	39	132	102	859	541	131

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1244	339	675	0	-	0
Stage 1	610	-	-	-	-	-
Stage 2	634	-	-	-	-	-
Critical Hdwy	6.86	6.94	4.22	-	-	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.32	2.26	-	-	-
Pot Cap-1 Maneuver	165	657	886	-	-	-
Stage 1	502	-	-	-	-	-
Stage 2	488	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	145	655	884	-	-	-
Mov Cap-2 Maneuver	145	-	-	-	-	-
Stage 1	443	-	-	-	-	-
Stage 2	487	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	23.3	1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	884	-	364	-	-
HCM Lane V/C Ratio	0.116	-	0.469	-	-
HCM Control Delay (s)	9.6	-	23.3	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.4	-	2.4	-	-

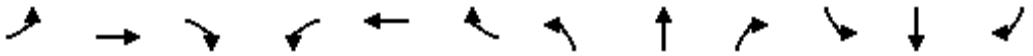


Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	57	94	30	256	638	4	1	594
v/c Ratio	0.37	0.28	0.16	0.41	0.24	0.00	0.00	0.28
Control Delay	47.8	2.0	26.5	8.0	7.3	0.0	6.0	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.8	2.0	26.5	8.0	7.3	0.0	6.0	9.0
Queue Length 50th (ft)	37	0	9	78	128	0	0	63
Queue Length 95th (ft)	66	0	32	166	252	m0	m1	97
Internal Link Dist (ft)	335		307		400			190
Turn Bay Length (ft)		75		205		290	125	
Base Capacity (vph)	261	452	300	812	2681	1243	646	2148
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.21	0.10	0.32	0.24	0.00	0.00	0.28

Intersection Summary

Description: 704010

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	1	80	11	2	13	218	542	3	1	480	25
Future Volume (vph)	48	1	80	11	2	13	218	542	3	1	480	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			2%			1%			1%	
Total Lost time (s)		7.0	7.0		7.0		7.0	6.0	6.0	7.0	6.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	0.98		0.99		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85		0.93		1.00	1.00	0.85	1.00	0.99	
Flt Protected		0.95	1.00		0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1759	1555		1695		1742	3454	1570	1793	3430	
Flt Permitted		0.71	1.00		0.83		0.37	1.00	1.00	0.41	1.00	
Satd. Flow (perm)		1306	1555		1443		679	3454	1570	773	3430	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	56	1	94	13	2	15	256	638	4	1	565	29
RTOR Reduction (vph)	0	0	85	0	13	0	0	0	1	0	2	0
Lane Group Flow (vph)	0	57	9	0	17	0	256	638	3	1	592	0
Confl. Peds. (#/hr)	4		9	9		4	3		4	4		3
Heavy Vehicles (%)	3%	0%	2%	0%	0%	0%	3%	4%	0%	0%	4%	0%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		
Actuated Green, G (s)		10.6	10.6		10.6		81.4	73.3	73.3	65.3	64.2	
Effective Green, g (s)		10.6	10.6		10.6		81.4	73.3	73.3	65.3	64.2	
Actuated g/C Ratio		0.10	0.10		0.10		0.78	0.70	0.70	0.62	0.61	
Clearance Time (s)		7.0	7.0		7.0		7.0	6.0	6.0	7.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	4.0	4.0	3.0	4.0	
Lane Grp Cap (vph)		131	156		145		629	2411	1096	491	2097	
v/s Ratio Prot							c0.04	0.18		0.00	0.17	
v/s Ratio Perm		c0.04	0.01		0.01		c0.28		0.00	0.00		
v/c Ratio		0.44	0.06		0.11		0.41	0.26	0.00	0.00	0.28	
Uniform Delay, d1		44.4	42.7		42.9		3.8	5.9	4.8	7.5	9.6	
Progression Factor		1.00	1.00		1.00		1.55	1.37	1.00	1.00	0.79	
Incremental Delay, d2		2.3	0.2		0.4		0.4	0.2	0.0	0.0	0.3	
Delay (s)		46.7	42.9		43.3		6.2	8.3	4.8	7.5	7.9	
Level of Service		D	D		D		A	A	A	A	A	
Approach Delay (s)		44.3			43.3			7.7			7.9	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	11.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		
Description: 704010			

c Critical Lane Group

Intersection	
Int Delay, s/veh	3.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	68	67	605	30	25	469
Future Vol, veh/h	68	67	605	30	25	469
Conflicting Peds, #/hr	3	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	1	-	-	1
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	7	3	4	17	0	4
Mvmt Flow	80	79	712	35	29	552

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1068	375	0	0	748	0
Stage 1	731	-	-	-	-	-
Stage 2	337	-	-	-	-	-
Critical Hdwy	6.39	7.16	-	-	5.3	-
Critical Hdwy Stg 1	6.74	-	-	-	-	-
Critical Hdwy Stg 2	5.94	-	-	-	-	-
Follow-up Hdwy	3.72	3.93	-	-	3.1	-
Pot Cap-1 Maneuver	240	529	-	-	524	-
Stage 1	351	-	-	-	-	-
Stage 2	657	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	220	529	-	-	524	-
Mov Cap-2 Maneuver	220	-	-	-	-	-
Stage 1	351	-	-	-	-	-
Stage 2	603	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	28.2	0	1
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	310	524	-
HCM Lane V/C Ratio	-	-	0.512	0.056	-
HCM Control Delay (s)	-	-	28.2	12.3	0.4
HCM Lane LOS	-	-	D	B	A
HCM 95th %tile Q(veh)	-	-	2.8	0.2	-



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	64	19	35	680	766
v/c Ratio	0.46	0.16	0.07	0.23	0.29
Control Delay	55.9	20.9	1.9	1.5	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	55.9	20.9	1.9	1.5	5.2
Queue Length 50th (ft)	42	0	2	26	80
Queue Length 95th (ft)	83	22	8	42	125
Internal Link Dist (ft)	434			170	147
Turn Bay Length (ft)		125			
Base Capacity (vph)	363	276	593	2923	2601
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.18	0.07	0.06	0.23	0.29

Intersection Summary
Description: 704005

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	60	18	33	639	476	244
Future Volume (veh/h)	60	18	33	639	476	244
Number	7	14	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1826	1470	1835	1853	1878	1890
Adj Flow Rate, veh/h	64	0	35	680	506	260
Adj No. of Lanes	1	1	1	2	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	28	3	2	1	0
Cap, veh/h	82	59	573	2919	1672	856
Arrive On Green	0.05	0.00	0.06	1.00	0.73	0.73
Sat Flow, veh/h	1739	1249	1748	3614	2380	1170
Grp Volume(v), veh/h	64	0	35	680	395	371
Grp Sat Flow(s),veh/h/ln	1739	1249	1748	1761	1784	1672
Q Serve(g_s), s	3.8	0.0	0.5	0.0	8.0	8.1
Cycle Q Clear(g_c), s	3.8	0.0	0.5	0.0	8.0	8.1
Prop In Lane	1.00	1.00	1.00			0.70
Lane Grp Cap(c), veh/h	82	59	573	2919	1305	1223
V/C Ratio(X)	0.78	0.00	0.06	0.23	0.30	0.30
Avail Cap(c_a), veh/h	364	262	703	2919	1305	1223
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.5	0.0	3.0	0.0	4.9	4.9
Incr Delay (d2), s/veh	5.7	0.0	0.0	0.2	0.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	0.2	0.1	4.1	3.8
LnGrp Delay(d),s/veh	55.2	0.0	3.0	0.2	5.5	5.5
LnGrp LOS	E		A	A	A	A
Approach Vol, veh/h	64			715	766	
Approach Delay, s/veh	55.2			0.3	5.5	
Approach LOS	E			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	10.2	82.8		12.0		93.0		
Change Period (Y+Rc), s	7.0	6.0		7.0		6.0		
Max Green Setting (Gmax), s	11.0	52.0		22.0		70.0		
Max Q Clear Time (g_c+I1), s	2.5	10.1		5.8		2.0		
Green Ext Time (p_c), s	0.0	7.8		0.1		7.5		

Intersection Summary	
HCM 2010 Ctrl Delay	5.2
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	1.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	65	13	604	95	6	655
Future Vol, veh/h	65	13	604	95	6	655
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	1
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	8	2	2	0	1
Mvmt Flow	70	14	649	102	6	704

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1064	376	0	0	751	0
Stage 1	700	-	-	-	-	-
Stage 2	364	-	-	-	-	-
Critical Hdwy	6.8	7.06	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.38	-	-	2.2	-
Pot Cap-1 Maneuver	221	605	-	-	868	-
Stage 1	459	-	-	-	-	-
Stage 2	679	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	219	605	-	-	868	-
Mov Cap-2 Maneuver	219	-	-	-	-	-
Stage 1	459	-	-	-	-	-
Stage 2	672	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	27.2	0	0.1
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	245	868	-
HCM Lane V/C Ratio	-	-	0.342	0.007	-
HCM Control Delay (s)	-	-	27.2	9.2	0
HCM Lane LOS	-	-	D	A	A
HCM 95th %tile Q(veh)	-	-	1.5	0	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	12	35	22	595	626	4
Future Vol, veh/h	12	35	22	595	626	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	60	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	5	2	1	0
Mvmt Flow	13	38	24	647	680	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1377	682	684	0	-	0
Stage 1	682	-	-	-	-	-
Stage 2	695	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.15	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.245	-	-	-
Pot Cap-1 Maneuver	161	453	895	-	-	-
Stage 1	506	-	-	-	-	-
Stage 2	499	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	154	453	895	-	-	-
Mov Cap-2 Maneuver	154	-	-	-	-	-
Stage 1	485	-	-	-	-	-
Stage 2	499	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18	0.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	895	-	154	453	-	-
HCM Lane V/C Ratio	0.027	-	0.085	0.084	-	-
HCM Control Delay (s)	9.1	0	30.5	13.7	-	-
HCM Lane LOS	A	A	D	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	0.3	-	-

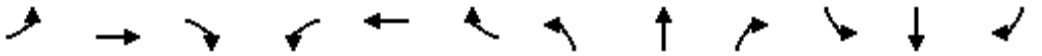


Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	469	126	265	48	170	471	88	423	238
v/c Ratio	0.71	0.16	0.30	0.06	0.67	0.86	0.43	0.82	0.43
Control Delay	37.4	11.0	24.3	0.1	45.2	68.8	37.2	67.9	17.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.4	11.0	24.3	0.1	45.2	68.8	37.2	67.9	17.9
Queue Length 50th (ft)	373	31	161	0	124	489	61	444	62
Queue Length 95th (ft)	549	73	240	0	184	#692	102	583	148
Internal Link Dist (ft)	748		505			1493		1383	
Turn Bay Length (ft)		75		75	180		380		225
Base Capacity (vph)	806	969	906	849	282	655	264	646	662
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.13	0.29	0.06	0.60	0.72	0.33	0.65	0.36

Intersection Summary

Description: 694030

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	147	303	121	20	234	46	163	403	49	84	406	228
Future Volume (vph)	147	303	121	20	234	46	163	403	49	84	406	228
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			-3%			-1%			-1%	
Total Lost time (s)		7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	7.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected		0.98	1.00		1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1821	1567		1903	1576	1796	1870		1778	1872	1607
Flt Permitted		0.73	1.00		0.94	1.00	0.18	1.00		0.16	1.00	1.00
Satd. Flow (perm)		1343	1567		1802	1576	334	1870		293	1872	1607
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	153	316	126	21	244	48	170	420	51	88	423	238
RTOR Reduction (vph)	0	0	35	0	0	24	0	3	0	0	0	119
Lane Group Flow (vph)	0	469	91	0	265	24	170	468	0	88	423	119
Heavy Vehicles (%)	3%	1%	2%	0%	1%	4%	1%	0%	4%	2%	2%	1%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4			8		1	6		5	2	
Permitted Phases	4		4	8		8	6			2		2
Actuated Green, G (s)		74.6	74.6		74.6	74.6	56.9	43.8		52.1	41.4	41.4
Effective Green, g (s)		74.6	74.6		74.6	74.6	56.9	43.8		52.1	41.4	41.4
Actuated g/C Ratio		0.50	0.50		0.50	0.50	0.38	0.29		0.35	0.28	0.28
Clearance Time (s)		7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	2.0	4.0		3.0	4.0	4.0
Lane Grp Cap (vph)		667	778		895	783	254	545		207	516	443
v/s Ratio Prot							c0.06	c0.25		0.03	0.23	
v/s Ratio Perm		c0.35	0.06		0.15	0.02	0.20			0.12		0.07
v/c Ratio		0.70	0.12		0.30	0.03	0.67	0.86		0.43	0.82	0.27
Uniform Delay, d1		29.2	20.2		22.3	19.3	35.3	50.2		36.6	50.9	42.5
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		3.4	0.1		0.2	0.0	5.1	13.2		1.4	10.3	0.4
Delay (s)		32.6	20.2		22.5	19.3	40.4	63.4		38.0	61.2	42.9
Level of Service		C	C		C	B	D	E		D	E	D
Approach Delay (s)		29.9			22.0			57.3			52.7	
Approach LOS		C			C			E			D	

Intersection Summary			
HCM 2000 Control Delay	43.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	150.1	Sum of lost time (s)	28.0
Intersection Capacity Utilization	91.2%	ICU Level of Service	F
Analysis Period (min)	15		
Description: 694030			
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	9.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	79	82	1	10	39	196	1	0	1	46	1	50
Future Vol, veh/h	79	82	1	10	39	196	1	0	1	46	1	50
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	23	1	0	0	0	1	0	0	0	2	0	26
Mvmt Flow	91	94	1	11	45	225	1	0	1	53	1	57
Number of Lanes	1	1	0	0	1	0	0	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	2
HCM Control Delay	9.1	10.1	8.7	8.8
HCM LOS	A	B	A	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	50%	100%	0%	4%	100%	0%
Vol Thru, %	0%	0%	99%	16%	0%	2%
Vol Right, %	50%	0%	1%	80%	0%	98%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	2	79	83	245	46	51
LT Vol	1	79	0	10	46	0
Through Vol	0	0	82	39	0	1
RT Vol	1	0	1	196	0	50
Lane Flow Rate	2	91	95	282	53	59
Geometry Grp	6	7	7	6	7	7
Degree of Util (X)	0.004	0.15	0.134	0.357	0.09	0.08
Departure Headway (Hd)	5.59	5.928	5.04	4.561	6.154	4.924
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	638	606	711	789	582	725
Service Time	3.647	3.661	2.774	2.59	3.9	2.669
HCM Lane V/C Ratio	0.003	0.15	0.134	0.357	0.091	0.081
HCM Control Delay	8.7	9.7	8.6	10.1	9.5	8.1
HCM Lane LOS	A	A	A	B	A	A
HCM 95th-tile Q	0	0.5	0.5	1.6	0.3	0.3

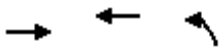
Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	131	162	2	21	59	10	0	0	0	0	0	4
Future Vol, veh/h	131	162	2	21	59	10	0	0	0	0	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	230	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	0	22	0	0	12	0	0	0	0	0	0	0
Mvmt Flow	154	191	2	25	69	12	0	0	0	0	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	81	0	0	193	0	0	628	631	192	625	626	75
Stage 1	-	-	-	-	-	-	500	500	-	125	125	-
Stage 2	-	-	-	-	-	-	128	131	-	500	501	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1529	-	-	1392	-	-	398	401	855	400	403	992
Stage 1	-	-	-	-	-	-	557	546	-	884	796	-
Stage 2	-	-	-	-	-	-	881	792	-	557	546	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1529	-	-	1392	-	-	361	354	855	364	356	992
Mov Cap-2 Maneuver	-	-	-	-	-	-	361	354	-	364	356	-
Stage 1	-	-	-	-	-	-	501	491	-	795	782	-
Stage 2	-	-	-	-	-	-	861	778	-	501	491	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.4	1.8	0	8.6
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	1529	-	-	1392	-	-	-	992
HCM Lane V/C Ratio	-	0.101	-	-	0.018	-	-	-	0.005
HCM Control Delay (s)	0	7.6	-	-	7.6	-	-	0	8.6
HCM Lane LOS	A	A	-	-	A	-	-	A	A
HCM 95th %tile Q(veh)	-	0.3	-	-	0.1	-	-	-	0



Lane Group	EBT	WBT	NBL
Lane Group Flow (vph)	1552	1342	437
v/c Ratio	0.62	0.54	0.74
Control Delay	10.1	4.9	49.3
Queue Delay	0.0	0.0	0.0
Total Delay	10.1	4.9	49.3
Queue Length 50th (ft)	253	146	145
Queue Length 95th (ft)	373	200	188
Internal Link Dist (ft)	735	250	372
Turn Bay Length (ft)			220
Base Capacity (vph)	2497	2498	1028
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.62	0.54	0.43

Intersection Summary
Description: 7075



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1521	0	0	1315	428	0
Future Volume (vph)	1521	0	0	1315	428	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	1%			-1%	-1%	
Total Lost time (s)	6.5			6.5	7.0	
Lane Util. Factor	0.95			0.95	0.97	
Frt	1.00			1.00	1.00	
Flt Protected	1.00			1.00	0.95	
Satd. Flow (prot)	3556			3557	3484	
Flt Permitted	1.00			1.00	0.95	
Satd. Flow (perm)	3556			3557	3484	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	1552	0	0	1342	437	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1552	0	0	1342	437	0
Heavy Vehicles (%)	1%	0%	0%	2%	1%	0%
Turn Type	NA			NA	Prot	
Protected Phases	2			6	4	
Permitted Phases						
Actuated Green, G (s)	73.8			73.8	17.7	
Effective Green, g (s)	73.8			73.8	17.7	
Actuated g/C Ratio	0.70			0.70	0.17	
Clearance Time (s)	6.5			6.5	7.0	
Vehicle Extension (s)	5.0			5.0	2.0	
Lane Grp Cap (vph)	2499			2500	587	
v/s Ratio Prot	c0.44			0.38	c0.13	
v/s Ratio Perm						
v/c Ratio	0.62			0.54	0.74	
Uniform Delay, d1	8.2			7.4	41.5	
Progression Factor	1.00			0.54	1.00	
Incremental Delay, d2	1.2			0.7	4.5	
Delay (s)	9.4			4.7	46.0	
Level of Service	A			A	D	
Approach Delay (s)	9.4			4.7	46.0	
Approach LOS	A			A	D	

Intersection Summary			
HCM 2000 Control Delay	12.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	65.5%	ICU Level of Service	C
Analysis Period (min)	15		

Description: 7075

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	2064	188	0	1243	0	0	0	9	0	0	132
Future Vol, veh/h	0	2064	188	0	1243	0	0	0	9	0	0	132
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Yield	Yield	Yield
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Yield
Storage Length	-	-	-	-	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	-7	-	-	-1	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	0	1	0	0	2	0	0	0	0	0	0	9
Mvmt Flow	0	2106	192	0	1268	0	0	0	9	0	0	135

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	-	0	0	-	-	0	-	-	1149
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	7.1
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.9
Pot Cap-1 Maneuver	0	-	-	0	-	0	0	0	167
Stage 1	0	-	-	0	-	0	0	0	-
Stage 2	0	-	-	0	-	0	0	0	-
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	0	167
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	0	-
Stage 1	-	-	-	-	-	-	-	0	-
Stage 2	-	-	-	-	-	-	-	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	27.8
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	167	-	-	-
HCM Lane V/C Ratio	0.055	-	-	-
HCM Control Delay (s)	27.8	-	-	-
HCM Lane LOS	D	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	44	2029	1217	18	2	26
Future Vol, veh/h	44	2029	1217	18	2	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	140	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	-1	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	1	2	11	0	0
Mvmt Flow	46	2114	1268	19	2	27

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1287	0	-	0	2216	644
Stage 1	-	-	-	-	1278	-
Stage 2	-	-	-	-	938	-
Critical Hdwy	4.1	-	-	-	6.25	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	6	-
Follow-up Hdwy	2.2	-	-	-	3.65	3.3
Pot Cap-1 Maneuver	546	-	-	-	53	420
Stage 1	-	-	-	-	224	-
Stage 2	-	-	-	-	320	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	546	-	-	-	49	420
Mov Cap-2 Maneuver	-	-	-	-	49	-
Stage 1	-	-	-	-	205	-
Stage 2	-	-	-	-	320	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	19.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	546	-	-	-	273
HCM Lane V/C Ratio	0.084	-	-	-	0.107
HCM Control Delay (s)	12.2	-	-	-	19.8
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.3	-	-	-	0.4

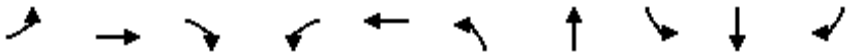
Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	2001	30	0	1235	8	0	0	19	0	0	0
Future Vol, veh/h	0	2001	30	0	1235	8	0	0	19	0	0	0
Conflicting Peds, #/hr	3	0	1	3	0	1	0	0	1	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	Stop
Storage Length	-	-	-	200	-	220	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-7	-	-	-1	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	4	2	3	2	0	0	0	0	0	0	0
Mvmt Flow	0	2106	32	0	1300	8	0	0	20	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	2141	0	0	2775	3425	1073	-	-	650
Stage 1	-	-	-	-	-	-	2125	2125	-	-	-	-
Stage 2	-	-	-	-	-	-	650	1300	-	-	-	-
Critical Hdwy	-	-	-	5.36	-	-	6.95	6.5	7.1	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	7.3	5.5	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	-	-	-
Follow-up Hdwy	-	-	-	3.13	-	-	3.65	4	3.9	-	-	3.3
Pot Cap-1 Maneuver	0	-	-	105	-	0	14	7	188	0	0	417
Stage 1	0	-	-	-	-	0	32	91	-	0	0	-
Stage 2	0	-	-	-	-	0	416	233	-	0	0	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	105	-	-	14	7	187	-	-	417
Mov Cap-2 Maneuver	-	-	-	-	-	-	14	7	-	-	-	-
Stage 1	-	-	-	-	-	-	32	91	-	-	-	-
Stage 2	-	-	-	-	-	-	416	233	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	26.5	0
HCM LOS			D	A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	187	-	-	105	-	-
HCM Lane V/C Ratio	0.107	-	-	-	-	-
HCM Control Delay (s)	26.5	-	-	0	-	0
HCM Lane LOS	D	-	-	A	-	A
HCM 95th %tile Q(veh)	0.4	-	-	0	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	463	1339	324	154	1057	120	298	62	365	214
v/c Ratio	0.87	0.66	0.32	1.18	0.67	0.73	0.44	0.27	1.16	0.58
Control Delay	110.7	42.9	12.0	211.9	46.7	82.7	75.5	53.3	163.8	29.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	110.7	42.9	12.0	211.9	46.7	82.7	75.5	53.3	163.8	29.5
Queue Length 50th (ft)	314	784	111	~255	598	129	193	61	~597	76
Queue Length 95th (ft)	378	983	164	#429	725	191	246	101	#830	132
Internal Link Dist (ft)		475			2080		412		548	
Turn Bay Length (ft)	250			225		115		295		
Base Capacity (vph)	586	2015	1014	130	1587	213	677	310	316	370
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.79	0.66	0.32	1.18	0.67	0.56	0.44	0.20	1.16	0.58

Intersection Summary

Description: 7070

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	440	1272	308	146	926	78	114	231	52	59	347	203
Future Volume (vph)	440	1272	308	146	926	78	114	231	52	59	347	203
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-7%			7%			3%			4%	
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0		7.0	6.5		7.0	6.5	6.5
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95		1.00	0.95		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99		1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.99	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3624	3736	1618	1708	3391		1743	3337		1594	1773	1455
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.09	1.00		0.50	1.00	1.00
Satd. Flow (perm)	3624	3736	1618	1708	3391		172	3337		844	1773	1455
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	463	1339	324	154	975	82	120	243	55	62	365	214
RTOR Reduction (vph)	0	0	21	0	0	0	0	0	0	0	0	111
Lane Group Flow (vph)	463	1339	303	154	1057	0	120	298	0	62	365	103
Confl. Peds. (#/hr)	3		6	6		3	27		14	14		27
Heavy Vehicles (%)	0%	0%	1%	2%	1%	6%	2%	3%	2%	10%	5%	2%
Turn Type	Prot	NA	pm+ov	Prot	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases			2				8			4		4
Actuated Green, G (s)	31.0	113.3	129.0	16.0	98.3		58.3	42.6		48.1	37.5	37.5
Effective Green, g (s)	31.0	113.3	129.0	16.0	98.3		58.3	42.6		48.1	37.5	37.5
Actuated g/C Ratio	0.15	0.54	0.61	0.08	0.47		0.28	0.20		0.23	0.18	0.18
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	6.5		7.0	6.5	6.5
Vehicle Extension (s)	3.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	534	2015	1047	130	1587		165	676		231	316	259
v/s Ratio Prot	c0.13	c0.36	0.02	c0.09	0.31		c0.05	c0.09		0.01	c0.21	
v/s Ratio Perm			0.17				0.15			0.05		0.07
v/c Ratio	0.87	0.66	0.29	1.18	0.67		0.73	0.44		0.27	1.16	0.40
Uniform Delay, d1	87.5	34.7	19.0	97.0	43.2		62.6	73.3		65.0	86.2	76.3
Progression Factor	1.08	1.16	0.84	1.00	1.00		1.00	1.00		0.91	0.91	0.81
Incremental Delay, d2	13.1	1.6	0.1	137.0	2.2		12.7	0.2		0.2	99.0	0.4
Delay (s)	107.9	42.0	16.0	234.0	45.4		75.3	73.4		59.1	177.2	62.0
Level of Service	F	D	B	F	D		E	E		E	F	E
Approach Delay (s)		52.4			69.4			74.0			127.4	
Approach LOS		D			E			E			F	

Intersection Summary			
HCM 2000 Control Delay	70.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	210.0	Sum of lost time (s)	27.5
Intersection Capacity Utilization	96.2%	ICU Level of Service	F
Analysis Period (min)	15		
Description: 7070			

c Critical Lane Group

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	73	67	51	790	607	54
Future Vol, veh/h	73	67	51	790	607	54
Conflicting Peds, #/hr	0	0	3	0	0	3
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	110	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	1	4	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	1	0	2	2	4
Mvmt Flow	77	71	54	832	639	57

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1195	351	699	0	-	0
Stage 1	671	-	-	-	-	-
Stage 2	524	-	-	-	-	-
Critical Hdwy	6.8	6.92	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.31	2.2	-	-	-
Pot Cap-1 Maneuver	182	648	907	-	-	-
Stage 1	475	-	-	-	-	-
Stage 2	564	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	170	646	905	-	-	-
Mov Cap-2 Maneuver	170	-	-	-	-	-
Stage 1	446	-	-	-	-	-
Stage 2	563	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	34.8	0.6	0
HCM LOS	D		

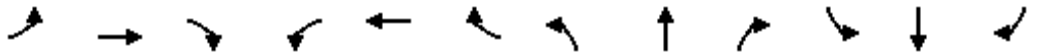
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	905	-	263	-	-
HCM Lane V/C Ratio	0.059	-	0.56	-	-
HCM Control Delay (s)	9.2	-	34.8	-	-
HCM Lane LOS	A	-	D	-	-
HCM 95th %tile Q(veh)	0.2	-	3.1	-	-

Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	212	191	24	84	872	13	16	565
v/c Ratio	0.79	0.42	0.08	0.16	0.40	0.01	0.04	0.29
Control Delay	59.3	10.3	20.1	5.7	14.2	0.0	4.0	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.3	10.3	20.1	5.7	14.2	0.0	4.0	8.0
Queue Length 50th (ft)	135	14	6	29	353	0	1	105
Queue Length 95th (ft)	204	66	26	m39	422	m0	4	166
Internal Link Dist (ft)	336		307		400			190
Turn Bay Length (ft)		75		205		290	125	
Base Capacity (vph)	343	527	374	613	2193	947	467	1943
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.36	0.06	0.14	0.40	0.01	0.03	0.29

Intersection Summary

Description: 704010

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	188	1	170	8	2	12	75	776	12	14	483	20
Future Volume (vph)	188	1	170	8	2	12	75	776	12	14	483	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			2%			1%			1%	
Total Lost time (s)		7.0	7.0		7.0		7.0	6.0	6.0	7.0	6.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	0.98		0.99		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes		0.99	1.00		1.00		1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85		0.93		1.00	1.00	0.85	1.00	0.99	
Flt Protected		0.95	1.00		0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1792	1571		1612		1725	3522	1453	1795	3467	
Flt Permitted		0.71	1.00		0.86		0.39	1.00	1.00	0.30	1.00	
Satd. Flow (perm)		1335	1571		1419		704	3522	1453	559	3467	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	211	1	191	9	2	13	84	872	13	16	543	22
RTOR Reduction (vph)	0	0	132	0	10	0	0	0	5	0	2	0
Lane Group Flow (vph)	0	212	59	0	14	0	84	872	8	16	563	0
Confl. Peds. (#/hr)	4		9	9		4	3		4	4		3
Heavy Vehicles (%)	1%	0%	1%	13%	0%	0%	4%	2%	8%	0%	3%	0%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		
Actuated Green, G (s)		21.2	21.2		21.2		67.6	61.2	61.2	60.0	57.4	
Effective Green, g (s)		21.2	21.2		21.2		67.6	61.2	61.2	60.0	57.4	
Actuated g/C Ratio		0.20	0.20		0.20		0.64	0.58	0.58	0.57	0.55	
Clearance Time (s)		7.0	7.0		7.0		7.0	6.0	6.0	7.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	4.0	4.0	3.0	4.0	
Lane Grp Cap (vph)		269	317		286		515	2052	846	350	1895	
v/s Ratio Prot							c0.01	c0.25		0.00	0.16	
v/s Ratio Perm		c0.16	0.04		0.01		0.09		0.01	0.02		
v/c Ratio		0.79	0.18		0.05		0.16	0.42	0.01	0.05	0.30	
Uniform Delay, d1		39.8	34.7		33.8		7.3	12.1	9.2	9.9	12.9	
Progression Factor		1.00	1.00		1.00		0.72	1.19	1.00	0.48	0.55	
Incremental Delay, d2		14.1	0.3		0.1		0.1	0.6	0.0	0.1	0.4	
Delay (s)		53.9	35.0		33.8		5.4	15.0	9.2	4.8	7.4	
Level of Service		D	D		C		A	B	A	A	A	
Approach Delay (s)		45.0			33.8			14.1			7.4	
Approach LOS		D			C			B			A	

Intersection Summary			
HCM 2000 Control Delay	18.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		
Description: 704010			

c Critical Lane Group

Intersection	
Int Delay, s/veh	4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	62	882	72	104	479
Future Vol, veh/h	20	62	882	72	104	479
Conflicting Peds, #/hr	3	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	1	-	-	1
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	5	0	1	1	0	2
Mvmt Flow	22	69	980	80	116	532

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1522	531	0	0	1061	0
Stage 1	1021	-	-	-	-	-
Stage 2	501	-	-	-	-	-
Critical Hdwy	6.35	7.1	-	-	5.3	-
Critical Hdwy Stg 1	6.7	-	-	-	-	-
Critical Hdwy Stg 2	5.9	-	-	-	-	-
Follow-up Hdwy	3.7	3.9	-	-	3.1	-
Pot Cap-1 Maneuver	131	426	-	-	371	-
Stage 1	235	-	-	-	-	-
Stage 2	548	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	73	426	-	-	371	-
Mov Cap-2 Maneuver	73	-	-	-	-	-
Stage 1	235	-	-	-	-	-
Stage 2	304	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	38.7	0	5.8
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	195	371	-
HCM Lane V/C Ratio	-	-	0.467	0.311	-
HCM Control Delay (s)	-	-	38.7	19	2.9
HCM Lane LOS	-	-	E	C	A
HCM 95th %tile Q(veh)	-	-	2.2	1.3	-



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	193	52	18	1031	647
v/c Ratio	0.69	0.19	0.04	0.40	0.28
Control Delay	53.9	11.4	8.2	9.2	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	53.9	11.4	8.2	9.2	8.9
Queue Length 50th (ft)	125	0	3	156	65
Queue Length 95th (ft)	189	32	m20	352	156
Internal Link Dist (ft)	434			170	147
Turn Bay Length (ft)		125			
Base Capacity (vph)	454	408	543	2551	2298
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.43	0.13	0.03	0.40	0.28

Intersection Summary

Description: 704005

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

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	174	47	16	928	536	46
Future Volume (veh/h)	174	47	16	928	536	46
Number	7	14	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1862	1695	1783	1872	1823	1890
Adj Flow Rate, veh/h	193	0	18	1031	596	51
Adj No. of Lanes	1	1	1	2	2	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	1	11	6	1	4	0
Cap, veh/h	227	184	539	2662	2140	183
Arrive On Green	0.13	0.00	0.03	1.00	0.66	0.66
Sat Flow, veh/h	1774	1440	1699	3650	3322	276
Grp Volume(v), veh/h	193	0	18	1031	319	328
Grp Sat Flow(s),veh/h/ln	1774	1440	1699	1778	1732	1775
Q Serve(g_s), s	11.2	0.0	0.3	0.2	8.0	8.0
Cycle Q Clear(g_c), s	11.2	0.0	0.3	0.2	8.0	8.0
Prop In Lane	1.00	1.00	1.00			0.16
Lane Grp Cap(c), veh/h	227	184	539	2662	1147	1175
V/C Ratio(X)	0.85	0.00	0.03	0.39	0.28	0.28
Avail Cap(c_a), veh/h	456	370	668	2662	1147	1175
HCM Platoon Ratio	1.00	1.00	1.33	1.33	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.8	0.0	5.2	0.1	7.3	7.3
Incr Delay (d2), s/veh	3.5	0.0	0.0	0.4	0.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	0.0	0.2	0.2	4.0	4.1
LnGrp Delay(d),s/veh	48.3	0.0	5.2	0.5	7.9	7.9
LnGrp LOS	D		A	A	A	A
Approach Vol, veh/h	193			1049	647	
Approach Delay, s/veh	48.3			0.6	7.9	
Approach LOS	D			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	9.0	75.5		20.4		84.6		
Change Period (Y+Rc), s	7.0	6.0		7.0		6.0		
Max Green Setting (Gmax), s	10.0	48.0		27.0		65.0		
Max Q Clear Time (g_c+I1), s	2.3	10.0		13.2		2.2		
Green Ext Time (p_c), s	0.0	6.0		0.3		13.5		

Intersection Summary	
HCM 2010 Ctrl Delay	8.0
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	14	12	750	352	16	568
Future Vol, veh/h	14	12	750	352	16	568
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	1
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	1	0	0	3
Mvmt Flow	15	13	798	374	17	604

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1321	586	0	0	1172	0
Stage 1	985	-	-	-	-	-
Stage 2	336	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	151	459	-	-	603	-
Stage 1	327	-	-	-	-	-
Stage 2	702	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	145	459	-	-	603	-
Mov Cap-2 Maneuver	145	-	-	-	-	-
Stage 1	327	-	-	-	-	-
Stage 2	673	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	24.5	0	0.5
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	212	603	-
HCM Lane V/C Ratio	-	-	0.13	0.028	-
HCM Control Delay (s)	-	-	24.5	11.1	0.2
HCM Lane LOS	-	-	C	B	A
HCM 95th %tile Q(veh)	-	-	0.4	0.1	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	33	51	711	551	15
Future Vol, veh/h	6	33	51	711	551	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	60	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	0	0	0	2	3	0
Mvmt Flow	6	33	52	718	557	15

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1387	565	572	0	-	0
Stage 1	565	-	-	-	-	-
Stage 2	822	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	159	528	1011	-	-	-
Stage 1	573	-	-	-	-	-
Stage 2	435	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	145	528	1011	-	-	-
Mov Cap-2 Maneuver	145	-	-	-	-	-
Stage 1	524	-	-	-	-	-
Stage 2	435	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.2	0.6	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1011	-	145	528	-	-
HCM Lane V/C Ratio	0.051	-	0.042	0.063	-	-
HCM Control Delay (s)	8.8	0	30.9	12.3	-	-
HCM Lane LOS	A	A	D	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.1	0.2	-	-

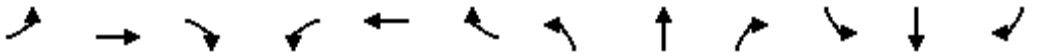


Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	579	151	259	30	115	366	55	510	230
v/c Ratio	0.89	0.19	0.34	0.04	0.55	0.56	0.17	0.87	0.40
Control Delay	57.1	15.7	29.7	0.1	37.2	45.5	27.2	67.4	17.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.1	15.7	29.7	0.1	37.2	45.5	27.2	67.4	17.0
Queue Length 50th (ft)	544	48	166	0	73	315	34	503	65
Queue Length 95th (ft)	#976	117	296	0	115	426	61	666	143
Internal Link Dist (ft)	748		505			1493		1383	
Turn Bay Length (ft)		75		75	180		380		227
Base Capacity (vph)	647	799	756	824	245	828	399	831	760
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.19	0.34	0.04	0.47	0.44	0.14	0.61	0.30

Intersection Summary

Description: 694030

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	176	380	145	23	226	29	110	322	30	53	490	221
Future Volume (vph)	176	380	145	23	226	29	110	322	30	53	490	221
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			-3%			-1%			-1%	
Total Lost time (s)		7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	7.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected		0.98	1.00		1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1821	1583		1895	1591	1778	1868		1814	1891	1546
Flt Permitted		0.72	1.00		0.82	1.00	0.13	1.00		0.38	1.00	1.00
Satd. Flow (perm)		1339	1583		1564	1591	236	1868		733	1891	1546
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	183	396	151	24	235	30	115	335	31	55	510	230
RTOR Reduction (vph)	0	0	34	0	0	16	0	2	0	0	0	99
Lane Group Flow (vph)	0	579	117	0	259	14	115	364	0	55	510	131
Heavy Vehicles (%)	1%	2%	1%	4%	1%	3%	2%	1%	0%	0%	1%	5%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4			8		1	6		5	2	
Permitted Phases	4		4	8		8	6			2		2
Actuated Green, G (s)		77.6	77.6		77.6	77.6	68.0	56.3		58.4	51.5	51.5
Effective Green, g (s)		77.6	77.6		77.6	77.6	68.0	56.3		58.4	51.5	51.5
Actuated g/C Ratio		0.48	0.48		0.48	0.48	0.42	0.35		0.36	0.32	0.32
Clearance Time (s)		7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	4.0		3.0	4.0	4.0
Lane Grp Cap (vph)		642	759		750	763	210	649		310	601	492
v/s Ratio Prot							c0.04	c0.19		0.01	c0.27	
v/s Ratio Perm		c0.43	0.07		0.17	0.01	0.19			0.06		0.08
v/c Ratio		0.90	0.15		0.35	0.02	0.55	0.56		0.18	0.85	0.27
Uniform Delay, d1		38.6	23.7		26.3	22.1	35.2	42.7		34.8	51.5	41.1
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		15.9	0.1		0.3	0.0	2.9	1.4		0.3	11.2	0.4
Delay (s)		54.5	23.7		26.5	22.1	38.1	44.1		35.1	62.7	41.5
Level of Service		D	C		C	C	D	D		D	E	D
Approach Delay (s)		48.2			26.1			42.6			54.6	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	46.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	161.8	Sum of lost time (s)	28.0
Intersection Capacity Utilization	98.1%	ICU Level of Service	F
Analysis Period (min)	15		
Description: 694030			
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	10
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	73	205	1	6	30	61	0	0	2	152	0	62
Future Vol, veh/h	73	205	1	6	30	61	0	0	2	152	0	62
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles, %	17	0	0	0	0	6	0	0	0	0	0	21
Mvmt Flow	78	218	1	6	32	65	0	0	2	162	0	66
Number of Lanes	1	1	0	0	1	0	0	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	2
HCM Control Delay	10.2	9.1	8.3	10.1
HCM LOS	B	A	A	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	0%	100%	0%	6%	100%	0%
Vol Thru, %	0%	0%	100%	31%	0%	0%
Vol Right, %	100%	0%	0%	63%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	2	73	206	97	152	62
LT Vol	0	73	0	6	152	0
Through Vol	0	0	205	30	0	0
RT Vol	2	0	1	61	0	62
Lane Flow Rate	2	78	219	103	162	66
Geometry Grp	6	7	7	6	7	7
Degree of Util (X)	0.003	0.13	0.319	0.147	0.27	0.088
Departure Headway (Hd)	5.236	6.032	5.235	5.131	6.016	4.807
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	677	593	684	694	595	741
Service Time	3.319	3.782	2.984	3.192	3.774	2.565
HCM Lane V/C Ratio	0.003	0.132	0.32	0.148	0.272	0.089
HCM Control Delay	8.3	9.7	10.4	9.1	11	8
HCM Lane LOS	A	A	B	A	B	A
HCM 95th-tile Q	0	0.4	1.4	0.5	1.1	0.3

Intersection	
Int Delay, s/veh	2.9

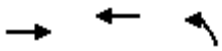
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	256	5	23	67	2	5	0	6	17	0	92
Future Vol, veh/h	6	256	5	23	67	2	5	0	6	17	0	92
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	230	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	5	0	0	20	0	0	0	0	0	0	0
Mvmt Flow	6	267	5	24	70	2	5	0	6	18	0	96

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	72	0	0	272	0	0	449	402	270	404	-	71
Stage 1	-	-	-	-	-	-	282	282	-	119	-	-
Stage 2	-	-	-	-	-	-	167	120	-	285	-	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	-	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	-	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	-	3.3
Pot Cap-1 Maneuver	1541	-	-	1303	-	-	524	540	774	561	0	997
Stage 1	-	-	-	-	-	-	729	681	-	890	0	-
Stage 2	-	-	-	-	-	-	840	800	-	727	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1541	-	-	1303	-	-	466	528	774	547	-	997
Mov Cap-2 Maneuver	-	-	-	-	-	-	466	528	-	547	-	-
Stage 1	-	-	-	-	-	-	726	678	-	886	-	-
Stage 2	-	-	-	-	-	-	745	786	-	718	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	2	11.2	9.4
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	595	1541	-	-	1303	-	-	547	997
HCM Lane V/C Ratio	0.019	0.004	-	-	0.018	-	-	0.032	0.096
HCM Control Delay (s)	11.2	7.3	-	-	7.8	-	-	11.8	9
HCM Lane LOS	B	A	-	-	A	-	-	B	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	0.1	0.3

Appendix F: Intersection Capacity Analysis - Future without Development Condition (2030)



Lane Group	EBT	WBT	NBL
Lane Group Flow (vph)	1590	1480	132
v/c Ratio	0.58	0.54	0.47
Control Delay	5.4	6.0	51.3
Queue Delay	0.0	0.0	0.0
Total Delay	5.4	6.0	51.3
Queue Length 50th (ft)	171	422	44
Queue Length 95th (ft)	247	25	73
Internal Link Dist (ft)	735	250	372
Turn Bay Length (ft)			220
Base Capacity (vph)	2755	2757	821
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.58	0.54	0.16

Intersection Summary
Description: 7075



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1463	0	0	1362	121	0
Future Volume (vph)	1463	0	0	1362	121	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	1%			-1%	-1%	
Total Lost time (s)	6.5			6.5	7.0	
Lane Util. Factor	0.95			0.95	0.97	
Frt	1.00			1.00	1.00	
Flt Protected	1.00			1.00	0.95	
Satd. Flow (prot)	3487			3489	3450	
Flt Permitted	1.00			1.00	0.95	
Satd. Flow (perm)	3487			3489	3450	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1590	0	0	1480	132	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1590	0	0	1480	132	0
Heavy Vehicles (%)	3%	0%	0%	4%	2%	2%
Bus Blockages (#/hr)	0	100	0	0	0	0
Turn Type	NA			NA	Prot	
Protected Phases	2			6	4	
Permitted Phases						
Actuated Green, G (s)	83.0			83.0	8.5	
Effective Green, g (s)	83.0			83.0	8.5	
Actuated g/C Ratio	0.79			0.79	0.08	
Clearance Time (s)	6.5			6.5	7.0	
Vehicle Extension (s)	5.0			5.0	2.0	
Lane Grp Cap (vph)	2756			2757	279	
v/s Ratio Prot	c0.46			0.42	c0.04	
v/s Ratio Perm						
v/c Ratio	0.58			0.54	0.47	
Uniform Delay, d1	4.2			4.0	46.1	
Progression Factor	1.00			1.31	1.00	
Incremental Delay, d2	0.9			0.5	0.5	
Delay (s)	5.1			5.8	46.6	
Level of Service	A			A	D	
Approach Delay (s)	5.1			5.8	46.6	
Approach LOS	A			A	D	

Intersection Summary			
HCM 2000 Control Delay	7.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	55.9%	ICU Level of Service	B
Analysis Period (min)	15		

Description: 7075

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1644	33	0	1529	0	0	0	16	0	0	52
Future Vol, veh/h	0	1644	33	0	1529	0	0	0	16	0	0	52
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Yield	Yield	Yield
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Yield
Storage Length	-	-	-	-	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	-7	-	-	-1	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	4	0	0	5	0	0	0	0	0	0	29
Mvmt Flow	0	1787	36	0	1662	0	0	0	17	0	0	57

Major/Minor	Major1			Major2			Minor1					
Conflicting Flow All	-	0	0	-	-	0	-	-	912			
Stage 1	-	-	-	-	-	-	-	-	-			
Stage 2	-	-	-	-	-	-	-	-	-			
Critical Hdwy	-	-	-	-	-	-	-	-	7.1			
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-			
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-			
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.9			
Pot Cap-1 Maneuver	0	-	-	0	-	0	0	0	240			
Stage 1	0	-	-	0	-	0	0	0	-			
Stage 2	0	-	-	0	-	0	0	0	-			
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	0	240			
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	0	-			
Stage 1	-	-	-	-	-	-	-	0	-			
Stage 2	-	-	-	-	-	-	-	0	-			

Approach	EB	WB	NB
HCM Control Delay, s	0	0	21.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	240	-	-	-
HCM Lane V/C Ratio	0.072	-	-	-
HCM Control Delay (s)	21.2	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	14	1646	1521	18	0	8
Future Vol, veh/h	14	1646	1521	18	0	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	140	-	-	0	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	-1	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	4	5	0	0	12
Mvmt Flow	14	1697	1568	19	0	8

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1587	0	-	0	-	784
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.14	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.22	-	-	-	-	3.42
Pot Cap-1 Maneuver	410	-	-	-	0	315
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	410	-	-	-	-	315
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	16.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	410	-	-	-	315
HCM Lane V/C Ratio	0.035	-	-	-	0.026
HCM Control Delay (s)	14.1	-	-	-	16.7
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1



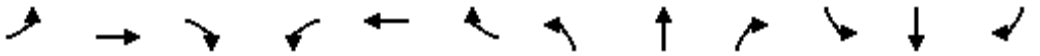
Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	167	1565	14	1560	560	20	5	223	211
v/c Ratio	1.52	0.51	0.13	0.85	0.54	0.20	0.02	0.71	0.43
Control Delay	310.4	25.1	48.4	25.9	7.0	52.4	0.2	52.2	5.7
Queue Delay	0.0	0.1	0.0	7.3	0.4	0.0	0.0	4.2	0.7
Total Delay	310.4	25.2	48.4	33.3	7.4	52.4	0.2	56.4	6.4
Queue Length 50th (ft)	~162	242	13	471	124	13	0	149	0
Queue Length 95th (ft)	#300	457	m14	m#1230	m172	39	0	214	43
Internal Link Dist (ft)		118		138		288			280
Turn Bay Length (ft)			180						
Base Capacity (vph)	110	3094	110	1841	1037	102	287	441	601
Starvation Cap Reductn	0	0	0	253	137	0	0	0	0
Spillback Cap Reductn	0	401	0	0	0	0	0	146	166
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.52	0.58	0.13	0.98	0.62	0.20	0.02	0.76	0.49

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

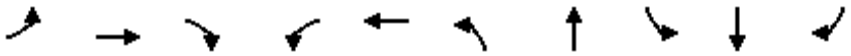
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	159	1466	21	13	1482	532	19	0	5	342	0	70
Future Volume (vph)	159	1466	21	13	1482	532	19	0	5	342	0	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-7%			-1%			0%			0%	
Total Lost time (s)	6.8	5.0		6.8	5.0	5.0		7.2	6.8	7.2	7.2	
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00		1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.95	1.00	0.95	0.97	
Satd. Flow (prot)	1868	5152		1814	3489	1586		1805	1601	1715	1656	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.95	1.00	0.95	0.97	
Satd. Flow (perm)	1868	5152		1814	3489	1586		1805	1601	1715	1656	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	167	1543	22	14	1560	560	20	0	5	360	0	74
RTOR Reduction (vph)	0	1	0	0	0	235	0	0	5	0	172	0
Lane Group Flow (vph)	167	1564	0	14	1560	325	0	20	0	223	39	0
Confl. Peds. (#/hr)	3		1	3		1			1			
Confl. Bikes (#/hr)			3									
Heavy Vehicles (%)	0%	4%	0%	0%	4%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	pm+ov	Split	NA	
Protected Phases	5	2		1	6		8	8	1	4	4	
Permitted Phases						6			8			
Actuated Green, G (s)	10.2	54.7		2.6	47.1	47.1		2.3	4.9	19.2	19.2	
Effective Green, g (s)	10.2	54.7		2.6	47.1	47.1		2.3	4.9	19.2	19.2	
Actuated g/C Ratio	0.10	0.52		0.02	0.45	0.45		0.02	0.05	0.18	0.18	
Clearance Time (s)	6.8	5.0		6.8	5.0	5.0		7.2	6.8	7.2	7.2	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	181	2683		44	1565	711		39	74	313	302	
v/s Ratio Prot	c0.09	0.30		0.01	c0.45			c0.01	0.00	c0.13	0.02	
v/s Ratio Perm						0.20			0.00			
v/c Ratio	0.92	0.58		0.32	1.00	0.46		0.51	0.00	0.71	0.13	
Uniform Delay, d1	47.0	17.3		50.3	28.9	20.1		50.8	47.7	40.3	35.9	
Progression Factor	1.25	1.54		1.00	0.98	1.33		1.00	1.00	1.00	1.00	
Incremental Delay, d2	42.0	0.8		2.1	15.4	1.1		10.9	0.0	7.5	0.2	
Delay (s)	100.8	27.4		52.6	43.6	27.9		61.7	47.7	47.8	36.1	
Level of Service	F	C		D	D	C		E	D	D	D	
Approach Delay (s)		34.5			39.5			58.9			42.1	
Approach LOS		C			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	37.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	26.2
Intersection Capacity Utilization	83.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



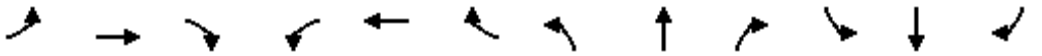
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	136	1637	111	29	1886	75	566	129	106	347
v/c Ratio	1.60	0.73	0.10	0.45	0.92	0.28	1.19	0.84	0.33	0.97
Control Delay	364.3	33.4	6.7	118.1	44.5	63.9	176.6	94.0	69.4	92.6
Queue Delay	0.0	1.0	0.0	0.0	5.4	0.3	0.0	0.0	0.0	38.6
Total Delay	364.3	34.4	6.7	118.1	49.9	64.1	176.6	94.0	69.4	131.2
Queue Length 50th (ft)	~139	1117	19	40	1214	81	~494	137	138	194
Queue Length 95th (ft)	#221	692	73	82	1340	134	#627	#244	215	#592
Internal Link Dist (ft)		259			2080		412		331	
Turn Bay Length (ft)	250			225		115		295		
Base Capacity (vph)	85	2239	1102	103	2041	288	475	163	317	356
Starvation Cap Reductn	0	322	0	0	0	0	0	0	0	41
Spillback Cap Reductn	0	0	0	0	127	37	0	0	0	30
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.60	0.85	0.10	0.28	0.99	0.30	1.19	0.79	0.33	1.10

Intersection Summary

Description: 7070

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	132	1588	108	28	1583	246	73	470	79	125	103	337
Future Volume (vph)	132	1588	108	28	1583	246	73	470	79	125	103	337
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-7%			7%			3%			4%	
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0		7.0	6.5		7.0	6.5	6.5
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95		1.00	0.95		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99		1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.97	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3588	3628	1600	1675	3284		1725	3386		1499	1862	1455
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.69	1.00		0.11	1.00	1.00
Satd. Flow (perm)	3588	3628	1600	1675	3284		1250	3386		176	1862	1455
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	136	1637	111	29	1632	254	75	485	81	129	106	347
RTOR Reduction (vph)	0	0	31	0	0	0	0	0	0	0	0	108
Lane Group Flow (vph)	136	1637	80	29	1886	0	75	566	0	129	106	239
Confl. Peds. (#/hr)	3		6	6		3	27		14	14		27
Heavy Vehicles (%)	1%	3%	2%	4%	3%	8%	0%	2%	3%	18%	0%	2%
Turn Type	Prot	NA	pm+ov	Prot	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases			2				8			4		4
Actuated Green, G (s)	5.0	128.2	139.3	7.3	130.5		40.6	29.5		53.4	35.9	35.9
Effective Green, g (s)	5.0	128.2	139.3	7.3	130.5		40.6	29.5		53.4	35.9	35.9
Actuated g/C Ratio	0.02	0.61	0.66	0.03	0.62		0.19	0.14		0.25	0.17	0.17
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	6.5		7.0	6.5	6.5
Vehicle Extension (s)	3.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	85	2214	1114	58	2040		266	475		155	318	248
v/s Ratio Prot	c0.04	0.45	0.00	0.02	c0.57		0.01	c0.17		c0.07	0.06	
v/s Ratio Perm			0.05				0.04			0.14		c0.16
v/c Ratio	1.60	0.74	0.07	0.50	0.92		0.28	1.19		0.83	0.33	0.96
Uniform Delay, d1	102.5	29.0	12.5	99.6	35.4		71.4	90.2		66.5	76.5	86.4
Progression Factor	0.93	1.07	2.37	1.00	1.00		1.00	1.00		0.86	0.86	1.01
Incremental Delay, d2	313.5	2.0	0.0	2.5	8.6		0.2	105.5		28.3	0.2	46.0
Delay (s)	408.4	33.0	29.7	102.0	44.0		71.6	195.7		85.8	66.3	132.9
Level of Service	F	C	C	F	D		E	F		F	E	F
Approach Delay (s)		59.9			44.9			181.2			110.3	
Approach LOS		E			D			F			F	

Intersection Summary			
HCM 2000 Control Delay	75.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	210.0	Sum of lost time (s)	27.5
Intersection Capacity Utilization	99.4%	ICU Level of Service	F
Analysis Period (min)	15		
Description: 7070			

c Critical Lane Group



Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	178	174	782	698
v/c Ratio	0.68	0.28	0.30	0.39
Control Delay	35.3	5.2	3.7	9.4
Queue Delay	0.0	0.7	0.2	0.0
Total Delay	35.3	5.9	3.9	9.4
Queue Length 50th (ft)	58	19	44	155
Queue Length 95th (ft)	122	53	102	233
Internal Link Dist (ft)	405		137	400
Turn Bay Length (ft)		110		
Base Capacity (vph)	598	629	2612	1812
Starvation Cap Reductn	0	230	950	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.30	0.44	0.47	0.39

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	60	104	160	719	528	114
Future Volume (veh/h)	60	104	160	719	528	114
Number	7	14	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1856	1900	1783	1818	1790	1862
Adj Flow Rate, veh/h	65	113	174	782	574	124
Adj No. of Lanes	0	0	1	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	2	6	4	4	4
Cap, veh/h	78	135	723	2543	928	200
Arrive On Green	0.13	0.13	0.67	1.00	0.11	0.11
Sat Flow, veh/h	597	1037	1699	3545	2873	600
Grp Volume(v), veh/h	179	0	174	782	350	348
Grp Sat Flow(s),veh/h/ln	1643	0	1699	1727	1701	1683
Q Serve(g_s), s	11.2	0.0	0.0	0.0	20.6	20.7
Cycle Q Clear(g_c), s	11.2	0.0	0.0	0.0	20.6	20.7
Prop In Lane	0.36	0.63	1.00			0.36
Lane Grp Cap(c), veh/h	214	0	723	2543	567	561
V/C Ratio(X)	0.84	0.00	0.24	0.31	0.62	0.62
Avail Cap(c_a), veh/h	532	0	723	2543	567	561
HCM Platoon Ratio	1.00	1.00	2.00	2.00	0.33	0.33
Upstream Filter(I)	1.00	0.00	0.95	0.95	0.96	0.96
Uniform Delay (d), s/veh	44.6	0.0	8.8	0.0	40.3	40.4
Incr Delay (d2), s/veh	8.3	0.0	0.2	0.3	4.8	4.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	0.0	1.6	0.1	10.5	10.4
LnGrp Delay(d),s/veh	52.8	0.0	9.0	0.3	45.1	45.3
LnGrp LOS	D		A	A	D	D
Approach Vol, veh/h	179			956	698	
Approach Delay, s/veh	52.8			1.9	45.2	
Approach LOS	D			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	42.3	42.0		20.7		84.3		
Change Period (Y+Rc), s	7.0	7.0		7.0		7.0		
Max Green Setting (Gmax), s	15.0	35.0		34.0		57.0		
Max Q Clear Time (g_c+I1), s	2.0	22.7		13.2		2.0		
Green Ext Time (p_c), s	0.4	2.1		0.6		3.5		

Intersection Summary	
HCM 2010 Ctrl Delay	23.4
HCM 2010 LOS	C

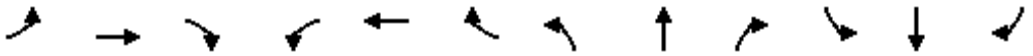


Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	97	87	28	211	632	3	1	626
v/c Ratio	0.55	0.24	0.13	0.37	0.25	0.00	0.00	0.31
Control Delay	53.6	1.6	25.2	5.6	4.2	0.0	6.0	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.6	1.6	25.2	5.6	4.2	0.0	6.0	9.6
Queue Length 50th (ft)	62	0	8	19	28	0	0	67
Queue Length 95th (ft)	108	0	32	64	214	m0	m1	100
Internal Link Dist (ft)	335		307		400			190
Turn Bay Length (ft)		75		205		290	125	
Base Capacity (vph)	261	452	303	762	2479	1158	615	2004
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.19	0.09	0.28	0.25	0.00	0.00	0.31

Intersection Summary

Description: 704010

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	1	80	11	2	13	194	581	3	1	551	25
Future Volume (vph)	88	1	80	11	2	13	194	581	3	1	551	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			2%			1%			1%	
Total Lost time (s)		7.0	7.0		7.0		7.0	6.0	6.0	7.0	6.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	0.98		0.99		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85		0.93		1.00	1.00	0.85	1.00	0.99	
Flt Protected		0.95	1.00		0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1758	1555		1696		1742	3454	1570	1793	3433	
Flt Permitted		0.71	1.00		0.84		0.35	1.00	1.00	0.41	1.00	
Satd. Flow (perm)		1306	1555		1460		640	3454	1570	777	3433	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	96	1	87	12	2	14	211	632	3	1	599	27
RTOR Reduction (vph)	0	0	75	0	12	0	0	0	1	0	2	0
Lane Group Flow (vph)	0	97	12	0	16	0	211	632	2	1	624	0
Confl. Peds. (#/hr)	4		9	9		4	3		4	4		3
Heavy Vehicles (%)	3%	0%	2%	0%	0%	0%	3%	4%	0%	0%	4%	0%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		
Actuated Green, G (s)		14.1	14.1		14.1		77.9	69.8	69.8	62.3	61.2	
Effective Green, g (s)		14.1	14.1		14.1		77.9	69.8	69.8	62.3	61.2	
Actuated g/C Ratio		0.13	0.13		0.13		0.74	0.66	0.66	0.59	0.58	
Clearance Time (s)		7.0	7.0		7.0		7.0	6.0	6.0	7.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	4.0	4.0	3.0	4.0	
Lane Grp Cap (vph)		175	208		196		576	2296	1043	471	2000	
v/s Ratio Prot							c0.03	0.18		0.00	0.18	
v/s Ratio Perm		c0.07	0.01		0.01		c0.24		0.00	0.00		
v/c Ratio		0.55	0.06		0.08		0.37	0.28	0.00	0.00	0.31	
Uniform Delay, d1		42.5	39.6		39.8		4.7	7.2	5.9	8.7	11.2	
Progression Factor		1.00	1.00		1.00		0.81	0.64	1.00	1.00	0.75	
Incremental Delay, d2		3.8	0.1		0.2		0.4	0.3	0.0	0.0	0.4	
Delay (s)		46.3	39.8		40.0		4.2	4.9	5.9	8.7	8.8	
Level of Service		D	D		D		A	A	A	A	A	
Approach Delay (s)		43.2			40.0			4.8			8.8	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	11.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	57.1%	ICU Level of Service	B
Analysis Period (min)	15		
Description: 704010			

c Critical Lane Group

Intersection	
Int Delay, s/veh	6.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	122	67	645	69	25	486
Future Vol, veh/h	122	67	645	69	25	486
Conflicting Peds, #/hr	3	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	1	-	-	1
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	7	3	4	17	0	4
Mvmt Flow	133	73	701	75	27	528

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1061	389	0	0	777	0
Stage 1	740	-	-	-	-	-
Stage 2	321	-	-	-	-	-
Critical Hdwy	6.39	7.16	-	-	5.3	-
Critical Hdwy Stg 1	6.74	-	-	-	-	-
Critical Hdwy Stg 2	5.94	-	-	-	-	-
Follow-up Hdwy	3.72	3.93	-	-	3.1	-
Pot Cap-1 Maneuver	242	519	-	-	507	-
Stage 1	346	-	-	-	-	-
Stage 2	670	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	223	519	-	-	507	-
Mov Cap-2 Maneuver	223	-	-	-	-	-
Stage 1	346	-	-	-	-	-
Stage 2	618	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	46.5	0	1
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	280	507	-
HCM Lane V/C Ratio	-	-	0.734	0.054	-
HCM Control Delay (s)	-	-	46.5	12.5	0.4
HCM Lane LOS	-	-	E	B	A
HCM 95th %tile Q(veh)	-	-	5.3	0.2	-



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	106	19	18	739	784
v/c Ratio	0.59	0.13	0.04	0.27	0.31
Control Delay	57.5	18.6	5.5	5.0	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	57.5	18.6	5.5	5.0	5.7
Queue Length 50th (ft)	69	0	4	78	54
Queue Length 95th (ft)	120	21	15	190	144
Internal Link Dist (ft)	434			170	147
Turn Bay Length (ft)		125			
Base Capacity (vph)	363	276	552	2720	2492
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.29	0.07	0.03	0.27	0.31

Intersection Summary
Description: 704005

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	100	18	17	695	493	244
Future Volume (veh/h)	100	18	17	695	493	244
Number	7	14	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1826	1470	1835	1853	1878	1890
Adj Flow Rate, veh/h	106	0	18	739	524	260
Adj No. of Lanes	1	1	1	2	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	28	3	2	1	0
Cap, veh/h	133	96	529	2816	1652	817
Arrive On Green	0.08	0.00	0.04	1.00	0.71	0.71
Sat Flow, veh/h	1739	1249	1748	3614	2409	1145
Grp Volume(v), veh/h	106	0	18	739	403	381
Grp Sat Flow(s),veh/h/ln	1739	1249	1748	1761	1784	1676
Q Serve(g_s), s	6.3	0.0	0.3	0.0	8.8	8.8
Cycle Q Clear(g_c), s	6.3	0.0	0.3	0.0	8.8	8.8
Prop In Lane	1.00	1.00	1.00			0.68
Lane Grp Cap(c), veh/h	133	96	529	2816	1273	1196
V/C Ratio(X)	0.80	0.00	0.03	0.26	0.32	0.32
Avail Cap(c_a), veh/h	364	262	678	2816	1273	1196
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.7	0.0	3.8	0.0	5.6	5.6
Incr Delay (d2), s/veh	4.1	0.0	0.0	0.2	0.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.0	0.1	0.1	4.5	4.2
LnGrp Delay(d),s/veh	51.7	0.0	3.8	0.2	6.2	6.3
LnGrp LOS	D		A	A	A	A
Approach Vol, veh/h	106			757	784	
Approach Delay, s/veh	51.7			0.3	6.2	
Approach LOS	D			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	9.0	80.9		15.0		90.0		
Change Period (Y+Rc), s	7.0	6.0		7.0		6.0		
Max Green Setting (Gmax), s	11.0	52.0		22.0		70.0		
Max Q Clear Time (g_c+I1), s	2.3	10.8		8.3		2.0		
Green Ext Time (p_c), s	0.0	8.0		0.1		8.3		

Intersection Summary	
HCM 2010 Ctrl Delay	6.4
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	1.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	65	13	700	95	6	672
Future Vol, veh/h	65	13	700	95	6	672
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	1
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	8	2	2	0	1
Mvmt Flow	70	14	753	102	6	723

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1178	428	0	0	855	0
Stage 1	804	-	-	-	-	-
Stage 2	374	-	-	-	-	-
Critical Hdwy	6.8	7.06	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.38	-	-	2.2	-
Pot Cap-1 Maneuver	187	559	-	-	793	-
Stage 1	406	-	-	-	-	-
Stage 2	672	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	185	559	-	-	793	-
Mov Cap-2 Maneuver	185	-	-	-	-	-
Stage 1	406	-	-	-	-	-
Stage 2	663	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	33.5	0	0.2
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	208	793	-
HCM Lane V/C Ratio	-	-	0.403	0.008	-
HCM Control Delay (s)	-	-	33.5	9.6	0.1
HCM Lane LOS	-	-	D	A	A
HCM 95th %tile Q(veh)	-	-	1.8	0	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	12	35	22	691	643	4
Future Vol, veh/h	12	35	22	691	643	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	60	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	5	2	1	0
Mvmt Flow	13	38	24	751	699	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1500	701	703	0	-	0
Stage 1	701	-	-	-	-	-
Stage 2	799	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.15	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.245	-	-	-
Pot Cap-1 Maneuver	136	442	881	-	-	-
Stage 1	496	-	-	-	-	-
Stage 2	446	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	130	442	881	-	-	-
Mov Cap-2 Maneuver	130	-	-	-	-	-
Stage 1	473	-	-	-	-	-
Stage 2	446	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.5	0.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	881	-	130	442	-	-
HCM Lane V/C Ratio	0.027	-	0.1	0.086	-	-
HCM Control Delay (s)	9.2	0	35.8	13.9	-	-
HCM Lane LOS	A	A	E	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	0.3	-	-

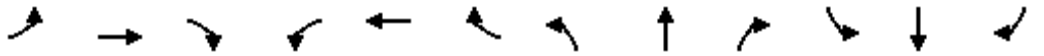


Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	569	126	282	48	170	471	88	423	238
v/c Ratio	0.79	0.15	0.30	0.05	0.75	0.90	0.49	0.86	0.44
Control Delay	42.3	10.6	24.0	0.1	54.9	77.0	41.9	75.7	18.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.3	10.6	24.0	0.1	54.9	77.0	41.9	75.7	18.1
Queue Length 50th (ft)	502	31	173	0	124	489	61	444	62
Queue Length 95th (ft)	731	73	257	0	#191	#692	102	583	148
Internal Link Dist (ft)	748		505			1493		1383	
Turn Bay Length (ft)		75		75	180		380		225
Base Capacity (vph)	738	872	940	881	242	586	225	577	609
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.14	0.30	0.05	0.70	0.80	0.39	0.73	0.39

Intersection Summary

Description: 694030

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	147	399	121	20	251	46	163	403	49	84	406	228
Future Volume (vph)	147	399	121	20	251	46	163	403	49	84	406	228
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			-3%			-1%			-1%	
Total Lost time (s)		7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	7.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected		0.99	1.00		1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1828	1567		1904	1576	1796	1870		1778	1872	1607
Flt Permitted		0.74	1.00		0.94	1.00	0.15	1.00		0.13	1.00	1.00
Satd. Flow (perm)		1379	1567		1789	1576	276	1870		234	1872	1607
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	153	416	126	21	261	48	170	420	51	88	423	238
RTOR Reduction (vph)	0	0	33	0	0	23	0	3	0	0	0	122
Lane Group Flow (vph)	0	569	93	0	282	25	170	468	0	88	423	116
Heavy Vehicles (%)	3%	1%	2%	0%	1%	4%	1%	0%	4%	2%	2%	1%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4			8		1	6		5	2	
Permitted Phases	4		4	8		8	6			2		2
Actuated Green, G (s)		85.7	85.7		85.7	85.7	59.0	45.5		53.6	42.8	42.8
Effective Green, g (s)		85.7	85.7		85.7	85.7	59.0	45.5		53.6	42.8	42.8
Actuated g/C Ratio		0.53	0.53		0.53	0.53	0.36	0.28		0.33	0.26	0.26
Clearance Time (s)		7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	2.0	4.0		3.0	4.0	4.0
Lane Grp Cap (vph)		725	823		940	828	225	521		179	491	421
v/s Ratio Prot							c0.06	c0.25		0.03	0.23	
v/s Ratio Perm		c0.41	0.06		0.16	0.02	0.21			0.13		0.07
v/c Ratio		0.78	0.11		0.30	0.03	0.76	0.90		0.49	0.86	0.28
Uniform Delay, d1		31.2	19.5		21.8	18.6	40.6	56.5		42.1	57.3	47.8
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		5.6	0.1		0.2	0.0	12.0	18.4		2.1	14.8	0.5
Delay (s)		36.8	19.6		21.9	18.6	52.6	75.0		44.2	72.1	48.3
Level of Service		D	B		C	B	D	E		D	E	D
Approach Delay (s)		33.7			21.5			69.0			61.2	
Approach LOS		C			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	49.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	163.0	Sum of lost time (s)	28.0
Intersection Capacity Utilization	97.2%	ICU Level of Service	F
Analysis Period (min)	15		
Description: 694030			
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	9.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	119	122	1	10	39	172	1	0	1	46	1	50
Future Vol, veh/h	119	122	1	10	39	172	1	0	1	46	1	50
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	23	1	0	0	0	1	0	0	0	2	0	26
Mvmt Flow	129	133	1	11	42	187	1	0	1	50	1	54
Number of Lanes	1	1	0	0	1	0	0	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	2
HCM Control Delay	9.5	9.8	8.7	8.9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	50%	100%	0%	5%	100%	0%
Vol Thru, %	0%	0%	99%	18%	0%	2%
Vol Right, %	50%	0%	1%	78%	0%	98%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	2	119	123	221	46	51
LT Vol	1	119	0	10	46	0
Through Vol	0	0	122	39	0	1
RT Vol	1	0	1	172	0	50
Lane Flow Rate	2	129	134	240	50	55
Geometry Grp	6	7	7	6	7	7
Degree of Util (X)	0.003	0.211	0.186	0.31	0.087	0.077
Departure Headway (Hd)	5.664	5.88	4.996	4.642	6.244	5.013
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	629	611	718	774	573	712
Service Time	3.727	3.615	2.731	2.675	3.992	2.76
HCM Lane V/C Ratio	0.003	0.211	0.187	0.31	0.087	0.077
HCM Control Delay	8.7	10.2	8.9	9.8	9.6	8.2
HCM Lane LOS	A	B	A	A	A	A
HCM 95th-tile Q	0	0.8	0.7	1.3	0.3	0.2

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	131	242	2	21	59	10	0	0	0	0	0	4
Future Vol, veh/h	131	242	2	21	59	10	0	0	0	0	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	230	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	22	0	0	12	0	0	0	0	0	0	0
Mvmt Flow	142	263	2	23	64	11	0	0	0	0	0	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	75	0	0	265	0	0	666	669	264	664	-	70
Stage 1	-	-	-	-	-	-	548	548	-	116	-	-
Stage 2	-	-	-	-	-	-	118	121	-	548	-	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	-	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	-	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	-	3.3
Pot Cap-1 Maneuver	1537	-	-	1311	-	-	376	381	780	377	0	998
Stage 1	-	-	-	-	-	-	524	520	-	894	0	-
Stage 2	-	-	-	-	-	-	891	800	-	524	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1537	-	-	1311	-	-	343	340	780	346	-	998
Mov Cap-2 Maneuver	-	-	-	-	-	-	343	340	-	346	-	-
Stage 1	-	-	-	-	-	-	476	472	-	812	-	-
Stage 2	-	-	-	-	-	-	872	786	-	476	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.6	1.8	0	8.6
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	1537	-	-	1311	-	-	-	998
HCM Lane V/C Ratio	-	0.093	-	-	0.017	-	-	-	0.004
HCM Control Delay (s)	0	7.6	-	-	7.8	-	-	0	8.6
HCM Lane LOS	A	A	-	-	A	-	-	A	A
HCM 95th %tile Q(veh)	-	0.3	-	-	0.1	-	-	-	0

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑			↱
Traffic Vol, veh/h	0	1828	1993	0	0	34
Future Vol, veh/h	0	1828	1993	0	0	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	-1	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	4	4	2	2	2
Mvmt Flow	0	1987	2166	0	0	37

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	1083
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	0	0	183
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	-	183
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	29.6
HCM LOS			D

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	183
HCM Lane V/C Ratio	-	-	0.202
HCM Control Delay (s)	-	-	29.6
HCM Lane LOS	-	-	D
HCM 95th %tile Q(veh)	-	-	0.7



Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	98	60	924	687
v/c Ratio	0.52	0.09	0.32	0.30
Control Delay	28.1	2.2	3.4	2.3
Queue Delay	0.0	0.0	0.3	0.1
Total Delay	28.1	2.2	3.7	2.4
Queue Length 50th (ft)	21	7	91	31
Queue Length 95th (ft)	70	m7	m84	45
Internal Link Dist (ft)	153		331	137
Turn Bay Length (ft)		150		
Base Capacity (vph)	553	690	2853	2309
Starvation Cap Reductn	0	0	1211	679
Spillback Cap Reductn	9	0	19	49
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.18	0.09	0.56	0.42

Intersection Summary

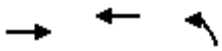
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	29	61	55	850	612	20
Future Volume (veh/h)	29	61	55	850	612	20
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1853	1818	1791	1862
Adj Flow Rate, veh/h	32	66	60	924	665	22
Adj No. of Lanes	0	0	1	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	4	4	2
Cap, veh/h	41	84	885	2729	1281	42
Arrive On Green	0.08	0.08	0.34	0.79	0.76	0.76
Sat Flow, veh/h	531	1095	1765	3545	3452	111
Grp Volume(v), veh/h	99	0	60	924	336	351
Grp Sat Flow(s),veh/h/ln	1643	0	1765	1727	1702	1772
Q Serve(g_s), s	6.2	0.0	0.0	8.1	8.2	8.2
Cycle Q Clear(g_c), s	6.2	0.0	0.0	8.1	8.2	8.2
Prop In Lane	0.32	0.67	1.00			0.06
Lane Grp Cap(c), veh/h	126	0	885	2729	648	675
V/C Ratio(X)	0.79	0.00	0.07	0.34	0.52	0.52
Avail Cap(c_a), veh/h	501	0	885	2729	648	675
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.09	0.09	0.93	0.93
Uniform Delay (d), s/veh	47.6	0.0	8.0	3.2	8.7	8.7
Incr Delay (d2), s/veh	10.3	0.0	0.0	0.0	2.7	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.0	0.7	3.7	4.1	4.3
LnGrp Delay(d),s/veh	57.9	0.0	8.0	3.2	11.5	11.4
LnGrp LOS	E		A	A	B	B
Approach Vol, veh/h	99			984	687	
Approach Delay, s/veh	57.9			3.5	11.4	
Approach LOS	E			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		90.0		15.0	43.0	47.0		
Change Period (Y+Rc), s		7.0		7.0	7.0	7.0		
Max Green Setting (Gmax), s		59.0		32.0	12.0	40.0		
Max Q Clear Time (g_c+I1), s		10.1		8.2	2.0	10.2		
Green Ext Time (p_c), s		4.4		0.3	0.1	2.4		

Intersection Summary	
HCM 2010 Ctrl Delay	9.6
HCM 2010 LOS	A



Lane Group	EBT	WBT	NBL
Lane Group Flow (vph)	1889	1660	437
v/c Ratio	0.76	0.66	0.74
Control Delay	13.1	7.1	49.3
Queue Delay	0.0	0.0	0.0
Total Delay	13.1	7.1	49.3
Queue Length 50th (ft)	371	479	145
Queue Length 95th (ft)	548	117	188
Internal Link Dist (ft)	735	250	372
Turn Bay Length (ft)			220
Base Capacity (vph)	2497	2498	1028
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.76	0.66	0.43

Intersection Summary
Description: 7075



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1851	0	0	1627	428	0
Future Volume (vph)	1851	0	0	1627	428	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	1%			-1%	-1%	
Total Lost time (s)	6.5			6.5	7.0	
Lane Util. Factor	0.95			0.95	0.97	
Frt	1.00			1.00	1.00	
Flt Protected	1.00			1.00	0.95	
Satd. Flow (prot)	3556			3557	3484	
Flt Permitted	1.00			1.00	0.95	
Satd. Flow (perm)	3556			3557	3484	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	1889	0	0	1660	437	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1889	0	0	1660	437	0
Heavy Vehicles (%)	1%	0%	0%	2%	1%	0%
Turn Type	NA			NA	Prot	
Protected Phases	2			6	4	
Permitted Phases						
Actuated Green, G (s)	73.8			73.8	17.7	
Effective Green, g (s)	73.8			73.8	17.7	
Actuated g/C Ratio	0.70			0.70	0.17	
Clearance Time (s)	6.5			6.5	7.0	
Vehicle Extension (s)	5.0			5.0	2.0	
Lane Grp Cap (vph)	2499			2500	587	
v/s Ratio Prot	c0.53			0.47	c0.13	
v/s Ratio Perm						
v/c Ratio	0.76			0.66	0.74	
Uniform Delay, d1	9.9			8.7	41.5	
Progression Factor	1.00			0.66	1.00	
Incremental Delay, d2	2.2			1.0	4.5	
Delay (s)	12.1			6.7	46.0	
Level of Service	B			A	D	
Approach Delay (s)	12.1			6.7	46.0	
Approach LOS	B			A	D	

Intersection Summary			
HCM 2000 Control Delay	13.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	74.6%	ICU Level of Service	D
Analysis Period (min)	15		

Description: 7075

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	2089	188	0	1553	0	0	0	9	0	0	132
Future Vol, veh/h	0	2089	188	0	1553	0	0	0	9	0	0	132
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Yield	Yield	Yield
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Yield
Storage Length	-	-	-	-	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	-7	-	-	-1	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	0	1	0	0	2	0	0	0	0	0	0	9
Mvmt Flow	0	2132	192	0	1585	0	0	0	9	0	0	135

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	-	0	0	-	-	0	-	-	1162
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	7.1
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.9
Pot Cap-1 Maneuver	0	-	-	0	-	0	0	0	164
Stage 1	0	-	-	0	-	0	0	0	-
Stage 2	0	-	-	0	-	0	0	0	-
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	0	164
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	0	-
Stage 1	-	-	-	-	-	-	-	0	-
Stage 2	-	-	-	-	-	-	-	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	28.2
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	164	-	-	-
HCM Lane V/C Ratio	0.056	-	-	-
HCM Control Delay (s)	28.2	-	-	-
HCM Lane LOS	D	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	2095	1550	4	0	3
Future Vol, veh/h	3	2095	1550	4	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	140	-	-	0	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	-1	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	1	2	11	0	0
Mvmt Flow	3	2182	1615	4	0	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1619	0	-	0	-	808
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.1	-	-	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.2	-	-	-	-	3.3
Pot Cap-1 Maneuver	408	-	-	-	0	328
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	408	-	-	-	-	328
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	16.1
HCM LOS			C

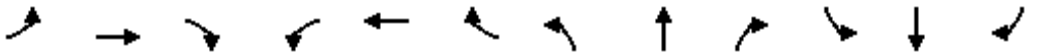
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	408	-	-	-	328
HCM Lane V/C Ratio	0.008	-	-	-	0.01
HCM Control Delay (s)	13.9	-	-	-	16.1
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	211	1995	1463	194	16	34	203	187
v/c Ratio	0.96	0.65	0.87	0.23	0.16	0.12	0.68	0.40
Control Delay	104.2	28.1	28.6	5.8	51.4	0.9	51.3	4.2
Queue Delay	0.0	0.5	0.0	0.0	0.0	0.2	2.9	0.7
Total Delay	104.2	28.6	28.6	5.8	51.4	1.2	54.2	4.9
Queue Length 50th (ft)	138	428	421	19	10	0	136	0
Queue Length 95th (ft)	m#254	#571	#985	m59	34	0	195	27
Internal Link Dist (ft)		118	138		288			273
Turn Bay Length (ft)								
Base Capacity (vph)	219	3046	1691	853	100	272	441	580
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	527	0	0	0	67	146	172
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.79	0.87	0.23	0.16	0.17	0.69	0.46

Intersection Summary

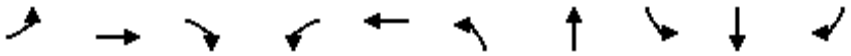
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	200	1858	37	0	1390	184	15	0	32	230	0	141
Future Volume (vph)	200	1858	37	0	1390	184	15	0	32	230	0	141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-7%			-1%			0%			0%	
Total Lost time (s)	6.8	5.0			5.0	5.0		7.2	6.8	7.2	7.2	
Lane Util. Factor	1.00	0.91			0.95	1.00		1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00			1.00	0.98		1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	1.00			1.00	0.85		1.00	0.85	1.00	0.88	
Flt Protected	0.95	1.00			1.00	1.00		0.95	1.00	0.95	0.99	
Satd. Flow (prot)	1832	5146			3557	1586		1805	1603	1715	1574	
Flt Permitted	0.95	1.00			1.00	1.00		0.95	1.00	0.95	0.99	
Satd. Flow (perm)	1832	5146			3557	1586		1805	1603	1715	1574	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	211	1956	39	0	1463	194	16	0	34	242	0	148
RTOR Reduction (vph)	0	1	0	0	0	112	0	0	32	0	154	0
Lane Group Flow (vph)	211	1994	0	0	1463	82	0	16	2	203	33	0
Confl. Peds. (#/hr)	3		1	3		1			1			
Confl. Bikes (#/hr)			3									
Heavy Vehicles (%)	2%	4%	2%	3%	2%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	pm+ov	Split	NA	
Protected Phases	5	2		1	6		8	8	1	4	4	
Permitted Phases						6			8			
Actuated Green, G (s)	15.3	55.1			42.9	42.9		2.3	5.4	18.3	18.3	
Effective Green, g (s)	15.3	55.1			42.9	42.9		2.3	5.4	18.3	18.3	
Actuated g/C Ratio	0.15	0.52			0.41	0.41		0.02	0.05	0.17	0.17	
Clearance Time (s)	6.8	5.0			5.0	5.0		7.2	6.8	7.2	7.2	
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	266	2700			1453	647		39	82	298	274	
v/s Ratio Prot	0.12	c0.39			c0.41			c0.01	0.00	c0.12	0.02	
v/s Ratio Perm						0.05			0.00			
v/c Ratio	0.79	0.74			1.01	0.13		0.41	0.02	0.68	0.12	
Uniform Delay, d1	43.3	19.4			31.1	19.4		50.7	47.3	40.6	36.6	
Progression Factor	1.26	1.52			0.87	1.90		1.00	1.00	1.00	1.00	
Incremental Delay, d2	12.6	1.5			21.2	0.3		6.9	0.1	6.3	0.2	
Delay (s)	67.0	30.9			48.2	37.0		57.6	47.4	46.9	36.7	
Level of Service	E	C			D	D		E	D	D	D	
Approach Delay (s)		34.4			46.9			50.7			42.0	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	40.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	26.2
Intersection Capacity Utilization	82.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



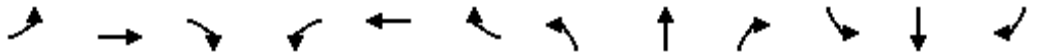
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	164	1683	378	172	1420	140	367	188	428	215
v/c Ratio	1.06	0.99	0.43	1.01	0.83	0.90	0.48	0.66	0.95	0.46
Control Delay	164.7	65.9	22.1	160.6	49.6	100.3	72.1	52.7	93.7	24.6
Queue Delay	0.0	15.0	0.5	0.0	0.0	0.0	0.0	0.0	20.9	1.0
Total Delay	164.7	80.9	22.6	160.6	49.6	100.3	72.1	52.7	114.6	25.6
Queue Length 50th (ft)	~126	~1305	213	~245	899	135	231	167	591	86
Queue Length 95th (ft)	#214	#1435	285	#428	1011	#262	287	221	#777	143
Internal Link Dist (ft)		259			2080		412		331	
Turn Bay Length (ft)	250			225		115		295		
Base Capacity (vph)	155	1693	883	170	1714	156	821	292	485	492
Starvation Cap Reductn	0	80	187	0	0	0	0	0	64	114
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.06	1.04	0.54	1.01	0.83	0.90	0.45	0.64	1.02	0.57

Intersection Summary

Description: 7070

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	156	1599	359	163	1186	163	133	291	58	179	407	204
Future Volume (vph)	156	1599	359	163	1186	163	133	291	58	179	407	204
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-7%			7%			3%			4%	
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0		7.0	6.5		7.0	6.5	6.5
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95		1.00	0.95		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99		1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3624	3736	1617	1708	3359		1743	3348		1602	1773	1455
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.12	1.00		0.35	1.00	1.00
Satd. Flow (perm)	3624	3736	1617	1708	3359		217	3348		588	1773	1455
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	164	1683	378	172	1248	172	140	306	61	188	428	215
RTOR Reduction (vph)	0	0	52	0	0	0	0	0	0	0	0	97
Lane Group Flow (vph)	164	1683	326	172	1420	0	140	367	0	188	428	118
Confl. Peds. (#/hr)	3		6	6		3	27		14	14		27
Heavy Vehicles (%)	0%	0%	1%	2%	1%	6%	2%	3%	2%	10%	5%	2%
Turn Type	Prot	NA	pm+ov	Prot	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases			2				8			4		4
Actuated Green, G (s)	9.0	95.2	108.1	21.0	107.2		60.8	47.9		71.8	53.4	53.4
Effective Green, g (s)	9.0	95.2	108.1	21.0	107.2		60.8	47.9		71.8	53.4	53.4
Actuated g/C Ratio	0.04	0.45	0.51	0.10	0.51		0.29	0.23		0.34	0.25	0.25
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	6.5		7.0	6.5	6.5
Vehicle Extension (s)	3.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	155	1693	886	170	1714		156	763		289	450	369
v/s Ratio Prot	0.05	c0.45	0.02	c0.10	c0.42		c0.05	0.11		0.06	c0.24	
v/s Ratio Perm			0.18				0.20			0.16		0.08
v/c Ratio	1.06	0.99	0.37	1.01	0.83		0.90	0.48		0.65	0.95	0.32
Uniform Delay, d1	100.5	57.1	30.5	94.5	43.6		61.7	70.3		52.6	77.0	63.6
Progression Factor	0.93	0.85	1.06	1.00	1.00		1.00	1.00		0.83	0.84	0.88
Incremental Delay, d2	81.2	18.3	0.1	72.1	4.8		42.3	0.2		3.7	28.7	0.2
Delay (s)	174.8	66.9	32.3	166.6	48.4		104.0	70.4		47.3	93.1	56.4
Level of Service	F	E	C	F	D		F	E		D	F	E
Approach Delay (s)		69.0			61.2			79.7			73.2	
Approach LOS		E			E			E			E	

Intersection Summary				
HCM 2000 Control Delay	68.3	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	0.98			
Actuated Cycle Length (s)	210.0	Sum of lost time (s)	27.5	
Intersection Capacity Utilization	108.5%	ICU Level of Service	G	
Analysis Period (min)	15			
Description: 7070				

c Critical Lane Group



Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	191	54	638	805
v/c Ratio	0.69	0.11	0.24	0.37
Control Delay	39.2	1.8	1.7	4.5
Queue Delay	0.0	0.0	0.2	0.0
Total Delay	39.2	1.8	2.0	4.5
Queue Length 50th (ft)	75	2	14	18
Queue Length 95th (ft)	141	5	22	246
Internal Link Dist (ft)	405		137	400
Turn Bay Length (ft)		110		
Base Capacity (vph)	585	491	2615	2179
Starvation Cap Reductn	0	0	1204	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.33	0.11	0.45	0.37

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	73	108	51	606	696	68
Future Volume (veh/h)	73	108	51	606	696	68
Number	7	14	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1889	1900	1890	1853	1822	1862
Adj Flow Rate, veh/h	77	114	54	638	733	72
Adj No. of Lanes	0	0	1	2	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	1	0	2	2	4
Cap, veh/h	92	136	430	2573	1994	196
Arrive On Green	0.14	0.14	0.08	1.00	0.21	0.21
Sat Flow, veh/h	673	997	1800	3614	3276	313
Grp Volume(v), veh/h	192	0	54	638	398	407
Grp Sat Flow(s),veh/h/ln	1679	0	1800	1761	1731	1767
Q Serve(g_s), s	11.7	0.0	1.0	0.0	20.7	20.8
Cycle Q Clear(g_c), s	11.7	0.0	1.0	0.0	20.7	20.8
Prop In Lane	0.40	0.59	1.00			0.18
Lane Grp Cap(c), veh/h	229	0	430	2573	1084	1106
V/C Ratio(X)	0.84	0.00	0.13	0.25	0.37	0.37
Avail Cap(c_a), veh/h	528	0	482	2573	1084	1106
HCM Platoon Ratio	1.00	1.00	2.00	2.00	0.33	0.33
Upstream Filter(I)	1.00	0.00	0.96	0.96	0.93	0.93
Uniform Delay (d), s/veh	44.2	0.0	7.8	0.0	23.8	23.8
Incr Delay (d2), s/veh	8.0	0.0	0.1	0.2	0.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	0.0	0.5	0.1	10.2	10.4
LnGrp Delay(d),s/veh	52.3	0.0	7.9	0.2	24.7	24.7
LnGrp LOS	D		A	A	C	C
Approach Vol, veh/h	192			692	805	
Approach Delay, s/veh	52.3			0.8	24.7	
Approach LOS	D			A	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	11.0	72.7		21.3		83.7		
Change Period (Y+Rc), s	7.0	7.0		7.0		7.0		
Max Green Setting (Gmax), s	7.0	44.0		33.0		58.0		
Max Q Clear Time (g_c+I1), s	3.0	22.8		13.7		2.0		
Green Ext Time (p_c), s	0.0	2.9		0.6		2.8		

Intersection Summary	
HCM 2010 Ctrl Delay	18.0
HCM 2010 LOS	B



Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	356	185	24	64	661	13	15	659
v/c Ratio	1.04	0.38	0.07	0.15	0.33	0.01	0.03	0.37
Control Delay	98.2	17.0	19.4	6.6	8.0	0.0	3.6	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	98.2	17.0	19.4	6.6	8.0	0.0	3.6	9.5
Queue Length 50th (ft)	~259	43	6	9	48	0	1	143
Queue Length 95th (ft)	#439	105	27	22	100	0	m3	42
Internal Link Dist (ft)	336		307		400			190
Turn Bay Length (ft)		75		205		290	125	
Base Capacity (vph)	343	481	360	524	2000	874	514	1766
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.04	0.38	0.07	0.12	0.33	0.01	0.03	0.37

Intersection Summary

Description: 704010

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	327	1	170	8	2	12	59	608	12	14	586	20
Future Volume (vph)	327	1	170	8	2	12	59	608	12	14	586	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			2%			1%			1%	
Total Lost time (s)		7.0	7.0		7.0		7.0	6.0	6.0	7.0	6.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	0.98		0.99		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes		0.99	1.00		1.00		1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85		0.93		1.00	1.00	0.85	1.00	0.99	
Flt Protected		0.95	1.00		0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1792	1571		1614		1726	3522	1453	1793	3470	
Flt Permitted		0.71	1.00		0.83		0.33	1.00	1.00	0.38	1.00	
Satd. Flow (perm)		1334	1571		1364		597	3522	1453	720	3470	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	355	1	185	9	2	13	64	661	13	15	637	22
RTOR Reduction (vph)	0	0	77	0	10	0	0	0	6	0	2	0
Lane Group Flow (vph)	0	356	108	0	14	0	64	661	7	15	657	0
Confl. Peds. (#/hr)	4		9	9		4	3		4	4		3
Heavy Vehicles (%)	1%	0%	1%	13%	0%	0%	4%	2%	8%	0%	3%	0%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		
Actuated Green, G (s)		27.0	27.0		27.0		61.4	55.4	55.4	54.6	52.0	
Effective Green, g (s)		27.0	27.0		27.0		61.4	55.4	55.4	54.6	52.0	
Actuated g/C Ratio		0.26	0.26		0.26		0.58	0.53	0.53	0.52	0.50	
Clearance Time (s)		7.0	7.0		7.0		7.0	6.0	6.0	7.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	4.0	4.0	3.0	4.0	
Lane Grp Cap (vph)		343	403		350		413	1858	766	400	1718	
v/s Ratio Prot							c0.01	c0.19		0.00	c0.19	
v/s Ratio Perm		c0.27	0.07		0.01		0.08		0.00	0.02		
v/c Ratio		1.04	0.27		0.04		0.15	0.36	0.01	0.04	0.38	
Uniform Delay, d1		39.0	31.1		29.3		9.9	14.4	11.8	12.2	16.5	
Progression Factor		1.00	1.00		1.00		0.69	0.59	1.00	0.40	0.54	
Incremental Delay, d2		58.8	0.4		0.0		0.2	0.5	0.0	0.0	0.6	
Delay (s)		97.8	31.5		29.3		7.1	9.0	11.8	5.0	9.5	
Level of Service		F	C		C		A	A	B	A	A	
Approach Delay (s)		75.1			29.3			8.9			9.4	
Approach LOS		E			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	27.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		
Description: 704010			

c Critical Lane Group

Intersection	
Int Delay, s/veh	6.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	43	62	830	94	104	559
Future Vol, veh/h	43	62	830	94	104	559
Conflicting Peds, #/hr	3	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	1	-	-	1
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	0	1	1	0	2
Mvmt Flow	47	67	902	102	113	608

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1487	503	0	0	1005	0
Stage 1	954	-	-	-	-	-
Stage 2	533	-	-	-	-	-
Critical Hdwy	6.35	7.1	-	-	5.3	-
Critical Hdwy Stg 1	6.7	-	-	-	-	-
Critical Hdwy Stg 2	5.9	-	-	-	-	-
Follow-up Hdwy	3.7	3.9	-	-	3.1	-
Pot Cap-1 Maneuver	138	444	-	-	395	-
Stage 1	259	-	-	-	-	-
Stage 2	528	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	78	444	-	-	395	-
Mov Cap-2 Maneuver	78	-	-	-	-	-
Stage 1	259	-	-	-	-	-
Stage 2	299	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	78.2	0	5.1
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	152	395	-
HCM Lane V/C Ratio	-	-	0.751	0.286	-
HCM Control Delay (s)	-	-	78.2	17.7	2.8
HCM Lane LOS	-	-	F	C	A
HCM 95th %tile Q(veh)	-	-	4.6	1.2	-



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	340	51	5	964	720
v/c Ratio	0.86	0.14	0.01	0.42	0.33
Control Delay	60.4	12.9	9.6	9.8	10.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	60.4	12.9	9.6	9.8	10.7
Queue Length 50th (ft)	217	5	2	157	104
Queue Length 95th (ft)	#335	35	m4	m177	196
Internal Link Dist (ft)	434			170	147
Turn Bay Length (ft)		125			
Base Capacity (vph)	454	401	460	2321	2162
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.75	0.13	0.01	0.42	0.33

Intersection Summary

Description: 704005

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

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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	313	47	5	887	616	46
Future Volume (veh/h)	313	47	5	887	616	46
Number	7	14	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1862	1695	1783	1872	1823	1890
Adj Flow Rate, veh/h	340	0	5	964	670	50
Adj No. of Lanes	1	1	1	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	11	6	1	4	0
Cap, veh/h	372	302	420	2370	1938	145
Arrive On Green	0.21	0.00	0.00	0.45	0.59	0.59
Sat Flow, veh/h	1774	1440	1699	3650	3359	244
Grp Volume(v), veh/h	340	0	5	964	355	365
Grp Sat Flow(s),veh/h/ln	1774	1440	1699	1778	1732	1780
Q Serve(g_s), s	19.7	0.0	0.1	19.3	11.0	11.0
Cycle Q Clear(g_c), s	19.7	0.0	0.1	19.3	11.0	11.0
Prop In Lane	1.00	1.00	1.00			0.14
Lane Grp Cap(c), veh/h	372	302	420	2370	1027	1056
V/C Ratio(X)	0.91	0.00	0.01	0.41	0.35	0.35
Avail Cap(c_a), veh/h	456	370	571	2370	1027	1056
HCM Platoon Ratio	1.00	1.00	0.67	0.67	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.6	0.0	8.5	15.0	10.9	10.9
Incr Delay (d2), s/veh	18.4	0.0	0.0	0.5	0.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.5	0.0	0.1	9.7	5.5	5.6
LnGrp Delay(d),s/veh	59.0	0.0	8.5	15.5	11.8	11.8
LnGrp LOS	E		A	B	B	B
Approach Vol, veh/h	340			969	720	
Approach Delay, s/veh	59.0			15.5	11.8	
Approach LOS	E			B	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	7.7	68.3		29.0		76.0		
Change Period (Y+Rc), s	7.0	6.0		7.0		6.0		
Max Green Setting (Gmax), s	10.0	48.0		27.0		65.0		
Max Q Clear Time (g_c+I1), s	2.1	13.0		21.7		21.3		
Green Ext Time (p_c), s	0.0	6.8		0.4		11.5		

Intersection Summary	
HCM 2010 Ctrl Delay	21.5
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	14	12	848	352	16	648
Future Vol, veh/h	14	12	848	352	16	648
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	1
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	1	0	0	3
Mvmt Flow	15	13	902	374	17	689

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1468	638	0	0	1276	0
Stage 1	1089	-	-	-	-	-
Stage 2	379	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	121	424	-	-	551	-
Stage 1	288	-	-	-	-	-
Stage 2	668	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	115	424	-	-	551	-
Mov Cap-2 Maneuver	115	-	-	-	-	-
Stage 1	288	-	-	-	-	-
Stage 2	635	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	29.7	0	0.6
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	173	551	-
HCM Lane V/C Ratio	-	-	0.16	0.031	-
HCM Control Delay (s)	-	-	29.7	11.7	0.3
HCM Lane LOS	-	-	D	B	A
HCM 95th %tile Q(veh)	-	-	0.6	0.1	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	33	51	809	631	15
Future Vol, veh/h	6	33	51	809	631	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	60	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	0	0	0	2	3	0
Mvmt Flow	6	33	52	817	637	15

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1566	645	652	0	-	0
Stage 1	645	-	-	-	-	-
Stage 2	921	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	124	476	944	-	-	-
Stage 1	526	-	-	-	-	-
Stage 2	391	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	111	476	944	-	-	-
Mov Cap-2 Maneuver	111	-	-	-	-	-
Stage 1	473	-	-	-	-	-
Stage 2	391	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.1	0.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	944	-	111	476	-	-
HCM Lane V/C Ratio	0.055	-	0.055	0.07	-	-
HCM Control Delay (s)	9	0	39.3	13.1	-	-
HCM Lane LOS	A	A	E	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.2	0.2	-	-



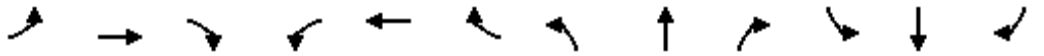
Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	681	151	343	30	115	366	55	510	230
v/c Ratio	1.15	0.19	0.53	0.04	0.55	0.56	0.17	0.87	0.40
Control Delay	123.7	15.7	35.3	0.1	37.2	45.5	27.2	67.4	17.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	123.7	15.7	35.3	0.1	37.2	45.5	27.2	67.4	17.0
Queue Length 50th (ft)	~835	48	246	0	73	315	34	503	65
Queue Length 95th (ft)	#1293	117	435	0	115	426	61	666	143
Internal Link Dist (ft)	748		505			1493		1383	
Turn Bay Length (ft)		75		75	180		380		227
Base Capacity (vph)	592	799	643	824	245	828	399	831	760
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.15	0.19	0.53	0.04	0.47	0.44	0.14	0.61	0.30

Intersection Summary

Description: 694030

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	176	478	145	23	306	29	110	322	30	53	490	221
Future Volume (vph)	176	478	145	23	306	29	110	322	30	53	490	221
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			-3%			-1%			-1%	
Total Lost time (s)		7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	7.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected		0.99	1.00		1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1824	1583		1899	1591	1778	1868		1814	1891	1546
Flt Permitted		0.66	1.00		0.70	1.00	0.13	1.00		0.38	1.00	1.00
Satd. Flow (perm)		1226	1583		1331	1591	236	1868		733	1891	1546
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	183	498	151	24	319	30	115	335	31	55	510	230
RTOR Reduction (vph)	0	0	34	0	0	16	0	2	0	0	0	99
Lane Group Flow (vph)	0	681	117	0	343	14	115	364	0	55	510	131
Heavy Vehicles (%)	1%	2%	1%	4%	1%	3%	2%	1%	0%	0%	1%	5%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4			8		1	6		5	2	
Permitted Phases	4		4	8		8	6			2		2
Actuated Green, G (s)		77.6	77.6		77.6	77.6	68.0	56.3		58.4	51.5	51.5
Effective Green, g (s)		77.6	77.6		77.6	77.6	68.0	56.3		58.4	51.5	51.5
Actuated g/C Ratio		0.48	0.48		0.48	0.48	0.42	0.35		0.36	0.32	0.32
Clearance Time (s)		7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	4.0		3.0	4.0	4.0
Lane Grp Cap (vph)		587	759		638	763	210	649		310	601	492
v/s Ratio Prot							c0.04	c0.19		0.01	c0.27	
v/s Ratio Perm		c0.56	0.07		0.26	0.01	0.19			0.06		0.08
v/c Ratio		1.16	0.15		0.54	0.02	0.55	0.56		0.18	0.85	0.27
Uniform Delay, d1		42.1	23.7		29.5	22.1	35.2	42.7		34.8	51.5	41.1
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		89.9	0.1		0.9	0.0	2.9	1.4		0.3	11.2	0.4
Delay (s)		132.0	23.7		30.4	22.1	38.1	44.1		35.1	62.7	41.5
Level of Service		F	C		C	C	D	D		D	E	D
Approach Delay (s)		112.3			29.7			42.6			54.6	
Approach LOS		F			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	67.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	161.8	Sum of lost time (s)	28.0
Intersection Capacity Utilization	107.5%	ICU Level of Service	G
Analysis Period (min)	15		
Description: 694030			
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	12
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	100	344	1	6	30	45	0	0	2	152	0	62
Future Vol, veh/h	100	344	1	6	30	45	0	0	2	152	0	62
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles, %	17	0	0	0	0	6	0	0	0	0	0	21
Mvmt Flow	106	366	1	6	32	48	0	0	2	162	0	66
Number of Lanes	1	1	0	0	1	0	0	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	2
HCM Control Delay	13.1	9.3	8.8	10.8
HCM LOS	B	A	A	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	0%	100%	0%	7%	100%	0%
Vol Thru, %	0%	0%	100%	37%	0%	0%
Vol Right, %	100%	0%	0%	56%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	2	100	345	81	152	62
LT Vol	0	100	0	6	152	0
Through Vol	0	0	344	30	0	0
RT Vol	2	0	1	45	0	62
Lane Flow Rate	2	106	367	86	162	66
Geometry Grp	6	7	7	6	7	7
Degree of Util (X)	0.003	0.179	0.535	0.129	0.287	0.095
Departure Headway (Hd)	5.743	6.048	5.252	5.403	6.394	5.182
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	627	590	683	657	558	685
Service Time	3.743	3.812	3.016	3.491	4.177	2.965
HCM Lane V/C Ratio	0.003	0.18	0.537	0.131	0.29	0.096
HCM Control Delay	8.8	10.1	14	9.3	11.8	8.5
HCM Lane LOS	A	B	B	A	B	A
HCM 95th-tile Q	0	0.6	3.2	0.4	1.2	0.3

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	422	5	23	67	2	5	0	6	17	0	92
Future Vol, veh/h	6	422	5	23	67	2	5	0	6	17	0	92
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	230	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	5	0	0	20	0	0	0	0	0	0	0
Mvmt Flow	6	440	5	24	70	2	5	0	6	18	0	96

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	72	0	0	445	0	0	622	575	443	577	-	71
Stage 1	-	-	-	-	-	-	455	455	-	119	-	-
Stage 2	-	-	-	-	-	-	167	120	-	458	-	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	-	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	-	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	-	3.3
Pot Cap-1 Maneuver	1541	-	-	1126	-	-	402	431	619	431	0	997
Stage 1	-	-	-	-	-	-	589	572	-	890	0	-
Stage 2	-	-	-	-	-	-	840	800	-	587	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1541	-	-	1126	-	-	357	420	619	419	-	997
Mov Cap-2 Maneuver	-	-	-	-	-	-	357	420	-	419	-	-
Stage 1	-	-	-	-	-	-	587	570	-	886	-	-
Stage 2	-	-	-	-	-	-	743	783	-	579	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	2.1	13	9.8
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	464	1541	-	-	1126	-	-	419	997
HCM Lane V/C Ratio	0.025	0.004	-	-	0.021	-	-	0.042	0.096
HCM Control Delay (s)	13	7.3	-	-	8.3	-	-	14	9
HCM Lane LOS	B	A	-	-	A	-	-	B	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	0.1	0.3

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑			↱
Traffic Vol, veh/h	0	2114	1523	0	0	51
Future Vol, veh/h	0	2114	1523	0	0	51
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	-1	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2114	1523	0	0	51

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	762
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	0	0	298
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	-	298
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	19.6
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	298
HCM Lane V/C Ratio	-	-	0.171
HCM Control Delay (s)	-	-	19.6
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	0.6



Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	160	111	653	874
v/c Ratio	0.65	0.24	0.24	0.41
Control Delay	35.1	6.5	6.0	5.2
Queue Delay	0.4	0.0	0.2	0.2
Total Delay	35.5	6.5	6.2	5.3
Queue Length 50th (ft)	52	40	134	50
Queue Length 95th (ft)	114	m56	m157	75
Internal Link Dist (ft)	222		331	137
Turn Bay Length (ft)		150		
Base Capacity (vph)	549	505	2683	2152
Starvation Cap Reductn	0	0	1117	452
Spillback Cap Reductn	131	0	2	273
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.38	0.22	0.42	0.51

Intersection Summary

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

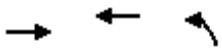


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	56	91	102	601	763	41
Future Volume (veh/h)	56	91	102	601	763	41
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1853	1853	1825	1862
Adj Flow Rate, veh/h	61	99	111	653	829	45
Adj No. of Lanes	0	0	1	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	74	120	551	2636	2123	115
Arrive On Green	0.12	0.12	0.05	0.75	1.00	1.00
Sat Flow, veh/h	626	1016	1765	3614	3437	182
Grp Volume(v), veh/h	161	0	111	653	430	444
Grp Sat Flow(s),veh/h/ln	1652	0	1765	1761	1734	1793
Q Serve(g_s), s	10.0	0.0	2.1	6.0	0.0	0.0
Cycle Q Clear(g_c), s	10.0	0.0	2.1	6.0	0.0	0.0
Prop In Lane	0.38	0.61	1.00			0.10
Lane Grp Cap(c), veh/h	195	0	551	2636	1100	1138
V/C Ratio(X)	0.83	0.00	0.20	0.25	0.39	0.39
Avail Cap(c_a), veh/h	488	0	652	2636	1100	1138
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.70	0.70	0.94	0.94
Uniform Delay (d), s/veh	45.2	0.0	5.0	4.1	0.0	0.0
Incr Delay (d2), s/veh	8.5	0.0	0.1	0.2	1.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	0.0	1.0	3.0	0.3	0.3
LnGrp Delay(d),s/veh	53.8	0.0	5.2	4.2	1.0	0.9
LnGrp LOS	D		A	A	A	A
Approach Vol, veh/h	161			764	874	
Approach Delay, s/veh	53.8			4.4	1.0	
Approach LOS	D			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		85.6		19.4	12.0	73.6		
Change Period (Y+Rc), s		7.0		7.0	7.0	7.0		
Max Green Setting (Gmax), s		60.0		31.0	11.0	42.0		
Max Q Clear Time (g_c+I1), s		8.0		12.0	4.1	2.0		
Green Ext Time (p_c), s		2.8		0.5	0.1	3.3		

Intersection Summary	
HCM 2010 Ctrl Delay	7.1
HCM 2010 LOS	A

Appendix G: Intersection Capacity Analysis – Future Background with Current Comprehensive Plan Development Conditions (2030)



Lane Group	EBT	WBT	NBL
Lane Group Flow (vph)	1597	1571	132
v/c Ratio	0.58	0.57	0.47
Control Delay	5.5	6.0	51.3
Queue Delay	0.0	0.0	0.0
Total Delay	5.5	6.0	51.3
Queue Length 50th (ft)	172	466	44
Queue Length 95th (ft)	248	31	73
Internal Link Dist (ft)	735	250	372
Turn Bay Length (ft)			220
Base Capacity (vph)	2755	2757	821
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.58	0.57	0.16

Intersection Summary
Description: 7075



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1469	0	0	1445	121	0
Future Volume (vph)	1469	0	0	1445	121	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	1%			-1%	-1%	
Total Lost time (s)	6.5			6.5	7.0	
Lane Util. Factor	0.95			0.95	0.97	
Frt	1.00			1.00	1.00	
Flt Protected	1.00			1.00	0.95	
Satd. Flow (prot)	3487			3489	3450	
Flt Permitted	1.00			1.00	0.95	
Satd. Flow (perm)	3487			3489	3450	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1597	0	0	1571	132	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1597	0	0	1571	132	0
Heavy Vehicles (%)	3%	0%	0%	4%	2%	2%
Bus Blockages (#/hr)	0	100	0	0	0	0
Turn Type	NA			NA	Prot	
Protected Phases	2			6	4	
Permitted Phases						
Actuated Green, G (s)	83.0			83.0	8.5	
Effective Green, g (s)	83.0			83.0	8.5	
Actuated g/C Ratio	0.79			0.79	0.08	
Clearance Time (s)	6.5			6.5	7.0	
Vehicle Extension (s)	5.0			5.0	2.0	
Lane Grp Cap (vph)	2756			2757	279	
v/s Ratio Prot	c0.46			0.45	c0.04	
v/s Ratio Perm						
v/c Ratio	0.58			0.57	0.47	
Uniform Delay, d1	4.3			4.2	46.1	
Progression Factor	1.00			1.23	1.00	
Incremental Delay, d2	0.9			0.6	0.5	
Delay (s)	5.1			5.7	46.6	
Level of Service	A			A	D	
Approach Delay (s)	5.1			5.7	46.6	
Approach LOS	A			A	D	

Intersection Summary			
HCM 2000 Control Delay	7.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	56.0%	ICU Level of Service	B
Analysis Period (min)	15		

Description: 7075

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1658	33	0	1545	0	0	0	16	0	0	119
Future Vol, veh/h	0	1658	33	0	1545	0	0	0	16	0	0	119
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Yield	Yield	Yield
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Yield
Storage Length	-	-	-	-	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	-7	-	-	-1	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	4	0	0	5	0	0	0	0	0	0	29
Mvmt Flow	0	1802	36	0	1679	0	0	0	17	0	0	129

Major/Minor	Major1			Major2			Minor1					
Conflicting Flow All	-	0	0	-	-	0	-	-	919			
Stage 1	-	-	-	-	-	-	-	-	-			
Stage 2	-	-	-	-	-	-	-	-	-			
Critical Hdwy	-	-	-	-	-	-	-	-	7.1			
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-			
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-			
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.9			
Pot Cap-1 Maneuver	0	-	-	0	-	0	0	0	238			
Stage 1	0	-	-	0	-	0	0	0	-			
Stage 2	0	-	-	0	-	0	0	0	-			
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	0	238			
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	0	-			
Stage 1	-	-	-	-	-	-	-	0	-			
Stage 2	-	-	-	-	-	-	-	0	-			

Approach	EB	WB	NB
HCM Control Delay, s	0	0	21.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	238	-	-	-
HCM Lane V/C Ratio	0.073	-	-	-
HCM Control Delay (s)	21.3	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	14	1660	1537	18	0	8
Future Vol, veh/h	14	1660	1537	18	0	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	140	-	-	0	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	-1	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	4	5	0	0	12
Mvmt Flow	14	1711	1585	19	0	8

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1604	0	-	0	-	793
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.14	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.22	-	-	-	-	3.42
Pot Cap-1 Maneuver	404	-	-	-	0	311
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	404	-	-	-	-	311
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	16.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	404	-	-	-	311
HCM Lane V/C Ratio	0.036	-	-	-	0.027
HCM Control Delay (s)	14.2	-	-	-	16.9
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1



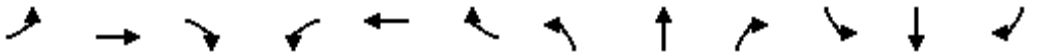
Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	182	1565	14	1560	620	20	5	259	249
v/c Ratio	1.65	0.52	0.14	0.87	0.59	0.21	0.02	0.76	0.48
Control Delay	364.6	25.9	48.2	27.7	7.9	53.2	0.2	53.3	8.4
Queue Delay	0.0	0.1	0.0	10.5	0.4	0.0	0.0	9.2	1.0
Total Delay	364.6	26.0	48.2	38.2	8.3	53.2	0.2	62.5	9.4
Queue Length 50th (ft)	~184	254	12	498	172	13	0	173	7
Queue Length 95th (ft)	#329	457	m14	m#1128	m178	39	0	250	70
Internal Link Dist (ft)		118		138		288			280
Turn Bay Length (ft)			180						
Base Capacity (vph)	110	3027	107	1790	1043	97	281	441	601
Starvation Cap Reductn	0	0	0	230	122	0	0	0	0
Spillback Cap Reductn	0	396	0	0	0	0	0	146	166
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.65	0.59	0.13	1.00	0.67	0.21	0.02	0.88	0.57

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

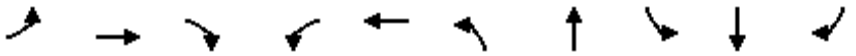
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	173	1466	21	13	1482	589	19	0	5	396	0	86
Future Volume (vph)	173	1466	21	13	1482	589	19	0	5	396	0	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-7%			-1%			0%			0%	
Total Lost time (s)	6.8	5.0		6.8	5.0	5.0		7.2	6.8	7.2	7.2	
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00		1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.95	1.00	0.95	0.97	
Satd. Flow (prot)	1868	5152		1814	3489	1586		1805	1601	1715	1654	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.95	1.00	0.95	0.97	
Satd. Flow (perm)	1868	5152		1814	3489	1586		1805	1601	1715	1654	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	182	1543	22	14	1560	620	20	0	5	417	0	91
RTOR Reduction (vph)	0	1	0	0	0	267	0	0	5	0	190	0
Lane Group Flow (vph)	182	1564	0	14	1560	353	0	20	0	259	59	0
Confl. Peds. (#/hr)	3		1	3		1			1			
Confl. Bikes (#/hr)			3									
Heavy Vehicles (%)	0%	4%	0%	0%	4%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	pm+ov	Split	NA	
Protected Phases	5	2		1	6		8	8	1	4	4	
Permitted Phases						6			8			
Actuated Green, G (s)	10.3	53.3		2.5	45.5	45.5		2.0	4.5	21.0	21.0	
Effective Green, g (s)	10.3	53.3		2.5	45.5	45.5		2.0	4.5	21.0	21.0	
Actuated g/C Ratio	0.10	0.51		0.02	0.43	0.43		0.02	0.04	0.20	0.20	
Clearance Time (s)	6.8	5.0		6.8	5.0	5.0		7.2	6.8	7.2	7.2	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	183	2615		43	1511	687		34	68	343	330	
v/s Ratio Prot	c0.10	0.30		0.01	c0.45			c0.01	0.00	c0.15	0.04	
v/s Ratio Perm						0.22			0.00			
v/c Ratio	0.99	0.60		0.33	1.03	0.51		0.59	0.00	0.76	0.18	
Uniform Delay, d1	47.3	18.3		50.4	29.8	21.7		51.1	48.1	39.6	34.9	
Progression Factor	1.25	1.53		1.00	0.99	1.43		1.00	1.00	1.00	1.00	
Incremental Delay, d2	61.1	0.9		2.0	24.6	1.2		23.4	0.0	9.1	0.3	
Delay (s)	120.2	28.8		52.3	54.2	32.1		74.5	48.1	48.7	35.1	
Level of Service	F	C		D	D	C		E	D	D	D	
Approach Delay (s)		38.4			47.9			69.2			42.0	
Approach LOS		D			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	43.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	26.2
Intersection Capacity Utilization	86.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	136	1692	112	29	1967	78	601	151	118	347
v/c Ratio	1.60	0.76	0.10	0.45	0.98	0.30	1.26	0.93	0.36	0.96
Control Delay	364.1	34.6	6.8	118.1	53.4	63.7	200.6	107.9	69.5	87.9
Queue Delay	0.0	1.4	0.0	0.0	17.3	0.3	0.0	0.0	0.0	33.7
Total Delay	364.1	36.0	6.8	118.1	70.8	64.0	200.6	107.9	69.5	121.5
Queue Length 50th (ft)	~140	1164	22	40	1346	84	~546	169	154	372
Queue Length 95th (ft)	#221	726	71	82	#1558	138	#682	#322	236	#585
Internal Link Dist (ft)		259			2080		412		331	
Turn Bay Length (ft)	250			225		115		295		
Base Capacity (vph)	85	2217	1094	103	2017	286	476	164	328	363
Starvation Cap Reductn	0	314	0	0	0	0	0	0	0	41
Spillback Cap Reductn	0	0	0	0	127	37	0	0	0	30
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.60	0.89	0.10	0.28	1.04	0.31	1.26	0.92	0.36	1.08

Intersection Summary

Description: 7070

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	132	1641	109	28	1637	271	76	504	79	146	114	337
Future Volume (vph)	132	1641	109	28	1637	271	76	504	79	146	114	337
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-7%			7%			3%			4%	
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0		7.0	6.5		7.0	6.5	6.5
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95		1.00	0.95		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99		1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.97	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3588	3628	1600	1675	3279		1726	3392		1499	1862	1455
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.68	1.00		0.11	1.00	1.00
Satd. Flow (perm)	3588	3628	1600	1675	3279		1238	3392		173	1862	1455
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	136	1692	112	29	1688	279	78	520	81	151	118	347
RTOR Reduction (vph)	0	0	31	0	0	0	0	0	0	0	0	107
Lane Group Flow (vph)	136	1692	81	29	1967	0	78	601	0	151	118	240
Confl. Peds. (#/hr)	3		6	6		3	27		14	14		27
Heavy Vehicles (%)	1%	3%	2%	4%	3%	8%	0%	2%	3%	18%	0%	2%
Turn Type	Prot	NA	pm+ov	Prot	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases			2				8			4		4
Actuated Green, G (s)	5.0	126.9	138.2	7.3	129.2		40.8	29.5		55.3	37.0	37.0
Effective Green, g (s)	5.0	126.9	138.2	7.3	129.2		40.8	29.5		55.3	37.0	37.0
Actuated g/C Ratio	0.02	0.60	0.66	0.03	0.62		0.19	0.14		0.26	0.18	0.18
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	6.5		7.0	6.5	6.5
Vehicle Extension (s)	3.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	85	2192	1106	58	2017		266	476		164	328	256
v/s Ratio Prot	c0.04	0.47	0.00	0.02	c0.60		0.02	c0.18		c0.08	0.06	
v/s Ratio Perm			0.05				0.04			0.16		c0.16
v/c Ratio	1.60	0.77	0.07	0.50	0.98		0.29	1.26		0.92	0.36	0.94
Uniform Delay, d1	102.5	30.8	12.9	99.6	38.9		71.4	90.2		66.1	76.1	85.4
Progression Factor	0.94	1.04	2.39	1.00	1.00		1.00	1.00		0.88	0.86	1.01
Incremental Delay, d2	312.9	2.4	0.0	2.5	15.0		0.2	134.2		46.1	0.2	37.9
Delay (s)	409.0	34.5	30.8	102.0	53.8		71.6	224.4		104.1	65.7	124.3
Level of Service	F	C	C	F	D		E	F		F	E	F
Approach Delay (s)		60.5			54.5			206.9			108.1	
Approach LOS		E			D			F			F	

Intersection Summary			
HCM 2000 Control Delay	82.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	210.0	Sum of lost time (s)	27.5
Intersection Capacity Utilization	101.1%	ICU Level of Service	G
Analysis Period (min)	15		
Description: 7070			

c Critical Lane Group



Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	183	187	832	731
v/c Ratio	0.69	0.31	0.32	0.40
Control Delay	35.3	5.9	3.8	9.1
Queue Delay	0.0	0.7	0.2	0.0
Total Delay	35.3	6.7	4.0	9.1
Queue Length 50th (ft)	60	24	56	165
Queue Length 95th (ft)	125	53	102	235
Internal Link Dist (ft)	405		137	400
Turn Bay Length (ft)		110		
Base Capacity (vph)	600	610	2603	1806
Starvation Cap Reductn	0	204	864	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.30	0.46	0.48	0.40

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	61	108	172	765	555	118
Future Volume (veh/h)	61	108	172	765	555	118
Number	7	14	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1856	1900	1783	1818	1790	1862
Adj Flow Rate, veh/h	66	117	187	832	603	128
Adj No. of Lanes	0	0	1	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	2	6	4	4	4
Cap, veh/h	79	140	708	2532	931	197
Arrive On Green	0.13	0.13	0.67	1.00	0.11	0.11
Sat Flow, veh/h	589	1044	1699	3545	2883	592
Grp Volume(v), veh/h	184	0	187	832	367	364
Grp Sat Flow(s),veh/h/ln	1642	0	1699	1727	1701	1684
Q Serve(g_s), s	11.5	0.0	0.0	0.0	21.7	21.8
Cycle Q Clear(g_c), s	11.5	0.0	0.0	0.0	21.7	21.8
Prop In Lane	0.36	0.64	1.00			0.35
Lane Grp Cap(c), veh/h	220	0	708	2532	567	561
V/C Ratio(X)	0.84	0.00	0.26	0.33	0.65	0.65
Avail Cap(c_a), veh/h	532	0	708	2532	567	561
HCM Platoon Ratio	1.00	1.00	2.00	2.00	0.33	0.33
Upstream Filter(I)	1.00	0.00	0.94	0.94	0.95	0.95
Uniform Delay (d), s/veh	44.4	0.0	9.5	0.0	40.8	40.8
Incr Delay (d2), s/veh	8.2	0.0	0.2	0.3	5.4	5.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	0.0	1.8	0.1	11.1	11.0
LnGrp Delay(d),s/veh	52.6	0.0	9.7	0.3	46.2	46.3
LnGrp LOS	D		A	A	D	D
Approach Vol, veh/h	184			1019	731	
Approach Delay, s/veh	52.6			2.1	46.2	
Approach LOS	D			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	42.0	42.0		21.0		84.0		
Change Period (Y+Rc), s	7.0	7.0		7.0		7.0		
Max Green Setting (Gmax), s	15.0	35.0		34.0		57.0		
Max Q Clear Time (g_c+I1), s	2.0	23.8		13.5		2.0		
Green Ext Time (p_c), s	0.5	2.1		0.6		3.8		

Intersection Summary	
HCM 2010 Ctrl Delay	23.6
HCM 2010 LOS	C

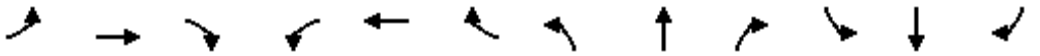


Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	111	114	28	260	635	3	1	653
v/c Ratio	0.61	0.31	0.13	0.47	0.26	0.00	0.00	0.34
Control Delay	55.5	3.2	24.7	8.4	4.4	0.0	6.0	10.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.5	3.2	24.7	8.4	4.4	0.0	6.0	10.3
Queue Length 50th (ft)	71	0	8	24	30	0	0	72
Queue Length 95th (ft)	121	10	32	122	204	m0	m1	105
Internal Link Dist (ft)	335		307		400			190
Turn Bay Length (ft)		75		205		290	125	
Base Capacity (vph)	261	452	302	744	2456	1148	599	1933
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.25	0.09	0.35	0.26	0.00	0.00	0.34

Intersection Summary

Description: 704010

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	1	105	11	2	13	239	584	3	1	557	44
Future Volume (vph)	101	1	105	11	2	13	239	584	3	1	557	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			2%			1%			1%	
Total Lost time (s)		7.0	7.0		7.0		7.0	6.0	6.0	7.0	6.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	0.98		0.99		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes		0.99	1.00		1.00		1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85		0.93		1.00	1.00	0.85	1.00	0.99	
Flt Protected		0.95	1.00		0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1758	1555		1696		1742	3454	1570	1793	3418	
Flt Permitted		0.71	1.00		0.84		0.33	1.00	1.00	0.41	1.00	
Satd. Flow (perm)		1306	1555		1458		609	3454	1570	775	3418	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	110	1	114	12	2	14	260	635	3	1	605	48
RTOR Reduction (vph)	0	0	98	0	12	0	0	0	1	0	3	0
Lane Group Flow (vph)	0	111	16	0	16	0	260	635	2	1	650	0
Confl. Peds. (#/hr)	4		9	9		4	3		4	4		3
Heavy Vehicles (%)	3%	0%	2%	0%	0%	0%	3%	4%	0%	0%	4%	0%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		
Actuated Green, G (s)		14.8	14.8		14.8		77.2	69.1	69.1	60.4	59.3	
Effective Green, g (s)		14.8	14.8		14.8		77.2	69.1	69.1	60.4	59.3	
Actuated g/C Ratio		0.14	0.14		0.14		0.74	0.66	0.66	0.58	0.56	
Clearance Time (s)		7.0	7.0		7.0		7.0	6.0	6.0	7.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	4.0	4.0	3.0	4.0	
Lane Grp Cap (vph)		184	219		205		565	2273	1033	456	1930	
v/s Ratio Prot							c0.05	0.18		0.00	0.19	
v/s Ratio Perm		c0.09	0.01		0.01		c0.29		0.00	0.00		
v/c Ratio		0.60	0.07		0.08		0.46	0.28	0.00	0.00	0.34	
Uniform Delay, d1		42.3	39.1		39.2		5.3	7.5	6.1	9.5	12.3	
Progression Factor		1.00	1.00		1.00		1.13	0.65	1.00	0.98	0.74	
Incremental Delay, d2		5.5	0.1		0.2		0.6	0.3	0.0	0.0	0.5	
Delay (s)		47.8	39.3		39.3		6.6	5.2	6.1	9.3	9.5	
Level of Service		D	D		D		A	A	A	A	A	
Approach Delay (s)		43.5			39.3			5.6			9.5	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	12.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	60.8%	ICU Level of Service	B
Analysis Period (min)	15		
Description: 704010			

c Critical Lane Group

Intersection	
Int Delay, s/veh	7.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	127	69	659	71	27	506
Future Vol, veh/h	127	69	659	71	27	506
Conflicting Peds, #/hr	3	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	1	-	-	1
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	7	3	4	17	0	4
Mvmt Flow	138	75	716	77	29	550

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1092	398	0	0	794	0
Stage 1	756	-	-	-	-	-
Stage 2	336	-	-	-	-	-
Critical Hdwy	6.39	7.16	-	-	5.3	-
Critical Hdwy Stg 1	6.74	-	-	-	-	-
Critical Hdwy Stg 2	5.94	-	-	-	-	-
Follow-up Hdwy	3.72	3.93	-	-	3.1	-
Pot Cap-1 Maneuver	232	512	-	-	498	-
Stage 1	339	-	-	-	-	-
Stage 2	658	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	212	512	-	-	498	-
Mov Cap-2 Maneuver	212	-	-	-	-	-
Stage 1	339	-	-	-	-	-
Stage 2	601	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	56.1	0	1.1
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	267	498	-
HCM Lane V/C Ratio	-	-	0.798	0.059	-
HCM Control Delay (s)	-	-	56.1	12.7	0.5
HCM Lane LOS	-	-	F	B	A
HCM 95th %tile Q(veh)	-	-	6.2	0.2	-



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	122	22	21	752	807
v/c Ratio	0.63	0.14	0.04	0.28	0.33
Control Delay	57.9	17.2	5.8	5.4	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	57.9	17.2	5.8	5.4	6.2
Queue Length 50th (ft)	80	0	4	72	60
Queue Length 95th (ft)	133	22	16	194	157
Internal Link Dist (ft)	434			170	147
Turn Bay Length (ft)		125			
Base Capacity (vph)	363	279	535	2688	2461
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.34	0.08	0.04	0.28	0.33

Intersection Summary
Description: 704005



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	115	21	20	707	511	247
Future Volume (veh/h)	115	21	20	707	511	247
Number	7	14	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1826	1470	1835	1853	1878	1890
Adj Flow Rate, veh/h	122	0	21	752	544	263
Adj No. of Lanes	1	1	1	2	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	28	3	2	1	0
Cap, veh/h	151	108	511	2780	1637	790
Arrive On Green	0.09	0.00	0.04	1.00	0.70	0.70
Sat Flow, veh/h	1739	1249	1748	3614	2430	1127
Grp Volume(v), veh/h	122	0	21	752	415	392
Grp Sat Flow(s),veh/h/ln	1739	1249	1748	1761	1784	1679
Q Serve(g_s), s	7.2	0.0	0.3	0.0	9.5	9.6
Cycle Q Clear(g_c), s	7.2	0.0	0.3	0.0	9.5	9.6
Prop In Lane	1.00	1.00	1.00			0.67
Lane Grp Cap(c), veh/h	151	108	511	2780	1250	1177
V/C Ratio(X)	0.81	0.00	0.04	0.27	0.33	0.33
Avail Cap(c_a), veh/h	364	262	656	2780	1250	1177
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.1	0.0	4.1	0.0	6.1	6.1
Incr Delay (d2), s/veh	3.9	0.0	0.0	0.2	0.7	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	0.0	0.2	0.1	4.9	4.6
LnGrp Delay(d),s/veh	50.9	0.0	4.1	0.2	6.8	6.9
LnGrp LOS	D		A	A	A	A
Approach Vol, veh/h	122			773	807	
Approach Delay, s/veh	50.9			0.3	6.9	
Approach LOS	D			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	9.3	79.6		16.1		88.9		
Change Period (Y+Rc), s	7.0	6.0		7.0		6.0		
Max Green Setting (Gmax), s	11.0	52.0		22.0		70.0		
Max Q Clear Time (g_c+I1), s	2.3	11.6		9.2		2.0		
Green Ext Time (p_c), s	0.0	8.3		0.2		8.5		

Intersection Summary	
HCM 2010 Ctrl Delay	7.1
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	1.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	65	13	727	95	6	693
Future Vol, veh/h	65	13	727	95	6	693
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	1
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	8	2	2	0	1
Mvmt Flow	70	14	782	102	6	745

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1218	442	0	0	884	0
Stage 1	833	-	-	-	-	-
Stage 2	385	-	-	-	-	-
Critical Hdwy	6.8	7.06	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.38	-	-	2.2	-
Pot Cap-1 Maneuver	176	547	-	-	774	-
Stage 1	392	-	-	-	-	-
Stage 2	663	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	174	547	-	-	774	-
Mov Cap-2 Maneuver	174	-	-	-	-	-
Stage 1	392	-	-	-	-	-
Stage 2	654	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	36.4	0	0.2
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	196	774	-
HCM Lane V/C Ratio	-	-	0.428	0.008	-
HCM Control Delay (s)	-	-	36.4	9.7	0.1
HCM Lane LOS	-	-	E	A	A
HCM 95th %tile Q(veh)	-	-	2	0	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	12	35	22	718	664	4
Future Vol, veh/h	12	35	22	718	664	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	60	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	5	2	1	0
Mvmt Flow	13	38	24	780	722	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1552	724	726	0	-	0
Stage 1	724	-	-	-	-	-
Stage 2	828	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.15	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.245	-	-	-
Pot Cap-1 Maneuver	126	429	863	-	-	-
Stage 1	484	-	-	-	-	-
Stage 2	432	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	120	429	863	-	-	-
Mov Cap-2 Maneuver	120	-	-	-	-	-
Stage 1	460	-	-	-	-	-
Stage 2	432	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20.4	0.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	863	-	120	429	-	-
HCM Lane V/C Ratio	0.028	-	0.109	0.089	-	-
HCM Control Delay (s)	9.3	0	38.6	14.2	-	-
HCM Lane LOS	A	A	E	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.4	0.3	-	-

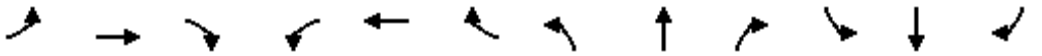


Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	588	135	288	48	178	471	88	423	246
v/c Ratio	0.81	0.16	0.30	0.05	0.80	0.91	0.50	0.87	0.45
Control Delay	44.4	11.2	24.0	0.1	60.9	78.7	42.7	77.7	18.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.4	11.2	24.0	0.1	60.9	78.7	42.7	77.7	18.4
Queue Length 50th (ft)	536	36	178	0	130	489	61	444	65
Queue Length 95th (ft)	#802	80	263	0	#222	#692	102	583	152
Internal Link Dist (ft)	748		505			1493		1383	
Turn Bay Length (ft)		75		75	180		380		225
Base Capacity (vph)	722	862	947	888	236	579	220	570	607
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.16	0.30	0.05	0.75	0.81	0.40	0.74	0.41

Intersection Summary

Description: 694030

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	156	408	130	20	256	46	171	403	49	84	406	236
Future Volume (vph)	156	408	130	20	256	46	171	403	49	84	406	236
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			-3%			-1%			-1%	
Total Lost time (s)		7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	7.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected		0.99	1.00		1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1827	1567		1904	1576	1796	1870		1778	1872	1607
Flt Permitted		0.74	1.00		0.94	1.00	0.14	1.00		0.12	1.00	1.00
Satd. Flow (perm)		1363	1567		1788	1576	261	1870		225	1872	1607
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	162	425	135	21	267	48	178	420	51	88	423	246
RTOR Reduction (vph)	0	0	32	0	0	23	0	3	0	0	0	126
Lane Group Flow (vph)	0	588	103	0	288	25	178	468	0	88	423	120
Heavy Vehicles (%)	3%	1%	2%	0%	1%	4%	1%	0%	4%	2%	2%	1%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4			8		1	6		5	2	
Permitted Phases	4		4	8		8	6			2		2
Actuated Green, G (s)		87.3	87.3		87.3	87.3	59.3	45.6		53.5	42.7	42.7
Effective Green, g (s)		87.3	87.3		87.3	87.3	59.3	45.6		53.5	42.7	42.7
Actuated g/C Ratio		0.53	0.53		0.53	0.53	0.36	0.28		0.32	0.26	0.26
Clearance Time (s)		7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	2.0	4.0		3.0	4.0	4.0
Lane Grp Cap (vph)		722	830		947	835	221	517		174	485	416
v/s Ratio Prot							c0.07	c0.25		0.03	0.23	
v/s Ratio Perm		c0.43	0.07		0.16	0.02	0.22			0.13		0.07
v/c Ratio		0.81	0.12		0.30	0.03	0.81	0.91		0.51	0.87	0.29
Uniform Delay, d1		32.0	19.5		21.7	18.5	41.6	57.5		43.0	58.4	48.8
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		7.0	0.1		0.2	0.0	17.9	19.6		2.3	16.2	0.5
Delay (s)		39.0	19.5		21.9	18.5	59.5	77.1		45.3	74.6	49.4
Level of Service		D	B		C	B	E	E		D	E	D
Approach Delay (s)		35.4			21.4			72.3			63.0	
Approach LOS		D			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	51.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	164.7	Sum of lost time (s)	28.0
Intersection Capacity Utilization	98.9%	ICU Level of Service	F
Analysis Period (min)	15		
Description: 694030			
c Critical Lane Group			

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	147	389	66	101	22	195	16	1	26	0	0	4
Future Vol, veh/h	147	389	66	101	22	195	16	1	26	0	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	230	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	22	0	0	12	0	0	0	0	0	0	0
Mvmt Flow	160	423	72	110	24	212	17	1	28	0	0	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	236	0	0	495	0	0	1131	1235	459	1144	-	130
Stage 1	-	-	-	-	-	-	779	779	-	350	-	-
Stage 2	-	-	-	-	-	-	352	456	-	794	-	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	-	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	-	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	-	3.3
Pot Cap-1 Maneuver	1343	-	-	1079	-	-	182	178	606	179	0	925
Stage 1	-	-	-	-	-	-	392	409	-	671	0	-
Stage 2	-	-	-	-	-	-	669	572	-	384	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1343	-	-	1079	-	-	152	141	606	142	-	925
Mov Cap-2 Maneuver	-	-	-	-	-	-	152	141	-	142	-	-
Stage 1	-	-	-	-	-	-	345	360	-	591	-	-
Stage 2	-	-	-	-	-	-	598	514	-	322	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2	2.8	20.6	8.9
HCM LOS			C	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	277	1343	-	-	1079	-	-	-	925
HCM Lane V/C Ratio	0.169	0.119	-	-	0.102	-	-	-	0.005
HCM Control Delay (s)	20.6	8	-	-	8.7	-	-	0	8.9
HCM Lane LOS	C	A	-	-	A	-	-	A	A
HCM 95th %tile Q(veh)	0.6	0.4	-	-	0.3	-	-	-	0

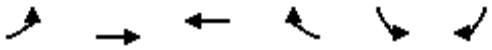
Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑			↱
Traffic Vol, veh/h	0	1882	2050	0	0	34
Future Vol, veh/h	0	1882	2050	0	0	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	-1	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	4	4	2	2	2
Mvmt Flow	0	2046	2228	0	0	37

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	1114
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	0	0	174
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	-	174
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	31.2
HCM LOS			D

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	174
HCM Lane V/C Ratio	-	-	0.212
HCM Control Delay (s)	-	-	31.2
HCM Lane LOS	-	-	D
HCM 95th %tile Q(veh)	-	-	0.8



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1660	1540	44	0	15
Future Volume (Veh/h)	0	1660	1540	44	0	15
Sign Control		Free	Free		Stop	
Grade		-7%	-1%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1804	1674	48	0	16
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		1143	198			
pX, platoon unblocked	0.59				0.59	0.59
vC, conflicting volume	1722				2149	582
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				527	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	98
cM capacity (veh/h)	960				284	642

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	SB 1
Volume Total	451	451	451	451	670	670	383	16
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	48	16
cSH	1700	1700	1700	1700	1700	1700	1700	642
Volume to Capacity	0.27	0.27	0.27	0.27	0.39	0.39	0.23	0.02
Queue Length 95th (ft)	0	0	0	0	0	0	0	2
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.8
Lane LOS								B
Approach Delay (s)	0.0				0.0			10.8
Approach LOS								B

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	40.7%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	98	60	987	721
v/c Ratio	0.52	0.09	0.35	0.31
Control Delay	28.1	2.3	3.8	2.3
Queue Delay	0.0	0.0	0.4	0.1
Total Delay	28.1	2.3	4.2	2.4
Queue Length 50th (ft)	21	7	94	33
Queue Length 95th (ft)	70	m7	m82	47
Internal Link Dist (ft)	153		331	137
Turn Bay Length (ft)		150		
Base Capacity (vph)	553	669	2853	2309
Starvation Cap Reductn	0	0	1197	622
Spillback Cap Reductn	10	0	21	178
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.18	0.09	0.60	0.43

Intersection Summary

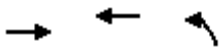
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	29	61	55	908	643	20
Future Volume (veh/h)	29	61	55	908	643	20
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1853	1818	1791	1862
Adj Flow Rate, veh/h	32	66	60	987	699	22
Adj No. of Lanes	0	0	1	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	4	4	2
Cap, veh/h	41	84	874	2729	1283	40
Arrive On Green	0.08	0.08	0.34	0.79	0.76	0.76
Sat Flow, veh/h	531	1095	1765	3545	3458	106
Grp Volume(v), veh/h	99	0	60	987	353	368
Grp Sat Flow(s),veh/h/ln	1643	0	1765	1727	1702	1773
Q Serve(g_s), s	6.2	0.0	0.0	8.8	8.9	8.9
Cycle Q Clear(g_c), s	6.2	0.0	0.0	8.8	8.9	8.9
Prop In Lane	0.32	0.67	1.00			0.06
Lane Grp Cap(c), veh/h	126	0	874	2729	648	675
V/C Ratio(X)	0.79	0.00	0.07	0.36	0.54	0.54
Avail Cap(c_a), veh/h	501	0	874	2729	648	675
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.09	0.09	0.92	0.92
Uniform Delay (d), s/veh	47.6	0.0	8.3	3.2	8.8	8.8
Incr Delay (d2), s/veh	10.3	0.0	0.0	0.0	3.0	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.0	0.7	4.1	4.6	4.7
LnGrp Delay(d),s/veh	57.9	0.0	8.3	3.3	11.8	11.7
LnGrp LOS	E		A	A	B	B
Approach Vol, veh/h	99			1047	721	
Approach Delay, s/veh	57.9			3.6	11.7	
Approach LOS	E			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		90.0		15.0	43.0	47.0		
Change Period (Y+Rc), s		7.0		7.0	7.0	7.0		
Max Green Setting (Gmax), s		59.0		32.0	12.0	40.0		
Max Q Clear Time (g_c+I1), s		10.8		8.2	2.0	10.9		
Green Ext Time (p_c), s		4.8		0.3	0.1	2.6		

Intersection Summary	
HCM 2010 Ctrl Delay	9.6
HCM 2010 LOS	A



Lane Group	EBT	WBT	NBL
Lane Group Flow (vph)	1894	1756	437
v/c Ratio	0.76	0.70	0.74
Control Delay	13.2	7.4	49.3
Queue Delay	0.0	0.0	0.0
Total Delay	13.2	7.4	49.3
Queue Length 50th (ft)	374	560	145
Queue Length 95th (ft)	551	128	188
Internal Link Dist (ft)	735	250	372
Turn Bay Length (ft)			220
Base Capacity (vph)	2497	2498	1028
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.76	0.70	0.43

Intersection Summary
Description: 7075



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1856	0	0	1721	428	0
Future Volume (vph)	1856	0	0	1721	428	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	1%			-1%	-1%	
Total Lost time (s)	6.5			6.5	7.0	
Lane Util. Factor	0.95			0.95	0.97	
Frt	1.00			1.00	1.00	
Flt Protected	1.00			1.00	0.95	
Satd. Flow (prot)	3556			3557	3484	
Flt Permitted	1.00			1.00	0.95	
Satd. Flow (perm)	3556			3557	3484	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	1894	0	0	1756	437	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1894	0	0	1756	437	0
Heavy Vehicles (%)	1%	0%	0%	2%	1%	0%
Turn Type	NA			NA	Prot	
Protected Phases	2			6	4	
Permitted Phases						
Actuated Green, G (s)	73.8			73.8	17.7	
Effective Green, g (s)	73.8			73.8	17.7	
Actuated g/C Ratio	0.70			0.70	0.17	
Clearance Time (s)	6.5			6.5	7.0	
Vehicle Extension (s)	5.0			5.0	2.0	
Lane Grp Cap (vph)	2499			2500	587	
v/s Ratio Prot	c0.53			0.49	c0.13	
v/s Ratio Perm						
v/c Ratio	0.76			0.70	0.74	
Uniform Delay, d1	9.9			9.2	41.5	
Progression Factor	1.00			0.64	1.00	
Incremental Delay, d2	2.2			1.2	4.5	
Delay (s)	12.1			7.0	46.0	
Level of Service	B			A	D	
Approach Delay (s)	12.1			7.0	46.0	
Approach LOS	B			A	D	

Intersection Summary			
HCM 2000 Control Delay	13.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	74.8%	ICU Level of Service	D
Analysis Period (min)	15		

Description: 7075

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	2099	188	0	1568	0	0	0	9	0	0	211
Future Vol, veh/h	0	2099	188	0	1568	0	0	0	9	0	0	211
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Yield	Yield	Yield
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Yield
Storage Length	-	-	-	-	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	-7	-	-	-1	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	0	1	0	0	2	0	0	0	0	0	0	9
Mvmt Flow	0	2142	192	0	1600	0	0	0	9	0	0	215

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	-	0	0	-	-	0	-	-	1167
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	7.1
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.9
Pot Cap-1 Maneuver	0	-	-	0	-	0	0	0	163
Stage 1	0	-	-	0	-	0	0	0	-
Stage 2	0	-	-	0	-	0	0	0	-
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	0	163
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	0	-
Stage 1	-	-	-	-	-	-	-	0	-
Stage 2	-	-	-	-	-	-	-	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	28.4
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	163	-	-	-
HCM Lane V/C Ratio	0.056	-	-	-
HCM Control Delay (s)	28.4	-	-	-
HCM Lane LOS	D	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	2105	1565	4	0	3
Future Vol, veh/h	3	2105	1565	4	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	140	-	-	0	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	-1	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	1	2	11	0	0
Mvmt Flow	3	2193	1630	4	0	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1634	0	-	0	-	815
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.1	-	-	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.2	-	-	-	-	3.3
Pot Cap-1 Maneuver	402	-	-	-	0	325
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	402	-	-	-	-	325
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	16.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	402	-	-	-	325
HCM Lane V/C Ratio	0.008	-	-	-	0.01
HCM Control Delay (s)	14	-	-	-	16.2
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	221	1995	1463	262	16	34	235	216
v/c Ratio	1.01	0.67	0.89	0.31	0.16	0.12	0.73	0.44
Control Delay	114.7	29.3	30.8	8.9	51.4	0.9	52.7	6.2
Queue Delay	0.0	0.6	0.0	0.0	0.0	0.2	5.3	0.9
Total Delay	114.7	29.8	30.8	8.9	51.4	1.2	58.0	7.1
Queue Length 50th (ft)	~145	431	486	63	10	0	157	0
Queue Length 95th (ft)	m#271	#571	#982	m98	34	0	227	47
Internal Link Dist (ft)		118	138		288			273
Turn Bay Length (ft)								
Base Capacity (vph)	219	2975	1642	835	100	272	441	582
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	514	0	0	0	67	146	173
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.01	0.81	0.89	0.31	0.16	0.17	0.80	0.53

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

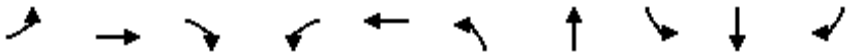
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	210	1858	37	0	1390	249	15	0	32	273	0	156
Future Volume (vph)	210	1858	37	0	1390	249	15	0	32	273	0	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-7%			-1%			0%			0%	
Total Lost time (s)	6.8	5.0			5.0	5.0		7.2	6.8	7.2	7.2	
Lane Util. Factor	1.00	0.91			0.95	1.00		1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00			1.00	0.98		1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	1.00			1.00	0.85		1.00	0.85	1.00	0.89	
Flt Protected	0.95	1.00			1.00	1.00		0.95	1.00	0.95	0.99	
Satd. Flow (prot)	1832	5146			3557	1586		1805	1603	1715	1580	
Flt Permitted	0.95	1.00			1.00	1.00		0.95	1.00	0.95	0.99	
Satd. Flow (perm)	1832	5146			3557	1586		1805	1603	1715	1580	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	221	1956	39	0	1463	262	16	0	34	287	0	164
RTOR Reduction (vph)	0	1	0	0	0	116	0	0	32	0	175	0
Lane Group Flow (vph)	221	1994	0	0	1463	146	0	16	2	235	41	0
Confl. Peds. (#/hr)	3		1	3		1			1			
Confl. Bikes (#/hr)			3									
Heavy Vehicles (%)	2%	4%	2%	3%	2%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	pm+ov	Split	NA	
Protected Phases	5	2		1	6		8	8	1	4	4	
Permitted Phases						6			8			
Actuated Green, G (s)	15.3	53.6			41.4	41.4		2.3	5.4	19.8	19.8	
Effective Green, g (s)	15.3	53.6			41.4	41.4		2.3	5.4	19.8	19.8	
Actuated g/C Ratio	0.15	0.51			0.39	0.39		0.02	0.05	0.19	0.19	
Clearance Time (s)	6.8	5.0			5.0	5.0		7.2	6.8	7.2	7.2	
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	266	2626			1402	625		39	82	323	297	
v/s Ratio Prot	0.12	c0.39			c0.41			c0.01	0.00	c0.14	0.03	
v/s Ratio Perm						0.09			0.00			
v/c Ratio	0.83	0.76			1.04	0.23		0.41	0.02	0.73	0.14	
Uniform Delay, d1	43.6	20.5			31.8	21.2		50.7	47.3	40.1	35.5	
Progression Factor	1.26	1.50			0.90	1.37		1.00	1.00	1.00	1.00	
Incremental Delay, d2	16.4	1.8			31.2	0.5		6.9	0.1	7.9	0.2	
Delay (s)	71.2	32.5			59.8	29.6		57.6	47.4	48.0	35.7	
Level of Service	E	C			E	C		E	D	D	D	
Approach Delay (s)		36.4			55.2			50.7			42.1	
Approach LOS		D			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	44.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	26.2
Intersection Capacity Utilization	84.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	164	1726	380	172	1511	142	388	211	456	215
v/c Ratio	1.06	1.05	0.44	1.01	0.90	0.94	0.48	0.73	0.97	0.45
Control Delay	164.0	81.1	22.9	160.6	57.0	109.6	70.9	57.2	94.6	24.1
Queue Delay	0.0	21.5	0.5	0.0	0.0	0.0	0.0	0.0	27.0	1.0
Total Delay	164.0	102.6	23.4	160.6	57.0	109.6	70.9	57.2	121.6	25.1
Queue Length 50th (ft)	~126	~1384	217	~245	1015	136	244	186	637	87
Queue Length 95th (ft)	#214	#1500	285	#428	1126	#294	304	262	#861	145
Internal Link Dist (ft)		259			2080		412		331	
Turn Bay Length (ft)	250			225		115		295		
Base Capacity (vph)	155	1648	861	170	1672	151	822	294	485	492
Starvation Cap Reductn	0	79	186	0	0	0	0	0	52	116
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.06	1.10	0.56	1.01	0.90	0.94	0.47	0.72	1.05	0.57

Intersection Summary

Description: 7070

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	156	1640	361	163	1249	186	135	311	58	200	433	204
Future Volume (vph)	156	1640	361	163	1249	186	135	311	58	200	433	204
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-7%			7%			3%			4%	
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0		7.0	6.5		7.0	6.5	6.5
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95		1.00	0.95		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99		1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3624	3736	1618	1708	3352		1743	3354		1602	1773	1455
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.10	1.00		0.34	1.00	1.00
Satd. Flow (perm)	3624	3736	1618	1708	3352		183	3354		571	1773	1455
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	164	1726	380	172	1315	196	142	327	61	211	456	215
RTOR Reduction (vph)	0	0	48	0	0	0	0	0	0	0	0	95
Lane Group Flow (vph)	164	1726	332	172	1511	0	142	388	0	211	456	120
Confl. Peds. (#/hr)	3		6	6		3	27		14	14		27
Heavy Vehicles (%)	0%	0%	1%	2%	1%	6%	2%	3%	2%	10%	5%	2%
Turn Type	Prot	NA	pm+ov	Prot	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases			2				8			4		4
Actuated Green, G (s)	9.0	92.7	105.7	21.0	104.7		63.1	50.1		74.5	55.8	55.8
Effective Green, g (s)	9.0	92.7	105.7	21.0	104.7		63.1	50.1		74.5	55.8	55.8
Actuated g/C Ratio	0.04	0.44	0.50	0.10	0.50		0.30	0.24		0.35	0.27	0.27
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	6.5		7.0	6.5	6.5
Vehicle Extension (s)	3.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	155	1649	868	170	1671		151	800		294	471	386
v/s Ratio Prot	0.05	c0.46	0.02	c0.10	c0.45		0.06	0.12		c0.06	c0.26	
v/s Ratio Perm			0.18				0.22			0.19		0.08
v/c Ratio	1.06	1.05	0.38	1.01	0.90		0.94	0.48		0.72	0.97	0.31
Uniform Delay, d1	100.5	58.6	32.1	94.5	48.1		60.5	68.8		53.1	76.2	61.7
Progression Factor	0.93	0.85	1.00	1.00	1.00		1.00	1.00		0.85	0.82	0.88
Incremental Delay, d2	80.6	33.3	0.1	72.1	8.5		55.0	0.2		6.3	31.3	0.2
Delay (s)	174.1	83.4	32.3	166.6	56.6		115.5	69.0		51.5	94.0	54.7
Level of Service	F	F	C	F	E		F	E		D	F	D
Approach Delay (s)		81.4			67.8			81.5			74.3	
Approach LOS		F			E			F			E	

Intersection Summary			
HCM 2000 Control Delay	76.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	210.0	Sum of lost time (s)	27.5
Intersection Capacity Utilization	110.3%	ICU Level of Service	H
Analysis Period (min)	15		
Description: 7070			

c Critical Lane Group



Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	202	60	676	848
v/c Ratio	0.71	0.13	0.26	0.39
Control Delay	39.4	1.8	1.8	5.2
Queue Delay	0.0	0.0	0.2	0.1
Total Delay	39.4	1.8	2.0	5.4
Queue Length 50th (ft)	80	3	16	22
Queue Length 95th (ft)	147	6	22	270
Internal Link Dist (ft)	405		137	400
Turn Bay Length (ft)		110		
Base Capacity (vph)	588	467	2600	2160
Starvation Cap Reductn	0	0	1129	439
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.34	0.13	0.46	0.49

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	75	117	57	642	734	71
Future Volume (veh/h)	75	117	57	642	734	71
Number	7	14	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1889	1900	1890	1853	1822	1862
Adj Flow Rate, veh/h	79	123	60	676	773	75
Adj No. of Lanes	0	0	1	2	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	1	0	2	2	4
Cap, veh/h	93	145	407	2548	1969	191
Arrive On Green	0.14	0.14	0.08	1.00	0.20	0.20
Sat Flow, veh/h	652	1016	1800	3614	3280	309
Grp Volume(v), veh/h	203	0	60	676	420	428
Grp Sat Flow(s),veh/h/ln	1677	0	1800	1761	1731	1767
Q Serve(g_s), s	12.4	0.0	1.2	0.0	22.0	22.0
Cycle Q Clear(g_c), s	12.4	0.0	1.2	0.0	22.0	22.0
Prop In Lane	0.39	0.61	1.00			0.18
Lane Grp Cap(c), veh/h	240	0	407	2548	1069	1091
V/C Ratio(X)	0.85	0.00	0.15	0.27	0.39	0.39
Avail Cap(c_a), veh/h	527	0	456	2548	1069	1091
HCM Platoon Ratio	1.00	1.00	2.00	2.00	0.33	0.33
Upstream Filter(I)	1.00	0.00	0.95	0.95	0.91	0.91
Uniform Delay (d), s/veh	43.9	0.0	8.4	0.0	24.8	24.8
Incr Delay (d2), s/veh	8.0	0.0	0.2	0.2	1.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.3	0.0	0.6	0.1	10.9	11.1
LnGrp Delay(d),s/veh	51.8	0.0	8.5	0.2	25.7	25.7
LnGrp LOS	D		A	A	C	C
Approach Vol, veh/h	203			736	848	
Approach Delay, s/veh	51.8			0.9	25.7	
Approach LOS	D			A	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	11.1	71.8		22.0		83.0		
Change Period (Y+Rc), s	7.0	7.0		7.0		7.0		
Max Green Setting (Gmax), s	7.0	44.0		33.0		58.0		
Max Q Clear Time (g_c+I1), s	3.2	24.0		14.4		2.0		
Green Ext Time (p_c), s	0.0	3.0		0.7		2.9		

Intersection Summary	
HCM 2010 Ctrl Delay	18.5
HCM 2010 LOS	B



Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	368	224	24	100	666	13	15	683
v/c Ratio	1.07	0.46	0.07	0.24	0.33	0.01	0.03	0.42
Control Delay	107.9	19.5	19.4	7.6	8.2	0.0	3.4	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	107.9	19.5	19.4	7.6	8.2	0.0	3.4	9.9
Queue Length 50th (ft)	~276	60	6	16	54	0	1	153
Queue Length 95th (ft)	#458	133	27	34	106	0	m3	85
Internal Link Dist (ft)	336		307		400			190
Turn Bay Length (ft)		75		205		290	125	
Base Capacity (vph)	343	487	350	499	2000	874	517	1644
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.07	0.46	0.07	0.20	0.33	0.01	0.03	0.42

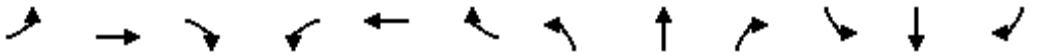
Intersection Summary

Description: 704010

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	338	1	206	8	2	12	92	613	12	14	591	38
Future Volume (vph)	338	1	206	8	2	12	92	613	12	14	591	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			2%			1%			1%	
Total Lost time (s)		7.0	7.0		7.0		7.0	6.0	6.0	7.0	6.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	0.98		0.99		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes		0.99	1.00		1.00		1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85		0.93		1.00	1.00	0.85	1.00	0.99	
Flt Protected		0.95	1.00		0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1792	1571		1614		1726	3522	1453	1793	3456	
Flt Permitted		0.71	1.00		0.81		0.30	1.00	1.00	0.39	1.00	
Satd. Flow (perm)		1334	1571		1324		542	3522	1453	745	3456	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	367	1	224	9	2	13	100	666	13	15	642	41
RTOR Reduction (vph)	0	0	83	0	10	0	0	0	6	0	4	0
Lane Group Flow (vph)	0	368	141	0	14	0	100	666	7	15	679	0
Confl. Peds. (#/hr)	4		9	9		4	3		4	4		3
Heavy Vehicles (%)	1%	0%	1%	13%	0%	0%	4%	2%	8%	0%	3%	0%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		
Actuated Green, G (s)		27.0	27.0		27.0		63.5	55.4	55.4	52.5	49.9	
Effective Green, g (s)		27.0	27.0		27.0		63.5	55.4	55.4	52.5	49.9	
Actuated g/C Ratio		0.26	0.26		0.26		0.60	0.53	0.53	0.50	0.48	
Clearance Time (s)		7.0	7.0		7.0		7.0	6.0	6.0	7.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	4.0	4.0	3.0	4.0	
Lane Grp Cap (vph)		343	403		340		419	1858	766	398	1642	
v/s Ratio Prot							c0.02	c0.19		0.00	c0.20	
v/s Ratio Perm		c0.28	0.09		0.01		0.13		0.00	0.02		
v/c Ratio		1.07	0.35		0.04		0.24	0.36	0.01	0.04	0.41	
Uniform Delay, d1		39.0	31.8		29.3		9.7	14.4	11.8	13.2	18.0	
Progression Factor		1.00	1.00		1.00		0.72	0.60	1.00	0.38	0.50	
Incremental Delay, d2		69.3	0.5		0.1		0.3	0.5	0.0	0.0	0.7	
Delay (s)		108.3	32.4		29.3		7.3	9.2	11.8	5.0	9.8	
Level of Service		F	C		C		A	A	B	A	A	
Approach Delay (s)		79.6			29.3			9.0			9.7	
Approach LOS		E			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	29.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	64.8%	ICU Level of Service	C
Analysis Period (min)	15		
Description: 704010			

c Critical Lane Group

Intersection	
Int Delay, s/veh	9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	46	67	844	97	106	579
Future Vol, veh/h	46	67	844	97	106	579
Conflicting Peds, #/hr	3	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	1	-	-	1
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	0	1	1	0	2
Mvmt Flow	50	73	917	105	115	629

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1519	512	0	0	1023	0
Stage 1	971	-	-	-	-	-
Stage 2	548	-	-	-	-	-
Critical Hdwy	6.35	7.1	-	-	5.3	-
Critical Hdwy Stg 1	6.7	-	-	-	-	-
Critical Hdwy Stg 2	5.9	-	-	-	-	-
Follow-up Hdwy	3.7	3.9	-	-	3.1	-
Pot Cap-1 Maneuver	132	438	-	-	387	-
Stage 1	252	-	-	-	-	-
Stage 2	518	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	71	438	-	-	387	-
Mov Cap-2 Maneuver	71	-	-	-	-	-
Stage 1	252	-	-	-	-	-
Stage 2	281	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	105.7	0	5.4
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	141	387	-
HCM Lane V/C Ratio	-	-	0.871	0.298	-
HCM Control Delay (s)	-	-	105.7	18.2	3
HCM Lane LOS	-	-	F	C	A
HCM 95th %tile Q(veh)	-	-	5.7	1.2	-



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	349	55	14	976	755
v/c Ratio	0.87	0.15	0.04	0.42	0.37
Control Delay	61.0	13.2	9.2	10.0	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	61.0	13.2	9.2	10.0	12.6
Queue Length 50th (ft)	222	6	4	164	112
Queue Length 95th (ft)	#349	36	m9	m178	210
Internal Link Dist (ft)	434			170	147
Turn Bay Length (ft)		125			
Base Capacity (vph)	454	402	441	2308	2063
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.77	0.14	0.03	0.42	0.37

Intersection Summary

Description: 704005

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

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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	321	51	13	898	634	61
Future Volume (veh/h)	321	51	13	898	634	61
Number	7	14	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1862	1695	1783	1872	1824	1890
Adj Flow Rate, veh/h	349	0	14	976	689	66
Adj No. of Lanes	1	1	1	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	11	6	1	4	0
Cap, veh/h	381	309	409	2352	1850	177
Arrive On Green	0.21	0.00	0.01	0.44	0.58	0.58
Sat Flow, veh/h	1774	1440	1699	3650	3288	306
Grp Volume(v), veh/h	349	0	14	976	373	382
Grp Sat Flow(s),veh/h/ln	1774	1440	1699	1778	1733	1770
Q Serve(g_s), s	20.2	0.0	0.3	19.7	12.1	12.2
Cycle Q Clear(g_c), s	20.2	0.0	0.3	19.7	12.1	12.2
Prop In Lane	1.00	1.00	1.00			0.17
Lane Grp Cap(c), veh/h	381	309	409	2352	1003	1025
V/C Ratio(X)	0.92	0.00	0.03	0.41	0.37	0.37
Avail Cap(c_a), veh/h	456	370	543	2352	1003	1025
HCM Platoon Ratio	1.00	1.00	0.67	0.67	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.3	0.0	8.9	15.4	11.9	11.9
Incr Delay (d2), s/veh	19.4	0.0	0.0	0.5	1.1	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.9	0.0	0.2	9.9	6.1	6.2
LnGrp Delay(d),s/veh	59.7	0.0	8.9	15.9	12.9	12.9
LnGrp LOS	E		A	B	B	B
Approach Vol, veh/h	349			990	755	
Approach Delay, s/veh	59.7			15.8	12.9	
Approach LOS	E			B	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	8.7	66.8		29.5		75.5		
Change Period (Y+Rc), s	7.0	6.0		7.0		6.0		
Max Green Setting (Gmax), s	10.0	48.0		27.0		65.0		
Max Q Clear Time (g_c+I1), s	2.3	14.2		22.2		21.7		
Green Ext Time (p_c), s	0.0	7.2		0.3		11.7		

Intersection Summary	
HCM 2010 Ctrl Delay	22.1
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	14	12	867	352	16	681
Future Vol, veh/h	14	12	867	352	16	681
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	1
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	1	0	0	3
Mvmt Flow	15	13	922	374	17	724

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1505	648	0	0	1296	0
Stage 1	1109	-	-	-	-	-
Stage 2	396	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	114	418	-	-	541	-
Stage 1	282	-	-	-	-	-
Stage 2	655	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	108	418	-	-	541	-
Mov Cap-2 Maneuver	108	-	-	-	-	-
Stage 1	282	-	-	-	-	-
Stage 2	620	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	31.4	0	0.6
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	164	541	-
HCM Lane V/C Ratio	-	-	0.169	0.031	-
HCM Control Delay (s)	-	-	31.4	11.9	0.3
HCM Lane LOS	-	-	D	B	A
HCM 95th %tile Q(veh)	-	-	0.6	0.1	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	33	51	828	664	15
Future Vol, veh/h	6	33	51	828	664	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	60	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	0	0	0	2	3	0
Mvmt Flow	6	33	52	836	671	15

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1619	679	686	0	-	0
Stage 1	679	-	-	-	-	-
Stage 2	940	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	115	455	917	-	-	-
Stage 1	507	-	-	-	-	-
Stage 2	383	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	103	455	917	-	-	-
Mov Cap-2 Maneuver	103	-	-	-	-	-
Stage 1	453	-	-	-	-	-
Stage 2	383	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.9	0.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	917	-	103	455	-	-
HCM Lane V/C Ratio	0.056	-	0.059	0.073	-	-
HCM Control Delay (s)	9.2	0	42.1	13.5	-	-
HCM Lane LOS	A	A	E	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.2	0.2	-	-



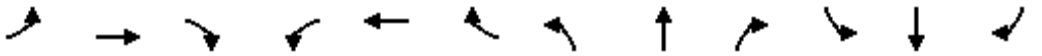
Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	696	156	354	30	126	366	55	510	242
v/c Ratio	1.21	0.20	0.57	0.04	0.59	0.55	0.17	0.87	0.41
Control Delay	146.0	16.2	37.3	0.1	38.7	45.3	27.1	67.7	17.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	146.0	16.2	37.3	0.1	38.7	45.3	27.1	67.7	17.3
Queue Length 50th (ft)	~891	52	264	0	80	315	34	507	70
Queue Length 95th (ft)	#1345	122	463	0	123	426	61	666	150
Internal Link Dist (ft)	748		505			1493		1383	
Turn Bay Length (ft)		75		75	180		380		227
Base Capacity (vph)	576	796	616	821	243	824	402	827	761
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.21	0.20	0.57	0.04	0.52	0.44	0.14	0.62	0.32

Intersection Summary

Description: 694030

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	181	487	150	23	317	29	121	322	30	53	490	232
Future Volume (vph)	181	487	150	23	317	29	121	322	30	53	490	232
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			-3%			-1%			-1%	
Total Lost time (s)		7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	7.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected		0.99	1.00		1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1824	1583		1899	1591	1778	1868		1814	1891	1546
Flt Permitted		0.65	1.00		0.67	1.00	0.12	1.00		0.39	1.00	1.00
Satd. Flow (perm)		1199	1583		1280	1591	233	1868		744	1891	1546
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	189	507	156	24	330	30	126	335	31	55	510	242
RTOR Reduction (vph)	0	0	34	0	0	16	0	2	0	0	0	104
Lane Group Flow (vph)	0	696	122	0	354	14	126	364	0	55	510	138
Heavy Vehicles (%)	1%	2%	1%	4%	1%	3%	2%	1%	0%	0%	1%	5%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4			8		1	6		5	2	
Permitted Phases	4		4	8		8	6			2		2
Actuated Green, G (s)		77.6	77.6		77.6	77.6	69.2	57.0		58.6	51.7	51.7
Effective Green, g (s)		77.6	77.6		77.6	77.6	69.2	57.0		58.6	51.7	51.7
Actuated g/C Ratio		0.48	0.48		0.48	0.48	0.43	0.35		0.36	0.32	0.32
Clearance Time (s)		7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	4.0		3.0	4.0	4.0
Lane Grp Cap (vph)		572	755		611	759	215	655		313	601	491
v/s Ratio Prot							c0.04	c0.19		0.01	c0.27	
v/s Ratio Perm		c0.58	0.08		0.28	0.01	0.21			0.06		0.09
v/c Ratio		1.22	0.16		0.58	0.02	0.59	0.56		0.18	0.85	0.28
Uniform Delay, d1		42.5	24.0		30.7	22.4	35.2	42.5		34.9	51.7	41.5
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		112.8	0.1		1.3	0.0	4.0	1.3		0.3	11.2	0.4
Delay (s)		155.3	24.1		32.0	22.4	39.2	43.8		35.2	62.9	41.9
Level of Service		F	C		C	C	D	D		D	E	D
Approach Delay (s)		131.3			31.2			42.6			54.7	
Approach LOS		F			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	74.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	162.5	Sum of lost time (s)	28.0
Intersection Capacity Utilization	109.4%	ICU Level of Service	H
Analysis Period (min)	15		
Description: 694030			
c Critical Lane Group			

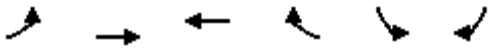
Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	81	652	34	68	28	51	36	2	48	0	0	92
Future Vol, veh/h	81	652	34	68	28	51	36	2	48	0	0	92
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	230	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	5	0	0	20	0	0	0	0	0	0	0
Mvmt Flow	84	679	35	71	29	53	38	2	50	0	0	96

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	82	0	0	714	0	0	1111	1089	697	1089	-	56
Stage 1	-	-	-	-	-	-	865	865	-	198	-	-
Stage 2	-	-	-	-	-	-	246	224	-	891	-	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	-	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	-	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	-	3.3
Pot Cap-1 Maneuver	1528	-	-	895	-	-	188	217	444	195	0	1016
Stage 1	-	-	-	-	-	-	351	374	-	808	0	-
Stage 2	-	-	-	-	-	-	762	722	-	340	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1528	-	-	895	-	-	153	189	444	154	-	1016
Mov Cap-2 Maneuver	-	-	-	-	-	-	153	189	-	154	-	-
Stage 1	-	-	-	-	-	-	332	353	-	764	-	-
Stage 2	-	-	-	-	-	-	635	665	-	283	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	4.3	28.2	8.9
HCM LOS			D	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	243	1528	-	-	895	-	-	-	1016
HCM Lane V/C Ratio	0.369	0.055	-	-	0.079	-	-	-	0.094
HCM Control Delay (s)	28.2	7.5	-	-	9.4	-	-	0	8.9
HCM Lane LOS	D	A	-	-	A	-	-	A	A
HCM 95th %tile Q(veh)	1.6	0.2	-	-	0.3	-	-	-	0.3



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑			↱
Traffic Volume (veh/h)	0	2157	1588	0	0	51
Future Volume (Veh/h)	0	2157	1588	0	0	51
Sign Control		Free	Free		Stop	
Grade		-7%	-1%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	2157	1588	0	0	51
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		Raised	Raised			
Median storage veh)		1	1			
Upstream signal (ft)		218	339			
pX, platoon unblocked					0.69	
vC, conflicting volume	1588				2307	529
vC1, stage 1 conf vol					1588	
vC2, stage 2 conf vol					719	
vCu, unblocked vol	1588				1327	529
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	90
cM capacity (veh/h)	410				136	494

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	719	719	719	529	529	529	51
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	51
cSH	1700	1700	1700	1700	1700	1700	494
Volume to Capacity	0.42	0.42	0.42	0.31	0.31	0.31	0.10
Queue Length 95th (ft)	0	0	0	0	0	0	9
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	13.1
Lane LOS							B
Approach Delay (s)	0.0			0.0			13.1
Approach LOS							B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	45.0%	ICU Level of Service	A
Analysis Period (min)	15		

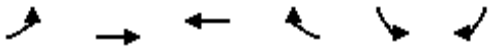
Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑			↱
Traffic Vol, veh/h	0	2157	1588	0	0	51
Future Vol, veh/h	0	2157	1588	0	0	51
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	-1	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2157	1588	0	0	51

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	794
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	0	0	284
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	-	284
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	20.4
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	284
HCM Lane V/C Ratio	-	-	0.18
HCM Control Delay (s)	-	-	20.4
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	0.6



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	2105	1516	30	0	53
Future Volume (Veh/h)	0	2105	1516	30	0	53
Sign Control		Free	Free		Stop	
Grade		-7%	-1%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2288	1648	33	0	58
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		1143	198			
pX, platoon unblocked	0.63				0.63	0.63
vC, conflicting volume	1681				2236	566
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	19				902	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	91
cM capacity (veh/h)	1004				175	682

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	SB 1
Volume Total	572	572	572	572	659	659	363	58
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	33	58
cSH	1700	1700	1700	1700	1700	1700	1700	682
Volume to Capacity	0.34	0.34	0.34	0.34	0.39	0.39	0.21	0.09
Queue Length 95th (ft)	0	0	0	0	0	0	0	7
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.8
Lane LOS								B
Approach Delay (s)	0.0				0.0			10.8
Approach LOS								B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	160	111	699	925
v/c Ratio	0.65	0.25	0.26	0.43
Control Delay	35.1	6.6	6.2	5.6
Queue Delay	0.4	0.0	0.2	0.1
Total Delay	35.5	6.6	6.4	5.7
Queue Length 50th (ft)	52	37	135	62
Queue Length 95th (ft)	114	m52	m160	80
Internal Link Dist (ft)	222		331	137
Turn Bay Length (ft)		150		
Base Capacity (vph)	549	485	2683	2153
Starvation Cap Reductn	0	0	1072	367
Spillback Cap Reductn	132	0	13	314
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.38	0.23	0.43	0.52

Intersection Summary

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

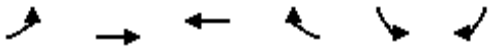


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	56	91	102	643	810	41
Future Volume (veh/h)	56	91	102	643	810	41
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1853	1853	1825	1862
Adj Flow Rate, veh/h	61	99	111	699	880	45
Adj No. of Lanes	0	0	1	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	74	120	533	2636	2130	109
Arrive On Green	0.12	0.12	0.05	0.75	1.00	1.00
Sat Flow, veh/h	626	1016	1765	3614	3449	172
Grp Volume(v), veh/h	161	0	111	699	455	470
Grp Sat Flow(s),veh/h/ln	1652	0	1765	1761	1734	1795
Q Serve(g_s), s	10.0	0.0	2.1	6.5	0.0	0.0
Cycle Q Clear(g_c), s	10.0	0.0	2.1	6.5	0.0	0.0
Prop In Lane	0.38	0.61	1.00			0.10
Lane Grp Cap(c), veh/h	195	0	533	2636	1100	1139
V/C Ratio(X)	0.83	0.00	0.21	0.27	0.41	0.41
Avail Cap(c_a), veh/h	488	0	634	2636	1100	1139
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.71	0.71	0.93	0.93
Uniform Delay (d), s/veh	45.2	0.0	5.0	4.1	0.0	0.0
Incr Delay (d2), s/veh	8.5	0.0	0.1	0.2	1.1	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	0.0	1.0	3.2	0.3	0.3
LnGrp Delay(d),s/veh	53.8	0.0	5.2	4.3	1.1	1.0
LnGrp LOS	D		A	A	A	A
Approach Vol, veh/h	161			810	925	
Approach Delay, s/veh	53.8			4.4	1.0	
Approach LOS	D			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		85.6		19.4	12.0	73.6		
Change Period (Y+Rc), s		7.0		7.0	7.0	7.0		
Max Green Setting (Gmax), s		60.0		31.0	11.0	42.0		
Max Q Clear Time (g_c+I1), s		8.5		12.0	4.1	2.0		
Green Ext Time (p_c), s		3.1		0.5	0.1	3.6		

Intersection Summary	
HCM 2010 Ctrl Delay	7.0
HCM 2010 LOS	A

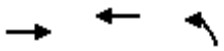
Appendix H: Intersection Capacity Analysis - Future with Development Condition (2030) – Baseline



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1667	1539	44	0	15
Future Volume (Veh/h)	0	1667	1539	44	0	15
Sign Control		Free	Free		Stop	
Grade		-7%	-1%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1812	1673	48	0	16
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		1143	198			
pX, platoon unblocked	0.59				0.59	0.59
vC, conflicting volume	1721				2150	582
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				548	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	98
cM capacity (veh/h)	964				277	645

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	SB 1
Volume Total	453	453	453	453	669	669	383	16
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	48	16
cSH	1700	1700	1700	1700	1700	1700	1700	645
Volume to Capacity	0.27	0.27	0.27	0.27	0.39	0.39	0.23	0.02
Queue Length 95th (ft)	0	0	0	0	0	0	0	2
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.7
Lane LOS								B
Approach Delay (s)	0.0				0.0			10.7
Approach LOS								B

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	40.7%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBT	WBT	NBL
Lane Group Flow (vph)	1599	1595	132
v/c Ratio	0.58	0.58	0.47
Control Delay	5.5	5.8	51.3
Queue Delay	0.0	0.0	0.0
Total Delay	5.5	5.8	51.3
Queue Length 50th (ft)	173	481	44
Queue Length 95th (ft)	249	28	73
Internal Link Dist (ft)	735	250	372
Turn Bay Length (ft)			220
Base Capacity (vph)	2755	2757	821
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.58	0.58	0.16

Intersection Summary
Description: 7075



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1471	0	0	1467	121	0
Future Volume (vph)	1471	0	0	1467	121	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	1%			-1%	-1%	
Total Lost time (s)	6.5			6.5	7.0	
Lane Util. Factor	0.95			0.95	0.97	
Frt	1.00			1.00	1.00	
Flt Protected	1.00			1.00	0.95	
Satd. Flow (prot)	3487			3489	3450	
Flt Permitted	1.00			1.00	0.95	
Satd. Flow (perm)	3487			3489	3450	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1599	0	0	1595	132	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1599	0	0	1595	132	0
Heavy Vehicles (%)	3%	0%	0%	4%	2%	2%
Bus Blockages (#/hr)	0	100	0	0	0	0
Turn Type	NA			NA	Prot	
Protected Phases	2			6	4	
Permitted Phases						
Actuated Green, G (s)	83.0			83.0	8.5	
Effective Green, g (s)	83.0			83.0	8.5	
Actuated g/C Ratio	0.79			0.79	0.08	
Clearance Time (s)	6.5			6.5	7.0	
Vehicle Extension (s)	5.0			5.0	2.0	
Lane Grp Cap (vph)	2756			2757	279	
v/s Ratio Prot	c0.46			0.46	c0.04	
v/s Ratio Perm						
v/c Ratio	0.58			0.58	0.47	
Uniform Delay, d1	4.3			4.2	46.1	
Progression Factor	1.00			1.17	1.00	
Incremental Delay, d2	0.9			0.6	0.5	
Delay (s)	5.2			5.6	46.6	
Level of Service	A			A	D	
Approach Delay (s)	5.2			5.6	46.6	
Approach LOS	A			A	D	

Intersection Summary			
HCM 2000 Control Delay	7.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	56.1%	ICU Level of Service	B
Analysis Period (min)	15		

Description: 7075

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1665	33	0	1544	0	0	0	16	0	0	142
Future Vol, veh/h	0	1665	33	0	1544	0	0	0	16	0	0	142
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Yield	Yield	Yield
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Yield
Storage Length	-	-	-	-	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	-7	-	-	-1	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	4	0	0	5	0	0	0	0	0	0	29
Mvmt Flow	0	1810	36	0	1678	0	0	0	17	0	0	154

Major/Minor	Major1			Major2			Minor1					
Conflicting Flow All	-	0	0	-	-	0	-	-	923			
Stage 1	-	-	-	-	-	-	-	-	-			
Stage 2	-	-	-	-	-	-	-	-	-			
Critical Hdwy	-	-	-	-	-	-	-	-	7.1			
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-			
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-			
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.9			
Pot Cap-1 Maneuver	0	-	-	0	-	0	0	0	237			
Stage 1	0	-	-	0	-	0	0	0	-			
Stage 2	0	-	-	0	-	0	0	0	-			
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	0	237			
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	0	-			
Stage 1	-	-	-	-	-	-	-	0	-			
Stage 2	-	-	-	-	-	-	-	0	-			

Approach	EB	WB	NB
HCM Control Delay, s	0	0	21.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	237	-	-	-
HCM Lane V/C Ratio	0.073	-	-	-
HCM Control Delay (s)	21.4	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	14	1667	1536	18	0	8
Future Vol, veh/h	14	1667	1536	18	0	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	140	-	-	0	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	-1	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	4	5	0	0	12
Mvmt Flow	14	1719	1584	19	0	8

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1603	0	-	0	-	792
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.14	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.22	-	-	-	-	3.42
Pot Cap-1 Maneuver	404	-	-	-	0	311
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	404	-	-	-	-	311
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	16.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	404	-	-	-	311
HCM Lane V/C Ratio	0.036	-	-	-	0.027
HCM Control Delay (s)	14.2	-	-	-	16.9
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1



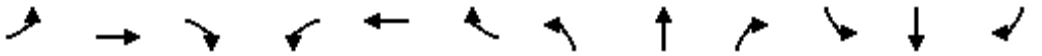
Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	205	1549	14	1540	706	20	5	269	259
v/c Ratio	1.86	0.51	0.14	0.87	0.66	0.21	0.02	0.77	0.49
Control Delay	450.7	26.0	48.3	27.3	8.1	53.6	0.2	53.8	9.2
Queue Delay	0.0	0.1	0.0	9.6	0.6	0.0	0.0	12.1	1.2
Total Delay	450.7	26.1	48.3	36.9	8.7	53.6	0.2	65.9	10.3
Queue Length 50th (ft)	~217	253	12	510	214	13	0	180	12
Queue Length 95th (ft)	#368	452	m14	m#915	m189	39	0	261	78
Internal Link Dist (ft)		118		138		288			281
Turn Bay Length (ft)			180						
Base Capacity (vph)	110	3011	107	1779	1075	95	279	441	598
Starvation Cap Reductn	0	0	0	232	115	0	0	0	0
Spillback Cap Reductn	0	373	0	0	0	0	0	146	165
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.86	0.59	0.13	1.00	0.74	0.21	0.02	0.91	0.60

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

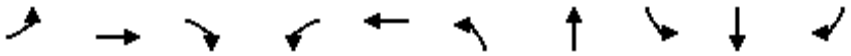
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	195	1451	21	13	1463	671	19	0	5	399	0	103
Future Volume (vph)	195	1451	21	13	1463	671	19	0	5	399	0	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-7%			-1%			0%			0%	
Total Lost time (s)	6.8	5.0		6.8	5.0	5.0		7.2	6.8	7.2	7.2	
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00		1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.95	1.00	0.95	0.97	
Satd. Flow (prot)	1868	5152		1814	3489	1586		1805	1602	1715	1644	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.95	1.00	0.95	0.97	
Satd. Flow (perm)	1868	5152		1814	3489	1586		1805	1602	1715	1644	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	205	1527	22	14	1540	706	20	0	5	420	0	108
RTOR Reduction (vph)	0	1	0	0	0	310	0	0	5	0	189	0
Lane Group Flow (vph)	205	1548	0	14	1540	396	0	20	0	269	70	0
Confl. Peds. (#/hr)	3		1	3		1			1			
Confl. Bikes (#/hr)			3									
Heavy Vehicles (%)	0%	4%	0%	0%	4%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	pm+ov	Split	NA	
Protected Phases	5	2		1	6		8	8	1	4	4	
Permitted Phases						6			8			
Actuated Green, G (s)	10.3	53.0		2.5	45.2	45.2		1.9	4.4	21.4	21.4	
Effective Green, g (s)	10.3	53.0		2.5	45.2	45.2		1.9	4.4	21.4	21.4	
Actuated g/C Ratio	0.10	0.50		0.02	0.43	0.43		0.02	0.04	0.20	0.20	
Clearance Time (s)	6.8	5.0		6.8	5.0	5.0		7.2	6.8	7.2	7.2	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	183	2600		43	1501	682		32	67	349	335	
v/s Ratio Prot	c0.11	0.30		0.01	c0.44			c0.01	0.00	c0.16	0.04	
v/s Ratio Perm						0.25			0.00			
v/c Ratio	1.12	0.60		0.33	1.03	0.58		0.62	0.00	0.77	0.21	
Uniform Delay, d1	47.4	18.4		50.4	29.9	22.7		51.2	48.2	39.5	34.8	
Progression Factor	1.25	1.53		1.00	0.99	1.44		1.00	1.00	1.00	1.00	
Incremental Delay, d2	99.0	0.9		1.8	22.0	1.5		32.4	0.0	10.1	0.3	
Delay (s)	158.1	29.0		52.3	51.6	34.1		83.6	48.2	49.6	35.1	
Level of Service	F	C		D	D	C		F	D	D	D	
Approach Delay (s)		44.1			46.1			76.5			42.5	
Approach LOS		D			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	45.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	26.2
Intersection Capacity Utilization	87.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



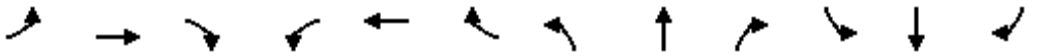
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	139	1676	112	29	2012	108	590	190	123	352
v/c Ratio	1.64	0.76	0.10	0.45	1.00	0.39	1.24	1.16	0.39	0.99
Control Delay	377.6	34.2	6.4	118.1	59.6	66.3	192.6	166.3	70.4	96.6
Queue Delay	0.0	1.3	0.0	0.0	20.7	1.0	0.0	0.0	0.0	35.0
Total Delay	377.6	35.5	6.4	118.1	80.3	67.3	192.6	166.3	70.4	131.7
Queue Length 50th (ft)	~143	1139	19	40	~1431	119	~530	~260	163	~383
Queue Length 95th (ft)	#225	721	71	82	#1626	183	#665	#448	242	#600
Internal Link Dist (ft)		259			2080		412		331	
Turn Bay Length (ft)	250			225		115		295		
Base Capacity (vph)	85	2213	1103	103	2011	286	476	164	316	355
Starvation Cap Reductn	0	318	0	0	0	0	0	0	0	39
Spillback Cap Reductn	0	0	0	0	115	58	0	0	0	32
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.64	0.88	0.10	0.28	1.06	0.47	1.24	1.16	0.39	1.11

Intersection Summary

Description: 7070

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	135	1626	109	28	1666	285	105	494	79	184	119	341
Future Volume (vph)	135	1626	109	28	1666	285	105	494	79	184	119	341
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-7%			7%			3%			4%	
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0		7.0	6.5		7.0	6.5	6.5
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95		1.00	0.95		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99		1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.97	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3588	3628	1600	1675	3276		1727	3390		1499	1862	1455
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.68	1.00		0.11	1.00	1.00
Satd. Flow (perm)	3588	3628	1600	1675	3276		1232	3390		176	1862	1455
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	139	1676	112	29	1718	294	108	509	81	190	123	352
RTOR Reduction (vph)	0	0	31	0	0	0	0	0	0	0	0	108
Lane Group Flow (vph)	139	1676	81	29	2012	0	108	590	0	190	123	244
Confl. Peds. (#/hr)	3		6	6		3	27		14	14		27
Heavy Vehicles (%)	1%	3%	2%	4%	3%	8%	0%	2%	3%	18%	0%	2%
Turn Type	Prot	NA	pm+ov	Prot	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases			2				8			4		4
Actuated Green, G (s)	5.0	126.7	139.4	7.3	129.0		42.2	29.5		54.8	35.8	35.8
Effective Green, g (s)	5.0	126.7	139.4	7.3	129.0		42.2	29.5		54.8	35.8	35.8
Actuated g/C Ratio	0.02	0.60	0.66	0.03	0.61		0.20	0.14		0.26	0.17	0.17
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	6.5		7.0	6.5	6.5
Vehicle Extension (s)	3.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	85	2188	1115	58	2012		277	476		165	317	248
v/s Ratio Prot	c0.04	0.46	0.00	0.02	c0.61		0.02	0.17		c0.10	0.07	
v/s Ratio Perm			0.05				0.05			c0.20		c0.17
v/c Ratio	1.64	0.77	0.07	0.50	1.00		0.39	1.24		1.15	0.39	0.98
Uniform Delay, d1	102.5	30.7	12.5	99.6	40.5		71.5	90.2		67.4	77.4	86.8
Progression Factor	0.94	1.04	2.29	1.00	1.00		1.00	1.00		0.88	0.85	1.01
Incremental Delay, d2	327.7	2.3	0.0	2.5	20.1		0.3	124.7		115.1	0.3	51.1
Delay (s)	423.8	34.1	28.6	102.0	60.6		71.8	214.9		174.8	66.3	138.9
Level of Service	F	C	C	F	E		E	F		F	E	F
Approach Delay (s)		61.9			61.2			192.8			135.7	
Approach LOS		E			E			F			F	

Intersection Summary					
HCM 2000 Control Delay	88.0	HCM 2000 Level of Service	F		
HCM 2000 Volume to Capacity ratio	1.08				
Actuated Cycle Length (s)	210.0	Sum of lost time (s)	27.5		
Intersection Capacity Utilization	104.3%	ICU Level of Service	G		
Analysis Period (min)	15				
Description: 7070					

c Critical Lane Group



Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	206	190	835	767
v/c Ratio	0.72	0.33	0.33	0.43
Control Delay	37.0	6.4	3.8	9.9
Queue Delay	0.0	0.8	0.2	0.0
Total Delay	37.0	7.2	4.0	9.9
Queue Length 50th (ft)	72	22	50	175
Queue Length 95th (ft)	141	54	104	255
Internal Link Dist (ft)	405		137	400
Turn Bay Length (ft)		110		
Base Capacity (vph)	602	584	2567	1773
Starvation Cap Reductn	0	190	842	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.34	0.48	0.48	0.43

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	66	123	175	768	587	119
Future Volume (veh/h)	66	123	175	768	587	119
Number	7	14	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1856	1900	1783	1818	1790	1862
Adj Flow Rate, veh/h	72	134	190	835	638	129
Adj No. of Lanes	0	0	1	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	2	6	4	4	4
Cap, veh/h	85	158	674	2481	940	190
Arrive On Green	0.15	0.15	0.64	1.00	0.11	0.11
Sat Flow, veh/h	571	1062	1699	3545	2909	569
Grp Volume(v), veh/h	207	0	190	835	384	383
Grp Sat Flow(s),veh/h/ln	1640	0	1699	1727	1701	1688
Q Serve(g_s), s	12.9	0.0	0.0	0.0	22.8	22.9
Cycle Q Clear(g_c), s	12.9	0.0	0.0	0.0	22.8	22.9
Prop In Lane	0.35	0.65	1.00			0.34
Lane Grp Cap(c), veh/h	243	0	674	2481	567	563
V/C Ratio(X)	0.85	0.00	0.28	0.34	0.68	0.68
Avail Cap(c_a), veh/h	531	0	674	2481	567	563
HCM Platoon Ratio	1.00	1.00	2.00	2.00	0.33	0.33
Upstream Filter(I)	1.00	0.00	0.93	0.93	0.94	0.94
Uniform Delay (d), s/veh	43.6	0.0	11.3	0.0	41.3	41.3
Incr Delay (d2), s/veh	8.1	0.0	0.2	0.3	6.1	6.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.4	0.0	2.0	0.1	11.7	11.7
LnGrp Delay(d),s/veh	51.7	0.0	11.5	0.3	47.4	47.5
LnGrp LOS	D		B	A	D	D
Approach Vol, veh/h	207			1025	767	
Approach Delay, s/veh	51.7			2.4	47.4	
Approach LOS	D			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	40.4	42.0		22.6		82.4		
Change Period (Y+Rc), s	7.0	7.0		7.0		7.0		
Max Green Setting (Gmax), s	15.0	35.0		34.0		57.0		
Max Q Clear Time (g_c+I1), s	2.0	24.9		14.9		2.0		
Green Ext Time (p_c), s	0.5	2.2		0.7		3.8		

Intersection Summary	
HCM 2010 Ctrl Delay	24.8
HCM 2010 LOS	C



Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	119	151	28	264	639	3	1	661
v/c Ratio	0.63	0.40	0.13	0.48	0.26	0.00	0.00	0.35
Control Delay	56.8	6.9	24.5	8.8	4.7	0.0	6.0	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.8	6.9	24.5	8.8	4.7	0.0	6.0	10.4
Queue Length 50th (ft)	77	0	8	26	31	0	0	73
Queue Length 95th (ft)	129	37	32	131	203	m0	m1	106
Internal Link Dist (ft)	375		307		400			190
Turn Bay Length (ft)				205		290	125	
Base Capacity (vph)	260	452	302	738	2444	1143	594	1913
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.33	0.09	0.36	0.26	0.00	0.00	0.35

Intersection Summary

Description: 704010

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	109	1	139	11	2	13	243	588	3	1	556	52
Future Volume (vph)	109	1	139	11	2	13	243	588	3	1	556	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			2%			1%			1%	
Total Lost time (s)		7.0	7.0		7.0		7.0	6.0	6.0	7.0	6.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	0.98		0.99		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes		0.99	1.00		1.00		1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85		0.93		1.00	1.00	0.85	1.00	0.99	
Flt Protected		0.95	1.00		0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1758	1555		1696		1742	3454	1570	1793	3412	
Flt Permitted		0.71	1.00		0.84		0.33	1.00	1.00	0.41	1.00	
Satd. Flow (perm)		1305	1555		1456		600	3454	1570	772	3412	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	118	1	151	12	2	14	264	639	3	1	604	57
RTOR Reduction (vph)	0	0	129	0	12	0	0	0	1	0	4	0
Lane Group Flow (vph)	0	119	22	0	16	0	264	639	2	1	657	0
Confl. Peds. (#/hr)	4		9	9		4	3		4	4		3
Heavy Vehicles (%)	3%	0%	2%	0%	0%	0%	3%	4%	0%	0%	4%	0%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		
Actuated Green, G (s)		15.1	15.1		15.1		76.9	68.8	68.8	59.9	58.8	
Effective Green, g (s)		15.1	15.1		15.1		76.9	68.8	68.8	59.9	58.8	
Actuated g/C Ratio		0.14	0.14		0.14		0.73	0.66	0.66	0.57	0.56	
Clearance Time (s)		7.0	7.0		7.0		7.0	6.0	6.0	7.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	4.0	4.0	3.0	4.0	
Lane Grp Cap (vph)		187	223		209		560	2263	1028	451	1910	
v/s Ratio Prot							c0.05	0.19		0.00	0.19	
v/s Ratio Perm		c0.09	0.01		0.01		c0.30		0.00	0.00		
v/c Ratio		0.64	0.10		0.08		0.47	0.28	0.00	0.00	0.34	
Uniform Delay, d1		42.4	39.0		38.9		5.5	7.7	6.2	9.7	12.6	
Progression Factor		1.00	1.00		1.00		1.15	0.69	1.00	0.97	0.72	
Incremental Delay, d2		6.9	0.2		0.2		0.6	0.3	0.0	0.0	0.5	
Delay (s)		49.3	39.2		39.1		6.9	5.6	6.3	9.4	9.6	
Level of Service		D	D		D		A	A	A	A	A	
Approach Delay (s)		43.7			39.1			6.0			9.6	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	13.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		
Description: 704010			

c Critical Lane Group

Intersection	
Int Delay, s/veh	8.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	129	70	670	71	27	511
Future Vol, veh/h	129	70	670	71	27	511
Conflicting Peds, #/hr	3	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	1	-	-	1
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	7	3	4	17	0	4
Mvmt Flow	140	76	728	77	29	555

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1107	404	0	0	806	0
Stage 1	768	-	-	-	-	-
Stage 2	339	-	-	-	-	-
Critical Hdwy	6.39	7.16	-	-	5.3	-
Critical Hdwy Stg 1	6.74	-	-	-	-	-
Critical Hdwy Stg 2	5.94	-	-	-	-	-
Follow-up Hdwy	3.72	3.93	-	-	3.1	-
Pot Cap-1 Maneuver	228	507	-	-	492	-
Stage 1	333	-	-	-	-	-
Stage 2	656	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	208	507	-	-	492	-
Mov Cap-2 Maneuver	208	-	-	-	-	-
Stage 1	333	-	-	-	-	-
Stage 2	599	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	61	0	1.1
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	262	492	-
HCM Lane V/C Ratio	-	-	0.826	0.06	-
HCM Control Delay (s)	-	-	61	12.8	0.5
HCM Lane LOS	-	-	F	B	A
HCM 95th %tile Q(veh)	-	-	6.6	0.2	-



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	123	22	26	762	819
v/c Ratio	0.63	0.14	0.06	0.28	0.34
Control Delay	57.8	17.1	5.8	5.5	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	57.8	17.1	5.8	5.5	7.1
Queue Length 50th (ft)	80	0	5	76	102
Queue Length 95th (ft)	134	22	18	180	161
Internal Link Dist (ft)	434			170	147
Turn Bay Length (ft)		125			
Base Capacity (vph)	363	279	526	2686	2384
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.34	0.08	0.05	0.28	0.34

Intersection Summary
Description: 704005

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	116	21	24	716	517	253
Future Volume (veh/h)	116	21	24	716	517	253
Number	7	14	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1826	1470	1835	1853	1878	1890
Adj Flow Rate, veh/h	123	0	26	762	550	269
Adj No. of Lanes	1	1	1	2	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	28	3	2	1	0
Cap, veh/h	152	109	508	2778	1621	791
Arrive On Green	0.09	0.00	0.05	1.00	0.70	0.70
Sat Flow, veh/h	1739	1249	1748	3614	2420	1135
Grp Volume(v), veh/h	123	0	26	762	422	397
Grp Sat Flow(s),veh/h/ln	1739	1249	1748	1761	1784	1678
Q Serve(g_s), s	7.3	0.0	0.4	0.0	9.9	9.9
Cycle Q Clear(g_c), s	7.3	0.0	0.4	0.0	9.9	9.9
Prop In Lane	1.00	1.00	1.00			0.68
Lane Grp Cap(c), veh/h	152	109	508	2778	1243	1169
V/C Ratio(X)	0.81	0.00	0.05	0.27	0.34	0.34
Avail Cap(c_a), veh/h	364	262	647	2778	1243	1169
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.0	0.0	4.2	0.0	6.3	6.3
Incr Delay (d2), s/veh	3.8	0.0	0.0	0.2	0.7	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	0.0	0.2	0.1	5.1	4.8
LnGrp Delay(d),s/veh	50.9	0.0	4.2	0.2	7.1	7.1
LnGrp LOS	D		A	A	A	A
Approach Vol, veh/h	123			788	819	
Approach Delay, s/veh	50.9			0.4	7.1	
Approach LOS	D			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	9.7	79.2		16.2		88.8		
Change Period (Y+Rc), s	7.0	6.0		7.0		6.0		
Max Green Setting (Gmax), s	11.0	52.0		22.0		70.0		
Max Q Clear Time (g_c+I1), s	2.4	11.9		9.3		2.0		
Green Ext Time (p_c), s	0.0	8.5		0.2		8.7		

Intersection Summary	
HCM 2010 Ctrl Delay	7.1
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	1.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	65	13	737	95	6	705
Future Vol, veh/h	65	13	737	95	6	705
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	1
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	8	2	2	0	1
Mvmt Flow	70	14	792	102	6	758

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1234	447	0	0	894	0
Stage 1	843	-	-	-	-	-
Stage 2	391	-	-	-	-	-
Critical Hdwy	6.8	7.06	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.38	-	-	2.2	-
Pot Cap-1 Maneuver	172	543	-	-	767	-
Stage 1	388	-	-	-	-	-
Stage 2	659	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	170	543	-	-	767	-
Mov Cap-2 Maneuver	170	-	-	-	-	-
Stage 1	388	-	-	-	-	-
Stage 2	650	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	37.5	0	0.2
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	192	767	-
HCM Lane V/C Ratio	-	-	0.437	0.008	-
HCM Control Delay (s)	-	-	37.5	9.7	0.1
HCM Lane LOS	-	-	E	A	A
HCM 95th %tile Q(veh)	-	-	2	0	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	12	35	22	728	676	4
Future Vol, veh/h	12	35	22	728	676	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	60	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	5	2	1	0
Mvmt Flow	13	38	24	791	735	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1576	737	739	0	-	0
Stage 1	737	-	-	-	-	-
Stage 2	839	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.15	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.245	-	-	-
Pot Cap-1 Maneuver	122	422	854	-	-	-
Stage 1	477	-	-	-	-	-
Stage 2	427	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	116	422	854	-	-	-
Mov Cap-2 Maneuver	116	-	-	-	-	-
Stage 1	453	-	-	-	-	-
Stage 2	427	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20.9	0.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	854	-	116	422	-	-
HCM Lane V/C Ratio	0.028	-	0.112	0.09	-	-
HCM Control Delay (s)	9.3	0	39.9	14.4	-	-
HCM Lane LOS	A	A	E	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.4	0.3	-	-

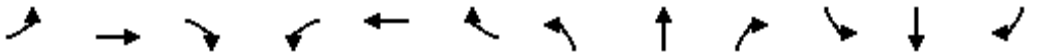


Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	594	140	290	48	183	471	88	423	251
v/c Ratio	0.83	0.16	0.31	0.05	0.82	0.90	0.50	0.87	0.46
Control Delay	45.5	11.5	24.1	0.1	63.6	78.6	42.7	78.0	18.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.5	11.5	24.1	0.1	63.6	78.6	42.7	78.0	18.3
Queue Length 50th (ft)	548	39	180	0	134	489	61	444	66
Queue Length 95th (ft)	#841	84	265	0	#243	#692	102	583	154
Internal Link Dist (ft)	748		505			1493		1383	
Turn Bay Length (ft)		75		75	180		380		225
Base Capacity (vph)	717	862	941	888	234	579	220	569	610
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.16	0.31	0.05	0.78	0.81	0.40	0.74	0.41

Intersection Summary

Description: 694030

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	160	410	134	20	258	46	176	403	49	84	406	241
Future Volume (vph)	160	410	134	20	258	46	176	403	49	84	406	241
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			-3%			-1%			-1%	
Total Lost time (s)		7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	7.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected		0.99	1.00		1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1826	1567		1904	1576	1796	1870		1778	1872	1607
Flt Permitted		0.73	1.00		0.93	1.00	0.14	1.00		0.12	1.00	1.00
Satd. Flow (perm)		1356	1567		1779	1576	257	1870		227	1872	1607
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	167	427	140	21	269	48	183	420	51	88	423	251
RTOR Reduction (vph)	0	0	32	0	0	23	0	3	0	0	0	129
Lane Group Flow (vph)	0	594	108	0	290	25	183	468	0	88	423	122
Heavy Vehicles (%)	3%	1%	2%	0%	1%	4%	1%	0%	4%	2%	2%	1%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4			8		1	6		5	2	
Permitted Phases	4		4	8		8	6			2		2
Actuated Green, G (s)		87.3	87.3		87.3	87.3	59.6	45.7		53.4	42.6	42.6
Effective Green, g (s)		87.3	87.3		87.3	87.3	59.6	45.7		53.4	42.6	42.6
Actuated g/C Ratio		0.53	0.53		0.53	0.53	0.36	0.28		0.32	0.26	0.26
Clearance Time (s)		7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	2.0	4.0		3.0	4.0	4.0
Lane Grp Cap (vph)		718	830		942	834	222	518		175	483	415
v/s Ratio Prot							c0.07	c0.25		0.03	0.23	
v/s Ratio Perm		c0.44	0.07		0.16	0.02	0.23			0.13		0.08
v/c Ratio		0.83	0.13		0.31	0.03	0.82	0.90		0.50	0.88	0.29
Uniform Delay, d1		32.4	19.6		21.8	18.5	41.6	57.4		43.1	58.6	49.0
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		7.8	0.1		0.2	0.0	20.4	19.4		2.3	16.6	0.5
Delay (s)		40.2	19.6		22.0	18.5	62.0	76.8		45.3	75.1	49.6
Level of Service		D	B		C	B	E	E		D	E	D
Approach Delay (s)		36.3			21.5			72.7			63.3	
Approach LOS		D			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	52.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	164.8	Sum of lost time (s)	28.0
Intersection Capacity Utilization	99.6%	ICU Level of Service	F
Analysis Period (min)	15		
Description: 694030			
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	19.5
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	266	218	24	12	261	36	109	33	2	33	32	34
Future Vol, veh/h	266	218	24	12	261	36	109	33	2	33	32	34
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	23	1	0	0	0	1	0	0	0	2	0	26
Mvmt Flow	289	237	26	13	284	39	118	36	2	36	35	37
Number of Lanes	0	2	0	0	1	0	0	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	2
HCM Control Delay	23.6	18	14	11.2
HCM LOS	C	C	B	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	76%	71%	0%	4%	100%	0%
Vol Thru, %	23%	29%	82%	84%	0%	48%
Vol Right, %	1%	0%	18%	12%	0%	52%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	144	375	133	309	33	66
LT Vol	109	266	0	12	33	0
Through Vol	33	109	109	261	0	32
RT Vol	2	0	24	36	0	34
Lane Flow Rate	157	408	145	336	36	72
Geometry Grp	6	7	7	6	7	7
Degree of Util (X)	0.322	0.763	0.236	0.587	0.08	0.141
Departure Headway (Hd)	7.395	6.739	5.871	6.288	8.07	7.051
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	484	534	609	571	447	504
Service Time	5.488	4.51	3.642	4.364	5.77	4.851
HCM Lane V/C Ratio	0.324	0.764	0.238	0.588	0.081	0.143
HCM Control Delay	14	28.2	10.5	18	11.5	11
HCM Lane LOS	B	D	B	C	B	B
HCM 95th-tile Q	1.4	6.7	0.9	3.8	0.3	0.5

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	158	467	115	165	170	69	23	2	37	4	0	7
Future Vol, veh/h	158	467	115	165	170	69	23	2	37	4	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	22	0	0	12	0	0	0	0	0	0	0
Mvmt Flow	172	508	125	179	185	75	25	2	40	4	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	260	0	0	633	0	0	1500	1533	317	1180	1558	223
Stage 1	-	-	-	-	-	-	915	915	-	581	581	-
Stage 2	-	-	-	-	-	-	585	618	-	599	977	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.3	6.5	6.9	7.3	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.5	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1316	-	-	960	-	-	93	118	685	158	114	822
Stage 1	-	-	-	-	-	-	298	354	-	503	503	-
Stage 2	-	-	-	-	-	-	501	484	-	460	332	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1316	-	-	960	-	-	65	73	685	102	71	822
Mov Cap-2 Maneuver	-	-	-	-	-	-	65	73	-	102	71	-
Stage 1	-	-	-	-	-	-	237	281	-	399	392	-
Stage 2	-	-	-	-	-	-	387	378	-	341	264	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.1	3.9	51.4	21.5
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	142	1316	-	-	960	-	-	230
HCM Lane V/C Ratio	0.475	0.131	-	-	0.187	-	-	0.052
HCM Control Delay (s)	51.4	8.1	0.5	-	9.6	0	-	21.5
HCM Lane LOS	F	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	2.2	0.4	-	-	0.7	-	-	0.2

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑			↱
Traffic Vol, veh/h	0	1870	2113	0	0	34
Future Vol, veh/h	0	1870	2113	0	0	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	-1	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	4	4	2	2	2
Mvmt Flow	0	2033	2297	0	0	37

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	1149
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	0	0	165
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	-	165
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	33
HCM LOS			D

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	165
HCM Lane V/C Ratio	-	-	0.224
HCM Control Delay (s)	-	-	33
HCM Lane LOS	-	-	D
HCM 95th %tile Q(veh)	-	-	0.8



Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	104	67	988	772
v/c Ratio	0.53	0.11	0.36	0.36
Control Delay	29.2	2.5	4.2	2.6
Queue Delay	0.0	0.0	0.5	0.2
Total Delay	29.2	2.5	4.7	2.8
Queue Length 50th (ft)	24	7	97	38
Queue Length 95th (ft)	74	m8	m86	54
Internal Link Dist (ft)	153		331	137
Turn Bay Length (ft)		150		
Base Capacity (vph)	556	622	2715	2173
Starvation Cap Reductn	0	0	1188	530
Spillback Cap Reductn	14	0	29	196
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.19	0.11	0.65	0.47

Intersection Summary

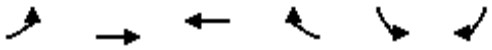
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	34	62	62	909	688	22
Future Volume (veh/h)	34	62	62	909	688	22
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1853	1818	1791	1862
Adj Flow Rate, veh/h	37	67	67	988	748	24
Adj No. of Lanes	0	0	1	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	4	4	2
Cap, veh/h	47	85	850	2714	1282	41
Arrive On Green	0.08	0.08	0.34	0.79	0.76	0.76
Sat Flow, veh/h	581	1052	1765	3545	3456	108
Grp Volume(v), veh/h	105	0	67	988	378	394
Grp Sat Flow(s),veh/h/ln	1648	0	1765	1727	1702	1772
Q Serve(g_s), s	6.6	0.0	0.0	9.0	10.0	10.0
Cycle Q Clear(g_c), s	6.6	0.0	0.0	9.0	10.0	10.0
Prop In Lane	0.35	0.64	1.00			0.06
Lane Grp Cap(c), veh/h	133	0	850	2714	648	675
V/C Ratio(X)	0.79	0.00	0.08	0.36	0.58	0.58
Avail Cap(c_a), veh/h	502	0	850	2714	648	675
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.09	0.09	0.90	0.90
Uniform Delay (d), s/veh	47.4	0.0	9.1	3.4	8.9	8.9
Incr Delay (d2), s/veh	9.9	0.0	0.0	0.0	3.4	3.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	0.0	0.8	4.3	5.1	5.3
LnGrp Delay(d),s/veh	57.3	0.0	9.1	3.4	12.4	12.2
LnGrp LOS	E		A	A	B	B
Approach Vol, veh/h	105			1055	772	
Approach Delay, s/veh	57.3			3.8	12.3	
Approach LOS	E			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		89.5		15.5	42.5	47.0		
Change Period (Y+Rc), s		7.0		7.0	7.0	7.0		
Max Green Setting (Gmax), s		59.0		32.0	12.0	40.0		
Max Q Clear Time (g_c+I1), s		11.0		8.6	2.0	12.0		
Green Ext Time (p_c), s		4.8		0.3	0.1	2.8		

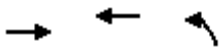
Intersection Summary	
HCM 2010 Ctrl Delay	10.1
HCM 2010 LOS	B



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	2108	1526	30	0	53
Future Volume (Veh/h)	0	2108	1526	30	0	53
Sign Control		Free	Free		Stop	
Grade		-7%	-1%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2291	1659	33	0	58
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		1143	198			
pX, platoon unblocked	0.64				0.64	0.64
vC, conflicting volume	1692				2248	570
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	129				995	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	92
cM capacity (veh/h)	935				155	697

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	SB 1
Volume Total	573	573	573	573	664	664	365	58
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	33	58
cSH	1700	1700	1700	1700	1700	1700	1700	697
Volume to Capacity	0.34	0.34	0.34	0.34	0.39	0.39	0.21	0.08
Queue Length 95th (ft)	0	0	0	0	0	0	0	7
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.6
Lane LOS								B
Approach Delay (s)	0.0				0.0			10.6
Approach LOS								B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	40.2%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBT	WBT	NBL
Lane Group Flow (vph)	1895	1835	437
v/c Ratio	0.76	0.73	0.74
Control Delay	13.2	7.9	49.3
Queue Delay	0.0	0.0	0.0
Total Delay	13.2	7.9	49.3
Queue Length 50th (ft)	374	599	145
Queue Length 95th (ft)	552	133	188
Internal Link Dist (ft)	735	250	372
Turn Bay Length (ft)			220
Base Capacity (vph)	2497	2498	1028
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.76	0.73	0.43

Intersection Summary
Description: 7075



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1857	0	0	1798	428	0
Future Volume (vph)	1857	0	0	1798	428	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	1%			-1%	-1%	
Total Lost time (s)	6.5			6.5	7.0	
Lane Util. Factor	0.95			0.95	0.97	
Frt	1.00			1.00	1.00	
Flt Protected	1.00			1.00	0.95	
Satd. Flow (prot)	3556			3557	3484	
Flt Permitted	1.00			1.00	0.95	
Satd. Flow (perm)	3556			3557	3484	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	1895	0	0	1835	437	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1895	0	0	1835	437	0
Heavy Vehicles (%)	1%	0%	0%	2%	1%	0%
Turn Type	NA			NA	Prot	
Protected Phases	2			6	4	
Permitted Phases						
Actuated Green, G (s)	73.8			73.8	17.7	
Effective Green, g (s)	73.8			73.8	17.7	
Actuated g/C Ratio	0.70			0.70	0.17	
Clearance Time (s)	6.5			6.5	7.0	
Vehicle Extension (s)	5.0			5.0	2.0	
Lane Grp Cap (vph)	2499			2500	587	
v/s Ratio Prot	c0.53			0.52	c0.13	
v/s Ratio Perm						
v/c Ratio	0.76			0.73	0.74	
Uniform Delay, d1	9.9			9.6	41.5	
Progression Factor	1.00			0.63	1.00	
Incremental Delay, d2	2.2			1.4	4.5	
Delay (s)	12.1			7.5	46.0	
Level of Service	B			A	D	
Approach Delay (s)	12.1			7.5	46.0	
Approach LOS	B			A	D	

Intersection Summary			
HCM 2000 Control Delay	13.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	74.8%	ICU Level of Service	D
Analysis Period (min)	15		

Description: 7075

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	2102	188	0	1578	0	0	0	9	0	0	278
Future Vol, veh/h	0	2102	188	0	1578	0	0	0	9	0	0	278
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Yield	Yield	Yield
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Yield
Storage Length	-	-	-	-	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	-7	-	-	-1	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	0	1	0	0	2	0	0	0	0	0	0	9
Mvmt Flow	0	2145	192	0	1610	0	0	0	9	0	0	284

Major/Minor	Major1			Major2			Minor1					
Conflicting Flow All	-	0	0	-	-	0	-	-	1169			
Stage 1	-	-	-	-	-	-	-	-	-			
Stage 2	-	-	-	-	-	-	-	-	-			
Critical Hdwy	-	-	-	-	-	-	-	-	7.1			
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-			
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-			
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.9			
Pot Cap-1 Maneuver	0	-	-	0	-	0	0	0	162			
Stage 1	0	-	-	0	-	0	0	0	-			
Stage 2	0	-	-	0	-	0	0	0	-			
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	0	162			
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	0	-			
Stage 1	-	-	-	-	-	-	-	0	-			
Stage 2	-	-	-	-	-	-	-	0	-			

Approach	EB	WB	NB
HCM Control Delay, s	0	0	28.6
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	162	-	-	-
HCM Lane V/C Ratio	0.057	-	-	-
HCM Control Delay (s)	28.6	-	-	-
HCM Lane LOS	D	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	2108	1575	4	0	3
Future Vol, veh/h	3	2108	1575	4	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	140	-	-	0	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	-1	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	1	2	11	0	0
Mvmt Flow	3	2196	1641	4	0	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1645	0	-	0	-	821
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.1	-	-	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.2	-	-	-	-	3.3
Pot Cap-1 Maneuver	398	-	-	-	0	322
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	398	-	-	-	-	322
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	398	-	-	-	322
HCM Lane V/C Ratio	0.008	-	-	-	0.01
HCM Control Delay (s)	14.1	-	-	-	16.3
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	239	1980	1443	306	16	34	273	247
v/c Ratio	1.09	0.68	0.91	0.37	0.17	0.13	0.77	0.48
Control Delay	134.7	30.1	33.3	9.5	52.3	1.0	54.0	8.3
Queue Delay	0.0	0.6	0.0	0.0	0.0	0.2	13.6	1.3
Total Delay	134.7	30.7	33.3	9.5	52.3	1.2	67.6	9.6
Queue Length 50th (ft)	~177	430	496	75	10	0	183	5
Queue Length 95th (ft)	m#304	#559	m#938	m106	34	0	265	69
Internal Link Dist (ft)		118	138		288			281
Turn Bay Length (ft)								
Base Capacity (vph)	219	2912	1590	835	94	265	441	581
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	476	0	0	0	66	146	173
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.09	0.81	0.91	0.37	0.17	0.17	0.93	0.61

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

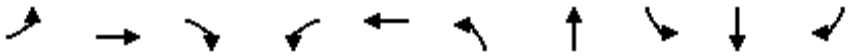
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	227	1844	37	0	1371	291	15	0	32	309	0	185
Future Volume (vph)	227	1844	37	0	1371	291	15	0	32	309	0	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-7%			-1%			0%			0%	
Total Lost time (s)	6.8	5.0			5.0	5.0		7.2	6.8	7.2	7.2	
Lane Util. Factor	1.00	0.91			0.95	1.00		1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00			1.00	0.98		1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	1.00			1.00	0.85		1.00	0.85	1.00	0.88	
Flt Protected	0.95	1.00			1.00	1.00		0.95	1.00	0.95	0.99	
Satd. Flow (prot)	1832	5146			3557	1586		1805	1603	1715	1575	
Flt Permitted	0.95	1.00			1.00	1.00		0.95	1.00	0.95	0.99	
Satd. Flow (perm)	1832	5146			3557	1586		1805	1603	1715	1575	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	239	1941	39	0	1443	306	16	0	34	325	0	195
RTOR Reduction (vph)	0	2	0	0	0	141	0	0	32	0	188	0
Lane Group Flow (vph)	239	1978	0	0	1443	165	0	16	2	273	59	0
Confl. Peds. (#/hr)	3		1	3		1			1			
Confl. Bikes (#/hr)			3									
Heavy Vehicles (%)	2%	4%	2%	3%	2%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	pm+ov	Split	NA	
Protected Phases	5	2		1	6		8	8	1	4	4	
Permitted Phases						6			8			
Actuated Green, G (s)	15.3	52.4			40.0	40.0		1.9	4.8	21.6	21.6	
Effective Green, g (s)	15.3	52.4			40.0	40.0		1.9	4.8	21.6	21.6	
Actuated g/C Ratio	0.15	0.50			0.38	0.38		0.02	0.05	0.21	0.21	
Clearance Time (s)	6.8	5.0			5.0	5.0		7.2	6.8	7.2	7.2	
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	266	2568			1355	604		32	73	352	324	
v/s Ratio Prot	0.13	c0.38			c0.41			c0.01	0.00	c0.16	0.04	
v/s Ratio Perm						0.10			0.00			
v/c Ratio	0.90	0.77			1.06	0.27		0.50	0.02	0.78	0.18	
Uniform Delay, d1	44.1	21.4			32.5	22.5		51.1	47.9	39.4	34.4	
Progression Factor	1.25	1.49			0.94	1.47		1.00	1.00	1.00	1.00	
Incremental Delay, d2	25.9	1.9			38.5	0.6		11.8	0.1	10.2	0.3	
Delay (s)	81.2	33.8			69.1	33.6		62.8	48.0	49.6	34.7	
Level of Service	F	C			E	C		E	D	D	C	
Approach Delay (s)		38.9			62.9			52.7			42.5	
Approach LOS		D			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	48.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	26.2
Intersection Capacity Utilization	87.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	166	1744	383	172	1533	148	389	252	478	221
v/c Ratio	1.07	1.08	0.45	1.01	0.93	1.02	0.47	0.84	0.99	0.45
Control Delay	165.4	92.1	23.1	160.6	61.5	133.0	70.0	67.0	95.4	24.2
Queue Delay	0.0	9.4	0.6	0.0	0.0	0.0	0.0	0.0	29.6	1.1
Total Delay	165.4	101.5	23.7	160.6	61.5	133.0	70.0	67.0	125.1	25.3
Queue Length 50th (ft)	~128	~1413	218	~245	1044	~161	245	220	673	96
Queue Length 95th (ft)	#219	#1528	282	#428	1158	#335	305	#320	#903	151
Internal Link Dist (ft)		259			2080		412		331	
Turn Bay Length (ft)	250			225		115		295		
Base Capacity (vph)	155	1618	846	170	1642	145	822	300	485	492
Starvation Cap Reductn	0	79	186	0	0	0	0	0	43	114
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.07	1.13	0.58	1.01	0.93	1.02	0.47	0.84	1.08	0.58

Intersection Summary

Description: 7070

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	158	1657	364	163	1260	197	141	312	58	239	454	210
Future Volume (vph)	158	1657	364	163	1260	197	141	312	58	239	454	210
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-7%			7%			3%			4%	
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0		7.0	6.5		7.0	6.5	6.5
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95		1.00	0.95		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99		1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3624	3736	1618	1708	3348		1743	3354		1602	1773	1455
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.08	1.00		0.34	1.00	1.00
Satd. Flow (perm)	3624	3736	1618	1708	3348		155	3354		577	1773	1455
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	166	1744	383	172	1326	207	148	328	61	252	478	221
RTOR Reduction (vph)	0	0	46	0	0	0	0	0	0	0	0	94
Lane Group Flow (vph)	166	1744	337	172	1533	0	148	389	0	252	478	127
Confl. Peds. (#/hr)	3		6	6		3	27		14	14		27
Heavy Vehicles (%)	0%	0%	1%	2%	1%	6%	2%	3%	2%	10%	5%	2%
Turn Type	Prot	NA	pm+ov	Prot	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases			2				8			4		4
Actuated Green, G (s)	9.0	91.0	104.0	21.0	103.0		64.5	51.5		76.5	57.5	57.5
Effective Green, g (s)	9.0	91.0	104.0	21.0	103.0		64.5	51.5		76.5	57.5	57.5
Actuated g/C Ratio	0.04	0.43	0.50	0.10	0.49		0.31	0.25		0.36	0.27	0.27
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	6.5		7.0	6.5	6.5
Vehicle Extension (s)	3.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	155	1618	855	170	1642		145	822		302	485	398
v/s Ratio Prot	0.05	c0.47	0.02	c0.10	c0.46		0.06	0.12		c0.08	c0.27	
v/s Ratio Perm			0.18				0.25			0.23		0.09
v/c Ratio	1.07	1.08	0.39	1.01	0.93		1.02	0.47		0.83	0.99	0.32
Uniform Delay, d1	100.5	59.5	33.2	94.5	50.3		60.7	67.7		56.4	75.8	60.7
Progression Factor	0.92	0.86	0.97	1.00	1.00		1.00	1.00		0.84	0.80	0.86
Incremental Delay, d2	83.9	44.5	0.1	72.1	11.2		80.3	0.2		15.6	34.8	0.2
Delay (s)	176.5	95.6	32.3	166.6	61.5		141.0	67.8		63.2	95.7	52.0
Level of Service	F	F	C	F	E		F	E		E	F	D
Approach Delay (s)		90.9			72.1			88.0			77.0	
Approach LOS		F			E			F			E	

Intersection Summary			
HCM 2000 Control Delay	82.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	210.0	Sum of lost time (s)	27.5
Intersection Capacity Utilization	111.6%	ICU Level of Service	H
Analysis Period (min)	15		
Description: 7070			

c Critical Lane Group



Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	215	73	679	915
v/c Ratio	0.72	0.17	0.26	0.43
Control Delay	39.4	2.1	1.7	6.5
Queue Delay	0.0	0.0	0.2	0.2
Total Delay	39.4	2.1	1.9	6.6
Queue Length 50th (ft)	85	4	18	40
Queue Length 95th (ft)	154	7	24	291
Internal Link Dist (ft)	405		137	400
Turn Bay Length (ft)		110		
Base Capacity (vph)	590	435	2581	2134
Starvation Cap Reductn	0	0	1110	404
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.36	0.17	0.46	0.53

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	77	127	69	645	791	78
Future Volume (veh/h)	77	127	69	645	791	78
Number	7	14	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1888	1900	1890	1853	1822	1862
Adj Flow Rate, veh/h	81	134	73	679	833	82
Adj No. of Lanes	0	0	1	2	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	1	0	2	2	4
Cap, veh/h	95	157	377	2519	1932	190
Arrive On Green	0.15	0.15	0.08	1.00	0.20	0.20
Sat Flow, veh/h	628	1038	1800	3614	3275	313
Grp Volume(v), veh/h	216	0	73	679	453	462
Grp Sat Flow(s),veh/h/ln	1674	0	1800	1761	1731	1766
Q Serve(g_s), s	13.2	0.0	1.5	0.0	24.0	24.0
Cycle Q Clear(g_c), s	13.2	0.0	1.5	0.0	24.0	24.0
Prop In Lane	0.37	0.62	1.00			0.18
Lane Grp Cap(c), veh/h	253	0	377	2519	1050	1072
V/C Ratio(X)	0.85	0.00	0.19	0.27	0.43	0.43
Avail Cap(c_a), veh/h	526	0	422	2519	1050	1072
HCM Platoon Ratio	1.00	1.00	2.00	2.00	0.33	0.33
Upstream Filter(I)	1.00	0.00	0.95	0.95	0.90	0.90
Uniform Delay (d), s/veh	43.4	0.0	9.3	0.0	26.1	26.1
Incr Delay (d2), s/veh	7.9	0.0	0.2	0.2	1.2	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	0.0	0.7	0.1	11.9	12.1
LnGrp Delay(d),s/veh	51.4	0.0	9.5	0.2	27.3	27.3
LnGrp LOS	D		A	A	C	C
Approach Vol, veh/h	216			752	915	
Approach Delay, s/veh	51.4			1.1	27.3	
Approach LOS	D			A	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	11.4	70.7		22.9		82.1		
Change Period (Y+Rc), s	7.0	7.0		7.0		7.0		
Max Green Setting (Gmax), s	7.0	44.0		33.0		58.0		
Max Q Clear Time (g_c+I1), s	3.5	26.0		15.2		2.0		
Green Ext Time (p_c), s	0.0	3.2		0.7		3.0		

Intersection Summary	
HCM 2010 Ctrl Delay	19.6
HCM 2010 LOS	B

Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	390	290	24	102	670	13	15	689
v/c Ratio	1.14	0.47	0.07	0.25	0.34	0.01	0.03	0.42
Control Delay	128.2	6.5	19.5	7.6	8.1	0.0	3.4	10.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	128.2	6.5	19.5	7.6	8.1	0.0	3.4	10.0
Queue Length 50th (ft)	~307	0	6	16	54	0	1	154
Queue Length 95th (ft)	#492	64	27	34	105	0	m3	85
Internal Link Dist (ft)	375		307		400			190
Turn Bay Length (ft)				205		290	125	
Base Capacity (vph)	343	619	331	496	2000	874	515	1644
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.14	0.47	0.07	0.21	0.34	0.01	0.03	0.42

Intersection Summary

Description: 704010

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	358	1	267	8	2	12	94	616	12	14	594	40
Future Volume (vph)	358	1	267	8	2	12	94	616	12	14	594	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			2%			1%			1%	
Total Lost time (s)		7.0	7.0		7.0		7.0	6.0	6.0	7.0	6.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	0.98		0.99		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes		0.99	1.00		1.00		1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85		0.93		1.00	1.00	0.85	1.00	0.99	
Flt Protected		0.95	1.00		0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1792	1571		1614		1726	3522	1453	1793	3455	
Flt Permitted		0.71	1.00		0.76		0.29	1.00	1.00	0.39	1.00	
Satd. Flow (perm)		1334	1571		1250		535	3522	1453	742	3455	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	389	1	290	9	2	13	102	670	13	15	646	43
RTOR Reduction (vph)	0	0	215	0	10	0	0	0	6	0	4	0
Lane Group Flow (vph)	0	390	75	0	14	0	102	670	7	15	685	0
Confl. Peds. (#/hr)	4		9	9		4	3		4	4		3
Heavy Vehicles (%)	1%	0%	1%	13%	0%	0%	4%	2%	8%	0%	3%	0%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		
Actuated Green, G (s)		27.0	27.0		27.0		63.6	55.4	55.4	52.4	49.8	
Effective Green, g (s)		27.0	27.0		27.0		63.6	55.4	55.4	52.4	49.8	
Actuated g/C Ratio		0.26	0.26		0.26		0.61	0.53	0.53	0.50	0.47	
Clearance Time (s)		7.0	7.0		7.0		7.0	6.0	6.0	7.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	4.0	4.0	3.0	4.0	
Lane Grp Cap (vph)		343	403		321		417	1858	766	396	1638	
v/s Ratio Prot							c0.02	c0.19		0.00	c0.20	
v/s Ratio Perm		c0.29	0.05		0.01		0.13		0.00	0.02		
v/c Ratio		1.14	0.19		0.04		0.24	0.36	0.01	0.04	0.42	
Uniform Delay, d1		39.0	30.4		29.3		9.7	14.5	11.8	13.3	18.1	
Progression Factor		1.00	1.00		1.00		0.72	0.59	1.00	0.38	0.50	
Incremental Delay, d2		91.1	0.2		0.1		0.3	0.5	0.0	0.0	0.8	
Delay (s)		130.1	30.6		29.4		7.3	9.0	11.8	5.1	9.9	
Level of Service		F	C		C		A	A	B	A	A	
Approach Delay (s)		87.7			29.4			8.9			9.8	
Approach LOS		F			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	33.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		
Description: 704010			

c Critical Lane Group

Intersection	
Int Delay, s/veh	10.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	48	65	864	101	106	582
Future Vol, veh/h	48	65	864	101	106	582
Conflicting Peds, #/hr	3	0	0	1	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	1	-	-	1
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	0	1	1	0	2
Mvmt Flow	52	71	939	110	115	633

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1545	526	0	0	1050	0
Stage 1	995	-	-	-	-	-
Stage 2	550	-	-	-	-	-
Critical Hdwy	6.35	7.1	-	-	5.3	-
Critical Hdwy Stg 1	6.7	-	-	-	-	-
Critical Hdwy Stg 2	5.9	-	-	-	-	-
Follow-up Hdwy	3.7	3.9	-	-	3.1	-
Pot Cap-1 Maneuver	127	429	-	-	376	-
Stage 1	244	-	-	-	-	-
Stage 2	517	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	67	429	-	-	376	-
Mov Cap-2 Maneuver	67	-	-	-	-	-
Stage 1	244	-	-	-	-	-
Stage 2	272	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	129.5	0	5.6
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	130	376	-
HCM Lane V/C Ratio	-	-	0.945	0.306	-
HCM Control Delay (s)	-	-	129.5	18.7	3.2
HCM Lane LOS	-	-	F	C	A
HCM 95th %tile Q(veh)	-	-	6.4	1.3	-



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	351	55	16	993	758
v/c Ratio	0.87	0.15	0.04	0.43	0.37
Control Delay	61.3	13.5	9.1	9.9	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	61.3	13.5	9.1	9.9	12.7
Queue Length 50th (ft)	223	6	5	168	113
Queue Length 95th (ft)	#352	37	m10	m175	211
Internal Link Dist (ft)	434			170	147
Turn Bay Length (ft)		125			
Base Capacity (vph)	454	402	438	2306	2061
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.77	0.14	0.04	0.43	0.37

Intersection Summary

Description: 704005

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

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

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	323	51	15	914	637	61
Future Volume (veh/h)	323	51	15	914	637	61
Number	7	14	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1862	1695	1783	1872	1824	1890
Adj Flow Rate, veh/h	351	0	16	993	692	66
Adj No. of Lanes	1	1	1	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	11	6	1	4	0
Cap, veh/h	383	311	408	2349	1842	176
Arrive On Green	0.22	0.00	0.01	0.44	0.58	0.58
Sat Flow, veh/h	1774	1440	1699	3650	3289	305
Grp Volume(v), veh/h	351	0	16	993	375	383
Grp Sat Flow(s),veh/h/ln	1774	1440	1699	1778	1733	1770
Q Serve(g_s), s	20.3	0.0	0.4	20.1	12.3	12.3
Cycle Q Clear(g_c), s	20.3	0.0	0.4	20.1	12.3	12.3
Prop In Lane	1.00	1.00	1.00			0.17
Lane Grp Cap(c), veh/h	383	311	408	2349	998	1020
V/C Ratio(X)	0.92	0.00	0.04	0.42	0.38	0.38
Avail Cap(c_a), veh/h	456	370	540	2349	998	1020
HCM Platoon Ratio	1.00	1.00	0.67	0.67	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.3	0.0	9.0	15.5	12.0	12.0
Incr Delay (d2), s/veh	19.6	0.0	0.0	0.6	1.1	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.0	0.0	0.2	10.0	6.1	6.3
LnGrp Delay(d),s/veh	59.9	0.0	9.0	16.1	13.1	13.1
LnGrp LOS	E		A	B	B	B
Approach Vol, veh/h	351			1009	758	
Approach Delay, s/veh	59.9			16.0	13.1	
Approach LOS	E			B	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	8.9	66.5		29.7		75.3		
Change Period (Y+Rc), s	7.0	6.0		7.0		6.0		
Max Green Setting (Gmax), s	10.0	48.0		27.0		65.0		
Max Q Clear Time (g_c+I1), s	2.4	14.3		22.3		22.1		
Green Ext Time (p_c), s	0.0	7.2		0.3		11.9		

Intersection Summary	
HCM 2010 Ctrl Delay	22.2
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	14	12	885	352	16	684
Future Vol, veh/h	14	12	885	352	16	684
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	1
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	1	0	0	3
Mvmt Flow	15	13	941	374	17	728

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1526	658	0	0	1315	0
Stage 1	1128	-	-	-	-	-
Stage 2	398	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	111	412	-	-	533	-
Stage 1	275	-	-	-	-	-
Stage 2	653	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	105	412	-	-	533	-
Mov Cap-2 Maneuver	105	-	-	-	-	-
Stage 1	275	-	-	-	-	-
Stage 2	618	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	32.1	0	0.6
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	160	533	-
HCM Lane V/C Ratio	-	-	0.173	0.032	-
HCM Control Delay (s)	-	-	32.1	12	0.3
HCM Lane LOS	-	-	D	B	A
HCM 95th %tile Q(veh)	-	-	0.6	0.1	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	33	51	846	667	15
Future Vol, veh/h	6	33	51	846	667	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	60	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	0	0	0	2	3	0
Mvmt Flow	6	33	52	855	674	15

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1641	682	689	0	-	0
Stage 1	682	-	-	-	-	-
Stage 2	959	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	111	453	915	-	-	-
Stage 1	506	-	-	-	-	-
Stage 2	375	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	99	453	915	-	-	-
Mov Cap-2 Maneuver	99	-	-	-	-	-
Stage 1	451	-	-	-	-	-
Stage 2	375	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.2	0.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	915	-	99	453	-	-
HCM Lane V/C Ratio	0.056	-	0.061	0.074	-	-
HCM Control Delay (s)	9.2	0	43.7	13.6	-	-
HCM Lane LOS	A	A	E	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.2	0.2	-	-



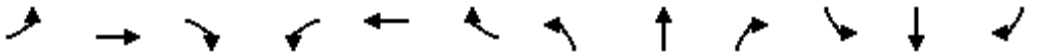
Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	709	163	355	30	127	366	55	510	243
v/c Ratio	1.24	0.21	0.59	0.04	0.59	0.55	0.17	0.87	0.41
Control Delay	157.2	16.7	38.3	0.1	38.8	45.3	27.1	67.7	17.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	157.2	16.7	38.3	0.1	38.8	45.3	27.1	67.7	17.3
Queue Length 50th (ft)	~923	56	269	0	81	315	34	507	70
Queue Length 95th (ft)	#1382	129	473	0	125	426	61	666	150
Internal Link Dist (ft)	748		505			1493		1383	
Turn Bay Length (ft)		75		75	180		380		227
Base Capacity (vph)	573	795	597	821	244	824	402	827	762
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.24	0.21	0.59	0.04	0.52	0.44	0.14	0.62	0.32

Intersection Summary

Description: 694030

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	187	493	156	23	318	29	122	322	30	53	490	233
Future Volume (vph)	187	493	156	23	318	29	122	322	30	53	490	233
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			-3%			-1%			-1%	
Total Lost time (s)		7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	7.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected		0.99	1.00		1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1824	1583		1899	1591	1778	1868		1814	1891	1546
Flt Permitted		0.65	1.00		0.65	1.00	0.13	1.00		0.39	1.00	1.00
Satd. Flow (perm)		1193	1583		1240	1591	235	1868		745	1891	1546
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	195	514	162	24	331	30	127	335	31	55	510	243
RTOR Reduction (vph)	0	0	35	0	0	16	0	2	0	0	0	104
Lane Group Flow (vph)	0	709	128	0	355	14	127	364	0	55	510	139
Heavy Vehicles (%)	1%	2%	1%	4%	1%	3%	2%	1%	0%	0%	1%	5%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4			8		1	6		5	2	
Permitted Phases	4		4	8		8	6			2		2
Actuated Green, G (s)		77.5	77.5		77.5	77.5	69.3	57.1		58.7	51.8	51.8
Effective Green, g (s)		77.5	77.5		77.5	77.5	69.3	57.1		58.7	51.8	51.8
Actuated g/C Ratio		0.48	0.48		0.48	0.48	0.43	0.35		0.36	0.32	0.32
Clearance Time (s)		7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	4.0		3.0	4.0	4.0
Lane Grp Cap (vph)		568	754		591	758	216	656		314	602	492
v/s Ratio Prot							c0.04	c0.19		0.01	c0.27	
v/s Ratio Perm		c0.59	0.08		0.29	0.01	0.21			0.06		0.09
v/c Ratio		1.25	0.17		0.60	0.02	0.59	0.55		0.18	0.85	0.28
Uniform Delay, d1		42.5	24.2		31.2	22.4	35.1	42.5		34.9	51.7	41.4
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		125.9	0.1		1.7	0.0	4.0	1.3		0.3	11.1	0.4
Delay (s)		168.4	24.3		32.9	22.4	39.2	43.7		35.1	62.7	41.9
Level of Service		F	C		C	C	D	D		D	E	D
Approach Delay (s)		141.4			32.1			42.6			54.6	
Approach LOS		F			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	78.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	162.5	Sum of lost time (s)	28.0
Intersection Capacity Utilization	110.2%	ICU Level of Service	H
Analysis Period (min)	15		
Description: 694030			
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	44.5
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	320	483	58	8	105	25	51	44	2	149	25	12
Future Vol, veh/h	320	483	58	8	105	25	51	44	2	149	25	12
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles, %	17	0	0	0	0	6	0	0	0	0	0	21
Mvmt Flow	340	514	62	9	112	27	54	47	2	159	27	13
Number of Lanes	0	2	0	0	1	0	0	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	2
HCM Control Delay	59.9	12.2	12.6	13.9
HCM LOS	F	B	B	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	53%	57%	0%	6%	100%	0%
Vol Thru, %	45%	43%	81%	76%	0%	68%
Vol Right, %	2%	0%	19%	18%	0%	32%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	97	562	300	138	149	37
LT Vol	51	320	0	8	149	0
Through Vol	44	242	242	105	0	25
RT Vol	2	0	58	25	0	12
Lane Flow Rate	103	597	319	147	159	39
Geometry Grp	6	7	7	6	7	7
Degree of Util (X)	0.21	1.074	0.509	0.269	0.339	0.077
Departure Headway (Hd)	7.63	6.472	5.754	6.747	7.99	7.247
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	474	567	631	536	453	498
Service Time	5.63	4.178	3.46	4.747	5.69	4.947
HCM Lane V/C Ratio	0.217	1.053	0.506	0.274	0.351	0.078
HCM Control Delay	12.6	84.2	14.3	12.2	14.7	10.6
HCM Lane LOS	B	F	B	B	B	B
HCM 95th-tile Q	0.8	17.8	2.9	1.1	1.5	0.2

Intersection	
Int Delay, s/veh	9.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	74	761	40	80	60	28	70	3	98	2	0	5
Future Vol, veh/h	74	761	40	80	60	28	70	3	98	2	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	5	0	0	20	0	0	0	0	0	0	0
Mvmt Flow	77	793	42	83	63	29	73	3	102	2	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	92	0	0	835	0	0	1214	1226	418	796	1233	78
Stage 1	-	-	-	-	-	-	968	968	-	244	244	-
Stage 2	-	-	-	-	-	-	246	258	-	552	989	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.3	6.5	6.9	7.3	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.5	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1515	-	-	807	-	-	149	180	589	294	178	988
Stage 1	-	-	-	-	-	-	276	335	-	764	708	-
Stage 2	-	-	-	-	-	-	762	698	-	491	327	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1515	-	-	807	-	-	126	145	589	203	143	988
Mov Cap-2 Maneuver	-	-	-	-	-	-	126	145	-	203	143	-
Stage 1	-	-	-	-	-	-	250	303	-	691	631	-
Stage 2	-	-	-	-	-	-	675	622	-	363	296	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	4.7	59.5	12.8
HCM LOS			F	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	230	1515	-	-	807	-	-	469
HCM Lane V/C Ratio	0.774	0.051	-	-	0.103	-	-	0.016
HCM Control Delay (s)	59.5	7.5	0.3	-	10	0	-	12.8
HCM Lane LOS	F	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	5.5	0.2	-	-	0.3	-	-	0

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑			↱
Traffic Vol, veh/h	0	2179	1611	0	0	51
Future Vol, veh/h	0	2179	1611	0	0	51
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	-1	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2179	1611	0	0	51

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	806
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	0	0	279
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	-	279
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	20.8
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	279
HCM Lane V/C Ratio	-	-	0.183
HCM Control Delay (s)	-	-	20.8
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	0.7



Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	168	116	708	998
v/c Ratio	0.67	0.29	0.27	0.47
Control Delay	37.7	7.8	7.0	4.8
Queue Delay	0.5	0.0	0.2	0.2
Total Delay	38.1	7.8	7.2	5.0
Queue Length 50th (ft)	62	39	139	50
Queue Length 95th (ft)	125	m54	m163	85
Internal Link Dist (ft)	222		331	137
Turn Bay Length (ft)		150		
Base Capacity (vph)	546	451	2658	2124
Starvation Cap Reductn	0	0	1051	250
Spillback Cap Reductn	132	0	8	330
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.41	0.26	0.44	0.56

Intersection Summary

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

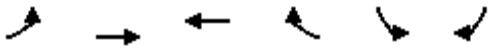


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	63	92	107	651	876	42
Future Volume (veh/h)	63	92	107	651	876	42
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1853	1853	1825	1862
Adj Flow Rate, veh/h	68	100	116	708	952	46
Adj No. of Lanes	0	0	1	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	82	120	505	2619	2120	102
Arrive On Green	0.12	0.12	0.05	0.74	1.00	1.00
Sat Flow, veh/h	667	980	1765	3614	3460	163
Grp Volume(v), veh/h	169	0	116	708	490	508
Grp Sat Flow(s),veh/h/ln	1656	0	1765	1761	1734	1797
Q Serve(g_s), s	10.5	0.0	2.2	6.8	0.0	0.0
Cycle Q Clear(g_c), s	10.5	0.0	2.2	6.8	0.0	0.0
Prop In Lane	0.40	0.59	1.00			0.09
Lane Grp Cap(c), veh/h	204	0	505	2619	1092	1131
V/C Ratio(X)	0.83	0.00	0.23	0.27	0.45	0.45
Avail Cap(c_a), veh/h	489	0	606	2619	1092	1131
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.71	0.71	0.91	0.91
Uniform Delay (d), s/veh	45.0	0.0	5.2	4.3	0.0	0.0
Incr Delay (d2), s/veh	8.4	0.0	0.2	0.2	1.2	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	0.0	1.1	3.3	0.4	0.4
LnGrp Delay(d),s/veh	53.4	0.0	5.4	4.5	1.2	1.2
LnGrp LOS	D		A	A	A	A
Approach Vol, veh/h	169			824	998	
Approach Delay, s/veh	53.4			4.6	1.2	
Approach LOS	D			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		85.1		19.9	12.0	73.1		
Change Period (Y+Rc), s		7.0		7.0	7.0	7.0		
Max Green Setting (Gmax), s		60.0		31.0	11.0	42.0		
Max Q Clear Time (g_c+I1), s		8.8		12.5	4.2	2.0		
Green Ext Time (p_c), s		3.1		0.5	0.2	4.0		

Intersection Summary	
HCM 2010 Ctrl Delay	7.0
HCM 2010 LOS	A

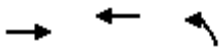
Appendix I: Intersection Capacity Analysis - Future with Development Condition (2030) – Proposed Mitigations



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1667	1539	44	0	15
Future Volume (Veh/h)	0	1667	1539	44	0	15
Sign Control		Free	Free		Stop	
Grade		-7%	-1%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1812	1673	48	0	16
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		1143	198			
pX, platoon unblocked	0.59				0.59	0.59
vC, conflicting volume	1721				2150	582
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				514	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	97
cM capacity (veh/h)	956				289	639

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	SB 1
Volume Total	453	453	453	453	669	669	383	16
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	48	16
cSH	1700	1700	1700	1700	1700	1700	1700	639
Volume to Capacity	0.27	0.27	0.27	0.27	0.39	0.39	0.23	0.03
Queue Length 95th (ft)	0	0	0	0	0	0	0	2
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.8
Lane LOS								B
Approach Delay (s)	0.0				0.0			10.8
Approach LOS								B

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	40.7%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBT	WBT	NBL
Lane Group Flow (vph)	1599	1595	132
v/c Ratio	0.63	0.63	0.21
Control Delay	11.5	2.9	53.5
Queue Delay	0.0	0.0	0.0
Total Delay	11.5	2.9	53.5
Queue Length 50th (ft)	373	65	57
Queue Length 95th (ft)	433	74	90
Internal Link Dist (ft)	735	250	372
Turn Bay Length (ft)			220
Base Capacity (vph)	2545	2546	621
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.63	0.63	0.21

Intersection Summary
Description: 7075



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1471	0	0	1467	121	0
Future Volume (vph)	1471	0	0	1467	121	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	1%			-1%	-1%	
Total Lost time (s)	6.5			6.5	7.0	
Lane Util. Factor	0.95			0.95	0.97	
Frt	1.00			1.00	1.00	
Flt Protected	1.00			1.00	0.95	
Satd. Flow (prot)	3487			3489	3450	
Flt Permitted	1.00			1.00	0.95	
Satd. Flow (perm)	3487			3489	3450	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1599	0	0	1595	132	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1599	0	0	1595	132	0
Heavy Vehicles (%)	3%	0%	0%	4%	2%	2%
Bus Blockages (#/hr)	0	100	0	0	0	0
Turn Type	NA			NA	Prot	
Protected Phases	2			6	4	
Permitted Phases						
Actuated Green, G (s)	109.5			109.5	27.0	
Effective Green, g (s)	109.5			109.5	27.0	
Actuated g/C Ratio	0.73			0.73	0.18	
Clearance Time (s)	6.5			6.5	7.0	
Vehicle Extension (s)	5.0			5.0	2.0	
Lane Grp Cap (vph)	2545			2546	621	
v/s Ratio Prot	c0.46			0.46	c0.04	
v/s Ratio Perm						
v/c Ratio	0.63			0.63	0.21	
Uniform Delay, d1	10.1			10.1	52.4	
Progression Factor	1.00			0.21	1.00	
Incremental Delay, d2	1.2			0.8	0.8	
Delay (s)	11.3			2.9	53.2	
Level of Service	B			A	D	
Approach Delay (s)	11.3			2.9	53.2	
Approach LOS	B			A	D	

Intersection Summary			
HCM 2000 Control Delay	8.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	56.1%	ICU Level of Service	B
Analysis Period (min)	15		

Description: 7075

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1665	33	0	1544	0	0	0	16	0	0	142
Future Vol, veh/h	0	1665	33	0	1544	0	0	0	16	0	0	142
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Yield	Yield	Yield
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Yield
Storage Length	-	-	-	-	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	-7	-	-	-1	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	4	0	0	5	0	0	0	0	0	0	29
Mvmt Flow	0	1810	36	0	1678	0	0	0	17	0	0	154

Major/Minor	Major1			Major2			Minor1					
Conflicting Flow All	-	0	0	-	-	0	-	-	923			
Stage 1	-	-	-	-	-	-	-	-	-			
Stage 2	-	-	-	-	-	-	-	-	-			
Critical Hdwy	-	-	-	-	-	-	-	-	7.1			
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-			
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-			
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.9			
Pot Cap-1 Maneuver	0	-	-	0	-	0	0	0	237			
Stage 1	0	-	-	0	-	0	0	0	-			
Stage 2	0	-	-	0	-	0	0	0	-			
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	0	237			
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	0	-			
Stage 1	-	-	-	-	-	-	-	0	-			
Stage 2	-	-	-	-	-	-	-	0	-			

Approach	EB	WB	NB
HCM Control Delay, s	0	0	21.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	237	-	-	-
HCM Lane V/C Ratio	0.073	-	-	-
HCM Control Delay (s)	21.4	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	14	1667	1536	18	0	8
Future Vol, veh/h	14	1667	1536	18	0	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	140	-	-	0	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	-1	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	4	5	0	0	12
Mvmt Flow	14	1719	1584	19	0	8

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1603	0	-	0	-	792
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.14	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.22	-	-	-	-	3.42
Pot Cap-1 Maneuver	404	-	-	-	0	311
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	404	-	-	-	-	311
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	16.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	404	-	-	-	311
HCM Lane V/C Ratio	0.036	-	-	-	0.027
HCM Control Delay (s)	14.2	-	-	-	16.9
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1



Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	205	1549	14	1540	706	20	5	269	259
v/c Ratio	0.86	0.49	0.17	0.89	0.72	0.24	0.02	0.83	0.58
Control Delay	83.7	14.8	81.8	37.8	16.8	75.8	0.2	79.2	24.2
Queue Delay	0.0	0.0	0.0	24.8	1.5	0.0	0.0	0.0	0.0
Total Delay	83.7	14.8	81.8	62.6	18.3	75.8	0.2	79.2	24.2
Queue Length 50th (ft)	200	194	15	624	190	19	0	268	84
Queue Length 95th (ft)	#344	287	m17	m622	m156	49	0	365	176
Internal Link Dist (ft)		118		138		288			281
Turn Bay Length (ft)			180						
Base Capacity (vph)	239	3159	123	1734	984	93	264	397	508
Starvation Cap Reductn	0	0	0	262	127	0	0	0	0
Spillback Cap Reductn	0	15	0	0	0	0	0	0	4
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.49	0.11	1.05	0.82	0.22	0.02	0.68	0.51

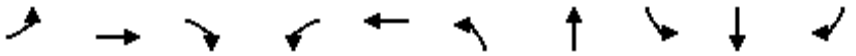
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	195	1451	21	13	1463	671	19	0	5	399	0	103
Future Volume (vph)	195	1451	21	13	1463	671	19	0	5	399	0	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-7%			-1%			0%			0%	
Total Lost time (s)	6.8	5.0		6.8	5.0	5.0		7.2	6.8	7.2	7.2	
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00		1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.95	1.00	0.95	0.97	
Satd. Flow (prot)	1868	5152		1814	3489	1585		1805	1601	1715	1644	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.95	1.00	0.95	0.97	
Satd. Flow (perm)	1868	5152		1814	3489	1585		1805	1601	1715	1644	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	205	1527	22	14	1540	706	20	0	5	420	0	108
RTOR Reduction (vph)	0	1	0	0	0	212	0	0	5	0	135	0
Lane Group Flow (vph)	205	1548	0	14	1540	494	0	20	0	269	124	0
Confl. Peds. (#/hr)	3		1	3		1			1			
Confl. Bikes (#/hr)			3									
Heavy Vehicles (%)	0%	4%	0%	0%	4%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	pm+ov	Split	NA	
Protected Phases	5	2		1	6		8	8	1	4	4	
Permitted Phases						6			8			
Actuated Green, G (s)	21.8	86.3		4.5	69.0	69.0		4.6	9.1	28.4	28.4	
Effective Green, g (s)	21.8	86.3		4.5	69.0	69.0		4.6	9.1	28.4	28.4	
Actuated g/C Ratio	0.15	0.58		0.03	0.46	0.46		0.03	0.06	0.19	0.19	
Clearance Time (s)	6.8	5.0		6.8	5.0	5.0		7.2	6.8	7.2	7.2	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	271	2964		54	1604	729		55	97	324	311	
v/s Ratio Prot	c0.11	0.30		0.01	c0.44			c0.01	0.00	c0.16	0.08	
v/s Ratio Perm						0.31			0.00			
v/c Ratio	0.76	0.52		0.26	0.96	0.68		0.36	0.00	0.83	0.40	
Uniform Delay, d1	61.6	19.3		71.1	39.2	31.8		71.3	66.2	58.5	53.3	
Progression Factor	0.87	0.74		1.18	1.01	1.11		1.00	1.00	1.00	1.00	
Incremental Delay, d2	10.0	0.6		0.6	4.8	1.2		4.1	0.0	16.3	0.8	
Delay (s)	63.6	14.9		84.6	44.5	36.5		75.3	66.2	74.8	54.2	
Level of Service	E	B		F	D	D		E	E	E	D	
Approach Delay (s)		20.6			42.2			73.5			64.7	
Approach LOS		C			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	36.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	26.2
Intersection Capacity Utilization	87.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	139	1676	112	29	2012	108	590	190	123	352
v/c Ratio	0.83	0.83	0.11	0.39	1.17	0.36	1.01	1.27	0.18	0.78
Control Delay	106.0	25.3	2.3	84.7	118.3	45.5	99.2	199.9	31.2	24.9
Queue Delay	0.0	0.0	0.0	0.0	0.4	0.1	0.0	0.0	0.0	2.3
Total Delay	106.0	25.3	2.3	84.7	118.7	45.5	99.2	199.9	31.2	27.2
Queue Length 50th (ft)	74	340	6	28	~1232	80	~309	~195	36	215
Queue Length 95th (ft)	m#135	433	m15	64	#1365	134	#441	#347	56	#179
Internal Link Dist (ft)		259			2080		412		331	
Turn Bay Length (ft)	250			225		115		200		
Base Capacity (vph)	167	2026	1011	83	1714	301	587	150	688	452
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	22
Spillback Cap Reductn	0	0	0	0	202	6	0	0	0	34
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.83	0.11	0.35	1.33	0.37	1.01	1.27	0.18	0.84

Intersection Summary

Description: 7070

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	135	1626	109	28	1666	285	105	494	79	184	119	341
Future Volume (vph)	135	1626	109	28	1666	285	105	494	79	184	119	341
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-7%			7%			3%			4%	
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0		7.0	6.5		7.0	6.5	7.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.98	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3588	3628	1606	1675	3277		1737	3393		1498	3538	1485
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.67	1.00		0.14	1.00	1.00
Satd. Flow (perm)	3588	3628	1606	1675	3277		1232	3393		216	3538	1485
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	139	1676	112	29	1718	294	108	509	81	190	123	352
RTOR Reduction (vph)	0	0	32	0	0	0	0	0	0	0	0	99
Lane Group Flow (vph)	139	1676	80	29	2012	0	108	590	0	190	123	253
Confl. Peds. (#/hr)	3		6	6		3	27		14	14		27
Heavy Vehicles (%)	1%	3%	2%	4%	3%	8%	0%	2%	3%	18%	0%	2%
Turn Type	Prot	NA	pm+ov	Prot	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	5	2	3	1	6		3	8		7	4	5
Permitted Phases			2				8			4		4
Actuated Green, G (s)	7.0	81.0	88.8	4.5	78.5		33.8	26.0		40.2	29.2	36.2
Effective Green, g (s)	7.0	81.0	88.8	4.5	78.5		33.8	26.0		40.2	29.2	36.2
Actuated g/C Ratio	0.05	0.54	0.59	0.03	0.52		0.23	0.17		0.27	0.19	0.24
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	6.5		7.0	6.5	7.0
Vehicle Extension (s)	3.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	3.0
Lane Grp Cap (vph)	167	1959	950	50	1714		303	588		151	688	358
v/s Ratio Prot	0.04	c0.46	0.00	0.02	c0.61		0.02	0.17		c0.09	0.03	0.03
v/s Ratio Perm			0.05				0.06			c0.24		0.14
v/c Ratio	0.83	0.86	0.08	0.58	1.17		0.36	1.00		1.26	0.18	0.71
Uniform Delay, d1	70.9	29.5	13.1	71.8	35.8		48.0	62.0		48.8	50.4	52.0
Progression Factor	1.04	0.75	0.77	1.00	1.00		1.00	1.00		1.10	0.60	0.42
Incremental Delay, d2	25.6	4.5	0.0	9.7	84.8		0.3	38.0		157.1	0.0	5.9
Delay (s)	99.7	26.7	10.2	81.6	120.5		48.3	100.0		211.1	30.5	27.9
Level of Service	F	C	B	F	F		D	F		F	C	C
Approach Delay (s)		31.0			120.0			92.0			80.7	
Approach LOS		C			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	79.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.24		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	27.5
Intersection Capacity Utilization	103.4%	ICU Level of Service	G
Analysis Period (min)	15		
Description: 7070			

c Critical Lane Group



Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	206	190	835	767
v/c Ratio	0.46	0.44	0.36	0.43
Control Delay	38.1	9.4	1.9	7.4
Queue Delay	0.0	0.1	0.2	0.1
Total Delay	38.1	9.4	2.1	7.5
Queue Length 50th (ft)	123	12	13	53
Queue Length 95th (ft)	207	52	28	83
Internal Link Dist (ft)	405		137	400
Turn Bay Length (ft)		110		
Base Capacity (vph)	444	539	2302	1791
Starvation Cap Reductn	0	18	703	240
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.46	0.36	0.52	0.49

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	66	123	175	768	587	119
Future Volume (veh/h)	66	123	175	768	587	119
Number	7	14	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1856	1900	1783	1818	1790	1862
Adj Flow Rate, veh/h	72	134	190	835	638	129
Adj No. of Lanes	0	0	1	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	2	6	4	4	4
Cap, veh/h	137	255	530	2303	1563	315
Arrive On Green	0.24	0.24	0.13	1.00	1.00	1.00
Sat Flow, veh/h	571	1062	1699	3545	2910	569
Grp Volume(v), veh/h	207	0	190	835	384	383
Grp Sat Flow(s),veh/h/ln	1640	0	1699	1727	1701	1689
Q Serve(g_s), s	16.5	0.0	7.4	0.0	0.0	0.0
Cycle Q Clear(g_c), s	16.5	0.0	7.4	0.0	0.0	0.0
Prop In Lane	0.35	0.65	1.00			0.34
Lane Grp Cap(c), veh/h	394	0	530	2303	942	936
V/C Ratio(X)	0.53	0.00	0.36	0.36	0.41	0.41
Avail Cap(c_a), veh/h	394	0	713	2303	942	936
HCM Platoon Ratio	1.00	1.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.93	0.93	0.93	0.93
Uniform Delay (d), s/veh	49.6	0.0	10.6	0.0	0.0	0.0
Incr Delay (d2), s/veh	5.0	0.0	0.4	0.4	1.2	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.0	0.0	3.4	0.1	0.3	0.3
LnGrp Delay(d),s/veh	54.5	0.0	11.0	0.4	1.2	1.2
LnGrp LOS	D		B	A	A	A
Approach Vol, veh/h	207			1025	767	
Approach Delay, s/veh	54.5			2.4	1.2	
Approach LOS	D			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	16.9	90.1		43.0		107.0		
Change Period (Y+Rc), s	7.0	7.0		7.0		7.0		
Max Green Setting (Gmax), s	26.0	67.0		36.0		100.0		
Max Q Clear Time (g_c+I1), s	9.4	2.0		18.5		2.0		
Green Ext Time (p_c), s	0.5	2.9		0.7		3.8		

Intersection Summary	
HCM 2010 Ctrl Delay	7.3
HCM 2010 LOS	A



Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	118	152	28	264	639	3	1	661
v/c Ratio	0.28	0.28	0.11	0.59	0.30	0.00	0.00	0.38
Control Delay	41.1	6.9	34.2	23.1	9.5	0.0	7.0	14.0
Queue Delay	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0
Total Delay	41.1	6.9	34.2	23.1	9.7	0.0	7.0	14.0
Queue Length 50th (ft)	88	1	12	76	63	0	0	201
Queue Length 95th (ft)	137	53	43	183	192	m0	m1	269
Internal Link Dist (ft)		375	307		400			190
Turn Bay Length (ft)				205		290	125	
Base Capacity (vph)	445	608	246	448	2123	1009	504	1735
Starvation Cap Reductn	0	0	0	0	616	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.25	0.11	0.59	0.42	0.00	0.00	0.38

Intersection Summary

Description: 704010

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	109	1	139	11	2	13	243	588	3	1	556	52
Future Volume (vph)	109	1	139	11	2	13	243	588	3	1	556	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			2%			1%			1%	
Total Lost time (s)	5.0	7.0			7.0		7.0	6.0	6.0	7.0	6.0	
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	0.97			0.99		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00			0.99		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85			0.93		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00			0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1753	1550			1691		1744	3454	1569	1791	3415	
Flt Permitted	0.71	1.00			0.85		0.31	1.00	1.00	0.41	1.00	
Satd. Flow (perm)	1310	1550			1469		569	3454	1569	772	3415	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	118	1	151	12	2	14	264	639	3	1	604	57
RTOR Reduction (vph)	0	109	0	0	12	0	0	0	1	0	4	0
Lane Group Flow (vph)	118	43	0	0	16	0	264	639	2	1	657	0
Confl. Peds. (#/hr)	4		9	9		4	3		4	4		3
Heavy Vehicles (%)	3%	0%	2%	0%	0%	0%	3%	4%	0%	0%	4%	0%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	3	8			4		1	6		5	2	
Permitted Phases	8			4			6		6	2		
Actuated Green, G (s)	42.2	42.2			24.0		94.8	86.6	86.6	77.2	76.0	
Effective Green, g (s)	42.2	42.2			24.0		94.8	86.6	86.6	77.2	76.0	
Actuated g/C Ratio	0.28	0.28			0.16		0.63	0.58	0.58	0.51	0.51	
Clearance Time (s)	5.0	7.0			7.0		7.0	6.0	6.0	7.0	6.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	4.0	4.0	3.0	4.0	
Lane Grp Cap (vph)	407	436			235		452	1994	905	405	1730	
v/s Ratio Prot	c0.03	0.03					c0.05	0.19		0.00	0.19	
v/s Ratio Perm	c0.06				0.01		c0.32		0.00	0.00		
v/c Ratio	0.29	0.10			0.07		0.58	0.32	0.00	0.00	0.38	
Uniform Delay, d1	41.6	39.9			53.5		13.8	16.4	13.4	17.7	22.6	
Progression Factor	1.00	1.00			1.00		1.32	0.62	1.00	0.59	0.58	
Incremental Delay, d2	0.4	0.1			0.1		1.8	0.4	0.0	0.0	0.6	
Delay (s)	42.0	40.0			53.6		20.0	10.6	13.4	10.5	13.8	
Level of Service	D	D			D		B	B	B	B	B	
Approach Delay (s)		40.9			53.6			13.4			13.8	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	18.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	25.0
Intersection Capacity Utilization	67.2%	ICU Level of Service	C
Analysis Period (min)	15		
Description: 704010			

c Critical Lane Group

Intersection	
Int Delay, s/veh	5.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	129	70	670	71	27	511
Future Vol, veh/h	129	70	670	71	27	511
Conflicting Peds, #/hr	3	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	150	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	1	-	-	1
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	7	3	4	17	0	4
Mvmt Flow	140	76	728	77	29	555

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1107	404	0	0	806	0
Stage 1	768	-	-	-	-	-
Stage 2	339	-	-	-	-	-
Critical Hdwy	6.39	7.16	-	-	5.3	-
Critical Hdwy Stg 1	6.74	-	-	-	-	-
Critical Hdwy Stg 2	5.94	-	-	-	-	-
Follow-up Hdwy	3.72	3.93	-	-	3.1	-
Pot Cap-1 Maneuver	228	507	-	-	492	-
Stage 1	333	-	-	-	-	-
Stage 2	656	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	208	507	-	-	492	-
Mov Cap-2 Maneuver	208	-	-	-	-	-
Stage 1	333	-	-	-	-	-
Stage 2	599	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	38.5	0	1.1
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	208	507	492	-
HCM Lane V/C Ratio	-	-	0.674	0.15	0.06	-
HCM Control Delay (s)	-	-	52.1	13.4	12.8	0.5
HCM Lane LOS	-	-	F	B	B	A
HCM 95th %tile Q(veh)	-	-	4.2	0.5	0.2	-



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	123	22	26	762	819
v/c Ratio	0.28	0.07	0.07	0.33	0.39
Control Delay	47.1	15.3	9.5	13.1	14.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	47.1	15.3	9.5	13.1	14.6
Queue Length 50th (ft)	97	0	10	207	200
Queue Length 95th (ft)	158	24	23	238	251
Internal Link Dist (ft)	434			170	147
Turn Bay Length (ft)		125			
Base Capacity (vph)	439	332	423	2324	2099
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.28	0.07	0.06	0.33	0.39

Intersection Summary
Description: 704005

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	116	21	24	716	517	253
Future Volume (veh/h)	116	21	24	716	517	253
Number	7	14	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1826	1470	1835	1853	1878	1890
Adj Flow Rate, veh/h	123	0	26	762	550	269
Adj No. of Lanes	1	1	1	2	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	28	3	2	1	0
Cap, veh/h	441	316	391	2324	1375	671
Arrive On Green	0.25	0.00	0.01	0.44	0.59	0.59
Sat Flow, veh/h	1739	1249	1748	3614	2420	1135
Grp Volume(v), veh/h	123	0	26	762	422	397
Grp Sat Flow(s),veh/h/ln	1739	1249	1748	1761	1784	1678
Q Serve(g_s), s	8.5	0.0	0.8	21.2	19.0	19.0
Cycle Q Clear(g_c), s	8.5	0.0	0.8	21.2	19.0	19.0
Prop In Lane	1.00	1.00	1.00			0.68
Lane Grp Cap(c), veh/h	441	316	391	2324	1055	992
V/C Ratio(X)	0.28	0.00	0.07	0.33	0.40	0.40
Avail Cap(c_a), veh/h	441	316	492	2324	1055	992
HCM Platoon Ratio	1.00	1.00	0.67	0.67	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.0	0.0	12.2	20.1	16.4	16.4
Incr Delay (d2), s/veh	1.6	0.0	0.0	0.4	1.1	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	0.0	0.4	10.5	9.7	9.2
LnGrp Delay(d),s/veh	46.6	0.0	12.3	20.5	17.5	17.6
LnGrp LOS	D		B	C	B	B
Approach Vol, veh/h	123			788	819	
Approach Delay, s/veh	46.6			20.2	17.6	
Approach LOS	D			C	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	10.3	94.7		45.0		105.0		
Change Period (Y+Rc), s	7.0	6.0		7.0		6.0		
Max Green Setting (Gmax), s	12.0	80.0		38.0		99.0		
Max Q Clear Time (g_c+I1), s	2.8	21.0		10.5		23.2		
Green Ext Time (p_c), s	0.0	8.9		0.2		8.7		

Intersection Summary	
HCM 2010 Ctrl Delay	20.9
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	1.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	65	13	737	95	6	705
Future Vol, veh/h	65	13	737	95	6	705
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	1
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	8	2	2	0	1
Mvmt Flow	70	14	792	102	6	758

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1234	447	0	0	894	0
Stage 1	843	-	-	-	-	-
Stage 2	391	-	-	-	-	-
Critical Hdwy	6.8	7.06	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.38	-	-	2.2	-
Pot Cap-1 Maneuver	172	543	-	-	767	-
Stage 1	388	-	-	-	-	-
Stage 2	659	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	170	543	-	-	767	-
Mov Cap-2 Maneuver	170	-	-	-	-	-
Stage 1	388	-	-	-	-	-
Stage 2	650	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	37.5	0	0.2
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	192	767	-
HCM Lane V/C Ratio	-	-	0.437	0.008	-
HCM Control Delay (s)	-	-	37.5	9.7	0.1
HCM Lane LOS	-	-	E	A	A
HCM 95th %tile Q(veh)	-	-	2	0	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	12	35	22	728	676	4
Future Vol, veh/h	12	35	22	728	676	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	60	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	5	2	1	0
Mvmt Flow	13	38	24	791	735	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1576	737	739	0	-	0
Stage 1	737	-	-	-	-	-
Stage 2	839	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.15	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.245	-	-	-
Pot Cap-1 Maneuver	122	422	854	-	-	-
Stage 1	477	-	-	-	-	-
Stage 2	427	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	116	422	854	-	-	-
Mov Cap-2 Maneuver	116	-	-	-	-	-
Stage 1	453	-	-	-	-	-
Stage 2	427	-	-	-	-	-

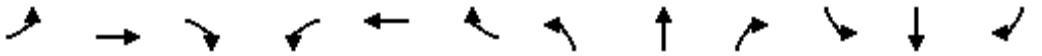
Approach	EB	NB	SB
HCM Control Delay, s	20.9	0.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	854	-	116	422	-	-
HCM Lane V/C Ratio	0.028	-	0.112	0.09	-	-
HCM Control Delay (s)	9.3	0	39.9	14.4	-	-
HCM Lane LOS	A	A	E	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.4	0.3	-	-



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	167	567	21	317	183	471	88	423	251
v/c Ratio	0.53	0.78	0.12	0.69	0.57	0.79	0.32	0.74	0.29
Control Delay	29.6	37.2	36.2	46.1	27.0	45.1	21.3	43.2	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.6	37.2	36.2	46.1	27.0	45.1	21.3	43.2	5.7
Queue Length 50th (ft)	76	329	11	196	72	292	33	258	19
Queue Length 95th (ft)	149	563	36	336	146	498	76	439	76
Internal Link Dist (ft)		748		505		1493		1383	
Turn Bay Length (ft)	250		125		180		380		225
Base Capacity (vph)	318	1521	490	1322	322	860	297	858	906
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.37	0.04	0.24	0.57	0.55	0.30	0.49	0.28

Intersection Summary
Description: 694030



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	160	410	134	20	258	46	176	403	49	84	406	241
Future Volume (vph)	160	410	134	20	258	46	176	403	49	84	406	241
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			-3%			-1%			-1%	
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	7.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.98		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1735	1789		1832	1858		1796	1870		1778	1872	1607
Flt Permitted	0.28	1.00		0.36	1.00		0.26	1.00		0.23	1.00	1.00
Satd. Flow (perm)	503	1789		690	1858		486	1870		429	1872	1607
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	167	427	140	21	269	48	183	420	51	88	423	251
RTOR Reduction (vph)	0	9	0	0	5	0	0	3	0	0	0	120
Lane Group Flow (vph)	167	558	0	21	312	0	183	468	0	88	423	131
Heavy Vehicles (%)	3%	1%	2%	0%	1%	4%	1%	0%	4%	2%	2%	1%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	7	4			8		1	6		5	2	7
Permitted Phases	4			8			6			2		2
Actuated Green, G (s)	44.5	44.5		27.2	27.2		45.4	35.1		42.8	33.8	44.1
Effective Green, g (s)	44.5	44.5		27.2	27.2		45.4	35.1		42.8	33.8	44.1
Actuated g/C Ratio	0.41	0.41		0.25	0.25		0.41	0.32		0.39	0.31	0.40
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	4.0	3.0		3.0	3.0		2.0	4.0		3.0	4.0	4.0
Lane Grp Cap (vph)	320	726		171	461		324	598		278	577	749
v/s Ratio Prot	0.05	c0.31			0.17		c0.05	c0.25		0.03	0.23	0.02
v/s Ratio Perm	0.16			0.03			0.18			0.10		0.07
v/c Ratio	0.52	0.77		0.12	0.68		0.56	0.78		0.32	0.73	0.18
Uniform Delay, d1	23.1	28.1		31.9	37.2		22.7	33.8		23.1	33.9	21.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.0	4.9		0.3	3.9		1.3	7.0		0.7	5.1	0.2
Delay (s)	25.1	33.0		32.3	41.1		24.0	40.8		23.7	39.0	21.2
Level of Service	C	C		C	D		C	D		C	D	C
Approach Delay (s)		31.2			40.6			36.1			31.4	
Approach LOS		C			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	33.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	109.6	Sum of lost time (s)	28.0
Intersection Capacity Utilization	89.2%	ICU Level of Service	E
Analysis Period (min)	15		
Description: 694030			
c Critical Lane Group			



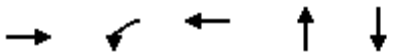
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	552	336	118	38	36	72
v/c Ratio	0.43	0.17	0.31	0.07	0.10	0.17
Control Delay	7.3	5.0	15.2	12.0	13.0	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.3	5.0	15.2	12.0	13.0	9.6
Queue Length 50th (ft)	33	15	18	5	5	6
Queue Length 95th (ft)	71	34	59	23	23	31
Internal Link Dist (ft)	414	375		177		378
Turn Bay Length (ft)			100		135	
Base Capacity (vph)	2181	3300	910	1272	920	1053
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.10	0.13	0.03	0.04	0.07

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	266	218	24	12	261	36	109	33	2	33	32	34
Future Volume (veh/h)	266	218	24	12	261	36	109	33	2	33	32	34
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1910	1698	1910	1900	1898	1900	1900	1900	1900	1863	1676	1900
Adj Flow Rate, veh/h	289	237	26	13	284	39	118	36	2	36	35	37
Adj No. of Lanes	0	2	0	0	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	23	1	0	0	0	1	0	0	0	2	0	26
Cap, veh/h	652	641	70	157	1441	192	438	313	17	473	131	139
Arrive On Green	0.47	0.47	0.47	0.47	0.47	0.47	0.18	0.18	0.18	0.18	0.18	0.18
Sat Flow, veh/h	845	1368	150	41	3075	409	1349	1783	99	1364	747	790
Grp Volume(v), veh/h	289	0	263	178	0	158	118	0	38	36	0	72
Grp Sat Flow(s),veh/h/ln	845	0	1518	1870	0	1655	1349	0	1883	1364	0	1537
Q Serve(g_s), s	7.1	0.0	3.1	0.0	0.0	1.6	2.3	0.0	0.5	0.6	0.0	1.1
Cycle Q Clear(g_c), s	8.7	0.0	3.1	1.5	0.0	1.6	3.5	0.0	0.5	1.1	0.0	1.1
Prop In Lane	1.00		0.10	0.07		0.25	1.00		0.05	1.00		0.51
Lane Grp Cap(c), veh/h	652	0	711	1014	0	775	438	0	330	473	0	270
V/C Ratio(X)	0.44	0.00	0.37	0.18	0.00	0.20	0.27	0.00	0.12	0.08	0.00	0.27
Avail Cap(c_a), veh/h	4234	0	6381	7767	0	6954	1259	0	1475	1302	0	1204
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.9	0.0	4.8	4.4	0.0	4.4	11.5	0.0	9.7	10.2	0.0	10.0
Incr Delay (d2), s/veh	0.5	0.0	0.3	0.1	0.0	0.1	0.3	0.0	0.2	0.1	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	1.3	0.8	0.0	0.7	0.9	0.0	0.3	0.2	0.0	0.5
LnGrp Delay(d),s/veh	7.4	0.0	5.1	4.5	0.0	4.5	11.8	0.0	9.9	10.3	0.0	10.5
LnGrp LOS	A		A	A		A	B		A	B		B
Approach Vol, veh/h		552			336			156			108	
Approach Delay, s/veh		6.3			4.5			11.4			10.5	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		18.2		9.9		18.2		9.9
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		118.0		22.0		118.0		22.0
Max Q Clear Time (g_c+I1), s		10.7		5.5		3.6		3.1
Green Ext Time (p_c), s		2.6		0.4		1.2		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	6.9
HCM 2010 LOS	A



Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	805	179	260	67	12
v/c Ratio	0.38	0.38	0.21	0.12	0.02
Control Delay	3.7	7.0	3.1	8.1	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	3.7	7.0	3.1	8.1	7.5
Queue Length 50th (ft)	0	0	0	1	0
Queue Length 95th (ft)	80	60	45	28	9
Internal Link Dist (ft)	612		414	128	222
Turn Bay Length (ft)					
Base Capacity (vph)	2555	661	1675	1432	1413
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.32	0.27	0.16	0.05	0.01

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	158	467	115	165	170	69	23	2	37	4	0	7
Future Volume (veh/h)	158	467	115	165	170	69	23	2	37	4	0	7
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1910	1677	1910	1900	1751	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	172	508	125	179	185	75	25	2	40	4	0	8
Adj No. of Lanes	0	2	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	22	0	0	12	0	0	0	0	0	0	0
Cap, veh/h	417	999	240	547	612	248	248	5	96	228	10	112
Arrive On Green	0.52	0.52	0.52	0.52	0.52	0.52	0.10	0.10	0.10	0.10	0.00	0.10
Sat Flow, veh/h	432	1934	464	807	1185	481	580	51	935	446	98	1087
Grp Volume(v), veh/h	416	0	389	179	0	260	67	0	0	12	0	0
Grp Sat Flow(s),veh/h/ln	1387	0	1444	807	0	1666	1566	0	0	1631	0	0
Q Serve(g_s), s	2.0	0.0	4.7	5.0	0.0	2.4	0.9	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	4.8	0.0	4.7	9.6	0.0	2.4	1.0	0.0	0.0	0.2	0.0	0.0
Prop In Lane	0.41		0.32	1.00		0.29	0.37		0.60	0.33		0.67
Lane Grp Cap(c), veh/h	910	0	746	547	0	861	349	0	0	351	0	0
V/C Ratio(X)	0.46	0.00	0.52	0.33	0.00	0.30	0.19	0.00	0.00	0.03	0.00	0.00
Avail Cap(c_a), veh/h	6174	0	6536	3781	0	7540	1426	0	0	1416	0	0
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	4.1	0.0	4.2	7.4	0.0	3.6	11.0	0.0	0.0	10.7	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.6	0.3	0.0	0.2	0.3	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	2.0	1.1	0.0	1.1	0.5	0.0	0.0	0.1	0.0	0.0
LnGrp Delay(d),s/veh	4.5	0.0	4.8	7.7	0.0	3.8	11.3	0.0	0.0	10.7	0.0	0.0
LnGrp LOS	A		A	A		A	B			B		
Approach Vol, veh/h		805			439			67			12	
Approach Delay, s/veh		4.6			5.4			11.3			10.7	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		18.6		7.7		18.6		7.7
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		119.0		21.0		119.0		21.0
Max Q Clear Time (g_c+I1), s		11.6		3.0		6.8		2.2
Green Ext Time (p_c), s		2.5		0.2		3.8		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	5.3
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑			↱
Traffic Vol, veh/h	0	1870	2113	0	0	34
Future Vol, veh/h	0	1870	2113	0	0	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	-1	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	4	4	2	2	2
Mvmt Flow	0	2033	2297	0	0	37

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	1149
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	0	0	165
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	-	165
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	33
HCM LOS			D

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	165
HCM Lane V/C Ratio	-	-	0.224
HCM Control Delay (s)	-	-	33
HCM Lane LOS	-	-	D
HCM 95th %tile Q(veh)	-	-	0.8



Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	104	67	988	772
v/c Ratio	0.28	0.15	0.40	0.36
Control Delay	28.1	4.4	5.1	6.4
Queue Delay	0.0	0.0	1.0	0.2
Total Delay	28.1	4.4	6.1	6.5
Queue Length 50th (ft)	41	11	104	63
Queue Length 95th (ft)	98	m12	m103	77
Internal Link Dist (ft)	153		331	137
Turn Bay Length (ft)		100		
Base Capacity (vph)	366	510	2463	2153
Starvation Cap Reductn	0	0	1141	558
Spillback Cap Reductn	0	0	0	9
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.28	0.13	0.75	0.48

Intersection Summary

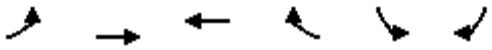
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	34	62	62	909	688	22
Future Volume (veh/h)	34	62	62	909	688	22
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1853	1818	1791	1862
Adj Flow Rate, veh/h	37	67	67	988	748	24
Adj No. of Lanes	0	0	1	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	4	4	2
Cap, veh/h	112	203	545	2464	2132	68
Arrive On Green	0.19	0.19	0.03	0.71	1.00	1.00
Sat Flow, veh/h	581	1052	1765	3545	3456	108
Grp Volume(v), veh/h	105	0	67	988	378	394
Grp Sat Flow(s),veh/h/ln	1648	0	1765	1727	1702	1772
Q Serve(g_s), s	8.2	0.0	1.9	17.2	0.0	0.0
Cycle Q Clear(g_c), s	8.2	0.0	1.9	17.2	0.0	0.0
Prop In Lane	0.35	0.64	1.00			0.06
Lane Grp Cap(c), veh/h	319	0	545	2464	1078	1123
V/C Ratio(X)	0.33	0.00	0.12	0.40	0.35	0.35
Avail Cap(c_a), veh/h	319	0	651	2464	1078	1123
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.16	0.16	0.91	0.91
Uniform Delay (d), s/veh	52.1	0.0	8.0	8.6	0.0	0.0
Incr Delay (d2), s/veh	2.8	0.0	0.0	0.1	0.8	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	0.0	0.9	8.1	0.2	0.2
LnGrp Delay(d),s/veh	54.9	0.0	8.0	8.7	0.8	0.8
LnGrp LOS	D		A	A	A	A
Approach Vol, veh/h	105			1055	772	
Approach Delay, s/veh	54.9			8.7	0.8	
Approach LOS	D			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		114.0		36.0	12.0	102.0		
Change Period (Y+Rc), s		7.0		7.0	7.0	7.0		
Max Green Setting (Gmax), s		107.0		29.0	14.0	86.0		
Max Q Clear Time (g_c+I1), s		19.2		10.2	3.9	2.0		
Green Ext Time (p_c), s		4.8		0.3	0.1	2.9		

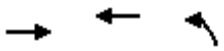
Intersection Summary	
HCM 2010 Ctrl Delay	8.0
HCM 2010 LOS	A



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	2108	1526	30	0	53
Future Volume (Veh/h)	0	2108	1526	30	0	53
Sign Control		Free	Free		Stop	
Grade		-7%	-1%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2291	1659	33	0	58
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		1143	198			
pX, platoon unblocked	0.64				0.64	0.64
vC, conflicting volume	1692				2248	570
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	107				977	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	92
cM capacity (veh/h)	947				159	693

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	SB 1
Volume Total	573	573	573	573	664	664	365	58
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	33	58
cSH	1700	1700	1700	1700	1700	1700	1700	693
Volume to Capacity	0.34	0.34	0.34	0.34	0.39	0.39	0.21	0.08
Queue Length 95th (ft)	0	0	0	0	0	0	0	7
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.7
Lane LOS								B
Approach Delay (s)	0.0				0.0			10.7
Approach LOS								B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	40.2%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBT	WBT	NBL
Lane Group Flow (vph)	1895	1835	437
v/c Ratio	0.78	0.76	0.55
Control Delay	19.0	15.2	54.4
Queue Delay	0.0	0.0	0.0
Total Delay	19.0	15.2	54.4
Queue Length 50th (ft)	616	257	196
Queue Length 95th (ft)	711	423	254
Internal Link Dist (ft)	735	250	372
Turn Bay Length (ft)			220
Base Capacity (vph)	2429	2430	789
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.78	0.76	0.55

Intersection Summary
Description: 7075



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1857	0	0	1798	428	0
Future Volume (vph)	1857	0	0	1798	428	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	1%			-1%	-1%	
Total Lost time (s)	6.5			6.5	7.0	
Lane Util. Factor	0.95			0.95	0.97	
Frt	1.00			1.00	1.00	
Flt Protected	1.00			1.00	0.95	
Satd. Flow (prot)	3556			3557	3484	
Flt Permitted	1.00			1.00	0.95	
Satd. Flow (perm)	3556			3557	3484	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	1895	0	0	1835	437	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1895	0	0	1835	437	0
Heavy Vehicles (%)	1%	0%	0%	2%	1%	0%
Turn Type	NA			NA	Prot	
Protected Phases	2			6	4	
Permitted Phases						
Actuated Green, G (s)	102.5			102.5	34.0	
Effective Green, g (s)	102.5			102.5	34.0	
Actuated g/C Ratio	0.68			0.68	0.23	
Clearance Time (s)	6.5			6.5	7.0	
Vehicle Extension (s)	5.0			5.0	2.0	
Lane Grp Cap (vph)	2429			2430	789	
v/s Ratio Prot	c0.53			0.52	c0.13	
v/s Ratio Perm						
v/c Ratio	0.78			0.76	0.55	
Uniform Delay, d1	16.1			15.5	51.3	
Progression Factor	1.00			0.85	1.00	
Incremental Delay, d2	2.6			1.7	2.8	
Delay (s)	18.7			14.9	54.1	
Level of Service	B			B	D	
Approach Delay (s)	18.7			14.9	54.1	
Approach LOS	B			B	D	

Intersection Summary			
HCM 2000 Control Delay	20.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	74.8%	ICU Level of Service	D
Analysis Period (min)	15		

Description: 7075

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	2102	188	0	1578	0	0	0	9	0	0	278
Future Vol, veh/h	0	2102	188	0	1578	0	0	0	9	0	0	278
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Yield	Yield	Yield
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Yield
Storage Length	-	-	-	-	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	-7	-	-	-1	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	0	1	0	0	2	0	0	0	0	0	0	9
Mvmt Flow	0	2145	192	0	1610	0	0	0	9	0	0	284

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	-	0	0	-	-	0	-	-	1169
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	7.1
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.9
Pot Cap-1 Maneuver	0	-	-	0	-	0	0	0	162
Stage 1	0	-	-	0	-	0	0	0	-
Stage 2	0	-	-	0	-	0	0	0	-
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	0	162
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	0	-
Stage 1	-	-	-	-	-	-	-	0	-
Stage 2	-	-	-	-	-	-	-	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	28.6
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	162	-	-	-
HCM Lane V/C Ratio	0.057	-	-	-
HCM Control Delay (s)	28.6	-	-	-
HCM Lane LOS	D	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	2108	1575	4	0	3
Future Vol, veh/h	3	2108	1575	4	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	140	-	-	0	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	-1	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	1	2	11	0	0
Mvmt Flow	3	2196	1641	4	0	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1645	0	-	0	-	821
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.1	-	-	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.2	-	-	-	-	3.3
Pot Cap-1 Maneuver	398	-	-	-	0	322
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	398	-	-	-	-	322
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	398	-	-	-	322
HCM Lane V/C Ratio	0.008	-	-	-	0.01
HCM Control Delay (s)	14.1	-	-	-	16.3
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	239	1980	1443	306	16	34	273	247
v/c Ratio	0.88	0.59	0.88	0.37	0.20	0.18	0.84	0.57
Control Delay	77.3	8.7	40.3	15.6	74.1	2.2	80.2	22.8
Queue Delay	0.0	0.1	8.6	0.0	0.0	0.2	0.6	0.2
Total Delay	77.3	8.8	48.9	15.6	74.1	2.4	80.8	23.0
Queue Length 50th (ft)	233	149	495	66	15	0	272	71
Queue Length 95th (ft)	m#357	196	#923	m111	42	0	370	164
Internal Link Dist (ft)		118	138		288			281
Turn Bay Length (ft)								
Base Capacity (vph)	271	3358	1633	822	93	196	397	493
Starvation Cap Reductn	0	0	177	0	0	0	0	0
Spillback Cap Reductn	0	299	0	0	0	29	18	31
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.88	0.65	0.99	0.37	0.17	0.20	0.72	0.53

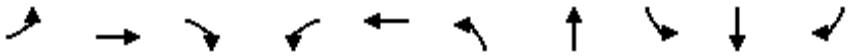
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	227	1844	37	0	1371	291	15	0	32	309	0	185
Future Volume (vph)	227	1844	37	0	1371	291	15	0	32	309	0	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-7%			-1%			0%			0%	
Total Lost time (s)	6.8	5.0			5.0	5.0		7.2	6.8	7.2	7.2	
Lane Util. Factor	1.00	0.91			0.95	1.00		1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00			1.00	0.98		1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	1.00			1.00	0.85		1.00	0.85	1.00	0.88	
Flt Protected	0.95	1.00			1.00	1.00		0.95	1.00	0.95	0.99	
Satd. Flow (prot)	1832	5146			3557	1585		1805	1583	1715	1575	
Flt Permitted	0.95	1.00			1.00	1.00		0.95	1.00	0.95	0.99	
Satd. Flow (perm)	1832	5146			3557	1585		1805	1583	1715	1575	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	239	1941	39	0	1443	306	16	0	34	325	0	195
RTOR Reduction (vph)	0	1	0	0	0	96	0	0	33	0	134	0
Lane Group Flow (vph)	239	1979	0	0	1443	210	0	16	1	273	113	0
Confl. Peds. (#/hr)	3		1	3		1			1			
Confl. Bikes (#/hr)			3									
Heavy Vehicles (%)	2%	4%	2%	3%	2%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	pm+ov	Split	NA	
Protected Phases	5	2		1	6		8	8	1	4	4	
Permitted Phases						6			8			
Actuated Green, G (s)	22.2	96.4			67.4	67.4		5.7	5.7	28.5	28.5	
Effective Green, g (s)	22.2	96.4			67.4	67.4		5.7	5.7	28.5	28.5	
Actuated g/C Ratio	0.15	0.64			0.45	0.45		0.04	0.04	0.19	0.19	
Clearance Time (s)	6.8	5.0			5.0	5.0		7.2	6.8	7.2	7.2	
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	271	3307			1598	712		68	60	325	299	
v/s Ratio Prot	c0.13	0.38			c0.41			c0.01		c0.16	0.07	
v/s Ratio Perm						0.13			0.00			
v/c Ratio	0.88	0.60			0.90	0.29		0.24	0.02	0.84	0.38	
Uniform Delay, d1	62.6	15.6			38.3	26.2		70.0	69.5	58.6	53.0	
Progression Factor	0.80	0.50			0.92	1.19		1.00	1.00	1.00	1.00	
Incremental Delay, d2	22.7	0.7			5.8	0.7		1.8	0.1	17.1	0.8	
Delay (s)	72.9	8.4			40.9	31.9		71.8	69.6	75.7	53.8	
Level of Service	E	A			D	C		E	E	E	D	
Approach Delay (s)		15.4			39.3			70.3			65.3	
Approach LOS		B			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	30.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	26.2
Intersection Capacity Utilization	87.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	166	1744	383	172	1533	148	389	252	478	221
v/c Ratio	0.70	0.98	0.41	1.08	0.90	0.76	0.79	1.10	0.81	0.49
Control Delay	96.1	47.4	7.9	156.0	42.6	66.9	73.6	115.5	48.3	14.5
Queue Delay	0.0	0.0	0.2	0.0	6.7	1.3	0.0	0.0	0.1	0.4
Total Delay	96.1	47.4	8.2	156.0	49.3	68.2	73.6	115.5	48.4	14.9
Queue Length 50th (ft)	88	753	70	~187	697	113	196	~197	245	107
Queue Length 95th (ft)	m#130	#1103	127	#345	#922	#177	248	#356	286	153
Internal Link Dist (ft)		259			2080		412		331	
Turn Bay Length (ft)	250			225		115		200		
Base Capacity (vph)	241	1780	924	159	1697	199	592	230	685	488
Starvation Cap Reductn	0	0	140	0	0	0	0	0	10	19
Spillback Cap Reductn	0	0	0	0	141	7	0	0	0	52
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.98	0.49	1.08	0.99	0.77	0.66	1.10	0.71	0.51

Intersection Summary

Description: 7070

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	158	1657	364	163	1260	197	141	312	58	239	454	210
Future Volume (vph)	158	1657	364	163	1260	197	141	312	58	239	454	210
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-7%			7%			3%			4%	
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0		7.0	6.5		7.0	6.5	7.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3624	3736	1624	1708	3349		1736	3357		1605	3369	1492
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.28	1.00		0.24	1.00	1.00
Satd. Flow (perm)	3624	3736	1624	1708	3349		505	3357		405	3369	1492
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	166	1744	383	172	1326	207	148	328	61	252	478	221
RTOR Reduction (vph)	0	0	34	0	8	0	0	0	0	0	0	99
Lane Group Flow (vph)	166	1744	349	172	1525	0	148	389	0	252	478	122
Confl. Peds. (#/hr)	3		6	6		3	27		14	14		27
Heavy Vehicles (%)	0%	0%	1%	2%	1%	6%	2%	3%	2%	10%	5%	2%
Turn Type	Prot	NA	pm+ov	Prot	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	5	2	3	1	6		3	8		7	4	5
Permitted Phases			2				8			4		4
Actuated Green, G (s)	9.8	71.5	82.2	14.0	75.7		32.7	22.0		41.3	26.3	36.1
Effective Green, g (s)	9.8	71.5	82.2	14.0	75.7		32.7	22.0		41.3	26.3	36.1
Actuated g/C Ratio	0.07	0.48	0.55	0.09	0.50		0.22	0.15		0.28	0.18	0.24
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	6.5		7.0	6.5	7.0
Vehicle Extension (s)	3.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	3.0
Lane Grp Cap (vph)	236	1780	889	159	1690		197	492		231	590	359
v/s Ratio Prot	0.05	c0.47	0.03	c0.10	0.46		0.05	0.12		c0.11	0.14	0.02
v/s Ratio Perm			0.19				0.11			c0.19		0.06
v/c Ratio	0.70	0.98	0.39	1.08	0.90		0.75	0.79		1.09	0.81	0.34
Uniform Delay, d1	68.7	38.5	19.5	68.0	33.8		50.7	61.8		49.7	59.5	47.1
Progression Factor	1.20	0.82	0.81	1.00	1.00		1.00	1.00		0.66	0.64	0.67
Incremental Delay, d2	7.7	15.3	0.1	94.9	8.3		13.3	7.9		82.0	7.0	0.5
Delay (s)	90.2	46.8	15.9	162.9	42.1		64.0	69.7		114.8	45.3	32.0
Level of Service	F	D	B	F	D		E	E		F	D	C
Approach Delay (s)		44.8			54.3			68.1			60.6	
Approach LOS		D			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	52.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	27.5
Intersection Capacity Utilization	105.8%	ICU Level of Service	G
Analysis Period (min)	15		
Description: 7070			

c Critical Lane Group



Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	215	73	679	915
v/c Ratio	0.48	0.20	0.29	0.47
Control Delay	40.8	4.2	4.1	7.5
Queue Delay	0.0	0.4	0.3	0.1
Total Delay	40.8	4.6	4.5	7.5
Queue Length 50th (ft)	137	6	27	78
Queue Length 95th (ft)	223	12	38	116
Internal Link Dist (ft)	405		137	400
Turn Bay Length (ft)		110		
Base Capacity (vph)	447	401	2348	1942
Starvation Cap Reductn	0	129	1008	122
Spillback Cap Reductn	0	0	65	15
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.48	0.27	0.51	0.50

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	77	127	69	645	791	78
Future Volume (veh/h)	77	127	69	645	791	78
Number	7	14	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1888	1900	1890	1853	1822	1862
Adj Flow Rate, veh/h	81	134	73	679	833	82
Adj No. of Lanes	0	0	1	2	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	1	0	2	2	4
Cap, veh/h	151	249	468	2348	1873	184
Arrive On Green	0.24	0.24	0.06	1.00	1.00	1.00
Sat Flow, veh/h	628	1038	1800	3614	3275	313
Grp Volume(v), veh/h	216	0	73	679	453	462
Grp Sat Flow(s),veh/h/ln	1674	0	1800	1761	1731	1766
Q Serve(g_s), s	16.9	0.0	2.3	0.0	0.0	0.0
Cycle Q Clear(g_c), s	16.9	0.0	2.3	0.0	0.0	0.0
Prop In Lane	0.37	0.62	1.00			0.18
Lane Grp Cap(c), veh/h	402	0	468	2348	1018	1039
V/C Ratio(X)	0.54	0.00	0.16	0.29	0.44	0.44
Avail Cap(c_a), veh/h	402	0	555	2348	1018	1039
HCM Platoon Ratio	1.00	1.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.96	0.96	0.87	0.87
Uniform Delay (d), s/veh	49.7	0.0	10.2	0.0	0.0	0.0
Incr Delay (d2), s/veh	5.1	0.0	0.1	0.3	1.2	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.4	0.0	1.2	0.1	0.3	0.3
LnGrp Delay(d),s/veh	54.8	0.0	10.3	0.3	1.2	1.2
LnGrp LOS	D		B	A	A	A
Approach Vol, veh/h	216			752	915	
Approach Delay, s/veh	54.8			1.3	1.2	
Approach LOS	D			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	11.8	95.2		43.0		107.0		
Change Period (Y+Rc), s	7.0	7.0		7.0		7.0		
Max Green Setting (Gmax), s	12.0	81.0		36.0		100.0		
Max Q Clear Time (g_c+I1), s	4.3	2.0		18.9		2.0		
Green Ext Time (p_c), s	0.1	7.4		0.7		5.6		

Intersection Summary	
HCM 2010 Ctrl Delay	7.4
HCM 2010 LOS	A

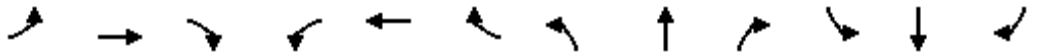


Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	389	291	24	102	670	13	15	689
v/c Ratio	0.63	0.39	0.10	0.31	0.39	0.02	0.04	0.48
Control Delay	39.9	6.7	33.8	28.3	37.2	0.2	8.1	21.4
Queue Delay	7.6	0.6	0.0	0.0	0.3	0.0	0.0	0.0
Total Delay	47.5	7.3	33.8	28.3	37.5	0.2	8.1	21.4
Queue Length 50th (ft)	286	22	9	47	311	0	5	264
Queue Length 95th (ft)	387	87	38	81	401	m1	m7	343
Internal Link Dist (ft)		375	307		400			190
Turn Bay Length (ft)				205		290	125	
Base Capacity (vph)	622	778	230	373	1739	775	395	1442
Starvation Cap Reductn	188	205	0	0	466	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.90	0.51	0.10	0.27	0.53	0.02	0.04	0.48

Intersection Summary

Description: 704010

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	358	1	267	8	2	12	94	616	12	14	594	40
Future Volume (vph)	358	1	267	8	2	12	94	616	12	14	594	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			2%			1%			1%	
Total Lost time (s)	5.0	7.0			7.0		7.0	6.0	6.0	7.0	6.0	
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	0.97			0.99		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85			0.93		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00			0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1788	1562			1608		1727	3522	1452	1793	3457	
Flt Permitted	0.71	1.00			0.84		0.26	1.00	1.00	0.36	1.00	
Satd. Flow (perm)	1331	1562			1372		473	3522	1452	675	3457	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	389	1	290	9	2	13	102	670	13	15	646	43
RTOR Reduction (vph)	0	157	0	0	11	0	0	0	7	0	3	0
Lane Group Flow (vph)	389	134	0	0	13	0	102	670	6	15	686	0
Confl. Peds. (#/hr)	4		9	9		4	3		4	4		3
Heavy Vehicles (%)	1%	0%	1%	13%	0%	0%	4%	2%	8%	0%	3%	0%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	3	8			4		1	6		5	2	
Permitted Phases	8			4			6		6	2		
Actuated Green, G (s)	57.4	57.4			24.0		79.6	69.8	69.8	65.2	62.4	
Effective Green, g (s)	57.4	57.4			24.0		79.6	69.8	69.8	65.2	62.4	
Actuated g/C Ratio	0.38	0.38			0.16		0.53	0.47	0.47	0.43	0.42	
Clearance Time (s)	5.0	7.0			7.0		7.0	6.0	6.0	7.0	6.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	4.0	4.0	3.0	4.0	
Lane Grp Cap (vph)	595	597			219		336	1638	675	314	1438	
v/s Ratio Prot	c0.12	0.09					c0.02	c0.19		0.00	c0.20	
v/s Ratio Perm	c0.13				0.01		0.14		0.00	0.02		
v/c Ratio	0.65	0.22			0.06		0.30	0.41	0.01	0.05	0.48	
Uniform Delay, d1	36.6	31.3			53.4		19.6	26.5	21.5	24.3	31.9	
Progression Factor	1.00	1.00			1.00		1.37	1.44	1.00	0.42	0.62	
Incremental Delay, d2	2.6	0.2			0.1		0.5	0.7	0.0	0.1	1.1	
Delay (s)	39.2	31.5			53.5		27.4	38.9	21.6	10.3	20.9	
Level of Service	D	C			D		C	D	C	B	C	
Approach Delay (s)		35.9			53.5			37.1			20.6	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	31.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	25.0
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		
Description: 704010			

c Critical Lane Group

Intersection	
Int Delay, s/veh	6.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	48	65	864	101	106	582
Future Vol, veh/h	48	65	864	101	106	582
Conflicting Peds, #/hr	3	0	0	1	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	150	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	1	-	-	1
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	0	1	1	0	2
Mvmt Flow	52	71	939	110	115	633

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1545	526	0	0	1050	0
Stage 1	995	-	-	-	-	-
Stage 2	550	-	-	-	-	-
Critical Hdwy	6.35	7.1	-	-	5.3	-
Critical Hdwy Stg 1	6.7	-	-	-	-	-
Critical Hdwy Stg 2	5.9	-	-	-	-	-
Follow-up Hdwy	3.7	3.9	-	-	3.1	-
Pot Cap-1 Maneuver	127	429	-	-	376	-
Stage 1	244	-	-	-	-	-
Stage 2	517	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	67	429	-	-	376	-
Mov Cap-2 Maneuver	67	-	-	-	-	-
Stage 1	244	-	-	-	-	-
Stage 2	272	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	74.4	0	5.6
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	67	429	376	-
HCM Lane V/C Ratio	-	-	0.779	0.165	0.306	-
HCM Control Delay (s)	-	-	154.9	15	18.7	3.2
HCM Lane LOS	-	-	F	C	C	A
HCM 95th %tile Q(veh)	-	-	3.6	0.6	1.3	-



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	351	55	16	993	758
v/c Ratio	0.66	0.12	0.05	0.46	0.38
Control Delay	53.0	19.8	12.1	11.4	18.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	53.0	19.8	12.1	11.4	18.2
Queue Length 50th (ft)	301	16	2	108	182
Queue Length 95th (ft)	418	52	m13	317	278
Internal Link Dist (ft)	434			170	147
Turn Bay Length (ft)		125			
Base Capacity (vph)	530	454	384	2181	1985
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.66	0.12	0.04	0.46	0.38

Intersection Summary

Description: 704005

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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	323	51	15	914	637	61
Future Volume (veh/h)	323	51	15	914	637	61
Number	7	14	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1862	1695	1783	1872	1824	1890
Adj Flow Rate, veh/h	351	0	16	993	692	66
Adj No. of Lanes	1	1	1	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	11	6	1	4	0
Cap, veh/h	532	432	363	2181	1760	168
Arrive On Green	0.30	0.00	0.01	0.20	0.55	0.55
Sat Flow, veh/h	1774	1440	1699	3650	3289	305
Grp Volume(v), veh/h	351	0	16	993	375	383
Grp Sat Flow(s),veh/h/ln	1774	1440	1699	1778	1733	1770
Q Serve(g_s), s	25.9	0.0	0.6	36.8	18.6	18.6
Cycle Q Clear(g_c), s	25.9	0.0	0.6	36.8	18.6	18.6
Prop In Lane	1.00	1.00	1.00			0.17
Lane Grp Cap(c), veh/h	532	432	363	2181	954	974
V/C Ratio(X)	0.66	0.00	0.04	0.46	0.39	0.39
Avail Cap(c_a), veh/h	532	432	449	2181	954	974
HCM Platoon Ratio	1.00	1.00	0.33	0.33	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.8	0.0	15.0	37.8	19.3	19.3
Incr Delay (d2), s/veh	6.3	0.0	0.0	0.7	1.2	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.6	0.0	0.3	18.3	9.2	9.4
LnGrp Delay(d),s/veh	52.1	0.0	15.0	38.5	20.6	20.5
LnGrp LOS	D		B	D	C	C
Approach Vol, veh/h	351			1009	758	
Approach Delay, s/veh	52.1			38.1	20.5	
Approach LOS	D			D	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	9.4	88.6		52.0		98.0		
Change Period (Y+Rc), s	7.0	6.0		7.0		6.0		
Max Green Setting (Gmax), s	10.0	75.0		45.0		92.0		
Max Q Clear Time (g_c+I1), s	2.6	20.6		27.9		38.8		
Green Ext Time (p_c), s	0.0	7.7		0.6		12.5		

Intersection Summary	
HCM 2010 Ctrl Delay	34.1
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	14	12	885	352	16	684
Future Vol, veh/h	14	12	885	352	16	684
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	1
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	1	0	0	3
Mvmt Flow	15	13	941	374	17	728

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1526	658	0	0	1315	0
Stage 1	1128	-	-	-	-	-
Stage 2	398	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	111	412	-	-	533	-
Stage 1	275	-	-	-	-	-
Stage 2	653	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	105	412	-	-	533	-
Mov Cap-2 Maneuver	105	-	-	-	-	-
Stage 1	275	-	-	-	-	-
Stage 2	618	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	32.1	0	0.6
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	160	533	-
HCM Lane V/C Ratio	-	-	0.173	0.032	-
HCM Control Delay (s)	-	-	32.1	12	0.3
HCM Lane LOS	-	-	D	B	A
HCM 95th %tile Q(veh)	-	-	0.6	0.1	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	33	51	846	667	15
Future Vol, veh/h	6	33	51	846	667	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	60	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	0	0	0	2	3	0
Mvmt Flow	6	33	52	855	674	15

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1641	682	689	0	-	0
Stage 1	682	-	-	-	-	-
Stage 2	959	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	111	453	915	-	-	-
Stage 1	506	-	-	-	-	-
Stage 2	375	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	99	453	915	-	-	-
Mov Cap-2 Maneuver	99	-	-	-	-	-
Stage 1	451	-	-	-	-	-
Stage 2	375	-	-	-	-	-

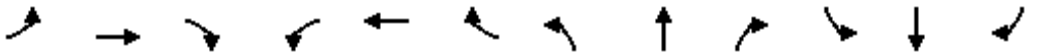
Approach	EB	NB	SB
HCM Control Delay, s	18.2	0.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	915	-	99	453	-	-
HCM Lane V/C Ratio	0.056	-	0.061	0.074	-	-
HCM Control Delay (s)	9.2	0	43.7	13.6	-	-
HCM Lane LOS	A	A	E	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.2	0.2	-	-



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	195	677	24	361	127	366	55	510	243
v/c Ratio	0.57	0.85	0.21	0.69	0.54	0.54	0.15	0.83	0.29
Control Delay	31.2	45.6	43.8	50.6	33.8	40.7	25.4	56.6	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.2	45.6	43.8	50.6	33.8	40.7	25.4	56.6	8.7
Queue Length 50th (ft)	107	521	16	283	65	262	27	414	36
Queue Length 95th (ft)	180	779	46	426	135	452	67	677	112
Internal Link Dist (ft)		748		505		1493		1383	
Turn Bay Length (ft)	250		125		180		380		227
Base Capacity (vph)	351	1320	231	1074	242	807	389	815	852
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.51	0.10	0.34	0.52	0.45	0.14	0.63	0.29

Intersection Summary
Description: 694030



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	187	493	156	23	318	29	122	322	30	53	490	233
Future Volume (vph)	187	493	156	23	318	29	122	322	30	53	490	233
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			-3%			-1%			-1%	
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	7.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.99		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1769	1782		1762	1883		1778	1868		1814	1891	1546
Flt Permitted	0.24	1.00		0.22	1.00		0.16	1.00		0.40	1.00	1.00
Satd. Flow (perm)	453	1782		405	1883		307	1868		772	1891	1546
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	195	514	162	24	331	30	127	335	31	55	510	243
RTOR Reduction (vph)	0	7	0	0	2	0	0	2	0	0	0	92
Lane Group Flow (vph)	195	670	0	24	359	0	127	364	0	55	510	151
Heavy Vehicles (%)	1%	2%	1%	4%	1%	3%	2%	1%	0%	0%	1%	5%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	7	4			8		1	6		5	2	7
Permitted Phases	4			8			6			2		2
Actuated Green, G (s)	59.4	59.4		37.6	37.6		59.2	49.2		52.2	45.7	60.5
Effective Green, g (s)	59.4	59.4		37.6	37.6		59.2	49.2		52.2	45.7	60.5
Actuated g/C Ratio	0.44	0.44		0.28	0.28		0.43	0.36		0.38	0.34	0.44
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	4.0	3.0		3.0	3.0		3.0	4.0		3.0	4.0	4.0
Lane Grp Cap (vph)	340	777		111	520		241	675		345	634	766
v/s Ratio Prot	0.06	c0.38			0.19		c0.04	c0.19		0.01	c0.27	0.02
v/s Ratio Perm	0.19			0.06			0.19			0.05		0.08
v/c Ratio	0.57	0.86		0.22	0.69		0.53	0.54		0.16	0.80	0.20
Uniform Delay, d1	27.1	34.6		37.9	44.0		27.8	34.5		27.2	41.1	23.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.8	9.7		1.0	3.9		2.1	1.1		0.2	7.7	0.2
Delay (s)	29.9	44.3		38.9	48.0		29.9	35.5		27.4	48.9	23.2
Level of Service	C	D		D	D		C	D		C	D	C
Approach Delay (s)		41.1			47.4			34.1			39.7	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	40.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	136.1	Sum of lost time (s)	28.0
Intersection Capacity Utilization	96.3%	ICU Level of Service	F
Analysis Period (min)	15		
Description: 694030			
c Critical Lane Group			



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	917	148	54	49	159	40
v/c Ratio	0.65	0.09	0.17	0.12	0.46	0.09
Control Delay	10.3	4.8	17.4	16.1	21.9	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.3	4.8	17.4	16.1	21.9	12.8
Queue Length 50th (ft)	78	7	12	10	37	6
Queue Length 95th (ft)	145	18	39	35	96	27
Internal Link Dist (ft)	414	375		177		378
Turn Bay Length (ft)			100		135	
Base Capacity (vph)	2646	3155	665	905	659	816
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.05	0.08	0.05	0.24	0.05

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	320	484	58	8	105	25	51	44	2	149	25	12
Future Volume (veh/h)	320	484	58	8	105	25	51	44	2	149	25	12
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1910	1796	1910	1900	1879	1900	1900	1900	1900	1900	1779	1900
Adj Flow Rate, veh/h	340	515	62	9	112	27	54	47	2	159	27	13
Adj No. of Lanes	0	2	0	0	2	0	1	1	0	1	1	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	17	0	0	0	0	6	0	0	0	0	0	21
Cap, veh/h	655	857	107	166	1326	305	462	335	14	458	210	101
Arrive On Green	0.49	0.49	0.49	0.49	0.49	0.49	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	921	1743	218	73	2697	620	1389	1809	77	1378	1135	547
Grp Volume(v), veh/h	463	0	454	78	0	70	54	0	49	159	0	40
Grp Sat Flow(s),veh/h/ln	1286	0	1596	1789	0	1601	1389	0	1886	1378	0	1682
Q Serve(g_s), s	8.4	0.0	6.3	0.0	0.0	0.7	1.0	0.0	0.7	3.4	0.0	0.6
Cycle Q Clear(g_c), s	9.1	0.0	6.3	0.7	0.0	0.7	1.7	0.0	0.7	4.1	0.0	0.6
Prop In Lane	0.73		0.14	0.12		0.39	1.00		0.04	1.00		0.33
Lane Grp Cap(c), veh/h	834	0	785	1009	0	787	462	0	350	458	0	312
V/C Ratio(X)	0.55	0.00	0.58	0.08	0.00	0.09	0.12	0.00	0.14	0.35	0.00	0.13
Avail Cap(c_a), veh/h	5204	0	6084	6472	0	6102	1192	0	1341	1182	0	1195
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.4	0.0	5.6	4.2	0.0	4.2	11.2	0.0	10.5	12.2	0.0	10.5
Incr Delay (d2), s/veh	0.6	0.0	0.7	0.0	0.0	0.0	0.1	0.0	0.2	0.5	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.0	2.8	0.4	0.0	0.3	0.4	0.0	0.4	1.3	0.0	0.3
LnGrp Delay(d),s/veh	7.0	0.0	6.3	4.2	0.0	4.2	11.3	0.0	10.7	12.7	0.0	10.7
LnGrp LOS	A		A	A		A	B		B	B		B
Approach Vol, veh/h		917			148			103			199	
Approach Delay, s/veh		6.6			4.2			11.0			12.3	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		20.2		10.7		20.2		10.7
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		118.0		22.0		118.0		22.0
Max Q Clear Time (g_c+I1), s		11.1		3.7		2.7		6.1
Green Ext Time (p_c), s		4.2		0.3		0.6		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	7.5
HCM 2010 LOS	A

Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	913	83	92	178	7
v/c Ratio	0.57	0.34	0.12	0.45	0.02
Control Delay	8.5	10.6	4.5	15.6	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	8.5	10.6	4.5	15.6	5.9
Queue Length 50th (ft)	62	9	6	27	0
Queue Length 95th (ft)	115	34	23	77	5
Internal Link Dist (ft)	588		414	128	222
Turn Bay Length (ft)					
Base Capacity (vph)	3183	528	1593	833	845
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.29	0.16	0.06	0.21	0.01

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	74	762	40	80	60	28	70	3	98	2	0	5
Future Volume (veh/h)	74	762	40	80	60	28	70	3	98	2	0	5
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1910	1830	1910	1900	1671	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	77	794	42	83	62	29	73	3	102	2	0	5
Adj No. of Lanes	0	2	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	5	0	0	20	0	0	0	0	0	0	0
Cap, veh/h	231	1315	68	422	463	216	293	28	174	212	51	222
Arrive On Green	0.43	0.43	0.43	0.43	0.43	0.43	0.19	0.19	0.19	0.19	0.00	0.19
Sat Flow, veh/h	170	3065	159	668	1078	504	525	145	900	195	265	1150
Grp Volume(v), veh/h	480	0	433	83	0	91	178	0	0	7	0	0
Grp Sat Flow(s),veh/h/ln	1756	0	1637	668	0	1582	1570	0	0	1609	0	0
Q Serve(g_s), s	1.2	0.0	5.4	2.9	0.0	0.9	1.8	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	5.5	0.0	5.4	8.3	0.0	0.9	2.7	0.0	0.0	0.1	0.0	0.0
Prop In Lane	0.16		0.10	1.00		0.32	0.41		0.57	0.29		0.71
Lane Grp Cap(c), veh/h	912	0	703	422	0	679	495	0	0	485	0	0
V/C Ratio(X)	0.53	0.00	0.62	0.20	0.00	0.13	0.36	0.00	0.00	0.01	0.00	0.00
Avail Cap(c_a), veh/h	7870	0	7361	3136	0	7113	1419	0	0	1395	0	0
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.9	0.0	5.9	9.1	0.0	4.6	9.7	0.0	0.0	8.7	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.9	0.2	0.0	0.1	0.4	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	2.6	0.6	0.0	0.4	1.2	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	6.3	0.0	6.7	9.3	0.0	4.7	10.1	0.0	0.0	8.7	0.0	0.0
LnGrp LOS	A		A	A		A	B			A		
Approach Vol, veh/h		913			174			178			7	
Approach Delay, s/veh		6.5			6.9			10.1			8.7	
Approach LOS		A			A			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		16.4		10.1		16.4		10.1
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		119.0		21.0		119.0		21.0
Max Q Clear Time (g_c+I1), s		10.3		4.7		7.5		2.1
Green Ext Time (p_c), s		1.2		0.5		3.9		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	7.1
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑			↱
Traffic Vol, veh/h	0	2179	1611	0	0	51
Future Vol, veh/h	0	2179	1611	0	0	51
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	-1	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2179	1611	0	0	51

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	806
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	0	0	279
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	-	279
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	20.8
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	279
HCM Lane V/C Ratio	-	-	0.183
HCM Control Delay (s)	-	-	20.8
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	0.7



Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	168	116	708	998
v/c Ratio	0.40	0.34	0.30	0.50
Control Delay	38.7	14.6	12.3	7.4
Queue Delay	0.0	0.0	0.8	0.1
Total Delay	38.7	14.6	13.1	7.5
Queue Length 50th (ft)	101	41	147	78
Queue Length 95th (ft)	176	m59	m164	91
Internal Link Dist (ft)	222		331	137
Turn Bay Length (ft)		100		
Base Capacity (vph)	416	416	2394	1977
Starvation Cap Reductn	0	0	1291	223
Spillback Cap Reductn	0	0	7	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.40	0.28	0.64	0.57

Intersection Summary

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

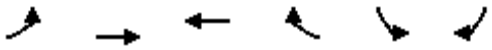


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	63	92	107	651	876	42
Future Volume (veh/h)	63	92	107	651	876	42
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1853	1853	1825	1862
Adj Flow Rate, veh/h	68	100	116	708	952	46
Adj No. of Lanes	0	0	1	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	151	222	310	2395	2000	97
Arrive On Green	0.23	0.23	0.04	0.68	0.20	0.20
Sat Flow, veh/h	667	980	1765	3614	3460	163
Grp Volume(v), veh/h	169	0	116	708	490	508
Grp Sat Flow(s),veh/h/ln	1656	0	1765	1761	1734	1797
Q Serve(g_s), s	13.2	0.0	3.7	12.1	37.6	37.6
Cycle Q Clear(g_c), s	13.2	0.0	3.7	12.1	37.6	37.6
Prop In Lane	0.40	0.59	1.00			0.09
Lane Grp Cap(c), veh/h	375	0	310	2395	1030	1067
V/C Ratio(X)	0.45	0.00	0.37	0.30	0.48	0.48
Avail Cap(c_a), veh/h	375	0	440	2395	1030	1067
HCM Platoon Ratio	1.00	1.00	1.00	1.00	0.33	0.33
Upstream Filter(I)	1.00	0.00	0.56	0.56	0.88	0.88
Uniform Delay (d), s/veh	49.9	0.0	16.6	9.6	39.6	39.6
Incr Delay (d2), s/veh	3.9	0.0	0.4	0.2	1.4	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.5	0.0	1.8	5.9	18.5	19.1
LnGrp Delay(d),s/veh	53.8	0.0	17.0	9.8	41.0	41.0
LnGrp LOS	D		B	A	D	D
Approach Vol, veh/h	169			824	998	
Approach Delay, s/veh	53.8			10.8	41.0	
Approach LOS	D			B	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		109.0		41.0	12.9	96.1		
Change Period (Y+Rc), s		7.0		7.0	7.0	7.0		
Max Green Setting (Gmax), s		102.0		34.0	17.0	78.0		
Max Q Clear Time (g_c+I1), s		14.1		15.2	5.7	39.6		
Green Ext Time (p_c), s		3.1		0.5	0.2	4.0		

Intersection Summary	
HCM 2010 Ctrl Delay	29.6
HCM 2010 LOS	C

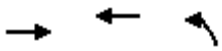
Appendix J: Intersection Capacity Analysis - Future with Development Condition (2030) – Alternative No VT Scenario



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1651	1535	44	0	15
Future Volume (Veh/h)	0	1651	1535	44	0	15
Sign Control		Free	Free		Stop	
Grade		-7%	-1%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1795	1668	48	0	16
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		1143	198			
pX, platoon unblocked	0.58				0.58	0.58
vC, conflicting volume	1716				2141	580
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				435	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	97
cM capacity (veh/h)	941				319	629

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	SB 1
Volume Total	449	449	449	449	667	667	382	16
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	48	16
cSH	1700	1700	1700	1700	1700	1700	1700	629
Volume to Capacity	0.26	0.26	0.26	0.26	0.39	0.39	0.22	0.03
Queue Length 95th (ft)	0	0	0	0	0	0	0	2
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.9
Lane LOS								B
Approach Delay (s)	0.0				0.0			10.9
Approach LOS								B

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	40.6%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBT	WBT	NBL
Lane Group Flow (vph)	1592	1534	132
v/c Ratio	0.58	0.56	0.47
Control Delay	5.4	6.1	51.3
Queue Delay	0.0	0.0	0.0
Total Delay	5.4	6.1	51.3
Queue Length 50th (ft)	171	442	44
Queue Length 95th (ft)	246	28	73
Internal Link Dist (ft)	735	250	372
Turn Bay Length (ft)			220
Base Capacity (vph)	2755	2757	821
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.58	0.56	0.16

Intersection Summary
Description: 7075



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1465	0	0	1411	121	0
Future Volume (vph)	1465	0	0	1411	121	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	1%			-1%	-1%	
Total Lost time (s)	6.5			6.5	7.0	
Lane Util. Factor	0.95			0.95	0.97	
Frt	1.00			1.00	1.00	
Flt Protected	1.00			1.00	0.95	
Satd. Flow (prot)	3487			3489	3450	
Flt Permitted	1.00			1.00	0.95	
Satd. Flow (perm)	3487			3489	3450	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1592	0	0	1534	132	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1592	0	0	1534	132	0
Heavy Vehicles (%)	3%	0%	0%	4%	2%	2%
Bus Blockages (#/hr)	0	100	0	0	0	0
Turn Type	NA			NA	Prot	
Protected Phases	2			6	4	
Permitted Phases						
Actuated Green, G (s)	83.0			83.0	8.5	
Effective Green, g (s)	83.0			83.0	8.5	
Actuated g/C Ratio	0.79			0.79	0.08	
Clearance Time (s)	6.5			6.5	7.0	
Vehicle Extension (s)	5.0			5.0	2.0	
Lane Grp Cap (vph)	2756			2757	279	
v/s Ratio Prot	c0.46			0.44	c0.04	
v/s Ratio Perm						
v/c Ratio	0.58			0.56	0.47	
Uniform Delay, d1	4.2			4.1	46.1	
Progression Factor	1.00			1.27	1.00	
Incremental Delay, d2	0.9			0.6	0.5	
Delay (s)	5.1			5.8	46.6	
Level of Service	A			A	D	
Approach Delay (s)	5.1			5.8	46.6	
Approach LOS	A			A	D	

Intersection Summary			
HCM 2000 Control Delay	7.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	55.9%	ICU Level of Service	B
Analysis Period (min)	15		

Description: 7075

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1649	33	0	1540	0	0	0	16	0	0	90
Future Vol, veh/h	0	1649	33	0	1540	0	0	0	16	0	0	90
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Yield	Yield	Yield
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Yield
Storage Length	-	-	-	-	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	-7	-	-	-1	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	4	0	0	5	0	0	0	0	0	0	29
Mvmt Flow	0	1792	36	0	1674	0	0	0	17	0	0	98

Major/Minor	Major1			Major2			Minor1					
Conflicting Flow All	-	0	0	-	-	0	-	-	914			
Stage 1	-	-	-	-	-	-	-	-	-			
Stage 2	-	-	-	-	-	-	-	-	-			
Critical Hdwy	-	-	-	-	-	-	-	-	7.1			
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-			
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-			
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.9			
Pot Cap-1 Maneuver	0	-	-	0	-	0	0	0	240			
Stage 1	0	-	-	0	-	0	0	0	-			
Stage 2	0	-	-	0	-	0	0	0	-			
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	0	240			
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	0	-			
Stage 1	-	-	-	-	-	-	-	0	-			
Stage 2	-	-	-	-	-	-	-	0	-			

Approach	EB	WB	NB
HCM Control Delay, s	0	0	21.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	240	-	-	-
HCM Lane V/C Ratio	0.072	-	-	-
HCM Control Delay (s)	21.2	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	14	1651	1532	18	0	8
Future Vol, veh/h	14	1651	1532	18	0	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	140	-	-	0	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	-1	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	4	5	0	0	12
Mvmt Flow	14	1702	1579	19	0	8

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1598	0	-	0	-	790
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.14	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.22	-	-	-	-	3.42
Pot Cap-1 Maneuver	406	-	-	-	0	312
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	406	-	-	-	-	312
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	16.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	406	-	-	-	312
HCM Lane V/C Ratio	0.036	-	-	-	0.026
HCM Control Delay (s)	14.2	-	-	-	16.9
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1



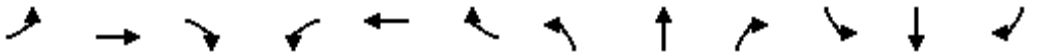
Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	178	1560	14	1558	575	20	5	232	224
v/c Ratio	1.62	0.51	0.13	0.85	0.55	0.20	0.02	0.72	0.45
Control Delay	350.0	25.3	47.6	26.5	7.3	52.4	0.2	52.7	6.6
Queue Delay	0.0	0.1	0.0	8.3	0.4	0.0	0.0	5.0	0.8
Total Delay	350.0	25.4	47.6	34.7	7.6	52.4	0.2	57.6	7.4
Queue Length 50th (ft)	~178	244	13	478	136	13	0	155	0
Queue Length 95th (ft)	#321	456	m14	m#1182	m162	39	0	224	52
Internal Link Dist (ft)		118		138		288			281
Turn Bay Length (ft)			180						
Base Capacity (vph)	110	3074	110	1827	1039	102	287	441	600
Starvation Cap Reductn	0	0	0	250	134	0	0	0	0
Spillback Cap Reductn	0	389	0	0	0	0	0	146	165
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.62	0.58	0.13	0.99	0.64	0.20	0.02	0.79	0.51

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

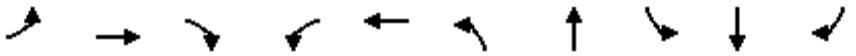
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	169	1461	21	13	1480	546	19	0	5	351	0	83
Future Volume (vph)	169	1461	21	13	1480	546	19	0	5	351	0	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-7%			-1%			0%			0%	
Total Lost time (s)	6.8	5.0		6.8	5.0	5.0		7.2	6.8	7.2	7.2	
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00		1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.95	1.00	0.95	0.97	
Satd. Flow (prot)	1868	5152		1814	3489	1586		1805	1601	1715	1649	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.95	1.00	0.95	0.97	
Satd. Flow (perm)	1868	5152		1814	3489	1586		1805	1601	1715	1649	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	178	1538	22	14	1558	575	20	0	5	369	0	87
RTOR Reduction (vph)	0	1	0	0	0	243	0	0	5	0	182	0
Lane Group Flow (vph)	178	1559	0	14	1558	332	0	20	0	232	42	0
Confl. Peds. (#/hr)	3		1	3		1			1			
Confl. Bikes (#/hr)			3									
Heavy Vehicles (%)	0%	4%	0%	0%	4%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	pm+ov	Split	NA	
Protected Phases	5	2		1	6		8	8	1	4	4	
Permitted Phases						6			8			
Actuated Green, G (s)	10.2	54.3		2.6	46.7	46.7		2.3	4.9	19.6	19.6	
Effective Green, g (s)	10.2	54.3		2.6	46.7	46.7		2.3	4.9	19.6	19.6	
Actuated g/C Ratio	0.10	0.52		0.02	0.44	0.44		0.02	0.05	0.19	0.19	
Clearance Time (s)	6.8	5.0		6.8	5.0	5.0		7.2	6.8	7.2	7.2	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	181	2664		44	1551	705		39	74	320	307	
v/s Ratio Prot	c0.10	0.30		0.01	c0.45			c0.01	0.00	c0.14	0.03	
v/s Ratio Perm						0.21			0.00			
v/c Ratio	0.98	0.59		0.32	1.00	0.47		0.51	0.00	0.72	0.14	
Uniform Delay, d1	47.3	17.6		50.3	29.1	20.5		50.8	47.7	40.2	35.6	
Progression Factor	1.25	1.53		0.99	0.99	1.38		1.00	1.00	1.00	1.00	
Incremental Delay, d2	58.2	0.9		1.9	16.6	1.0		10.9	0.0	7.9	0.2	
Delay (s)	117.5	27.7		51.8	45.6	29.3		61.7	47.7	48.1	35.8	
Level of Service	F	C		D	D	C		E	D	D	D	
Approach Delay (s)		36.9			41.3			58.9			42.1	
Approach LOS		D			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	39.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	26.2
Intersection Capacity Utilization	85.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



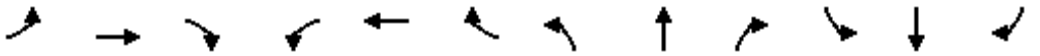
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	142	1635	111	29	1918	75	580	175	115	361
v/c Ratio	1.67	0.74	0.10	0.45	0.95	0.29	1.22	1.07	0.35	0.99
Control Delay	391.7	34.1	6.7	118.1	49.5	63.4	186.3	139.9	68.6	95.1
Queue Delay	0.0	1.1	0.0	0.0	11.5	0.3	0.0	0.0	0.0	36.2
Total Delay	391.7	35.2	6.7	118.1	61.0	63.7	186.3	139.9	68.6	131.3
Queue Length 50th (ft)	~149	1110	19	40	1269	81	~515	~220	149	206
Queue Length 95th (ft)	#229	694	72	82	1397	134	#650	#399	228	#636
Internal Link Dist (ft)		259			2080		412		331	
Turn Bay Length (ft)	250			225		115		295		
Base Capacity (vph)	85	2213	1091	103	2011	287	475	164	331	366
Starvation Cap Reductn	0	323	0	0	0	0	0	0	0	40
Spillback Cap Reductn	0	0	0	0	126	37	0	0	0	30
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.67	0.87	0.10	0.28	1.02	0.30	1.22	1.07	0.35	1.11

Intersection Summary

Description: 7070

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	138	1586	108	28	1583	277	73	484	79	170	112	350
Future Volume (vph)	138	1586	108	28	1583	277	73	484	79	170	112	350
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-7%			7%			3%			4%	
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0		7.0	6.5		7.0	6.5	6.5
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95		1.00	0.95		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99		1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.97	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3588	3628	1600	1675	3274		1726	3389		1499	1862	1455
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.68	1.00		0.11	1.00	1.00
Satd. Flow (perm)	3588	3628	1600	1675	3274		1241	3389		173	1862	1455
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	142	1635	111	29	1632	286	75	499	81	175	115	361
RTOR Reduction (vph)	0	0	31	0	0	0	0	0	0	0	0	107
Lane Group Flow (vph)	142	1635	80	29	1918	0	75	580	0	175	115	254
Confl. Peds. (#/hr)	3		6	6		3	27		14	14		27
Heavy Vehicles (%)	1%	3%	2%	4%	3%	8%	0%	2%	3%	18%	0%	2%
Turn Type	Prot	NA	pm+ov	Prot	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases			2				8			4		4
Actuated Green, G (s)	5.0	126.7	137.8	7.3	129.0		40.6	29.5		55.5	37.4	37.4
Effective Green, g (s)	5.0	126.7	137.8	7.3	129.0		40.6	29.5		55.5	37.4	37.4
Actuated g/C Ratio	0.02	0.60	0.66	0.03	0.61		0.19	0.14		0.26	0.18	0.18
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	6.5		7.0	6.5	6.5
Vehicle Extension (s)	3.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	85	2188	1103	58	2011		265	476		165	331	259
v/s Ratio Prot	c0.04	0.45	0.00	0.02	c0.59		0.01	c0.17		c0.10	0.06	
v/s Ratio Perm			0.05				0.04			0.18		c0.17
v/c Ratio	1.67	0.75	0.07	0.50	0.95		0.28	1.22		1.06	0.35	0.98
Uniform Delay, d1	102.5	30.1	13.0	99.6	37.7		71.4	90.2		66.8	75.6	86.0
Progression Factor	0.93	1.06	2.38	1.00	1.00		1.00	1.00		0.88	0.86	1.01
Incremental Delay, d2	343.1	2.1	0.0	2.5	11.8		0.2	116.2		85.6	0.2	49.2
Delay (s)	439.0	34.1	31.1	102.0	49.5		71.6	206.4		144.1	65.0	135.9
Level of Service	F	C	C	F	D		E	F		F	E	F
Approach Delay (s)		64.4			50.3			191.0			125.6	
Approach LOS		E			D			F			F	

Intersection Summary			
HCM 2000 Control Delay	82.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	210.0	Sum of lost time (s)	27.5
Intersection Capacity Utilization	104.7%	ICU Level of Service	G
Analysis Period (min)	15		
Description: 7070			

c Critical Lane Group



Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	178	174	837	771
v/c Ratio	0.68	0.29	0.32	0.42
Control Delay	35.3	5.3	3.4	9.3
Queue Delay	0.0	0.8	0.2	0.0
Total Delay	35.3	6.1	3.6	9.3
Queue Length 50th (ft)	58	18	46	152
Queue Length 95th (ft)	122	51	105	235
Internal Link Dist (ft)	405		137	400
Turn Bay Length (ft)		110		
Base Capacity (vph)	598	592	2612	1816
Starvation Cap Reductn	0	207	861	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.30	0.45	0.48	0.42

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	60	104	160	770	595	114
Future Volume (veh/h)	60	104	160	770	595	114
Number	7	14	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1856	1900	1783	1818	1790	1862
Adj Flow Rate, veh/h	65	113	174	837	647	124
Adj No. of Lanes	0	0	1	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	2	6	4	4	4
Cap, veh/h	78	135	703	2543	949	182
Arrive On Green	0.13	0.13	0.67	1.00	0.11	0.11
Sat Flow, veh/h	597	1037	1699	3545	2938	545
Grp Volume(v), veh/h	179	0	174	837	386	385
Grp Sat Flow(s),veh/h/ln	1643	0	1699	1727	1701	1692
Q Serve(g_s), s	11.2	0.0	0.0	0.0	22.9	23.0
Cycle Q Clear(g_c), s	11.2	0.0	0.0	0.0	22.9	23.0
Prop In Lane	0.36	0.63	1.00			0.32
Lane Grp Cap(c), veh/h	214	0	703	2543	567	564
V/C Ratio(X)	0.84	0.00	0.25	0.33	0.68	0.68
Avail Cap(c_a), veh/h	532	0	703	2543	567	564
HCM Platoon Ratio	1.00	1.00	2.00	2.00	0.33	0.33
Upstream Filter(I)	1.00	0.00	0.93	0.93	0.95	0.95
Uniform Delay (d), s/veh	44.6	0.0	9.6	0.0	41.4	41.4
Incr Delay (d2), s/veh	8.3	0.0	0.2	0.3	6.2	6.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	0.0	1.7	0.1	11.8	11.7
LnGrp Delay(d),s/veh	52.8	0.0	9.8	0.3	47.5	47.6
LnGrp LOS	D		A	A	D	D
Approach Vol, veh/h	179			1011	771	
Approach Delay, s/veh	52.8			2.0	47.6	
Approach LOS	D			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	42.3	42.0		20.7		84.3		
Change Period (Y+Rc), s	7.0	7.0		7.0		7.0		
Max Green Setting (Gmax), s	15.0	35.0		34.0		57.0		
Max Q Clear Time (g_c+I1), s	2.0	25.0		13.2		2.0		
Green Ext Time (p_c), s	0.4	2.2		0.6		3.9		

Intersection Summary	
HCM 2010 Ctrl Delay	24.5
HCM 2010 LOS	C

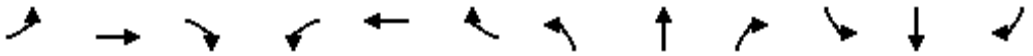


Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	99	159	28	263	636	3	1	630
v/c Ratio	0.56	0.44	0.13	0.46	0.26	0.00	0.00	0.32
Control Delay	53.9	8.3	25.1	7.7	4.1	0.0	6.0	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.9	8.3	25.1	7.7	4.1	0.0	6.0	10.1
Queue Length 50th (ft)	64	0	8	25	30	0	0	68
Queue Length 95th (ft)	110	43	32	114	207	m0	m1	104
Internal Link Dist (ft)	375		307		400			190
Turn Bay Length (ft)				205		290	125	
Base Capacity (vph)	261	452	303	758	2475	1156	602	1958
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.35	0.09	0.35	0.26	0.00	0.00	0.32

Intersection Summary

Description: 704010

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	1	146	11	2	13	242	585	3	1	552	28
Future Volume (vph)	90	1	146	11	2	13	242	585	3	1	552	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			2%			1%			1%	
Total Lost time (s)		7.0	7.0		7.0		7.0	6.0	6.0	7.0	6.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	0.98		0.99		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85		0.93		1.00	1.00	0.85	1.00	0.99	
Flt Protected		0.95	1.00		0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1758	1555		1696		1742	3454	1570	1793	3431	
Flt Permitted		0.71	1.00		0.84		0.34	1.00	1.00	0.41	1.00	
Satd. Flow (perm)		1306	1555		1460		631	3454	1570	774	3431	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	98	1	159	12	2	14	263	636	3	1	600	30
RTOR Reduction (vph)	0	0	137	0	12	0	0	0	1	0	2	0
Lane Group Flow (vph)	0	99	22	0	16	0	263	636	2	1	628	0
Confl. Peds. (#/hr)	4		9	9		4	3		4	4		3
Heavy Vehicles (%)	3%	0%	2%	0%	0%	0%	3%	4%	0%	0%	4%	0%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		
Actuated Green, G (s)		14.2	14.2		14.2		77.8	69.7	69.7	61.0	59.9	
Effective Green, g (s)		14.2	14.2		14.2		77.8	69.7	69.7	61.0	59.9	
Actuated g/C Ratio		0.14	0.14		0.14		0.74	0.66	0.66	0.58	0.57	
Clearance Time (s)		7.0	7.0		7.0		7.0	6.0	6.0	7.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	4.0	4.0	3.0	4.0	
Lane Grp Cap (vph)		176	210		197		582	2292	1042	460	1957	
v/s Ratio Prot							c0.05	0.18		0.00	0.18	
v/s Ratio Perm		c0.08	0.01		0.01		c0.29		0.00	0.00		
v/c Ratio		0.56	0.10		0.08		0.45	0.28	0.00	0.00	0.32	
Uniform Delay, d1		42.5	39.8		39.7		5.1	7.3	5.9	9.2	11.9	
Progression Factor		1.00	1.00		1.00		1.05	0.62	1.00	0.97	0.74	
Incremental Delay, d2		4.1	0.2		0.2		0.5	0.3	0.0	0.0	0.4	
Delay (s)		46.6	40.0		39.9		5.9	4.8	5.9	9.0	9.2	
Level of Service		D	D		D		A	A	A	A	A	
Approach Delay (s)		42.5			39.9			5.1			9.2	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	12.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		
Description: 704010			

c Critical Lane Group

Intersection	
Int Delay, s/veh	7.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	123	70	650	69	27	489
Future Vol, veh/h	123	70	650	69	27	489
Conflicting Peds, #/hr	3	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	1	-	-	1
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	7	3	4	17	0	4
Mvmt Flow	134	76	707	75	29	532

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1073	392	0	0	783	0
Stage 1	746	-	-	-	-	-
Stage 2	327	-	-	-	-	-
Critical Hdwy	6.39	7.16	-	-	5.3	-
Critical Hdwy Stg 1	6.74	-	-	-	-	-
Critical Hdwy Stg 2	5.94	-	-	-	-	-
Follow-up Hdwy	3.72	3.93	-	-	3.1	-
Pot Cap-1 Maneuver	238	516	-	-	504	-
Stage 1	343	-	-	-	-	-
Stage 2	665	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	218	516	-	-	504	-
Mov Cap-2 Maneuver	218	-	-	-	-	-
Stage 1	343	-	-	-	-	-
Stage 2	609	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	49.9	0	1.1
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	276	504	-
HCM Lane V/C Ratio	-	-	0.76	0.058	-
HCM Control Delay (s)	-	-	49.9	12.6	0.5
HCM Lane LOS	-	-	E	B	A
HCM 95th %tile Q(veh)	-	-	5.6	0.2	-



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	124	22	26	740	792
v/c Ratio	0.63	0.14	0.06	0.28	0.33
Control Delay	57.8	17.1	6.0	5.8	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	57.8	17.1	6.0	5.8	7.0
Queue Length 50th (ft)	81	0	5	82	96
Queue Length 95th (ft)	135	22	20	196	153
Internal Link Dist (ft)	434			170	147
Turn Bay Length (ft)		125			
Base Capacity (vph)	363	279	538	2684	2382
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.34	0.08	0.05	0.28	0.33

Intersection Summary
Description: 704005

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	117	21	24	696	495	249
Future Volume (veh/h)	117	21	24	696	495	249
Number	7	14	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1826	1470	1835	1853	1878	1890
Adj Flow Rate, veh/h	124	0	26	740	527	265
Adj No. of Lanes	1	1	1	2	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	28	3	2	1	0
Cap, veh/h	153	110	520	2775	1603	804
Arrive On Green	0.09	0.00	0.05	1.00	0.70	0.70
Sat Flow, veh/h	1739	1249	1748	3614	2397	1155
Grp Volume(v), veh/h	124	0	26	740	408	384
Grp Sat Flow(s),veh/h/ln	1739	1249	1748	1761	1784	1674
Q Serve(g_s), s	7.4	0.0	0.4	0.0	9.5	9.5
Cycle Q Clear(g_c), s	7.4	0.0	0.4	0.0	9.5	9.5
Prop In Lane	1.00	1.00	1.00			0.69
Lane Grp Cap(c), veh/h	153	110	520	2775	1242	1165
V/C Ratio(X)	0.81	0.00	0.05	0.27	0.33	0.33
Avail Cap(c_a), veh/h	364	262	659	2775	1242	1165
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.0	0.0	4.1	0.0	6.3	6.3
Incr Delay (d2), s/veh	3.8	0.0	0.0	0.2	0.7	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	0.0	0.2	0.1	4.9	4.6
LnGrp Delay(d),s/veh	50.8	0.0	4.1	0.2	7.0	7.0
LnGrp LOS	D		A	A	A	A
Approach Vol, veh/h	124			766	792	
Approach Delay, s/veh	50.8			0.4	7.0	
Approach LOS	D			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	9.7	79.1		16.2		88.8		
Change Period (Y+Rc), s	7.0	6.0		7.0		6.0		
Max Green Setting (Gmax), s	11.0	52.0		22.0		70.0		
Max Q Clear Time (g_c+I1), s	2.4	11.5		9.4		2.0		
Green Ext Time (p_c), s	0.0	8.1		0.2		8.4		

Intersection Summary	
HCM 2010 Ctrl Delay	7.2
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	1.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	65	13	718	95	6	679
Future Vol, veh/h	65	13	718	95	6	679
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	1
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	8	2	2	0	1
Mvmt Flow	70	14	772	102	6	730

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1200	437	0	0	874	0
Stage 1	823	-	-	-	-	-
Stage 2	377	-	-	-	-	-
Critical Hdwy	6.8	7.06	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.38	-	-	2.2	-
Pot Cap-1 Maneuver	181	551	-	-	781	-
Stage 1	397	-	-	-	-	-
Stage 2	669	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	179	551	-	-	781	-
Mov Cap-2 Maneuver	179	-	-	-	-	-
Stage 1	397	-	-	-	-	-
Stage 2	660	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	34.9	0	0.2
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	202	781	-
HCM Lane V/C Ratio	-	-	0.415	0.008	-
HCM Control Delay (s)	-	-	34.9	9.6	0.1
HCM Lane LOS	-	-	D	A	A
HCM 95th %tile Q(veh)	-	-	1.9	0	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	12	35	22	709	650	4
Future Vol, veh/h	12	35	22	709	650	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	60	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	5	2	1	0
Mvmt Flow	13	38	24	771	707	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1528	709	711	0	-	0
Stage 1	709	-	-	-	-	-
Stage 2	819	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.15	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.245	-	-	-
Pot Cap-1 Maneuver	131	438	875	-	-	-
Stage 1	491	-	-	-	-	-
Stage 2	437	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	125	438	875	-	-	-
Mov Cap-2 Maneuver	125	-	-	-	-	-
Stage 1	467	-	-	-	-	-
Stage 2	437	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.9	0.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	875	-	125	438	-	-
HCM Lane V/C Ratio	0.027	-	0.104	0.087	-	-
HCM Control Delay (s)	9.2	0	37.1	14	-	-
HCM Lane LOS	A	A	E	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	0.3	-	-

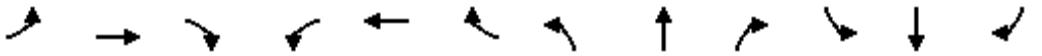


Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	581	132	284	48	173	471	88	423	241
v/c Ratio	0.80	0.15	0.30	0.05	0.78	0.91	0.50	0.87	0.45
Control Delay	43.1	11.0	24.0	0.1	58.3	78.8	42.7	77.5	18.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.1	11.0	24.0	0.1	58.3	78.8	42.7	77.5	18.2
Queue Length 50th (ft)	522	34	175	0	126	489	61	444	63
Queue Length 95th (ft)	762	77	258	0	#208	#692	102	583	148
Internal Link Dist (ft)	748		505			1493		1383	
Turn Bay Length (ft)		75		75	180		380		225
Base Capacity (vph)	727	862	947	888	237	579	221	570	605
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.15	0.30	0.05	0.73	0.81	0.40	0.74	0.40

Intersection Summary

Description: 694030

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	153	405	127	20	252	46	166	403	49	84	406	231
Future Volume (vph)	153	405	127	20	252	46	166	403	49	84	406	231
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			-3%			-1%			-1%	
Total Lost time (s)		7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	7.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected		0.99	1.00		1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1827	1567		1904	1576	1796	1870		1778	1872	1607
Flt Permitted		0.74	1.00		0.94	1.00	0.14	1.00		0.12	1.00	1.00
Satd. Flow (perm)		1373	1567		1788	1576	264	1870		224	1872	1607
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	159	422	132	21	262	48	173	420	51	88	423	241
RTOR Reduction (vph)	0	0	32	0	0	23	0	3	0	0	0	124
Lane Group Flow (vph)	0	581	100	0	284	25	173	468	0	88	423	117
Heavy Vehicles (%)	3%	1%	2%	0%	1%	4%	1%	0%	4%	2%	2%	1%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4			8		1	6		5	2	
Permitted Phases	4		4	8		8	6			2		2
Actuated Green, G (s)		87.3	87.3		87.3	87.3	59.2	45.6		53.6	42.8	42.8
Effective Green, g (s)		87.3	87.3		87.3	87.3	59.2	45.6		53.6	42.8	42.8
Actuated g/C Ratio		0.53	0.53		0.53	0.53	0.36	0.28		0.33	0.26	0.26
Clearance Time (s)		7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	2.0	4.0		3.0	4.0	4.0
Lane Grp Cap (vph)		727	830		947	835	221	517		174	486	417
v/s Ratio Prot							c0.06	c0.25		0.03	0.23	
v/s Ratio Perm		c0.42	0.06		0.16	0.02	0.22			0.13		0.07
v/c Ratio		0.80	0.12		0.30	0.03	0.78	0.91		0.51	0.87	0.28
Uniform Delay, d1		31.6	19.4		21.6	18.5	41.5	57.5		42.9	58.3	48.7
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		6.1	0.1		0.2	0.0	15.2	19.6		2.3	16.0	0.5
Delay (s)		37.7	19.5		21.8	18.5	56.7	77.1		45.3	74.3	49.2
Level of Service		D	B		C	B	E	E		D	E	D
Approach Delay (s)		34.3			21.3			71.6			62.8	
Approach LOS		C			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	51.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	164.7	Sum of lost time (s)	28.0
Intersection Capacity Utilization	98.0%	ICU Level of Service	F
Analysis Period (min)	15		
Description: 694030			
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	13.6
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	245	167	1	10	225	37	1	0	1	69	1	32
Future Vol, veh/h	245	167	1	10	225	37	1	0	1	69	1	32
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	23	1	0	0	0	1	0	0	0	2	0	26
Mvmt Flow	266	182	1	11	245	40	1	0	1	75	1	35
Number of Lanes	0	2	0	0	1	0	0	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	2
HCM Control Delay	15.1	12.5	9.6	10.2
HCM LOS	C	B	A	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	50%	75%	0%	4%	100%	0%
Vol Thru, %	0%	25%	99%	83%	0%	3%
Vol Right, %	50%	0%	1%	14%	0%	97%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	2	329	85	272	69	33
LT Vol	1	245	0	10	69	0
Through Vol	0	84	84	225	0	1
RT Vol	1	0	1	37	0	32
Lane Flow Rate	2	357	92	296	75	36
Geometry Grp	6	7	7	6	7	7
Degree of Util (X)	0.004	0.584	0.131	0.437	0.144	0.057
Departure Headway (Hd)	6.524	5.888	5.128	5.326	6.904	5.673
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	552	611	694	671	515	625
Service Time	4.524	3.656	2.896	3.395	4.699	3.467
HCM Lane V/C Ratio	0.004	0.584	0.133	0.441	0.146	0.058
HCM Control Delay	9.6	16.7	8.7	12.5	10.9	8.8
HCM Lane LOS	A	C	A	B	B	A
HCM 95th-tile Q	0	3.8	0.4	2.2	0.5	0.2

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	175	408	2	21	142	95	0	0	0	5	0	11
Future Vol, veh/h	175	408	2	21	142	95	0	0	0	5	0	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	22	0	0	12	0	0	0	0	0	0	0
Mvmt Flow	190	443	2	23	154	103	0	0	0	5	0	12

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	257	0	0	445	0	0	1082	1127	223	854	1077	206
Stage 1	-	-	-	-	-	-	824	824	-	252	252	-
Stage 2	-	-	-	-	-	-	258	303	-	602	825	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.3	6.5	6.9	7.3	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.5	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1320	-	-	1126	-	-	185	206	787	268	221	840
Stage 1	-	-	-	-	-	-	338	390	-	757	702	-
Stage 2	-	-	-	-	-	-	751	667	-	458	390	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1320	-	-	1126	-	-	153	163	787	225	175	840
Mov Cap-2 Maneuver	-	-	-	-	-	-	153	163	-	225	175	-
Stage 1	-	-	-	-	-	-	273	316	-	612	685	-
Stage 2	-	-	-	-	-	-	723	651	-	371	316	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.7	0.7	0	13.3
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1320	-	-	1126	-	-	453
HCM Lane V/C Ratio	-	0.144	-	-	0.02	-	-	0.038
HCM Control Delay (s)	0	8.2	0.4	-	8.3	0	-	13.3
HCM Lane LOS	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	-	0.5	-	-	0.1	-	-	0.1

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑			↱
Traffic Vol, veh/h	0	1832	2005	0	0	34
Future Vol, veh/h	0	1832	2005	0	0	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	-1	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	4	4	2	2	2
Mvmt Flow	0	1991	2179	0	0	37

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	1090
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	0	0	181
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	-	181
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	29.9
HCM LOS			D

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	181
HCM Lane V/C Ratio	-	-	0.204
HCM Control Delay (s)	-	-	29.9
HCM Lane LOS	-	-	D
HCM 95th %tile Q(veh)	-	-	0.7



Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	104	67	974	760
v/c Ratio	0.53	0.11	0.36	0.35
Control Delay	29.2	2.6	4.2	2.4
Queue Delay	0.0	0.0	0.5	0.2
Total Delay	29.2	2.6	4.7	2.6
Queue Length 50th (ft)	24	8	100	31
Queue Length 95th (ft)	74	m8	m90	45
Internal Link Dist (ft)	153		331	137
Turn Bay Length (ft)		150		
Base Capacity (vph)	556	628	2715	2174
Starvation Cap Reductn	0	0	1187	551
Spillback Cap Reductn	12	0	19	57
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.19	0.11	0.64	0.47

Intersection Summary

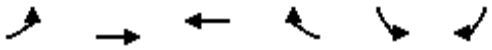
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	34	62	62	896	677	22
Future Volume (veh/h)	34	62	62	896	677	22
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1853	1818	1791	1862
Adj Flow Rate, veh/h	37	67	67	974	736	24
Adj No. of Lanes	0	0	1	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	4	4	2
Cap, veh/h	47	85	854	2714	1282	42
Arrive On Green	0.08	0.08	0.34	0.79	0.76	0.76
Sat Flow, veh/h	581	1052	1765	3545	3454	110
Grp Volume(v), veh/h	105	0	67	974	372	388
Grp Sat Flow(s),veh/h/ln	1648	0	1765	1727	1702	1772
Q Serve(g_s), s	6.6	0.0	0.0	8.8	9.7	9.7
Cycle Q Clear(g_c), s	6.6	0.0	0.0	8.8	9.7	9.7
Prop In Lane	0.35	0.64	1.00			0.06
Lane Grp Cap(c), veh/h	133	0	854	2714	648	675
V/C Ratio(X)	0.79	0.00	0.08	0.36	0.57	0.57
Avail Cap(c_a), veh/h	502	0	854	2714	648	675
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.09	0.09	0.91	0.91
Uniform Delay (d), s/veh	47.4	0.0	8.9	3.4	8.9	8.9
Incr Delay (d2), s/veh	9.9	0.0	0.0	0.0	3.3	3.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	0.0	0.8	4.1	4.8	5.0
LnGrp Delay(d),s/veh	57.3	0.0	8.9	3.4	12.2	12.1
LnGrp LOS	E		A	A	B	B
Approach Vol, veh/h	105			1041	760	
Approach Delay, s/veh	57.3			3.7	12.2	
Approach LOS	E			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		89.5		15.5	42.5	47.0		
Change Period (Y+Rc), s		7.0		7.0	7.0	7.0		
Max Green Setting (Gmax), s		59.0		32.0	12.0	40.0		
Max Q Clear Time (g_c+I1), s		10.8		8.6	2.0	11.7		
Green Ext Time (p_c), s		4.7		0.3	0.1	2.7		

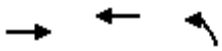
Intersection Summary	
HCM 2010 Ctrl Delay	10.1
HCM 2010 LOS	B



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	2100	1518	30	0	53
Future Volume (Veh/h)	0	2100	1518	30	0	53
Sign Control		Free	Free		Stop	
Grade		-7%	-1%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2283	1650	33	0	58
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		1143	198			
pX, platoon unblocked	0.62				0.62	0.62
vC, conflicting volume	1683				2237	566
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				859	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	91
cM capacity (veh/h)	1008				184	674

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	SB 1
Volume Total	571	571	571	571	660	660	363	58
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	33	58
cSH	1700	1700	1700	1700	1700	1700	1700	674
Volume to Capacity	0.34	0.34	0.34	0.34	0.39	0.39	0.21	0.09
Queue Length 95th (ft)	0	0	0	0	0	0	0	7
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.8
Lane LOS								B
Approach Delay (s)	0.0				0.0			10.8
Approach LOS								B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBT	WBT	NBL
Lane Group Flow (vph)	1892	1729	437
v/c Ratio	0.76	0.69	0.74
Control Delay	13.1	7.3	49.3
Queue Delay	0.0	0.0	0.0
Total Delay	13.1	7.3	49.3
Queue Length 50th (ft)	373	537	145
Queue Length 95th (ft)	550	126	188
Internal Link Dist (ft)	735	250	372
Turn Bay Length (ft)			220
Base Capacity (vph)	2497	2498	1028
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.76	0.69	0.43

Intersection Summary
Description: 7075



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1854	0	0	1694	428	0
Future Volume (vph)	1854	0	0	1694	428	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	1%			-1%	-1%	
Total Lost time (s)	6.5			6.5	7.0	
Lane Util. Factor	0.95			0.95	0.97	
Frt	1.00			1.00	1.00	
Flt Protected	1.00			1.00	0.95	
Satd. Flow (prot)	3556			3557	3484	
Flt Permitted	1.00			1.00	0.95	
Satd. Flow (perm)	3556			3557	3484	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	1892	0	0	1729	437	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1892	0	0	1729	437	0
Heavy Vehicles (%)	1%	0%	0%	2%	1%	0%
Turn Type	NA			NA	Prot	
Protected Phases	2			6	4	
Permitted Phases						
Actuated Green, G (s)	73.8			73.8	17.7	
Effective Green, g (s)	73.8			73.8	17.7	
Actuated g/C Ratio	0.70			0.70	0.17	
Clearance Time (s)	6.5			6.5	7.0	
Vehicle Extension (s)	5.0			5.0	2.0	
Lane Grp Cap (vph)	2499			2500	587	
v/s Ratio Prot	c0.53			0.49	c0.13	
v/s Ratio Perm						
v/c Ratio	0.76			0.69	0.74	
Uniform Delay, d1	9.9			9.0	41.5	
Progression Factor	1.00			0.64	1.00	
Incremental Delay, d2	2.2			1.1	4.5	
Delay (s)	12.1			6.9	46.0	
Level of Service	B			A	D	
Approach Delay (s)	12.1			6.9	46.0	
Approach LOS	B			A	D	

Intersection Summary			
HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		

Description: 7075

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	2094	188	0	1570	0	0	0	9	0	0	182
Future Vol, veh/h	0	2094	188	0	1570	0	0	0	9	0	0	182
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Yield	Yield	Yield
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Yield
Storage Length	-	-	-	-	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	-7	-	-	-1	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	0	1	0	0	2	0	0	0	0	0	0	9
Mvmt Flow	0	2137	192	0	1602	0	0	0	9	0	0	186

Major/Minor	Major1			Major2			Minor1					
Conflicting Flow All	-	0	0	-	-	0	-	-	1165			
Stage 1	-	-	-	-	-	-	-	-	-			
Stage 2	-	-	-	-	-	-	-	-	-			
Critical Hdwy	-	-	-	-	-	-	-	-	7.1			
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-			
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-			
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.9			
Pot Cap-1 Maneuver	0	-	-	0	-	0	0	0	163			
Stage 1	0	-	-	0	-	0	0	0	-			
Stage 2	0	-	-	0	-	0	0	0	-			
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	0	163			
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	0	-			
Stage 1	-	-	-	-	-	-	-	0	-			
Stage 2	-	-	-	-	-	-	-	0	-			

Approach	EB	WB	NB
HCM Control Delay, s	0	0	28.4
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	163	-	-	-
HCM Lane V/C Ratio	0.056	-	-	-
HCM Control Delay (s)	28.4	-	-	-
HCM Lane LOS	D	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	2100	1567	4	0	3
Future Vol, veh/h	3	2100	1567	4	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	140	-	-	0	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	-1	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	1	2	11	0	0
Mvmt Flow	3	2188	1632	4	0	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1636	0	-	0	-	816
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.1	-	-	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.2	-	-	-	-	3.3
Pot Cap-1 Maneuver	402	-	-	-	0	324
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	402	-	-	-	-	324
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	16.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	402	-	-	-	324
HCM Lane V/C Ratio	0.008	-	-	-	0.01
HCM Control Delay (s)	14	-	-	-	16.2
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0



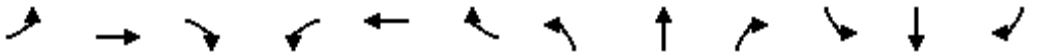
Lane Group	EBL	EBT	WBT	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	220	1991	1466	207	16	34	218	198
v/c Ratio	1.00	0.66	0.88	0.25	0.16	0.12	0.70	0.41
Control Delay	113.8	28.7	29.8	6.7	51.4	0.9	51.9	4.8
Queue Delay	0.0	0.5	0.0	0.0	0.0	0.2	3.8	0.8
Total Delay	113.8	29.2	29.8	6.7	51.4	1.2	55.7	5.6
Queue Length 50th (ft)	~144	428	466	30	10	0	146	0
Queue Length 95th (ft)	m#271	#568	#987	m64	34	0	210	34
Internal Link Dist (ft)		118	138		288			281
Turn Bay Length (ft)								
Base Capacity (vph)	219	3012	1668	843	100	272	441	579
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	519	0	0	0	67	146	172
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.00	0.80	0.88	0.25	0.16	0.17	0.74	0.49

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

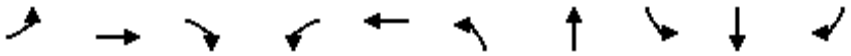
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	209	1854	37	0	1393	197	15	0	32	240	0	155
Future Volume (vph)	209	1854	37	0	1393	197	15	0	32	240	0	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-7%			-1%			0%			0%	
Total Lost time (s)	6.8	5.0			5.0	5.0		7.2	6.8	7.2	7.2	
Lane Util. Factor	1.00	0.91			0.95	1.00		1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00			1.00	0.98		1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	1.00			1.00	0.85		1.00	0.85	1.00	0.88	
Flt Protected	0.95	1.00			1.00	1.00		0.95	1.00	0.95	0.99	
Satd. Flow (prot)	1832	5147			3557	1586		1805	1603	1715	1568	
Flt Permitted	0.95	1.00			1.00	1.00		0.95	1.00	0.95	0.99	
Satd. Flow (perm)	1832	5147			3557	1586		1805	1603	1715	1568	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	220	1952	39	0	1466	207	16	0	34	253	0	163
RTOR Reduction (vph)	0	1	0	0	0	113	0	0	32	0	162	0
Lane Group Flow (vph)	220	1990	0	0	1466	94	0	16	2	218	36	0
Confl. Peds. (#/hr)	3		1	3		1			1			
Confl. Bikes (#/hr)			3									
Heavy Vehicles (%)	2%	4%	2%	3%	2%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	pm+ov	Split	NA	
Protected Phases	5	2		1	6		8	8	1	4	4	
Permitted Phases						6			8			
Actuated Green, G (s)	15.3	54.4			42.2	42.2		2.3	5.4	19.0	19.0	
Effective Green, g (s)	15.3	54.4			42.2	42.2		2.3	5.4	19.0	19.0	
Actuated g/C Ratio	0.15	0.52			0.40	0.40		0.02	0.05	0.18	0.18	
Clearance Time (s)	6.8	5.0			5.0	5.0		7.2	6.8	7.2	7.2	
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	266	2666			1429	637		39	82	310	283	
v/s Ratio Prot	0.12	c0.39			c0.41			c0.01	0.00	c0.13	0.02	
v/s Ratio Perm						0.06			0.00			
v/c Ratio	0.83	0.75			1.03	0.15		0.41	0.02	0.70	0.13	
Uniform Delay, d1	43.6	19.9			31.4	20.0		50.7	47.3	40.4	36.0	
Progression Factor	1.26	1.51			0.89	1.76		1.00	1.00	1.00	1.00	
Incremental Delay, d2	15.8	1.6			25.8	0.3		6.9	0.1	7.1	0.2	
Delay (s)	70.6	31.6			53.8	35.5		57.6	47.4	47.4	36.2	
Level of Service	E	C			D	D		E	D	D	D	
Approach Delay (s)		35.5			51.5			50.7			42.1	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	42.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	26.2
Intersection Capacity Utilization	84.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	171	1683	378	172	1467	140	381	238	451	234
v/c Ratio	1.10	1.02	0.44	1.01	0.88	0.93	0.48	0.81	0.97	0.49
Control Delay	174.6	72.1	23.0	160.6	54.5	105.3	71.3	65.5	93.6	26.0
Queue Delay	0.0	18.7	0.5	0.0	0.0	0.0	0.0	0.0	25.1	1.2
Total Delay	174.6	90.8	23.5	160.6	54.5	105.3	71.3	65.5	118.7	27.2
Queue Length 50th (ft)	~137	~1317	217	~245	966	134	239	208	623	105
Queue Length 95th (ft)	#227	#1433	285	#428	1075	#284	299	#323	#843	160
Internal Link Dist (ft)		259			2080		412		331	
Turn Bay Length (ft)	250			225		115		295		
Base Capacity (vph)	155	1657	866	170	1670	151	822	293	485	492
Starvation Cap Reductn	0	80	185	0	0	0	0	0	53	108
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.10	1.07	0.56	1.01	0.88	0.93	0.46	0.81	1.04	0.61

Intersection Summary

Description: 7070

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	162	1599	359	163	1184	210	133	304	58	226	428	222
Future Volume (vph)	162	1599	359	163	1184	210	133	304	58	226	428	222
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-7%			7%			3%			4%	
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0		7.0	6.5		7.0	6.5	6.5
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95		1.00	0.95		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99		1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3624	3736	1618	1708	3337		1743	3352		1602	1773	1455
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.10	1.00		0.34	1.00	1.00
Satd. Flow (perm)	3624	3736	1618	1708	3337		188	3352		572	1773	1455
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	171	1683	378	172	1246	221	140	320	61	238	451	234
RTOR Reduction (vph)	0	0	48	0	0	0	0	0	0	0	0	96
Lane Group Flow (vph)	171	1683	330	172	1467	0	140	381	0	238	451	138
Confl. Peds. (#/hr)	3		6	6		3	27		14	14		27
Heavy Vehicles (%)	0%	0%	1%	2%	1%	6%	2%	3%	2%	10%	5%	2%
Turn Type	Prot	NA	pm+ov	Prot	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases			2				8			4		4
Actuated Green, G (s)	9.0	93.2	106.2	21.0	105.2		62.3	49.3		74.3	55.3	55.3
Effective Green, g (s)	9.0	93.2	106.2	21.0	105.2		62.3	49.3		74.3	55.3	55.3
Actuated g/C Ratio	0.04	0.44	0.51	0.10	0.50		0.30	0.23		0.35	0.26	0.26
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	6.5		7.0	6.5	6.5
Vehicle Extension (s)	3.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	155	1658	872	170	1671		152	786		295	466	383
v/s Ratio Prot	0.05	c0.45	0.02	c0.10	c0.44		0.06	0.11		c0.07	c0.25	
v/s Ratio Perm			0.18				0.22			0.21		0.10
v/c Ratio	1.10	1.02	0.38	1.01	0.88		0.92	0.48		0.81	0.97	0.36
Uniform Delay, d1	100.5	58.4	31.7	94.5	46.7		60.8	69.4		56.5	76.5	63.0
Progression Factor	0.93	0.85	1.03	1.00	1.00		1.00	1.00		0.86	0.81	0.82
Incremental Delay, d2	95.1	23.6	0.1	72.1	6.9		49.4	0.2		13.0	31.2	0.2
Delay (s)	188.7	73.4	32.6	166.6	53.6		110.2	69.6		61.4	93.4	52.1
Level of Service	F	E	C	F	D		F	E		E	F	D
Approach Delay (s)		75.4			65.4			80.5			74.7	
Approach LOS		E			E			F			E	

Intersection Summary			
HCM 2000 Control Delay	72.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	210.0	Sum of lost time (s)	27.5
Intersection Capacity Utilization	109.0%	ICU Level of Service	G
Analysis Period (min)	15		
Description: 7070			

c Critical Lane Group



Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	191	54	708	896
v/c Ratio	0.69	0.12	0.27	0.41
Control Delay	39.2	1.8	1.5	5.1
Queue Delay	0.0	0.0	0.2	0.1
Total Delay	39.2	1.8	1.8	5.2
Queue Length 50th (ft)	75	3	17	36
Queue Length 95th (ft)	141	6	25	274
Internal Link Dist (ft)	405		137	400
Turn Bay Length (ft)		110		
Base Capacity (vph)	585	449	2615	2181
Starvation Cap Reductn	0	0	1085	418
Spillback Cap Reductn	0	0	0	3
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.33	0.12	0.46	0.51

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	73	108	51	673	783	68
Future Volume (veh/h)	73	108	51	673	783	68
Number	7	14	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1889	1900	1890	1853	1823	1862
Adj Flow Rate, veh/h	77	114	54	708	824	72
Adj No. of Lanes	0	0	1	2	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	1	0	2	2	4
Cap, veh/h	92	136	391	2573	2018	176
Arrive On Green	0.14	0.14	0.08	1.00	0.21	0.21
Sat Flow, veh/h	673	997	1800	3614	3314	282
Grp Volume(v), veh/h	192	0	54	708	443	453
Grp Sat Flow(s),veh/h/ln	1679	0	1800	1761	1731	1772
Q Serve(g_s), s	11.7	0.0	1.0	0.0	23.3	23.3
Cycle Q Clear(g_c), s	11.7	0.0	1.0	0.0	23.3	23.3
Prop In Lane	0.40	0.59	1.00			0.16
Lane Grp Cap(c), veh/h	229	0	391	2573	1084	1110
V/C Ratio(X)	0.84	0.00	0.14	0.28	0.41	0.41
Avail Cap(c_a), veh/h	528	0	443	2573	1084	1110
HCM Platoon Ratio	1.00	1.00	2.00	2.00	0.33	0.33
Upstream Filter(I)	1.00	0.00	0.95	0.95	0.91	0.91
Uniform Delay (d), s/veh	44.2	0.0	8.4	0.0	24.8	24.8
Incr Delay (d2), s/veh	8.0	0.0	0.2	0.3	1.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	0.0	0.5	0.1	11.5	11.8
LnGrp Delay(d),s/veh	52.3	0.0	8.6	0.3	25.8	25.8
LnGrp LOS	D		A	A	C	C
Approach Vol, veh/h	192			762	896	
Approach Delay, s/veh	52.3			0.8	25.8	
Approach LOS	D			A	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	11.0	72.7		21.3		83.7		
Change Period (Y+Rc), s	7.0	7.0		7.0		7.0		
Max Green Setting (Gmax), s	7.0	44.0		33.0		58.0		
Max Q Clear Time (g_c+I1), s	3.0	25.3		13.7		2.0		
Green Ext Time (p_c), s	0.0	3.2		0.6		3.1		

Intersection Summary	
HCM 2010 Ctrl Delay	18.3
HCM 2010 LOS	B

Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	359	277	24	126	672	13	15	664
v/c Ratio	1.05	0.45	0.07	0.30	0.34	0.01	0.03	0.41
Control Delay	100.6	6.4	19.4	8.0	8.0	0.0	3.6	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	100.6	6.4	19.4	8.0	8.0	0.0	3.6	10.4
Queue Length 50th (ft)	~263	0	6	21	57	0	2	150
Queue Length 95th (ft)	#444	63	27	38	101	0	m3	105
Internal Link Dist (ft)	375		307		400			190
Turn Bay Length (ft)				205		290	125	
Base Capacity (vph)	343	609	358	501	2000	874	512	1625
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.05	0.45	0.07	0.25	0.34	0.01	0.03	0.41

Intersection Summary

Description: 704010

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	329	1	255	8	2	12	116	618	12	14	588	23
Future Volume (vph)	329	1	255	8	2	12	116	618	12	14	588	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			2%			1%			1%	
Total Lost time (s)		7.0	7.0		7.0		7.0	6.0	6.0	7.0	6.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	0.98		0.99		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes		0.99	1.00		1.00		1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85		0.93		1.00	1.00	0.85	1.00	0.99	
Flt Protected		0.95	1.00		0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1792	1571		1614		1726	3522	1453	1793	3468	
Flt Permitted		0.71	1.00		0.82		0.30	1.00	1.00	0.40	1.00	
Satd. Flow (perm)		1334	1571		1354		547	3522	1453	748	3468	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	358	1	277	9	2	13	126	672	13	15	639	25
RTOR Reduction (vph)	0	0	206	0	10	0	0	0	6	0	2	0
Lane Group Flow (vph)	0	359	71	0	14	0	126	672	7	15	662	0
Confl. Peds. (#/hr)	4		9	9		4	3		4	4		3
Heavy Vehicles (%)	1%	0%	1%	13%	0%	0%	4%	2%	8%	0%	3%	0%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		
Actuated Green, G (s)		27.0	27.0		27.0		64.2	55.4	55.4	51.8	49.2	
Effective Green, g (s)		27.0	27.0		27.0		64.2	55.4	55.4	51.8	49.2	
Actuated g/C Ratio		0.26	0.26		0.26		0.61	0.53	0.53	0.49	0.47	
Clearance Time (s)		7.0	7.0		7.0		7.0	6.0	6.0	7.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	4.0	4.0	3.0	4.0	
Lane Grp Cap (vph)		343	403		348		433	1858	766	394	1625	
v/s Ratio Prot							c0.02	c0.19		0.00	c0.19	
v/s Ratio Perm		c0.27	0.05		0.01		0.15		0.00	0.02		
v/c Ratio		1.05	0.18		0.04		0.29	0.36	0.01	0.04	0.41	
Uniform Delay, d1		39.0	30.4		29.3		9.6	14.5	11.8	13.6	18.3	
Progression Factor		1.00	1.00		1.00		0.72	0.59	1.00	0.39	0.52	
Incremental Delay, d2		61.3	0.2		0.0		0.4	0.5	0.0	0.0	0.7	
Delay (s)		100.3	30.6		29.3		7.3	9.0	11.8	5.4	10.2	
Level of Service		F	C		C		A	A	B	A	B	
Approach Delay (s)		69.9			29.3			8.8			10.1	
Approach LOS		E			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	27.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		
Description: 704010			

c Critical Lane Group

Intersection	
Int Delay, s/veh	7.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	43	66	842	95	107	564
Future Vol, veh/h	43	66	842	95	107	564
Conflicting Peds, #/hr	3	0	0	1	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	1	-	-	1
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	0	1	1	0	2
Mvmt Flow	47	72	915	103	116	613

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1510	510	0	0	1019	0
Stage 1	968	-	-	-	-	-
Stage 2	542	-	-	-	-	-
Critical Hdwy	6.35	7.1	-	-	5.3	-
Critical Hdwy Stg 1	6.7	-	-	-	-	-
Critical Hdwy Stg 2	5.9	-	-	-	-	-
Follow-up Hdwy	3.7	3.9	-	-	3.1	-
Pot Cap-1 Maneuver	134	439	-	-	389	-
Stage 1	253	-	-	-	-	-
Stage 2	522	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	73	439	-	-	389	-
Mov Cap-2 Maneuver	73	-	-	-	-	-
Stage 1	253	-	-	-	-	-
Stage 2	286	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	89.7	0	5.4
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	147	389	-
HCM Lane V/C Ratio	-	-	0.806	0.299	-
HCM Control Delay (s)	-	-	89.7	18.2	3
HCM Lane LOS	-	-	F	C	A
HCM 95th %tile Q(veh)	-	-	5.1	1.2	-



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	353	57	22	966	733
v/c Ratio	0.87	0.16	0.06	0.42	0.36
Control Delay	61.3	13.2	9.4	10.1	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	61.3	13.2	9.4	10.1	12.7
Queue Length 50th (ft)	224	6	6	158	109
Queue Length 95th (ft)	#356	38	m13	m181	205
Internal Link Dist (ft)	434			170	147
Turn Bay Length (ft)		125			
Base Capacity (vph)	454	403	447	2302	2055
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.78	0.14	0.05	0.42	0.36

Intersection Summary

Description: 704005

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

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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	325	52	20	889	619	55
Future Volume (veh/h)	325	52	20	889	619	55
Number	7	14	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1862	1695	1783	1872	1824	1890
Adj Flow Rate, veh/h	353	0	22	966	673	60
Adj No. of Lanes	1	1	1	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	11	6	1	4	0
Cap, veh/h	385	312	422	2345	1835	163
Arrive On Green	0.22	0.00	0.02	0.44	0.57	0.57
Sat Flow, veh/h	1774	1440	1699	3650	3310	287
Grp Volume(v), veh/h	353	0	22	966	362	371
Grp Sat Flow(s),veh/h/ln	1774	1440	1699	1778	1732	1773
Q Serve(g_s), s	20.4	0.0	0.5	19.5	11.9	11.9
Cycle Q Clear(g_c), s	20.4	0.0	0.5	19.5	11.9	11.9
Prop In Lane	1.00	1.00	1.00			0.16
Lane Grp Cap(c), veh/h	385	312	422	2345	988	1011
V/C Ratio(X)	0.92	0.00	0.05	0.41	0.37	0.37
Avail Cap(c_a), veh/h	456	370	545	2345	988	1011
HCM Platoon Ratio	1.00	1.00	0.67	0.67	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.2	0.0	9.0	15.4	12.3	12.3
Incr Delay (d2), s/veh	19.9	0.0	0.0	0.5	1.1	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.1	0.0	0.3	9.8	5.9	6.1
LnGrp Delay(d),s/veh	60.0	0.0	9.1	16.0	13.3	13.3
LnGrp LOS	E		A	B	B	B
Approach Vol, veh/h	353			988	733	
Approach Delay, s/veh	60.0			15.8	13.3	
Approach LOS	E			B	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	9.4	65.9		29.8		75.2		
Change Period (Y+Rc), s	7.0	6.0		7.0		6.0		
Max Green Setting (Gmax), s	10.0	48.0		27.0		65.0		
Max Q Clear Time (g_c+I1), s	2.5	13.9		22.4		21.5		
Green Ext Time (p_c), s	0.0	6.9		0.3		11.5		

Intersection Summary	
HCM 2010 Ctrl Delay	22.5
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	14	12	862	352	16	660
Future Vol, veh/h	14	12	862	352	16	660
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	1
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	1	0	0	3
Mvmt Flow	15	13	917	374	17	702

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1489	646	0	0	1291	0
Stage 1	1104	-	-	-	-	-
Stage 2	385	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	117	419	-	-	544	-
Stage 1	283	-	-	-	-	-
Stage 2	663	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	111	419	-	-	544	-
Mov Cap-2 Maneuver	111	-	-	-	-	-
Stage 1	283	-	-	-	-	-
Stage 2	629	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	30.6	0	0.6
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	168	544	-
HCM Lane V/C Ratio	-	-	0.165	0.031	-
HCM Control Delay (s)	-	-	30.6	11.8	0.3
HCM Lane LOS	-	-	D	B	A
HCM 95th %tile Q(veh)	-	-	0.6	0.1	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	33	51	823	643	15
Future Vol, veh/h	6	33	51	823	643	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	60	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	0	0	0	2	3	0
Mvmt Flow	6	33	52	831	649	15

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1592	657	664	0	-	0
Stage 1	657	-	-	-	-	-
Stage 2	935	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	119	468	935	-	-	-
Stage 1	519	-	-	-	-	-
Stage 2	385	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	107	468	935	-	-	-
Mov Cap-2 Maneuver	107	-	-	-	-	-
Stage 1	466	-	-	-	-	-
Stage 2	385	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.5	0.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	935	-	107	468	-	-
HCM Lane V/C Ratio	0.055	-	0.057	0.071	-	-
HCM Control Delay (s)	9.1	0	40.7	13.3	-	-
HCM Lane LOS	A	A	E	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.2	0.2	-	-



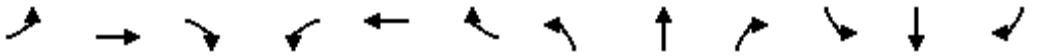
Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	692	155	347	30	119	366	55	510	234
v/c Ratio	1.18	0.19	0.56	0.04	0.57	0.55	0.17	0.87	0.40
Control Delay	135.6	16.0	36.3	0.1	37.7	45.4	27.2	67.5	17.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	135.6	16.0	36.3	0.1	37.7	45.4	27.2	67.5	17.2
Queue Length 50th (ft)	~868	51	254	0	75	315	34	505	67
Queue Length 95th (ft)	#1329	120	449	0	117	426	61	666	145
Internal Link Dist (ft)	748		505			1493		1383	
Turn Bay Length (ft)		75		75	180		380		227
Base Capacity (vph)	586	798	625	823	244	826	400	829	760
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.18	0.19	0.56	0.04	0.49	0.44	0.14	0.62	0.31

Intersection Summary

Description: 694030

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	180	484	149	23	310	29	114	322	30	53	490	225
Future Volume (vph)	180	484	149	23	310	29	114	322	30	53	490	225
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			-3%			-1%			-1%	
Total Lost time (s)		7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	7.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected		0.99	1.00		1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1824	1583		1899	1591	1778	1868		1814	1891	1546
Flt Permitted		0.66	1.00		0.68	1.00	0.13	1.00		0.39	1.00	1.00
Satd. Flow (perm)		1214	1583		1297	1591	235	1868		737	1891	1546
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	188	504	155	24	323	30	119	335	31	55	510	234
RTOR Reduction (vph)	0	0	34	0	0	16	0	2	0	0	0	100
Lane Group Flow (vph)	0	692	121	0	347	14	119	364	0	55	510	134
Heavy Vehicles (%)	1%	2%	1%	4%	1%	3%	2%	1%	0%	0%	1%	5%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4			8		1	6		5	2	
Permitted Phases	4		4	8		8	6			2		2
Actuated Green, G (s)		77.6	77.6		77.6	77.6	68.5	56.6		58.5	51.6	51.6
Effective Green, g (s)		77.6	77.6		77.6	77.6	68.5	56.6		58.5	51.6	51.6
Actuated g/C Ratio		0.48	0.48		0.48	0.48	0.42	0.35		0.36	0.32	0.32
Clearance Time (s)		7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	4.0		3.0	4.0	4.0
Lane Grp Cap (vph)		581	757		620	761	212	652		311	601	492
v/s Ratio Prot							c0.04	c0.19		0.01	c0.27	
v/s Ratio Perm		c0.57	0.08		0.27	0.01	0.20			0.06		0.09
v/c Ratio		1.19	0.16		0.56	0.02	0.56	0.56		0.18	0.85	0.27
Uniform Delay, d1		42.2	23.8		30.1	22.2	35.1	42.6		34.9	51.6	41.2
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		102.2	0.1		1.1	0.0	3.4	1.3		0.3	11.2	0.4
Delay (s)		144.5	23.9		31.2	22.2	38.5	43.9		35.1	62.8	41.6
Level of Service		F	C		C	C	D	D		D	E	D
Approach Delay (s)		122.4			30.5			42.6			54.7	
Approach LOS		F			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	71.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	162.1	Sum of lost time (s)	28.0
Intersection Capacity Utilization	108.5%	ICU Level of Service	G
Analysis Period (min)	15		
Description: 694030			
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	28.6
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	316	378	1	6	76	58	0	0	2	205	0	11
Future Vol, veh/h	316	378	1	6	76	58	0	0	2	205	0	11
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles, %	17	0	0	0	0	6	0	0	0	0	0	21
Mvmt Flow	336	402	1	6	81	62	0	0	2	218	0	12
Number of Lanes	0	2	0	0	1	0	0	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	2
HCM Control Delay	36.2	11.2	9.8	15.5
HCM LOS	E	B	A	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	0%	63%	0%	4%	100%	0%
Vol Thru, %	0%	37%	99%	54%	0%	0%
Vol Right, %	100%	0%	1%	41%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	2	505	190	140	205	11
LT Vol	0	316	0	6	205	0
Through Vol	0	189	189	76	0	0
RT Vol	2	0	1	58	0	11
Lane Flow Rate	2	537	202	149	218	12
Geometry Grp	6	7	7	6	7	7
Degree of Util (X)	0.004	0.925	0.314	0.253	0.445	0.02
Departure Headway (Hd)	6.752	6.201	5.59	6.104	7.339	6.119
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	528	586	643	588	491	585
Service Time	4.813	3.931	3.319	4.143	5.082	3.861
HCM Lane V/C Ratio	0.004	0.916	0.314	0.253	0.444	0.021
HCM Control Delay	9.8	45.7	10.9	11.2	15.9	9
HCM Lane LOS	A	E	B	B	C	A
HCM 95th-tile Q	0	11.7	1.3	1	2.3	0.1

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	81	684	5	23	34	30	5	0	6	5	0	27
Future Vol, veh/h	81	684	5	23	34	30	5	0	6	5	0	27
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	5	0	0	20	0	0	0	0	0	0	0
Mvmt Flow	84	713	5	24	35	31	5	0	6	5	0	28

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	66	0	0	718	0	0	997	998	359	624	985	51
Stage 1	-	-	-	-	-	-	884	884	-	99	99	-
Stage 2	-	-	-	-	-	-	113	114	-	525	886	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.3	6.5	6.9	7.3	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.5	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1549	-	-	892	-	-	213	246	643	387	250	1023
Stage 1	-	-	-	-	-	-	311	366	-	912	817	-
Stage 2	-	-	-	-	-	-	897	805	-	509	365	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1549	-	-	892	-	-	189	218	643	349	221	1023
Mov Cap-2 Maneuver	-	-	-	-	-	-	189	218	-	349	221	-
Stage 1	-	-	-	-	-	-	283	333	-	830	794	-
Stage 2	-	-	-	-	-	-	848	782	-	459	332	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	2.4	17.2	9.8
HCM LOS			C	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	307	1549	-	-	892	-	-	786
HCM Lane V/C Ratio	0.037	0.054	-	-	0.027	-	-	0.042
HCM Control Delay (s)	17.2	7.5	0.3	-	9.1	0	-	9.8
HCM Lane LOS	C	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0.2	-	-	0.1	-	-	0.1

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑			↱
Traffic Vol, veh/h	0	2120	1539	0	0	51
Future Vol, veh/h	0	2120	1539	0	0	51
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	-1	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2120	1539	0	0	51

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	770
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	0	0	295
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	-	295
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	19.7
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	295
HCM Lane V/C Ratio	-	-	0.173
HCM Control Delay (s)	-	-	19.7
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	0.6



Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	168	116	720	969
v/c Ratio	0.67	0.28	0.27	0.46
Control Delay	37.7	7.4	6.6	4.5
Queue Delay	0.4	0.0	0.2	0.1
Total Delay	38.1	7.4	6.8	4.6
Queue Length 50th (ft)	62	40	146	43
Queue Length 95th (ft)	125	m55	m173	76
Internal Link Dist (ft)	222		331	137
Turn Bay Length (ft)		150		
Base Capacity (vph)	546	461	2658	2124
Starvation Cap Reductn	0	0	1052	290
Spillback Cap Reductn	131	0	0	294
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.40	0.25	0.45	0.53

Intersection Summary

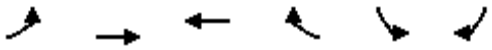
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	63	92	107	662	849	42
Future Volume (veh/h)	63	92	107	662	849	42
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1853	1853	1825	1862
Adj Flow Rate, veh/h	68	100	116	720	923	46
Adj No. of Lanes	0	0	1	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	82	120	514	2619	2117	105
Arrive On Green	0.12	0.12	0.05	0.74	1.00	1.00
Sat Flow, veh/h	667	980	1765	3614	3454	168
Grp Volume(v), veh/h	169	0	116	720	476	493
Grp Sat Flow(s),veh/h/ln	1656	0	1765	1761	1734	1796
Q Serve(g_s), s	10.5	0.0	2.2	6.9	0.0	0.0
Cycle Q Clear(g_c), s	10.5	0.0	2.2	6.9	0.0	0.0
Prop In Lane	0.40	0.59	1.00			0.09
Lane Grp Cap(c), veh/h	204	0	514	2619	1092	1130
V/C Ratio(X)	0.83	0.00	0.23	0.27	0.44	0.44
Avail Cap(c_a), veh/h	489	0	615	2619	1092	1130
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.68	0.68	0.92	0.92
Uniform Delay (d), s/veh	45.0	0.0	5.2	4.3	0.0	0.0
Incr Delay (d2), s/veh	8.4	0.0	0.1	0.2	1.2	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	0.0	1.1	3.4	0.4	0.4
LnGrp Delay(d),s/veh	53.4	0.0	5.4	4.5	1.2	1.1
LnGrp LOS	D		A	A	A	A
Approach Vol, veh/h	169			836	969	
Approach Delay, s/veh	53.4			4.6	1.1	
Approach LOS	D			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		85.1		19.9	12.0	73.1		
Change Period (Y+Rc), s		7.0		7.0	7.0	7.0		
Max Green Setting (Gmax), s		60.0		31.0	11.0	42.0		
Max Q Clear Time (g_c+I1), s		8.9		12.5	4.2	2.0		
Green Ext Time (p_c), s		3.2		0.5	0.2	3.8		

Intersection Summary	
HCM 2010 Ctrl Delay	7.1
HCM 2010 LOS	A

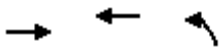
Appendix K: Intersection Capacity Analysis - Future with Development Condition (2030) – Alternative No VT Scenario – Proposed Mitigations



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1651	1535	44	0	15
Future Volume (Veh/h)	0	1651	1535	44	0	15
Sign Control		Free	Free		Stop	
Grade		-7%	-1%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1795	1668	48	0	16
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		1143	198			
pX, platoon unblocked	0.59				0.59	0.59
vC, conflicting volume	1716				2141	580
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				532	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	98
cM capacity (veh/h)	964				284	645

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	SB 1
Volume Total	449	449	449	449	667	667	382	16
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	48	16
cSH	1700	1700	1700	1700	1700	1700	1700	645
Volume to Capacity	0.26	0.26	0.26	0.26	0.39	0.39	0.22	0.02
Queue Length 95th (ft)	0	0	0	0	0	0	0	2
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.7
Lane LOS								B
Approach Delay (s)	0.0				0.0			10.7
Approach LOS								B

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	40.6%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBT	WBT	NBL
Lane Group Flow (vph)	1592	1534	132
v/c Ratio	0.63	0.60	0.21
Control Delay	11.4	2.4	53.5
Queue Delay	0.0	0.0	0.0
Total Delay	11.4	2.4	53.5
Queue Length 50th (ft)	370	46	57
Queue Length 95th (ft)	430	56	90
Internal Link Dist (ft)	735	250	372
Turn Bay Length (ft)			220
Base Capacity (vph)	2545	2546	621
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.63	0.60	0.21

Intersection Summary
Description: 7075



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1465	0	0	1411	121	0
Future Volume (vph)	1465	0	0	1411	121	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	1%			-1%	-1%	
Total Lost time (s)	6.5			6.5	7.0	
Lane Util. Factor	0.95			0.95	0.97	
Frt	1.00			1.00	1.00	
Flt Protected	1.00			1.00	0.95	
Satd. Flow (prot)	3487			3489	3450	
Flt Permitted	1.00			1.00	0.95	
Satd. Flow (perm)	3487			3489	3450	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1592	0	0	1534	132	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1592	0	0	1534	132	0
Heavy Vehicles (%)	3%	0%	0%	4%	2%	2%
Bus Blockages (#/hr)	0	100	0	0	0	0
Turn Type	NA			NA	Prot	
Protected Phases	2			6	4	
Permitted Phases						
Actuated Green, G (s)	109.5			109.5	27.0	
Effective Green, g (s)	109.5			109.5	27.0	
Actuated g/C Ratio	0.73			0.73	0.18	
Clearance Time (s)	6.5			6.5	7.0	
Vehicle Extension (s)	5.0			5.0	2.0	
Lane Grp Cap (vph)	2545			2546	621	
v/s Ratio Prot	c0.46			0.44	c0.04	
v/s Ratio Perm						
v/c Ratio	0.63			0.60	0.21	
Uniform Delay, d1	10.1			9.8	52.4	
Progression Factor	1.00			0.17	1.00	
Incremental Delay, d2	1.2			0.7	0.8	
Delay (s)	11.2			2.4	53.2	
Level of Service	B			A	D	
Approach Delay (s)	11.2			2.4	53.2	
Approach LOS	B			A	D	

Intersection Summary			
HCM 2000 Control Delay	8.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	55.9%	ICU Level of Service	B
Analysis Period (min)	15		

Description: 7075

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1649	33	0	1540	0	0	0	16	0	0	90
Future Vol, veh/h	0	1649	33	0	1540	0	0	0	16	0	0	90
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Yield	Yield	Yield
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Yield
Storage Length	-	-	-	-	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	-7	-	-	-1	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	4	0	0	5	0	0	0	0	0	0	29
Mvmt Flow	0	1792	36	0	1674	0	0	0	17	0	0	98

Major/Minor	Major1			Major2			Minor1					
Conflicting Flow All	-	0	0	-	-	0	-	-	914			
Stage 1	-	-	-	-	-	-	-	-	-			
Stage 2	-	-	-	-	-	-	-	-	-			
Critical Hdwy	-	-	-	-	-	-	-	-	7.1			
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-			
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-			
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.9			
Pot Cap-1 Maneuver	0	-	-	0	-	0	0	0	240			
Stage 1	0	-	-	0	-	0	0	0	-			
Stage 2	0	-	-	0	-	0	0	0	-			
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	0	240			
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	0	-			
Stage 1	-	-	-	-	-	-	-	0	-			
Stage 2	-	-	-	-	-	-	-	0	-			

Approach	EB	WB	NB
HCM Control Delay, s	0	0	21.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	240	-	-	-
HCM Lane V/C Ratio	0.072	-	-	-
HCM Control Delay (s)	21.2	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	14	1651	1532	18	0	8
Future Vol, veh/h	14	1651	1532	18	0	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	140	-	-	0	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	-1	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	4	5	0	0	12
Mvmt Flow	14	1702	1579	19	0	8

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1598	0	-	0	-	790
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.14	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.22	-	-	-	-	3.42
Pot Cap-1 Maneuver	406	-	-	-	0	312
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	406	-	-	-	-	312
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	16.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	406	-	-	-	312
HCM Lane V/C Ratio	0.036	-	-	-	0.026
HCM Control Delay (s)	14.2	-	-	-	16.9
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1



Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	178	1560	14	1558	575	20	5	232	224
v/c Ratio	0.74	0.48	0.17	0.87	0.59	0.24	0.02	0.79	0.53
Control Delay	72.0	13.8	80.7	36.0	15.5	75.8	0.2	77.8	19.7
Queue Delay	0.0	0.0	0.0	14.6	0.8	0.0	0.0	0.0	0.0
Total Delay	72.0	13.8	80.7	50.6	16.3	75.8	0.2	77.8	19.7
Queue Length 50th (ft)	170	193	14	558	147	19	0	232	51
Queue Length 95th (ft)	#280	286	m17	m#726	m134	49	0	314	133
Internal Link Dist (ft)		118		138		288			281
Turn Bay Length (ft)			180						
Base Capacity (vph)	239	3248	123	1794	968	93	264	397	510
Starvation Cap Reductn	0	0	0	259	155	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.48	0.11	1.01	0.71	0.22	0.02	0.58	0.44

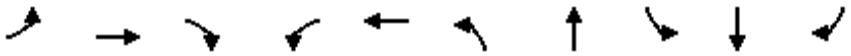
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	169	1461	21	13	1480	546	19	0	5	351	0	83
Future Volume (vph)	169	1461	21	13	1480	546	19	0	5	351	0	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-7%			-1%			0%			0%	
Total Lost time (s)	6.8	5.0		6.8	5.0	5.0		7.2	6.8	7.2	7.2	
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00		1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85		1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.95	1.00	0.95	0.97	
Satd. Flow (prot)	1868	5152		1814	3489	1585		1805	1601	1715	1649	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.95	1.00	0.95	0.97	
Satd. Flow (perm)	1868	5152		1814	3489	1585		1805	1601	1715	1649	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	178	1538	22	14	1558	575	20	0	5	369	0	87
RTOR Reduction (vph)	0	1	0	0	0	165	0	0	5	0	137	0
Lane Group Flow (vph)	178	1559	0	14	1558	410	0	20	0	232	87	0
Confl. Peds. (#/hr)	3		1	3		1			1			
Confl. Bikes (#/hr)			3									
Heavy Vehicles (%)	0%	4%	0%	0%	4%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	pm+ov	Split	NA	
Protected Phases	5	2		1	6		8	8	1	4	4	
Permitted Phases						6			8			
Actuated Green, G (s)	21.8	88.9		4.5	71.6	71.6		4.6	9.1	25.8	25.8	
Effective Green, g (s)	21.8	88.9		4.5	71.6	71.6		4.6	9.1	25.8	25.8	
Actuated g/C Ratio	0.15	0.59		0.03	0.48	0.48		0.03	0.06	0.17	0.17	
Clearance Time (s)	6.8	5.0		6.8	5.0	5.0		7.2	6.8	7.2	7.2	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	271	3053		54	1665	756		55	97	294	283	
v/s Ratio Prot	c0.10	0.30		0.01	c0.45			c0.01	0.00	c0.14	0.05	
v/s Ratio Perm						0.26			0.00			
v/c Ratio	0.66	0.51		0.26	0.94	0.54		0.36	0.00	0.79	0.31	
Uniform Delay, d1	60.6	17.8		71.1	37.0	27.6		71.3	66.2	59.5	54.3	
Progression Factor	0.87	0.74		1.16	1.01	1.17		1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.9	0.5		0.8	4.1	0.8		4.1	0.0	13.1	0.6	
Delay (s)	57.6	13.7		83.2	41.4	33.3		75.3	66.2	72.6	54.9	
Level of Service	E	B		F	D	C		E	E	E	D	
Approach Delay (s)		18.2			39.5			73.5			63.9	
Approach LOS		B			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	33.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	26.2
Intersection Capacity Utilization	85.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	142	1635	111	29	1918	75	580	175	115	361
v/c Ratio	0.85	0.81	0.11	0.39	1.12	0.25	0.99	1.16	0.17	0.79
Control Delay	110.0	24.4	2.1	84.7	96.2	42.4	95.4	165.2	31.3	26.5
Queue Delay	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	2.6
Total Delay	110.0	24.4	2.1	84.7	96.6	42.4	95.4	165.2	31.3	29.1
Queue Length 50th (ft)	75	314	4	28	~1132	55	301	~162	34	219
Queue Length 95th (ft)	#139	406	15	64	#1266	99	#430	#316	53	#312
Internal Link Dist (ft)		259			2080		412		331	
Turn Bay Length (ft)	250			225		115		200		
Base Capacity (vph)	167	2026	1009	83	1714	303	587	151	695	455
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	22
Spillback Cap Reductn	0	0	0	0	175	7	0	0	0	34
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.81	0.11	0.35	1.25	0.25	0.99	1.16	0.17	0.86

Intersection Summary

Description: 7070

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	138	1586	108	28	1583	277	73	484	79	170	112	350
Future Volume (vph)	138	1586	108	28	1583	277	73	484	79	170	112	350
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-7%			7%			3%			4%	
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0		7.0	6.5		7.0	6.5	7.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.98	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3588	3628	1606	1675	3274		1736	3391		1498	3538	1485
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.68	1.00		0.14	1.00	1.00
Satd. Flow (perm)	3588	3628	1606	1675	3274		1241	3391		214	3538	1485
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	142	1635	111	29	1632	286	75	499	81	175	115	361
RTOR Reduction (vph)	0	0	33	0	0	0	0	0	0	0	0	99
Lane Group Flow (vph)	142	1635	78	29	1918	0	75	580	0	175	115	262
Confl. Peds. (#/hr)	3		6	6		3	27		14	14		27
Heavy Vehicles (%)	1%	3%	2%	4%	3%	8%	0%	2%	3%	18%	0%	2%
Turn Type	Prot	NA	pm+ov	Prot	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	5	2	3	1	6		3	8		7	4	5
Permitted Phases			2				8			4		4
Actuated Green, G (s)	7.0	81.0	88.5	4.5	78.5		33.5	26.0		40.5	29.5	36.5
Effective Green, g (s)	7.0	81.0	88.5	4.5	78.5		33.5	26.0		40.5	29.5	36.5
Actuated g/C Ratio	0.05	0.54	0.59	0.03	0.52		0.22	0.17		0.27	0.20	0.24
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	6.5		7.0	6.5	7.0
Vehicle Extension (s)	3.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	3.0
Lane Grp Cap (vph)	167	1959	947	50	1713		301	587		151	695	361
v/s Ratio Prot	0.04	c0.45	0.00	0.02	c0.59		0.01	0.17		c0.08	0.03	0.03
v/s Ratio Perm			0.04				0.04			c0.23		0.14
v/c Ratio	0.85	0.83	0.08	0.58	1.12		0.25	0.99		1.16	0.17	0.73
Uniform Delay, d1	71.0	28.9	13.3	71.8	35.8		47.3	61.8		48.5	50.0	52.1
Progression Factor	1.06	0.75	0.70	1.00	1.00		1.00	1.00		1.12	0.61	0.43
Incremental Delay, d2	29.2	4.0	0.0	9.7	62.3		0.2	33.7		120.7	0.0	6.8
Delay (s)	104.6	25.6	9.3	81.6	98.1		47.4	95.5		175.0	30.5	29.4
Level of Service	F	C	A	F	F		D	F		F	C	C
Approach Delay (s)		30.6			97.8			90.0			68.7	
Approach LOS		C			F			F			E	

Intersection Summary			
HCM 2000 Control Delay	68.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	27.5
Intersection Capacity Utilization	103.7%	ICU Level of Service	G
Analysis Period (min)	15		
Description: 7070			

c Critical Lane Group



Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	178	174	837	771
v/c Ratio	0.40	0.41	0.36	0.43
Control Delay	35.8	7.7	2.0	7.5
Queue Delay	0.0	0.1	0.2	0.1
Total Delay	35.8	7.8	2.2	7.7
Queue Length 50th (ft)	101	10	14	54
Queue Length 95th (ft)	176	40	31	85
Internal Link Dist (ft)	405		137	400
Turn Bay Length (ft)		110		
Base Capacity (vph)	441	539	2302	1806
Starvation Cap Reductn	0	23	701	262
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.40	0.34	0.52	0.50

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	60	104	160	770	595	114
Future Volume (veh/h)	60	104	160	770	595	114
Number	7	14	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1856	1900	1783	1818	1790	1862
Adj Flow Rate, veh/h	65	113	174	837	647	124
Adj No. of Lanes	0	0	1	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	2	6	4	4	4
Cap, veh/h	143	249	523	2303	1593	305
Arrive On Green	0.24	0.24	0.12	1.00	1.00	1.00
Sat Flow, veh/h	597	1037	1699	3545	2938	545
Grp Volume(v), veh/h	179	0	174	837	386	385
Grp Sat Flow(s),veh/h/ln	1643	0	1699	1727	1701	1693
Q Serve(g_s), s	13.9	0.0	6.6	0.0	0.0	0.0
Cycle Q Clear(g_c), s	13.9	0.0	6.6	0.0	0.0	0.0
Prop In Lane	0.36	0.63	1.00			0.32
Lane Grp Cap(c), veh/h	394	0	523	2303	951	947
V/C Ratio(X)	0.45	0.00	0.33	0.36	0.41	0.41
Avail Cap(c_a), veh/h	394	0	715	2303	951	947
HCM Platoon Ratio	1.00	1.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.93	0.93	0.94	0.94
Uniform Delay (d), s/veh	48.6	0.0	10.6	0.0	0.0	0.0
Incr Delay (d2), s/veh	3.7	0.0	0.3	0.4	1.2	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	0.0	3.1	0.1	0.3	0.3
LnGrp Delay(d),s/veh	52.4	0.0	10.9	0.4	1.2	1.2
LnGrp LOS	D		B	A	A	A
Approach Vol, veh/h	179			1011	771	
Approach Delay, s/veh	52.4			2.2	1.2	
Approach LOS	D			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	16.1	90.9		43.0		107.0		
Change Period (Y+Rc), s	7.0	7.0		7.0		7.0		
Max Green Setting (Gmax), s	26.0	67.0		36.0		100.0		
Max Q Clear Time (g_c+I1), s	8.6	2.0		15.9		2.0		
Green Ext Time (p_c), s	0.5	2.9		0.6		3.9		

Intersection Summary	
HCM 2010 Ctrl Delay	6.4
HCM 2010 LOS	A



Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	98	160	28	263	636	3	1	630
v/c Ratio	0.24	0.30	0.11	0.56	0.30	0.00	0.00	0.36
Control Delay	41.4	7.0	34.2	20.1	9.1	0.0	7.0	13.3
Queue Delay	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0
Total Delay	41.4	7.0	34.2	20.1	9.3	0.0	7.0	13.3
Queue Length 50th (ft)	73	1	12	69	61	0	0	187
Queue Length 95th (ft)	119	56	43	126	187	m0	m1	250
Internal Link Dist (ft)		375	307		400			190
Turn Bay Length (ft)				205		290	125	
Base Capacity (vph)	434	613	245	471	2153	1021	512	1772
Starvation Cap Reductn	0	0	0	0	632	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.26	0.11	0.56	0.42	0.00	0.00	0.36

Intersection Summary

Description: 704010

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	1	146	11	2	13	242	585	3	1	552	28
Future Volume (vph)	90	1	146	11	2	13	242	585	3	1	552	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			2%			1%			1%	
Total Lost time (s)	5.0	7.0			7.0		7.0	6.0	6.0	7.0	6.0	
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	0.97			0.99		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00			0.99		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85			0.93		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00			0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1753	1550			1692		1743	3454	1569	1791	3432	
Flt Permitted	0.71	1.00			0.85		0.33	1.00	1.00	0.41	1.00	
Satd. Flow (perm)	1310	1550			1464		601	3454	1569	774	3432	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	98	1	159	12	2	14	263	636	3	1	600	30
RTOR Reduction (vph)	0	116	0	0	12	0	0	0	1	0	2	0
Lane Group Flow (vph)	98	44	0	0	16	0	263	636	2	1	628	0
Confl. Peds. (#/hr)	4		9	9		4	3		4	4		3
Heavy Vehicles (%)	3%	0%	2%	0%	0%	0%	3%	4%	0%	0%	4%	0%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	3	8			4		1	6		5	2	
Permitted Phases	8			4			6		6	2		
Actuated Green, G (s)	40.9	40.9			24.0		96.1	87.9	87.9	78.6	77.4	
Effective Green, g (s)	40.9	40.9			24.0		96.1	87.9	87.9	78.6	77.4	
Actuated g/C Ratio	0.27	0.27			0.16		0.64	0.59	0.59	0.52	0.52	
Clearance Time (s)	5.0	7.0			7.0		7.0	6.0	6.0	7.0	6.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	4.0	4.0	3.0	4.0	
Lane Grp Cap (vph)	392	422			234		474	2024	919	413	1770	
v/s Ratio Prot	c0.02	0.03					c0.04	0.18		0.00	0.18	
v/s Ratio Perm	c0.05				0.01		c0.31		0.00	0.00		
v/c Ratio	0.25	0.11			0.07		0.55	0.31	0.00	0.00	0.35	
Uniform Delay, d1	42.1	40.8			53.5		13.0	15.8	12.9	17.0	21.5	
Progression Factor	1.00	1.00			1.00		1.23	0.63	1.00	0.56	0.58	
Incremental Delay, d2	0.3	0.1			0.1		1.3	0.4	0.0	0.0	0.5	
Delay (s)	42.5	41.0			53.6		17.3	10.3	12.9	9.5	13.0	
Level of Service	D	D			D		B	B	B	A	B	
Approach Delay (s)		41.5			53.6			12.3			13.0	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	17.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	25.0
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		
Description: 704010			

c Critical Lane Group

Intersection	
Int Delay, s/veh	4.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	123	70	650	69	27	489
Future Vol, veh/h	123	70	650	69	27	489
Conflicting Peds, #/hr	3	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	150	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	1	-	-	1
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	7	3	4	17	0	4
Mvmt Flow	134	76	707	75	29	532

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1073	392	0	0	783	0
Stage 1	746	-	-	-	-	-
Stage 2	327	-	-	-	-	-
Critical Hdwy	6.39	7.16	-	-	5.3	-
Critical Hdwy Stg 1	6.74	-	-	-	-	-
Critical Hdwy Stg 2	5.94	-	-	-	-	-
Follow-up Hdwy	3.72	3.93	-	-	3.1	-
Pot Cap-1 Maneuver	238	516	-	-	504	-
Stage 1	343	-	-	-	-	-
Stage 2	665	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	218	516	-	-	504	-
Mov Cap-2 Maneuver	218	-	-	-	-	-
Stage 1	343	-	-	-	-	-
Stage 2	609	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	33.2	0	1.1
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	218	516	504	-
HCM Lane V/C Ratio	-	-	0.613	0.147	0.058	-
HCM Control Delay (s)	-	-	44.6	13.2	12.6	0.5
HCM Lane LOS	-	-	E	B	B	A
HCM 95th %tile Q(veh)	-	-	3.6	0.5	0.2	-



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	124	22	26	740	792
v/c Ratio	0.28	0.07	0.07	0.32	0.38
Control Delay	47.2	15.3	9.8	13.2	14.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	47.2	15.3	9.8	13.2	14.2
Queue Length 50th (ft)	98	0	11	199	189
Queue Length 95th (ft)	160	24	24	231	238
Internal Link Dist (ft)	434			170	147
Turn Bay Length (ft)		125			
Base Capacity (vph)	439	332	434	2324	2099
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.28	0.07	0.06	0.32	0.38

Intersection Summary
Description: 704005



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	117	21	24	696	495	249
Future Volume (veh/h)	117	21	24	696	495	249
Number	7	14	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1826	1470	1835	1853	1878	1890
Adj Flow Rate, veh/h	124	0	26	740	527	265
Adj No. of Lanes	1	1	1	2	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	28	3	2	1	0
Cap, veh/h	441	316	402	2324	1362	683
Arrive On Green	0.25	0.00	0.01	0.44	0.59	0.59
Sat Flow, veh/h	1739	1249	1748	3614	2397	1155
Grp Volume(v), veh/h	124	0	26	740	408	384
Grp Sat Flow(s),veh/h/ln	1739	1249	1748	1761	1784	1674
Q Serve(g_s), s	8.6	0.0	0.8	20.5	18.2	18.3
Cycle Q Clear(g_c), s	8.6	0.0	0.8	20.5	18.2	18.3
Prop In Lane	1.00	1.00	1.00			0.69
Lane Grp Cap(c), veh/h	441	316	402	2324	1055	990
V/C Ratio(X)	0.28	0.00	0.06	0.32	0.39	0.39
Avail Cap(c_a), veh/h	441	316	503	2324	1055	990
HCM Platoon Ratio	1.00	1.00	0.67	0.67	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.0	0.0	12.1	19.9	16.2	16.3
Incr Delay (d2), s/veh	1.6	0.0	0.0	0.4	1.1	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	0.0	0.4	10.1	9.3	8.7
LnGrp Delay(d),s/veh	46.6	0.0	12.1	20.3	17.3	17.4
LnGrp LOS	D		B	C	B	B
Approach Vol, veh/h	124			766	792	
Approach Delay, s/veh	46.6			20.0	17.4	
Approach LOS	D			C	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	10.3	94.7		45.0		105.0		
Change Period (Y+Rc), s	7.0	6.0		7.0		6.0		
Max Green Setting (Gmax), s	12.0	80.0		38.0		99.0		
Max Q Clear Time (g_c+I1), s	2.8	20.3		10.6		22.5		
Green Ext Time (p_c), s	0.0	8.5		0.2		8.4		

Intersection Summary	
HCM 2010 Ctrl Delay	20.7
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	1.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	65	13	718	95	6	679
Future Vol, veh/h	65	13	718	95	6	679
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	1
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	8	2	2	0	1
Mvmt Flow	70	14	772	102	6	730

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1200	437	0	0	874	0
Stage 1	823	-	-	-	-	-
Stage 2	377	-	-	-	-	-
Critical Hdwy	6.8	7.06	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.38	-	-	2.2	-
Pot Cap-1 Maneuver	181	551	-	-	781	-
Stage 1	397	-	-	-	-	-
Stage 2	669	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	179	551	-	-	781	-
Mov Cap-2 Maneuver	179	-	-	-	-	-
Stage 1	397	-	-	-	-	-
Stage 2	660	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	34.9	0	0.2
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	202	781	-
HCM Lane V/C Ratio	-	-	0.415	0.008	-
HCM Control Delay (s)	-	-	34.9	9.6	0.1
HCM Lane LOS	-	-	D	A	A
HCM 95th %tile Q(veh)	-	-	1.9	0	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	12	35	22	709	650	4
Future Vol, veh/h	12	35	22	709	650	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	60	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	5	2	1	0
Mvmt Flow	13	38	24	771	707	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1528	709	711	0	-	0
Stage 1	709	-	-	-	-	-
Stage 2	819	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.15	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.245	-	-	-
Pot Cap-1 Maneuver	131	438	875	-	-	-
Stage 1	491	-	-	-	-	-
Stage 2	437	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	125	438	875	-	-	-
Mov Cap-2 Maneuver	125	-	-	-	-	-
Stage 1	467	-	-	-	-	-
Stage 2	437	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.9	0.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	875	-	125	438	-	-
HCM Lane V/C Ratio	0.027	-	0.104	0.087	-	-
HCM Control Delay (s)	9.2	0	37.1	14	-	-
HCM Lane LOS	A	A	E	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	0.3	-	-



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	159	554	21	311	173	471	88	423	241
v/c Ratio	0.50	0.77	0.12	0.69	0.53	0.79	0.31	0.73	0.28
Control Delay	29.1	36.8	36.3	46.4	25.0	44.4	20.7	42.0	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.1	36.8	36.3	46.4	25.0	44.4	20.7	42.0	5.5
Queue Length 50th (ft)	71	317	11	191	67	289	32	255	18
Queue Length 95th (ft)	143	547	37	330	136	489	74	430	72
Internal Link Dist (ft)		748		505		1493		1383	
Turn Bay Length (ft)	250		125		180		380		225
Base Capacity (vph)	318	1535	522	1333	330	867	301	865	906
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.36	0.04	0.23	0.52	0.54	0.29	0.49	0.27

Intersection Summary
Description: 694030

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	153	405	127	20	252	46	166	403	49	84	406	231
Future Volume (vph)	153	405	127	20	252	46	166	403	49	84	406	231
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			-3%			-1%			-1%	
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	7.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.98		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1735	1792		1832	1857		1796	1870		1778	1872	1607
Flt Permitted	0.28	1.00		0.38	1.00		0.27	1.00		0.23	1.00	1.00
Satd. Flow (perm)	505	1792		728	1857		502	1870		431	1872	1607
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	159	422	132	21	262	48	173	420	51	88	423	241
RTOR Reduction (vph)	0	8	0	0	5	0	0	3	0	0	0	114
Lane Group Flow (vph)	159	546	0	21	306	0	173	468	0	88	423	127
Heavy Vehicles (%)	3%	1%	2%	0%	1%	4%	1%	0%	4%	2%	2%	1%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	7	4			8		1	6		5	2	7
Permitted Phases	4			8			6			2		2
Actuated Green, G (s)	43.6	43.6		26.3	26.3		44.9	34.9		42.9	33.9	44.2
Effective Green, g (s)	43.6	43.6		26.3	26.3		44.9	34.9		42.9	33.9	44.2
Actuated g/C Ratio	0.40	0.40		0.24	0.24		0.41	0.32		0.40	0.31	0.41
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	4.0	3.0		3.0	3.0		2.0	4.0		3.0	4.0	4.0
Lane Grp Cap (vph)	319	720		176	450		327	601		282	584	758
v/s Ratio Prot	0.05	c0.30			0.16		c0.05	c0.25		0.03	0.23	0.02
v/s Ratio Perm	0.15			0.03			0.17			0.10		0.06
v/c Ratio	0.50	0.76		0.12	0.68		0.53	0.78		0.31	0.72	0.17
Uniform Delay, d1	23.0	27.9		32.1	37.3		22.2	33.3		22.5	33.1	20.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.7	4.6		0.3	4.1		0.7	6.7		0.6	4.7	0.1
Delay (s)	24.6	32.5		32.4	41.3		22.9	40.0		23.2	37.9	20.6
Level of Service	C	C		C	D		C	D		C	D	C
Approach Delay (s)		30.7			40.8			35.4			30.6	
Approach LOS		C			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	33.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	108.5	Sum of lost time (s)	28.0
Intersection Capacity Utilization	87.9%	ICU Level of Service	E
Analysis Period (min)	15		
Description: 694030			
c Critical Lane Group			

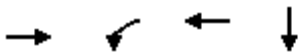
Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	449	296	2	75	36
v/c Ratio	0.31	0.13	0.00	0.12	0.08
Control Delay	5.6	4.1	1.5	10.3	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	5.6	4.1	1.5	10.3	5.6
Queue Length 50th (ft)	23	11	0	9	0
Queue Length 95th (ft)	48	25	1	32	13
Internal Link Dist (ft)	414	375	177		378
Turn Bay Length (ft)				135	
Base Capacity (vph)	2176	3300	1151	1468	1028
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.21	0.09	0.00	0.05	0.04

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	245	167	1	10	225	37	1	0	1	69	1	32
Future Volume (veh/h)	245	167	1	10	225	37	1	0	1	69	1	32
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1910	1675	1910	1900	1897	1900	1900	1900	1900	1863	1517	1900
Adj Flow Rate, veh/h	266	182	1	11	245	40	1	0	1	75	1	35
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	23	1	0	0	0	1	0	0	0	2	0	26
Cap, veh/h	671	653	4	178	1294	204	294	52	122	515	5	192
Arrive On Green	0.43	0.43	0.43	0.43	0.43	0.43	0.15	0.00	0.15	0.15	0.15	0.15
Sat Flow, veh/h	861	1514	8	41	3003	474	454	343	797	1410	36	1259
Grp Volume(v), veh/h	266	0	183	157	0	139	2	0	0	75	0	36
Grp Sat Flow(s),veh/h/ln	861	0	1522	1875	0	1643	1594	0	0	1410	0	1295
Q Serve(g_s), s	5.6	0.0	1.9	0.0	0.0	1.3	0.0	0.0	0.0	1.1	0.0	0.6
Cycle Q Clear(g_c), s	6.8	0.0	1.9	1.2	0.0	1.3	0.0	0.0	0.0	1.1	0.0	0.6
Prop In Lane	1.00		0.01	0.07		0.29	0.50		0.50	1.00		0.97
Lane Grp Cap(c), veh/h	671	0	656	968	0	708	468	0	0	515	0	197
V/C Ratio(X)	0.40	0.00	0.28	0.16	0.00	0.20	0.00	0.00	0.00	0.15	0.00	0.18
Avail Cap(c_a), veh/h	5104	0	7545	9233	0	8143	1549	0	0	1534	0	1132
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.4	0.0	4.4	4.2	0.0	4.2	8.6	0.0	0.0	9.1	0.0	8.9
Incr Delay (d2), s/veh	0.4	0.0	0.2	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	0.8	0.6	0.0	0.6	0.0	0.0	0.0	0.5	0.0	0.2
LnGrp Delay(d),s/veh	6.7	0.0	4.6	4.3	0.0	4.4	8.6	0.0	0.0	9.2	0.0	9.3
LnGrp LOS	A		A	A		A	A			A		A
Approach Vol, veh/h		449			296			2			111	
Approach Delay, s/veh		5.9			4.3			8.6			9.3	
Approach LOS		A			A			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		15.3		8.7		15.3		8.7
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		119.0		21.0		119.0		21.0
Max Q Clear Time (g_c+I1), s		8.8		2.0		3.3		3.1
Green Ext Time (p_c), s		2.1		0.0		1.1		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	5.8
HCM 2010 LOS	A



Lane Group	EBT	WBL	WBT	SBT
Lane Group Flow (vph)	635	23	257	17
v/c Ratio	0.28	0.05	0.25	0.02
Control Delay	2.4	3.0	2.6	5.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	2.4	3.0	2.6	5.5
Queue Length 50th (ft)	0	0	2	0
Queue Length 95th (ft)	59	8	37	9
Internal Link Dist (ft)	508		414	222
Turn Bay Length (ft)				
Base Capacity (vph)	2479	781	1666	1512
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.26	0.03	0.15	0.01

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	175	408	2	21	142	95	0	0	0	5	0	11
Future Volume (veh/h)	175	408	2	21	142	95	0	0	0	5	0	11
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1910	1655	1910	1900	1773	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	190	443	2	23	154	103	0	0	0	5	0	12
Adj No. of Lanes	0	2	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	22	0	0	12	0	0	0	0	0	0	0
Cap, veh/h	529	972	4	671	441	295	0	60	0	258	0	35
Arrive On Green	0.44	0.44	0.44	0.44	0.44	0.44	0.00	0.00	0.00	0.03	0.00	0.03
Sat Flow, veh/h	525	2185	10	960	992	663	0	1900	0	458	0	1099
Grp Volume(v), veh/h	335	0	300	23	0	257	0	0	0	17	0	0
Grp Sat Flow(s),veh/h/ln	1215	0	1505	960	0	1655	0	1900	0	1557	0	0
Q Serve(g_s), s	2.0	0.0	2.6	0.3	0.0	1.9	0.0	0.0	0.0	0.2	0.0	0.0
Cycle Q Clear(g_c), s	4.0	0.0	2.6	3.0	0.0	1.9	0.0	0.0	0.0	0.2	0.0	0.0
Prop In Lane	0.57		0.01	1.00		0.40	0.00		0.00	0.29		0.71
Lane Grp Cap(c), veh/h	836	0	669	671	0	736	0	60	0	293	0	0
V/C Ratio(X)	0.40	0.00	0.45	0.03	0.00	0.35	0.00	0.00	0.00	0.06	0.00	0.00
Avail Cap(c_a), veh/h	7789	0	9375	6224	0	10315	0	2089	0	1956	0	0
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	3.9	0.0	3.7	4.7	0.0	3.5	0.0	0.0	0.0	9.1	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.5	0.0	0.0	0.3	0.0	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	1.2	0.1	0.0	0.9	0.0	0.0	0.0	0.1	0.0	0.0
LnGrp Delay(d),s/veh	4.2	0.0	4.1	4.7	0.0	3.8	0.0	0.0	0.0	9.1	0.0	0.0
LnGrp LOS	A		A	A		A				A		
Approach Vol, veh/h		635			280			0			17	
Approach Delay, s/veh		4.2			3.8			0.0			9.1	
Approach LOS		A			A						A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		13.5		5.6		13.5		5.6
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		119.0		21.0		119.0		21.0
Max Q Clear Time (g_c+I1), s		5.0		0.0		6.0		2.2
Green Ext Time (p_c), s		1.2		0.0		2.8		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	4.2
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑			↱
Traffic Vol, veh/h	0	1832	2005	0	0	34
Future Vol, veh/h	0	1832	2005	0	0	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	-1	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	4	4	2	2	2
Mvmt Flow	0	1991	2179	0	0	37

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	1090
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	0	0	181
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	-	181
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	29.9
HCM LOS			D

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	181
HCM Lane V/C Ratio	-	-	0.204
HCM Control Delay (s)	-	-	29.9
HCM Lane LOS	-	-	D
HCM 95th %tile Q(veh)	-	-	0.7



Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	104	67	974	760
v/c Ratio	0.28	0.15	0.40	0.35
Control Delay	28.1	4.3	5.0	5.4
Queue Delay	0.0	0.0	1.0	0.2
Total Delay	28.1	4.3	6.0	5.6
Queue Length 50th (ft)	41	11	102	53
Queue Length 95th (ft)	98	m12	m103	65
Internal Link Dist (ft)	153		331	137
Turn Bay Length (ft)		100		
Base Capacity (vph)	366	515	2463	2153
Starvation Cap Reductn	0	0	1142	545
Spillback Cap Reductn	0	0	0	15
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.28	0.13	0.74	0.47

Intersection Summary

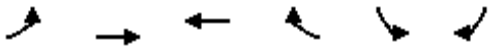
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	34	62	62	896	677	22
Future Volume (veh/h)	34	62	62	896	677	22
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1853	1818	1791	1862
Adj Flow Rate, veh/h	37	67	67	974	736	24
Adj No. of Lanes	0	0	1	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	4	4	2
Cap, veh/h	112	203	550	2464	2131	69
Arrive On Green	0.19	0.19	0.03	0.71	1.00	1.00
Sat Flow, veh/h	581	1052	1765	3545	3454	110
Grp Volume(v), veh/h	105	0	67	974	372	388
Grp Sat Flow(s),veh/h/ln	1648	0	1765	1727	1702	1772
Q Serve(g_s), s	8.2	0.0	1.9	16.9	0.0	0.0
Cycle Q Clear(g_c), s	8.2	0.0	1.9	16.9	0.0	0.0
Prop In Lane	0.35	0.64	1.00			0.06
Lane Grp Cap(c), veh/h	319	0	550	2464	1078	1122
V/C Ratio(X)	0.33	0.00	0.12	0.40	0.35	0.35
Avail Cap(c_a), veh/h	319	0	656	2464	1078	1122
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.18	0.18	0.91	0.91
Uniform Delay (d), s/veh	52.1	0.0	8.0	8.6	0.0	0.0
Incr Delay (d2), s/veh	2.8	0.0	0.0	0.1	0.8	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	0.0	0.9	8.0	0.2	0.2
LnGrp Delay(d),s/veh	54.9	0.0	8.0	8.7	0.8	0.8
LnGrp LOS	D		A	A	A	A
Approach Vol, veh/h	105			1041	760	
Approach Delay, s/veh	54.9			8.6	0.8	
Approach LOS	D			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		114.0		36.0	12.0	102.0		
Change Period (Y+Rc), s		7.0		7.0	7.0	7.0		
Max Green Setting (Gmax), s		107.0		29.0	14.0	86.0		
Max Q Clear Time (g_c+I1), s		18.9		10.2	3.9	2.0		
Green Ext Time (p_c), s		4.7		0.3	0.1	2.8		

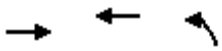
Intersection Summary	
HCM 2010 Ctrl Delay	8.0
HCM 2010 LOS	A



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	2100	1518	30	0	53
Future Volume (Veh/h)	0	2100	1518	30	0	53
Sign Control		Free	Free		Stop	
Grade		-7%	-1%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2283	1650	33	0	58
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		1143	198			
pX, platoon unblocked	0.65				0.65	0.65
vC, conflicting volume	1683				2237	566
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	153				1008	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	92
cM capacity (veh/h)	923				153	703

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	SB 1
Volume Total	571	571	571	571	660	660	363	58
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	33	58
cSH	1700	1700	1700	1700	1700	1700	1700	703
Volume to Capacity	0.34	0.34	0.34	0.34	0.39	0.39	0.21	0.08
Queue Length 95th (ft)	0	0	0	0	0	0	0	7
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.6
Lane LOS								B
Approach Delay (s)	0.0				0.0			10.6
Approach LOS								B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBT	WBT	NBL
Lane Group Flow (vph)	1892	1729	437
v/c Ratio	0.78	0.71	0.55
Control Delay	19.0	12.4	54.4
Queue Delay	0.0	0.0	0.0
Total Delay	19.0	12.4	54.4
Queue Length 50th (ft)	614	203	196
Queue Length 95th (ft)	708	338	254
Internal Link Dist (ft)	735	250	372
Turn Bay Length (ft)			220
Base Capacity (vph)	2429	2430	789
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.78	0.71	0.55

Intersection Summary
Description: 7075



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1854	0	0	1694	428	0
Future Volume (vph)	1854	0	0	1694	428	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	1%			-1%	-1%	
Total Lost time (s)	6.5			6.5	7.0	
Lane Util. Factor	0.95			0.95	0.97	
Frt	1.00			1.00	1.00	
Flt Protected	1.00			1.00	0.95	
Satd. Flow (prot)	3556			3557	3484	
Flt Permitted	1.00			1.00	0.95	
Satd. Flow (perm)	3556			3557	3484	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	1892	0	0	1729	437	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1892	0	0	1729	437	0
Heavy Vehicles (%)	1%	0%	0%	2%	1%	0%
Turn Type	NA			NA	Prot	
Protected Phases	2			6	4	
Permitted Phases						
Actuated Green, G (s)	102.5			102.5	34.0	
Effective Green, g (s)	102.5			102.5	34.0	
Actuated g/C Ratio	0.68			0.68	0.23	
Clearance Time (s)	6.5			6.5	7.0	
Vehicle Extension (s)	5.0			5.0	2.0	
Lane Grp Cap (vph)	2429			2430	789	
v/s Ratio Prot	c0.53			0.49	c0.13	
v/s Ratio Perm						
v/c Ratio	0.78			0.71	0.55	
Uniform Delay, d1	16.1			14.6	51.3	
Progression Factor	1.00			0.74	1.00	
Incremental Delay, d2	2.5			1.3	2.8	
Delay (s)	18.6			12.2	54.1	
Level of Service	B			B	D	
Approach Delay (s)	18.6			12.2	54.1	
Approach LOS	B			B	D	

Intersection Summary			
HCM 2000 Control Delay	19.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		

Description: 7075

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	2094	188	0	1570	0	0	0	9	0	0	182
Future Vol, veh/h	0	2094	188	0	1570	0	0	0	9	0	0	182
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Yield	Yield	Yield
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Yield
Storage Length	-	-	-	-	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	-7	-	-	-1	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	0	1	0	0	2	0	0	0	0	0	0	9
Mvmt Flow	0	2137	192	0	1602	0	0	0	9	0	0	186

Major/Minor	Major1			Major2			Minor1					
Conflicting Flow All	-	0	0	-	-	0	-	-	1165			
Stage 1	-	-	-	-	-	-	-	-	-			
Stage 2	-	-	-	-	-	-	-	-	-			
Critical Hdwy	-	-	-	-	-	-	-	-	7.1			
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-			
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-			
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.9			
Pot Cap-1 Maneuver	0	-	-	0	-	0	0	0	163			
Stage 1	0	-	-	0	-	0	0	0	-			
Stage 2	0	-	-	0	-	0	0	0	-			
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	0	163			
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	0	-			
Stage 1	-	-	-	-	-	-	-	0	-			
Stage 2	-	-	-	-	-	-	-	0	-			

Approach	EB	WB	NB
HCM Control Delay, s	0	0	28.4
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	163	-	-	-
HCM Lane V/C Ratio	0.056	-	-	-
HCM Control Delay (s)	28.4	-	-	-
HCM Lane LOS	D	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	2100	1567	4	0	3
Future Vol, veh/h	3	2100	1567	4	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	140	-	-	0	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	-1	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	1	2	11	0	0
Mvmt Flow	3	2188	1632	4	0	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1636	0	-	0	-	816
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.1	-	-	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.2	-	-	-	-	3.3
Pot Cap-1 Maneuver	402	-	-	-	0	324
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	402	-	-	-	-	324
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	16.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	402	-	-	-	324
HCM Lane V/C Ratio	0.008	-	-	-	0.01
HCM Control Delay (s)	14	-	-	-	16.2
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	220	1991	1466	207	16	34	218	198
v/c Ratio	0.81	0.57	0.85	0.25	0.20	0.18	0.78	0.50
Control Delay	68.8	7.7	37.5	13.9	74.1	2.2	78.8	16.0
Queue Delay	0.0	0.1	3.7	0.0	0.0	0.1	0.0	0.0
Total Delay	68.8	7.8	41.2	13.9	74.1	2.2	78.8	16.0
Queue Length 50th (ft)	212	144	438	37	15	0	217	28
Queue Length 95th (ft)	m#313	166	#917	m80	42	0	300	104
Internal Link Dist (ft)		118	138		288			281
Turn Bay Length (ft)								
Base Capacity (vph)	271	3498	1729	838	93	196	397	491
Starvation Cap Reductn	0	0	186	0	0	0	0	0
Spillback Cap Reductn	0	369	0	0	0	7	0	11
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.64	0.95	0.25	0.17	0.18	0.55	0.41

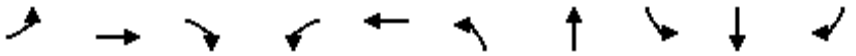
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	209	1854	37	0	1393	197	15	0	32	240	0	155
Future Volume (vph)	209	1854	37	0	1393	197	15	0	32	240	0	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-7%			-1%			0%			0%	
Total Lost time (s)	6.8	5.0			5.0	5.0		7.2	6.8	7.2	7.2	
Lane Util. Factor	1.00	0.91			0.95	1.00		1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00			1.00	0.98		1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	1.00			1.00	0.85		1.00	0.85	1.00	0.88	
Flt Protected	0.95	1.00			1.00	1.00		0.95	1.00	0.95	0.99	
Satd. Flow (prot)	1832	5147			3557	1585		1805	1583	1715	1568	
Flt Permitted	0.95	1.00			1.00	1.00		0.95	1.00	0.95	0.99	
Satd. Flow (perm)	1832	5147			3557	1585		1805	1583	1715	1568	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	220	1952	39	0	1466	207	16	0	34	253	0	163
RTOR Reduction (vph)	0	1	0	0	0	69	0	0	33	0	139	0
Lane Group Flow (vph)	220	1990	0	0	1466	138	0	16	1	218	59	0
Confl. Peds. (#/hr)	3		1	3		1			1			
Confl. Bikes (#/hr)			3									
Heavy Vehicles (%)	2%	4%	2%	3%	2%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	pm+ov	Split	NA	
Protected Phases	5	2		1	6		8	8	1	4	4	
Permitted Phases						6			8			
Actuated Green, G (s)	22.2	100.5			71.5	71.5		5.7	5.7	24.4	24.4	
Effective Green, g (s)	22.2	100.5			71.5	71.5		5.7	5.7	24.4	24.4	
Actuated g/C Ratio	0.15	0.67			0.48	0.48		0.04	0.04	0.16	0.16	
Clearance Time (s)	6.8	5.0			5.0	5.0		7.2	6.8	7.2	7.2	
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	271	3448			1695	755		68	60	278	255	
v/s Ratio Prot	c0.12	0.39			c0.41			c0.01		c0.13	0.04	
v/s Ratio Perm						0.09			0.00			
v/c Ratio	0.81	0.58			0.86	0.18		0.24	0.02	0.78	0.23	
Uniform Delay, d1	61.9	13.3			34.9	22.5		70.0	69.5	60.3	54.6	
Progression Factor	0.80	0.51			0.95	1.37		1.00	1.00	1.00	1.00	
Incremental Delay, d2	13.9	0.6			4.2	0.4		1.8	0.1	13.5	0.5	
Delay (s)	63.2	7.3			37.4	31.2		71.8	69.6	73.7	55.1	
Level of Service	E	A			D	C		E	E	E	E	
Approach Delay (s)		12.9			36.7			70.3			64.9	
Approach LOS		B			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	27.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	26.2
Intersection Capacity Utilization	84.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	171	1683	378	172	1467	140	381	238	451	234
v/c Ratio	0.72	0.94	0.41	1.08	0.87	0.69	0.78	1.03	0.77	0.52
Control Delay	102.4	40.9	7.2	156.0	39.4	59.9	73.1	93.9	48.4	18.7
Queue Delay	0.0	0.0	0.2	0.0	0.9	1.7	0.0	0.0	0.1	0.6
Total Delay	102.4	40.9	7.5	156.0	40.3	61.6	73.1	93.9	48.5	19.3
Queue Length 50th (ft)	91	648	67	~187	641	107	192	~192	230	135
Queue Length 95th (ft)	#136	#1039	126	#345	#818	161	243	#319	286	220
Internal Link Dist (ft)		259			2080		412		331	
Turn Bay Length (ft)	250			225		115		200		
Base Capacity (vph)	241	1785	925	159	1695	207	592	230	685	488
Starvation Cap Reductn	0	0	141	0	0	0	0	0	10	19
Spillback Cap Reductn	0	0	0	0	69	14	0	0	0	65
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.94	0.48	1.08	0.90	0.73	0.64	1.03	0.67	0.55

Intersection Summary

Description: 7070

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	162	1599	359	163	1184	210	133	304	58	226	428	222
Future Volume (vph)	162	1599	359	163	1184	210	133	304	58	226	428	222
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-7%			7%			3%			4%	
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0		7.0	6.5		7.0	6.5	7.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.99	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3624	3736	1624	1708	3338		1734	3355		1605	3369	1492
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.31	1.00		0.25	1.00	1.00
Satd. Flow (perm)	3624	3736	1624	1708	3338		572	3355		415	3369	1492
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	171	1683	378	172	1246	221	140	320	61	238	451	234
RTOR Reduction (vph)	0	0	34	0	9	0	0	0	0	0	0	99
Lane Group Flow (vph)	171	1683	344	172	1458	0	140	381	0	238	451	135
Confl. Peds. (#/hr)	3		6	6		3	27		14	14		27
Heavy Vehicles (%)	0%	0%	1%	2%	1%	6%	2%	3%	2%	10%	5%	2%
Turn Type	Prot	NA	pm+ov	Prot	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	5	2	3	1	6		3	8		7	4	5
Permitted Phases			2				8			4		4
Actuated Green, G (s)	9.9	71.7	82.3	14.0	75.8		32.4	21.8		41.2	26.2	36.1
Effective Green, g (s)	9.9	71.7	82.3	14.0	75.8		32.4	21.8		41.2	26.2	36.1
Actuated g/C Ratio	0.07	0.48	0.55	0.09	0.51		0.22	0.15		0.27	0.17	0.24
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	6.5		7.0	6.5	7.0
Vehicle Extension (s)	3.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	3.0
Lane Grp Cap (vph)	239	1785	891	159	1686		205	487		232	588	359
v/s Ratio Prot	0.05	c0.45	0.03	c0.10	0.44		0.05	0.11		c0.10	0.13	0.02
v/s Ratio Perm			0.18				0.10			c0.18		0.07
v/c Ratio	0.72	0.94	0.39	1.08	0.86		0.68	0.78		1.03	0.77	0.37
Uniform Delay, d1	68.7	37.2	19.4	68.0	32.6		50.4	61.8		49.8	59.0	47.5
Progression Factor	1.28	0.80	0.73	1.00	1.00		1.00	1.00		0.59	0.68	0.82
Incremental Delay, d2	8.4	10.2	0.1	94.9	6.2		7.3	7.4		62.6	4.8	0.6
Delay (s)	96.0	40.1	14.3	162.9	38.8		57.7	69.2		91.7	45.2	39.6
Level of Service	F	D	B	F	D		E	E		F	D	D
Approach Delay (s)		40.0			51.8			66.1			55.8	
Approach LOS		D			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	48.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	27.5
Intersection Capacity Utilization	103.3%	ICU Level of Service	G
Analysis Period (min)	15		
Description: 7070			

c Critical Lane Group



Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	191	54	708	896
v/c Ratio	0.43	0.15	0.30	0.44
Control Delay	39.4	4.0	3.7	6.4
Queue Delay	0.0	0.5	0.3	0.1
Total Delay	39.4	4.5	4.1	6.4
Queue Length 50th (ft)	120	4	30	64
Queue Length 95th (ft)	199	12	51	103
Internal Link Dist (ft)	405		137	400
Turn Bay Length (ft)		110		
Base Capacity (vph)	443	412	2348	2015
Starvation Cap Reductn	0	172	961	201
Spillback Cap Reductn	0	0	7	15
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.43	0.23	0.51	0.49

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	73	108	51	673	783	68
Future Volume (veh/h)	73	108	51	673	783	68
Number	7	14	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1889	1900	1890	1853	1823	1862
Adj Flow Rate, veh/h	77	114	54	708	824	72
Adj No. of Lanes	0	0	1	2	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	1	0	2	2	4
Cap, veh/h	162	239	472	2348	1902	166
Arrive On Green	0.24	0.24	0.06	1.00	1.00	1.00
Sat Flow, veh/h	673	997	1800	3614	3314	282
Grp Volume(v), veh/h	192	0	54	708	443	453
Grp Sat Flow(s),veh/h/ln	1679	0	1800	1761	1731	1772
Q Serve(g_s), s	14.7	0.0	1.7	0.0	0.0	0.0
Cycle Q Clear(g_c), s	14.7	0.0	1.7	0.0	0.0	0.0
Prop In Lane	0.40	0.59	1.00			0.16
Lane Grp Cap(c), veh/h	403	0	472	2348	1022	1046
V/C Ratio(X)	0.48	0.00	0.11	0.30	0.43	0.43
Avail Cap(c_a), veh/h	403	0	562	2348	1022	1046
HCM Platoon Ratio	1.00	1.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.96	0.96	0.91	0.91
Uniform Delay (d), s/veh	48.9	0.0	10.1	0.0	0.0	0.0
Incr Delay (d2), s/veh	4.0	0.0	0.1	0.3	1.2	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.3	0.0	0.8	0.1	0.3	0.3
LnGrp Delay(d),s/veh	52.9	0.0	10.2	0.3	1.2	1.2
LnGrp LOS	D		B	A	A	A
Approach Vol, veh/h	192			762	896	
Approach Delay, s/veh	52.9			1.0	1.2	
Approach LOS	D			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	11.5	95.5		43.0		107.0		
Change Period (Y+Rc), s	7.0	7.0		7.0		7.0		
Max Green Setting (Gmax), s	12.0	81.0		36.0		100.0		
Max Q Clear Time (g_c+I1), s	3.7	2.0		16.7		2.0		
Green Ext Time (p_c), s	0.1	7.1		0.6		5.9		

Intersection Summary	
HCM 2010 Ctrl Delay	6.5
HCM 2010 LOS	A

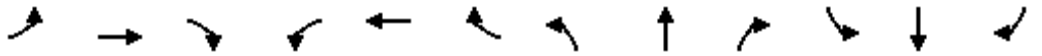


Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	358	278	24	126	672	13	15	664
v/c Ratio	0.65	0.39	0.10	0.34	0.36	0.02	0.04	0.43
Control Delay	44.4	5.6	33.8	23.6	30.4	0.1	7.3	16.5
Queue Delay	7.6	0.4	0.0	0.0	0.3	0.0	0.0	0.0
Total Delay	52.1	6.0	33.8	23.6	30.7	0.1	7.3	16.5
Queue Length 50th (ft)	276	4	9	55	155	0	2	238
Queue Length 95th (ft)	381	67	38	79	384	m1	m8	308
Internal Link Dist (ft)		375	307		400			190
Turn Bay Length (ft)				205		290	125	
Base Capacity (vph)	555	728	231	409	1858	821	426	1546
Starvation Cap Reductn	154	153	0	0	535	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.48	0.10	0.31	0.51	0.02	0.04	0.43

Intersection Summary

Description: 704010

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	329	1	255	8	2	12	116	618	12	14	588	23
Future Volume (vph)	329	1	255	8	2	12	116	618	12	14	588	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			2%			1%			1%	
Total Lost time (s)	5.0	7.0			7.0		7.0	6.0	6.0	7.0	6.0	
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	0.97			0.99		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85			0.93		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00			0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1788	1562			1608		1727	3522	1452	1792	3469	
Flt Permitted	0.71	1.00			0.84		0.29	1.00	1.00	0.37	1.00	
Satd. Flow (perm)	1331	1562			1378		519	3522	1452	701	3469	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	358	1	277	9	2	13	126	672	13	15	639	25
RTOR Reduction (vph)	0	177	0	0	11	0	0	0	7	0	2	0
Lane Group Flow (vph)	358	101	0	0	13	0	126	672	7	15	662	0
Confl. Peds. (#/hr)	4		9	9		4	3		4	4		3
Heavy Vehicles (%)	1%	0%	1%	13%	0%	0%	4%	2%	8%	0%	3%	0%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	3	8			4		1	6		5	2	
Permitted Phases	8			4			6		6	2		
Actuated Green, G (s)	52.3	52.3			24.0		84.7	75.0	75.0	69.5	66.8	
Effective Green, g (s)	52.3	52.3			24.0		84.7	75.0	75.0	69.5	66.8	
Actuated g/C Ratio	0.35	0.35			0.16		0.56	0.50	0.50	0.46	0.45	
Clearance Time (s)	5.0	7.0			7.0		7.0	6.0	6.0	7.0	6.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	4.0	4.0	3.0	4.0	
Lane Grp Cap (vph)	535	544			220		380	1761	726	344	1544	
v/s Ratio Prot	c0.10	0.06					c0.02	c0.19		0.00	c0.19	
v/s Ratio Perm	c0.13				0.01		0.16		0.00	0.02		
v/c Ratio	0.67	0.19			0.06		0.33	0.38	0.01	0.04	0.43	
Uniform Delay, d1	40.1	34.0			53.4		17.1	23.2	18.8	21.8	28.5	
Progression Factor	1.00	1.00			1.00		1.31	1.37	1.00	0.45	0.54	
Incremental Delay, d2	3.2	0.2			0.1		0.5	0.6	0.0	0.1	0.8	
Delay (s)	43.3	34.2			53.5		22.9	32.3	18.9	9.9	16.2	
Level of Service	D	C			D		C	C	B	A	B	
Approach Delay (s)		39.3			53.5			30.6			16.1	
Approach LOS		D			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	28.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	25.0
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		
Description: 704010			

c Critical Lane Group

Intersection	
Int Delay, s/veh	5.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	43	66	842	95	107	564
Future Vol, veh/h	43	66	842	95	107	564
Conflicting Peds, #/hr	3	0	0	1	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	150	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	1	-	-	1
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	0	1	1	0	2
Mvmt Flow	47	72	915	103	116	613

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1510	510	0	0	1019	0
Stage 1	968	-	-	-	-	-
Stage 2	542	-	-	-	-	-
Critical Hdwy	6.35	7.1	-	-	5.3	-
Critical Hdwy Stg 1	6.7	-	-	-	-	-
Critical Hdwy Stg 2	5.9	-	-	-	-	-
Follow-up Hdwy	3.7	3.9	-	-	3.1	-
Pot Cap-1 Maneuver	134	439	-	-	389	-
Stage 1	253	-	-	-	-	-
Stage 2	522	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	73	439	-	-	389	-
Mov Cap-2 Maneuver	73	-	-	-	-	-
Stage 1	253	-	-	-	-	-
Stage 2	286	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	55.3	0	5.4
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	73	439	389	-
HCM Lane V/C Ratio	-	-	0.64	0.163	0.299	-
HCM Control Delay (s)	-	-	117.5	14.8	18.2	3
HCM Lane LOS	-	-	F	B	C	A
HCM 95th %tile Q(veh)	-	-	2.9	0.6	1.2	-



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	353	57	22	966	733
v/c Ratio	0.67	0.13	0.06	0.44	0.38
Control Delay	53.1	19.7	7.7	7.7	19.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	53.1	19.7	7.7	7.7	19.5
Queue Length 50th (ft)	303	17	3	107	216
Queue Length 95th (ft)	420	53	m11	201	269
Internal Link Dist (ft)	434			170	147
Turn Bay Length (ft)		125			
Base Capacity (vph)	530	455	392	2181	1927
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.67	0.13	0.06	0.44	0.38

Intersection Summary

Description: 704005

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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	325	52	20	889	619	55
Future Volume (veh/h)	325	52	20	889	619	55
Number	7	14	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1862	1695	1783	1872	1824	1890
Adj Flow Rate, veh/h	353	0	22	966	673	60
Adj No. of Lanes	1	1	1	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	11	6	1	4	0
Cap, veh/h	532	432	376	2181	1759	157
Arrive On Green	0.30	0.00	0.01	0.20	0.55	0.55
Sat Flow, veh/h	1774	1440	1699	3650	3310	287
Grp Volume(v), veh/h	353	0	22	966	362	371
Grp Sat Flow(s),veh/h/ln	1774	1440	1699	1778	1732	1773
Q Serve(g_s), s	26.1	0.0	0.8	35.7	18.0	18.0
Cycle Q Clear(g_c), s	26.1	0.0	0.8	35.7	18.0	18.0
Prop In Lane	1.00	1.00	1.00			0.16
Lane Grp Cap(c), veh/h	532	432	376	2181	947	969
V/C Ratio(X)	0.66	0.00	0.06	0.44	0.38	0.38
Avail Cap(c_a), veh/h	532	432	456	2181	947	969
HCM Platoon Ratio	1.00	1.00	0.33	0.33	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.9	0.0	15.0	37.4	19.5	19.5
Incr Delay (d2), s/veh	6.4	0.0	0.0	0.7	1.2	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.7	0.0	0.4	17.8	8.9	9.1
LnGrp Delay(d),s/veh	52.3	0.0	15.0	38.0	20.7	20.6
LnGrp LOS	D		B	D	C	C
Approach Vol, veh/h	353			988	733	
Approach Delay, s/veh	52.3			37.5	20.6	
Approach LOS	D			D	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	10.0	88.0		52.0		98.0		
Change Period (Y+Rc), s	7.0	6.0		7.0		6.0		
Max Green Setting (Gmax), s	10.0	75.0		45.0		92.0		
Max Q Clear Time (g_c+I1), s	2.8	20.0		28.1		37.7		
Green Ext Time (p_c), s	0.0	7.3		0.6		12.0		

Intersection Summary	
HCM 2010 Ctrl Delay	34.1
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	14	12	862	352	16	660
Future Vol, veh/h	14	12	862	352	16	660
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	1
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	1	0	0	3
Mvmt Flow	15	13	917	374	17	702

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1489	646	0	0	1291	0
Stage 1	1104	-	-	-	-	-
Stage 2	385	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	117	419	-	-	544	-
Stage 1	283	-	-	-	-	-
Stage 2	663	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	111	419	-	-	544	-
Mov Cap-2 Maneuver	111	-	-	-	-	-
Stage 1	283	-	-	-	-	-
Stage 2	629	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	30.6	0	0.6
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	168	544	-
HCM Lane V/C Ratio	-	-	0.165	0.031	-
HCM Control Delay (s)	-	-	30.6	11.8	0.3
HCM Lane LOS	-	-	D	B	A
HCM 95th %tile Q(veh)	-	-	0.6	0.1	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	33	51	823	643	15
Future Vol, veh/h	6	33	51	823	643	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	60	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	0	0	0	2	3	0
Mvmt Flow	6	33	52	831	649	15

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1592	657	664	0	-	0
Stage 1	657	-	-	-	-	-
Stage 2	935	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	119	468	935	-	-	-
Stage 1	519	-	-	-	-	-
Stage 2	385	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	107	468	935	-	-	-
Mov Cap-2 Maneuver	107	-	-	-	-	-
Stage 1	466	-	-	-	-	-
Stage 2	385	-	-	-	-	-

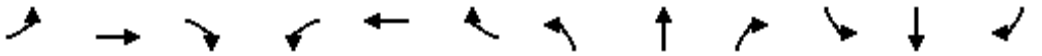
Approach	EB	NB	SB
HCM Control Delay, s	17.5	0.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	935	-	107	468	-	-
HCM Lane V/C Ratio	0.055	-	0.057	0.071	-	-
HCM Control Delay (s)	9.1	0	40.7	13.3	-	-
HCM Lane LOS	A	A	E	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.2	0.2	-	-



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	188	659	24	353	119	366	55	510	234
v/c Ratio	0.55	0.84	0.20	0.70	0.49	0.53	0.15	0.83	0.28
Control Delay	30.8	44.6	43.4	51.2	30.7	39.4	24.2	54.8	8.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.8	44.6	43.4	51.2	30.7	39.4	24.2	54.8	8.3
Queue Length 50th (ft)	101	492	16	273	58	254	26	402	33
Queue Length 95th (ft)	175	749	46	416	123	440	65	658	104
Internal Link Dist (ft)		748		505		1493		1383	
Turn Bay Length (ft)	250		125		180		380		227
Base Capacity (vph)	352	1351	258	1099	250	827	396	835	861
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.49	0.09	0.32	0.48	0.44	0.14	0.61	0.27

Intersection Summary
Description: 694030



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	180	484	149	23	310	29	114	322	30	53	490	225
Future Volume (vph)	180	484	149	23	310	29	114	322	30	53	490	225
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			-3%			-1%			-1%	
Total Lost time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	7.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.99		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1769	1783		1762	1882		1778	1868		1814	1891	1546
Flt Permitted	0.24	1.00		0.24	1.00		0.17	1.00		0.41	1.00	1.00
Satd. Flow (perm)	453	1783		442	1882		318	1868		777	1891	1546
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	188	504	155	24	323	30	119	335	31	55	510	234
RTOR Reduction (vph)	0	7	0	0	2	0	0	2	0	0	0	88
Lane Group Flow (vph)	188	652	0	24	351	0	119	364	0	55	510	146
Heavy Vehicles (%)	1%	2%	1%	4%	1%	3%	2%	1%	0%	0%	1%	5%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	7	4			8		1	6		5	2	7
Permitted Phases	4			8			6			2		2
Actuated Green, G (s)	57.1	57.1		35.5	35.5		57.9	48.2		51.3	44.9	59.5
Effective Green, g (s)	57.1	57.1		35.5	35.5		57.9	48.2		51.3	44.9	59.5
Actuated g/C Ratio	0.43	0.43		0.27	0.27		0.44	0.36		0.39	0.34	0.45
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	4.0	3.0		3.0	3.0		3.0	4.0		3.0	4.0	4.0
Lane Grp Cap (vph)	339	767		118	503		245	678		350	639	774
v/s Ratio Prot	0.06	c0.37			0.19		c0.04	c0.19		0.01	c0.27	0.02
v/s Ratio Perm	0.18			0.05			0.18			0.05		0.07
v/c Ratio	0.55	0.85		0.20	0.70		0.49	0.54		0.16	0.80	0.19
Uniform Delay, d1	26.7	33.9		37.6	43.8		26.8	33.4		26.3	39.8	22.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.4	8.7		0.9	4.2		1.5	1.0		0.2	7.3	0.2
Delay (s)	29.1	42.7		38.5	48.0		28.3	34.5		26.5	47.1	22.2
Level of Service	C	D		D	D		C	C		C	D	C
Approach Delay (s)		39.7			47.4			33.0			38.4	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	39.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	132.7	Sum of lost time (s)	28.0
Intersection Capacity Utilization	95.0%	ICU Level of Service	F
Analysis Period (min)	15		
Description: 694030			
c Critical Lane Group			

Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	739	149	2	218	12
v/c Ratio	0.68	0.11	0.00	0.41	0.01
Control Delay	14.6	5.0	0.0	15.9	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	14.6	5.0	0.0	15.9	0.0
Queue Length 50th (ft)	81	6	0	44	0
Queue Length 95th (ft)	122	17	0	110	0
Internal Link Dist (ft)	414	375	177		378
Turn Bay Length (ft)				135	
Base Capacity (vph)	2566	3066	1046	640	1125
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.29	0.05	0.00	0.34	0.01

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	316	378	1	6	76	58	0	0	2	205	0	11
Future Volume (veh/h)	316	378	1	6	76	58	0	0	2	205	0	11
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1910	1772	1910	1900	1854	1900	1900	1900	1900	1900	1570	1900
Adj Flow Rate, veh/h	336	402	1	6	81	62	0	0	2	218	0	12
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	1	1	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	17	0	0	0	0	6	0	0	0	0	0	21
Cap, veh/h	694	796	2	148	876	590	0	0	329	540	0	272
Arrive On Green	0.45	0.45	0.45	0.45	0.45	0.45	0.00	0.00	0.20	0.20	0.00	0.20
Sat Flow, veh/h	1019	1765	4	32	1942	1307	0	0	1615	1437	0	1335
Grp Volume(v), veh/h	381	0	358	80	0	69	0	0	2	218	0	12
Grp Sat Flow(s),veh/h/ln	1176	0	1612	1824	0	1456	0	0	1615	1437	0	1335
Q Serve(g_s), s	7.2	0.0	4.5	0.0	0.0	0.8	0.0	0.0	0.0	4.1	0.0	0.2
Cycle Q Clear(g_c), s	7.9	0.0	4.5	0.7	0.0	0.8	0.0	0.0	0.0	4.2	0.0	0.2
Prop In Lane	0.88		0.00	0.08		0.90	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	764	0	727	957	0	657	0	0	329	540	0	272
V/C Ratio(X)	0.50	0.00	0.49	0.08	0.00	0.11	0.00	0.00	0.01	0.40	0.00	0.04
Avail Cap(c_a), veh/h	5213	0	6566	7243	0	5931	0	0	1226	1339	0	1014
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.8	0.0	5.6	4.6	0.0	4.6	0.0	0.0	9.2	10.9	0.0	9.3
Incr Delay (d2), s/veh	0.5	0.0	0.5	0.0	0.0	0.1	0.0	0.0	0.0	0.5	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	2.1	0.4	0.0	0.3	0.0	0.0	0.0	1.7	0.0	0.1
LnGrp Delay(d),s/veh	7.3	0.0	6.1	4.6	0.0	4.7	0.0	0.0	9.2	11.3	0.0	9.3
LnGrp LOS	A		A	A		A			A	B		A
Approach Vol, veh/h		739			149			2			230	
Approach Delay, s/veh		6.7			4.6			9.2			11.2	
Approach LOS		A			A			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		18.1		10.9		18.1		10.9
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		118.0		22.0		118.0		22.0
Max Q Clear Time (g_c+I1), s		9.9		2.0		2.8		6.2
Green Ext Time (p_c), s		3.2		0.0		0.6		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	7.4
HCM 2010 LOS	A

Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	802	24	66	11	33
v/c Ratio	0.56	0.08	0.09	0.03	0.09
Control Delay	8.0	5.4	3.4	6.0	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	8.0	5.4	3.4	6.0	6.6
Queue Length 50th (ft)	43	2	3	0	1
Queue Length 95th (ft)	70	8	12	6	13
Internal Link Dist (ft)	516		414	128	222
Turn Bay Length (ft)					
Base Capacity (vph)	3179	652	1598	1045	1104
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.25	0.04	0.04	0.01	0.03

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	81	684	5	23	34	30	5	0	6	5	0	27
Future Volume (veh/h)	81	684	5	23	34	30	5	0	6	5	0	27
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1910	1828	1910	1900	1718	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	84	712	5	24	35	31	5	0	6	5	0	28
Adj No. of Lanes	0	2	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	5	0	0	20	0	0	0	0	0	0	0
Cap, veh/h	243	1201	8	409	321	284	313	61	219	175	39	351
Arrive On Green	0.38	0.38	0.38	0.38	0.38	0.38	0.25	0.00	0.25	0.25	0.00	0.25
Sat Flow, veh/h	225	3151	22	746	841	745	480	238	861	94	153	1380
Grp Volume(v), veh/h	419	0	382	24	0	66	11	0	0	33	0	0
Grp Sat Flow(s),veh/h/ln	1738	0	1660	746	0	1586	1579	0	0	1626	0	0
Q Serve(g_s), s	1.7	0.0	5.1	0.7	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	5.2	0.0	5.1	5.8	0.0	0.7	0.1	0.0	0.0	0.4	0.0	0.0
Prop In Lane	0.20		0.01	1.00		0.47	0.45		0.55	0.15		0.85
Lane Grp Cap(c), veh/h	820	0	633	409	0	605	593	0	0	565	0	0
V/C Ratio(X)	0.51	0.00	0.60	0.06	0.00	0.11	0.02	0.00	0.00	0.06	0.00	0.00
Avail Cap(c_a), veh/h	7504	0	7189	3355	0	6870	1363	0	0	1372	0	0
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.8	0.0	6.8	9.2	0.0	5.5	7.7	0.0	0.0	7.8	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.9	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.0	2.4	0.2	0.0	0.3	0.1	0.0	0.0	0.2	0.0	0.0
LnGrp Delay(d),s/veh	7.3	0.0	7.8	9.2	0.0	5.6	7.7	0.0	0.0	7.8	0.0	0.0
LnGrp LOS	A		A	A		A	A			A		
Approach Vol, veh/h		801			90			11			33	
Approach Delay, s/veh		7.5			6.5			7.7			7.8	
Approach LOS		A			A			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		15.5		12.0		15.5		12.0
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		119.0		21.0		119.0		21.0
Max Q Clear Time (g_c+I1), s		7.8		2.1		7.2		2.4
Green Ext Time (p_c), s		0.5		0.0		3.3		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	7.5
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑			↱
Traffic Vol, veh/h	0	2120	1539	0	0	51
Future Vol, veh/h	0	2120	1539	0	0	51
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	-1	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2120	1539	0	0	51

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	770
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	0	0	295
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	-	295
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	19.7
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	295
HCM Lane V/C Ratio	-	-	0.173
HCM Control Delay (s)	-	-	19.7
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	0.6



Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	168	116	720	969
v/c Ratio	0.40	0.33	0.30	0.49
Control Delay	38.7	14.4	13.0	6.9
Queue Delay	0.0	0.0	0.8	0.1
Total Delay	38.7	14.4	13.8	7.0
Queue Length 50th (ft)	101	42	152	68
Queue Length 95th (ft)	176	m62	m172	80
Internal Link Dist (ft)	222		331	137
Turn Bay Length (ft)		100		
Base Capacity (vph)	416	425	2394	1977
Starvation Cap Reductn	0	0	1296	252
Spillback Cap Reductn	0	0	22	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.40	0.27	0.66	0.56

Intersection Summary

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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	63	92	107	662	849	42
Future Volume (veh/h)	63	92	107	662	849	42
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1853	1853	1825	1862
Adj Flow Rate, veh/h	68	100	116	720	923	46
Adj No. of Lanes	0	0	1	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	151	222	320	2395	1996	99
Arrive On Green	0.23	0.23	0.04	0.68	0.20	0.20
Sat Flow, veh/h	667	980	1765	3614	3454	168
Grp Volume(v), veh/h	169	0	116	720	476	493
Grp Sat Flow(s),veh/h/ln	1656	0	1765	1761	1734	1796
Q Serve(g_s), s	13.2	0.0	3.7	12.3	36.4	36.4
Cycle Q Clear(g_c), s	13.2	0.0	3.7	12.3	36.4	36.4
Prop In Lane	0.40	0.59	1.00			0.09
Lane Grp Cap(c), veh/h	375	0	320	2395	1030	1066
V/C Ratio(X)	0.45	0.00	0.36	0.30	0.46	0.46
Avail Cap(c_a), veh/h	375	0	450	2395	1030	1066
HCM Platoon Ratio	1.00	1.00	1.00	1.00	0.33	0.33
Upstream Filter(I)	1.00	0.00	0.56	0.56	0.90	0.90
Uniform Delay (d), s/veh	49.9	0.0	16.2	9.7	39.1	39.1
Incr Delay (d2), s/veh	3.9	0.0	0.4	0.2	1.3	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.5	0.0	1.8	6.1	17.9	18.5
LnGrp Delay(d),s/veh	53.8	0.0	16.6	9.8	40.5	40.4
LnGrp LOS	D		B	A	D	D
Approach Vol, veh/h	169			836	969	
Approach Delay, s/veh	53.8			10.8	40.5	
Approach LOS	D			B	D	

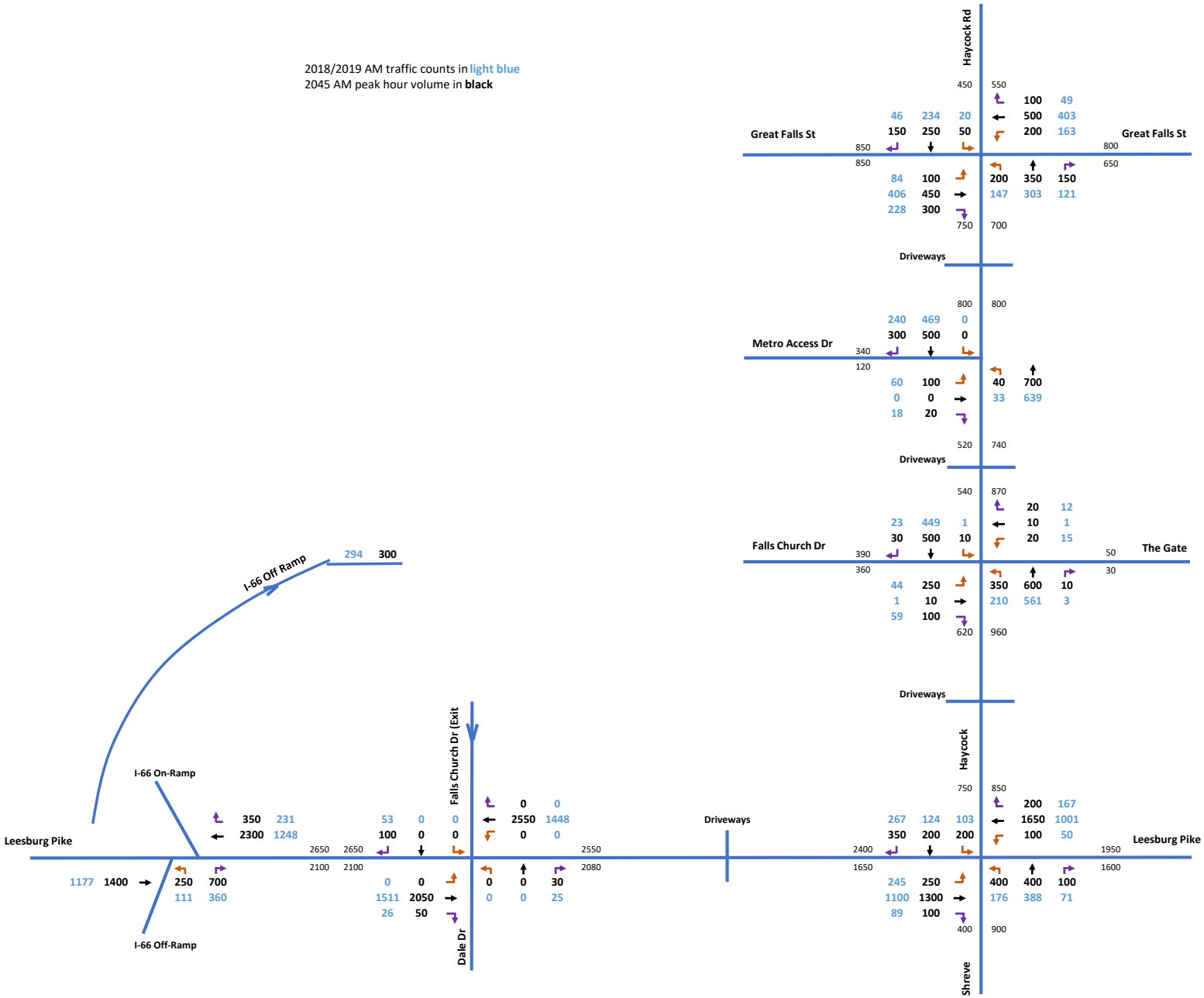
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		109.0		41.0	12.9	96.1		
Change Period (Y+Rc), s		7.0		7.0	7.0	7.0		
Max Green Setting (Gmax), s		102.0		34.0	17.0	78.0		
Max Q Clear Time (g_c+I1), s		14.3		15.2	5.7	38.4		
Green Ext Time (p_c), s		3.2		0.5	0.2	3.8		

Intersection Summary	
HCM 2010 Ctrl Delay	29.0
HCM 2010 LOS	C

Appendix L: FCDOT Travel Demand Forecasts

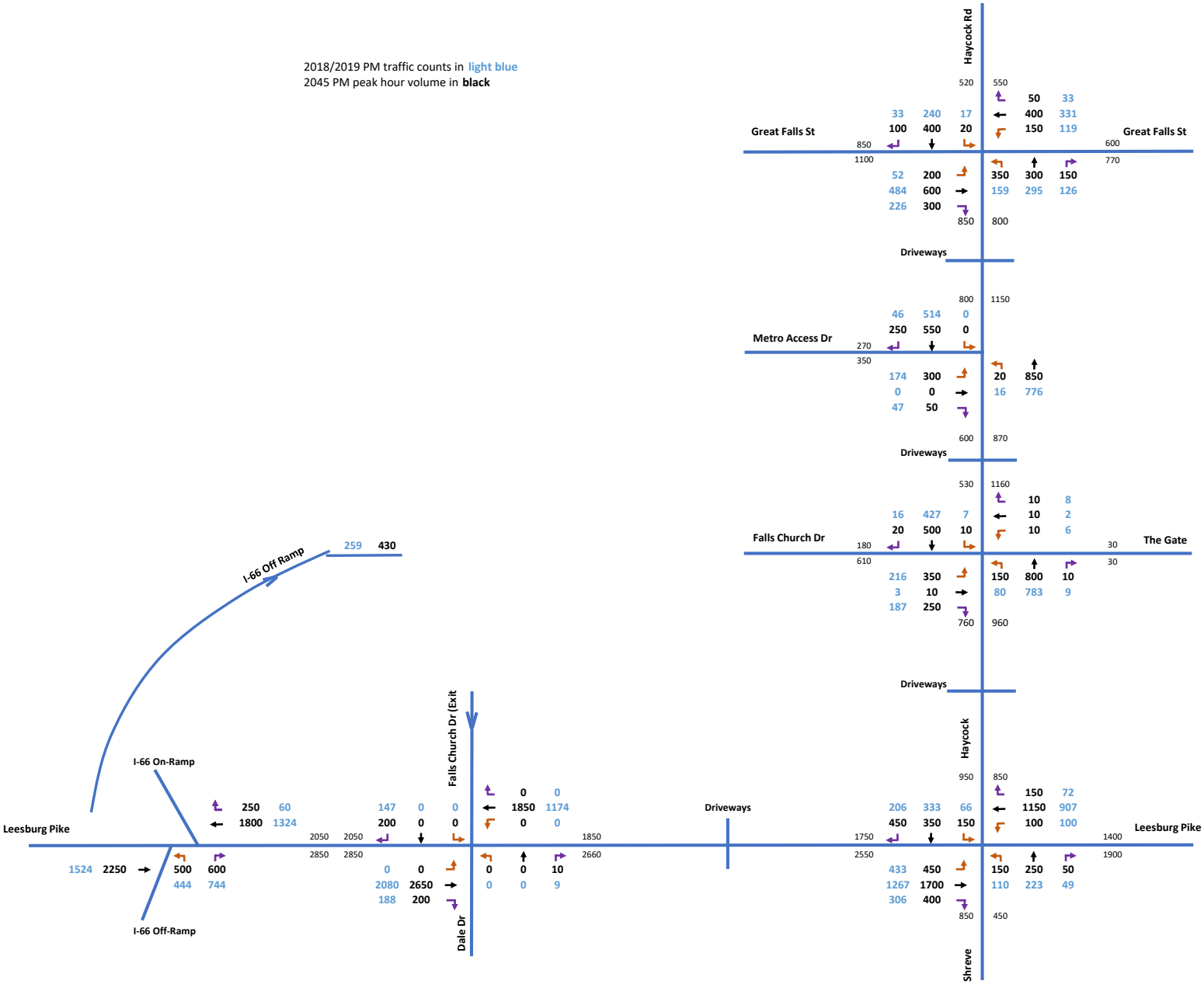
2045 AM Peak Hour Volume

2018/2019 AM traffic counts in light blue
2045 AM peak hour volume in **black**



2045 PM Peak Hour Volume

2018/2019 PM traffic counts in **light blue**
2045 PM peak hour volume in **black**



APPENDIX F: CONCEPT DRAWINGS



NOTES:

1. THIS PLAN IS SCHEMATIC AND REFLECTS THE GENERAL CHARACTER AND INTENT OF THE PROPOSED DEVELOPMENT. MODIFICATIONS AND VARIATIONS MAY OCCUR. THE APPLICANT RESERVES THE OPTION TO MODIFY THE PLAN PER FINAL SITE DESIGN, PROVIDED THE OVERALL QUALITY AND DESIGN INTENT ARE MAINTAINED. THESE DRAWINGS ARE NOT TO BE USED FOR CONSTRUCTION.
2. SEE ARCHITECTURE SHEETS FOR LOCATIONS OF PEDESTRIAN AND VEHICULAR ENTRANCES.
3. SEE CIVIL PLANS FOR LOCATION OF EXISTING AND PROPOSED UTILITIES.
4. PARK SPACES ARE CONCEPTUAL ONLY. THEY MAY BE REVISED OR CONSOLIDATED. THEIR LOCATIONS AND DIMENSIONS ADJUSTED, DECREASED OR INCREASED AND/OR THEIR COMPONENTS MODIFIED, SO LONG AS THE REQUIRED OPEN SPACE FOR THE OVERALL PROJECT IS MAINTAINED.
4. APPLICANT RESERVES THE RIGHT TO MODIFY OR REDUCE THE PERCENTAGE OF OPEN SPACE PROVIDED, SO LONG AS IT MEETS THE MINIMUM REQUIREMENTS IN THE PRM DISTRICT.
5. DRAWINGS ARE NOT FOR CONSTRUCTION.

ILLUSTRATIVE PLAN

CONCEPTUAL DEVELOPMENT PLAN

WMATA - WEST FALLS CHURCH

DRANESVILLE DISTRICT

FAIRFAX COUNTY, VIRGINIA

REVISION APPROVED BY

NO.	DESCRIPTION	DATE	REV. BY	APPROVED	DATE

LandDesign.
200 S. PEYTON STREET
ALEXANDRIA, VA 22314
703.549.7784
WWW.LANDDESIGN.COM

WMATA - WEST FALLS CHURCH
2021157

SCALE:
DATE: 2022-08-22
DRAWN: ABS/SW
CHECKED: MB

COMMONWEALTH OF VIRGINIA
GABRIELA CAÑAMAR CLARK
Lic. No. 958
08/22/2022
LANDSCAPE ARCHITECT

SHEET: L001

APPENDIX G: NOTICE OF PUBLIC HEARING STAFF REPORT

APPENDIX H: COMMENTS RECEIVED ON THE PUBLIC HEARING STAFF REPORT